

Administration Guide

Lifecycle Manager – Standard 1.0.1



Administration Guide for Lifecycle Manager

Item: EN-000047-01

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About This Book

This book, the *Administration Guide for Lifecycle Manager – Standard 1.0.1*, provides information about installing and configuring Lifecycle Manager – Standard (LCM) and the Orchestrator Configurator.

This guide also describes how to configure various aspects of LCM, such as criteria and the infrastructure.

Intended Audience

This book is intended for administrators who are installing and configuring LCM and the Orchestrator Configurator. The information in this guide is written for experienced Windows or Linux system administrators who are familiar with virtual machine technology and LCM.

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Understanding LCM

VMware Lifecycle Manager – Standard (LCM) helps you manage the creation of virtual machines and prevent machine sprawl by allowing you to do the following:

- Handle and process virtual machine requests in a simple Web user interface.
- Disable the approval process to provide a self-service portal.
- Automatically determine the provisioning infrastructure, based on organizational and logical criteria, not technical ones.

Servers are automatically placed based on their location, organization, environment, service level, or performance levels. When a solution is found for set of criteria, the machine is automatically deployed.

- Enforce the best-practice provisioning processes, such as automatic deployment and configuration, that reduces error and speeds up the process.
- Track lifecycle information for requested machines. This helps maintain an audit trail, which allows on-time archiving and deletion of an end-of-life server and avoids server sprawl. These requests can be modified to extend a virtual machine's life span.

This chapter includes the following topics:

- [“Using Lifecycle Manager”](#) on page 10
- [“Role-Based User Interface”](#) on page 11
- [“LCM Administrator”](#) on page 11
- [“Lifecycle Manager Architecture”](#) on page 14
- [“Lifecycle Manager Components”](#) on page 15

Using Lifecycle Manager

To set up and use Lifecycle Manager, an LCM Administrator has to do the following:

- 1 Check the system requirements and prerequisites to install LCM on:
 - Windows
 - [“Before You Install LCM on Windows”](#) on page 17
 - [“System Requirements to Install Lifecycle Manager on Windows”](#) on page 19
 - The LCM Appliance
 - [“System Requirements for the Lifecycle Manager Appliance”](#) on page 20
 - [“Installing the LCM Appliance”](#) on page 21
- 2 Install LCM.

For more information, see:

 - [“Install Lifecycle Manager on Microsoft Windows”](#) on page 17
 - [“Install the Lifecycle Manager Appliance”](#) on page 20
- 3 Configure the Orchestrator Configurator.

For more information, see [“Setting Up the Orchestrator Configurator”](#) on page 27.
- 4 Log out of Orchestrator Configurator.
- 5 Log in to LCM and complete the initial configuration of LCM.

The Administrator is automatically logged out of LCM.

For more information on the initial configuration, see [“Initial Configuration of Lifecycle Manager”](#) on page 47.
- 6 Log in to LCM and complete the relevant tasks.

For more information, see [“Using LCM”](#) on page 43.

Role-Based User Interface

LCM has a role-based interface and presents information that is relevant to a role. This maintains the proper role separation that is required by most regulatory procedures.

The following roles exist in the LCM:

- **LCM Administrator** – Establishes the criteria used for machine placement and determines how these criteria convert to sizing or placement values. This role configures LCM and establishes the placement of virtual machines.
- **LCM Requester** – Requests a new virtual machine and an extension of the life of a new virtual machine. Requesters can also access elementary functions of machines assigned to them, such as opening consoles and shutting down or restarting machines. Requesters can also delegate this control to other users.
- **LCM Tech Requester** – In addition to doing everything the LCM Requester can do, this role can also modify customization templates.
- **LCM Approver** – Approves current requests for deployment or extensions. Approvers have the authority to approve or reject deploying a machine. If no unique solution is available to place a machine based on the provided criteria, an IT staff member must manually choose the sizing and placement of the new machine.
- **LCM IT staff** – Completes manual placement of approved virtual machines.

All of these roles can request a virtual machine.

For more information on LCM Requester, LCM Tech Requester, LCM Approver, and LCM IT Staff, see *VMware User's Guide for Lifecycle Manager – Standard 1.0.1*.

LCM Administrator

The LCM Administrator is responsible for the following tasks:

- Initially configuring LCM
- Mapping the infrastructure, which includes:
 - Configuring the criteria, such as location, organization, server environment, and so on
 - Reconfiguring LCM to set up email notifications, the look and feel of the user interface, and style sheets

Mapping determines who can access a newly created element, such as a resource pool or datastore. If you have a requested virtual machine that is set up with all the criteria, it is mapped to the existing infrastructure.

As shown in [Figure 1-1](#), the process starts when a virtual machine is requested. The next step depends on how the LCM Administrator configured the approval process. If an approval is required, the LCM Approver receives an email notification that a virtual machine is waiting for approval. If approval is turned off, and there is no conflict with the placement information, the virtual machine is placed automatically. If there is a conflict, such as incorrect or missing information, an LCM IT Staff user receives an email notification that a virtual machine is waiting to be placed. The LCM IT Staff user must display the current setup and provide the appropriate information

After the virtual machine has been placed, the virtual machine can be used until the decommissioning date. Five days before this date, an email is sent to the user who requested the virtual machine to notify the user that the virtual machine is close to being decommissioned. The user who requested the virtual machine can do one of the following:

- Request an extension of the life of the machine

If the extension is approved, continue using the virtual machine until the new decommissioning date. If the extension is not approved, the virtual machine reaches its end of life at the previously set decommissioning date and is archived or deleted.

- Manually decommission the virtual machine
- Delete the virtual machine

An LCM Requester can only decommission, not delete, a virtual machine. An LCM Administrator has access to a **Delete** button and can remove information about a virtual machine. A deletion means that there is no information about the deleted virtual machine in reports, but the associated virtual machine is not destroyed. If the virtual machine is accidentally deleted, the LCM Administrator can recover it.

- Archive the virtual machine before it is deleted

An LCM Administrator specifies whether decommissioned virtual machines are archived. This setting is specified during the initial configuration of LCM.

The solid blue line in [Figure 1-1](#) shows the process if an LCM Requester manually decommissions a virtual machine, it is deleted or archived.

The broken blue line shows what happens if approval is turned off. A requested virtual machine is created and placed automatically, or if there is a conflict, an LCM IT Staff user is notified. Also, if approval is turned off, a request to extend the life of a virtual machine is completed automatically.

Lifecycle Manager Architecture

LCM is powered by VMware Orchestrator Configurator, which needs the following to run at a basic level:

- Service directory
- Database

For more information on the Orchestrator Configurator, see [“Setting Up the Orchestrator Configurator”](#) on page 27.

Figure 1-2. Architecture of LCM and Orchestrator Configurator

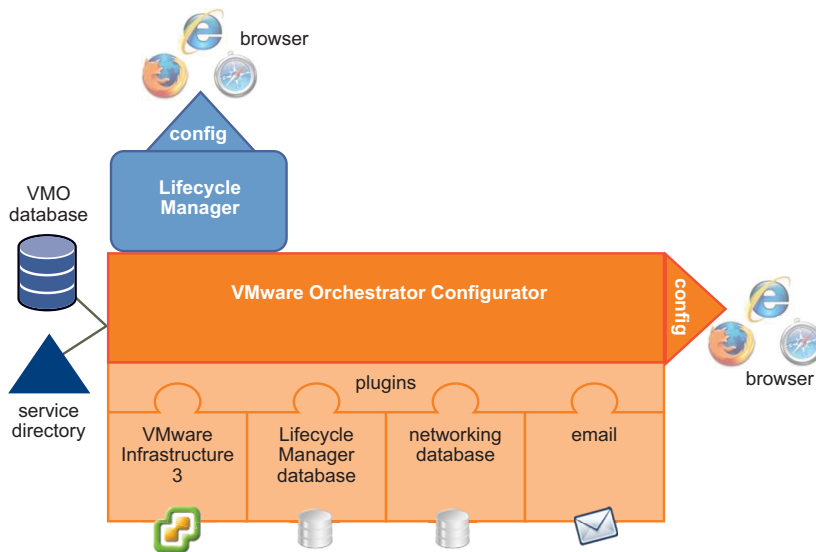


Figure 1-2 shows that to complete more complex tasks, Orchestrator Configurator needs plug-ins.

When you install LCM, you need to configure the following plug-ins:

- **VMware Infrastructure 3**
- **LCM database**
- **Networking database**
- **Email**

The Email plug-in receives email notifications. It is installed by default when you install the server.

Lifecycle Manager Components

The components necessary to run LCM are described in this section:

- **Service Directory** – Defines which users can connect to LCM and defines their permission levels. When a person logs in, the directory checks the user name and password and checks whether the person logging in has the right to login to LCM. Only users who are members of a directory group can log in.
- **Database** – Stores all the information that is related to LCM, such as the virtual machine name, control group, view group, commission/decommission date, infrastructure elements linked with the virtual machine request (template profile, datastore, resource pool, and so on). All the information necessary to map criteria and the infrastructure is also stored. The component also gets the necessary information to generate reports.
- **VMware Infrastructure** – Responsible for all the communication with VMware VirtualCenter. A Web Service API is used to connect to VMware Infrastructure 3.

Installing LCM

This chapter includes the following topics:

- [“Install Lifecycle Manager on Microsoft Windows”](#) on page 17
- [“Install the Lifecycle Manager Appliance”](#) on page 20
- [“Check Configuration Readiness”](#) on page 25
- [“Migrate to Lifecycle Manager 1.0.1”](#) on page 25

Install Lifecycle Manager on Microsoft Windows

The following section describes the prerequisites, the system requirements, and steps to install VMware Lifecycle Manager – Standard (LCM) on Windows.

Before You Install LCM on Windows

Before you install LCM on Microsoft Windows, you need the following.

Table 2-1. Installation Prerequisites for LCM on Windows

Component or Action	Options
Plug-ins	VMware Infrastructure 3.0 and one of the following: <ul style="list-style-type: none"> ■ VirtualCenter 2.0 ■ VirtualCenter 2.5, update 2
VMware ESX	<ul style="list-style-type: none"> ■ ESX host 3.0.x ■ ESX host 3.5 ■ DRS cluster with at least one resource pool and VM folder

Table 2-1. Installation Prerequisites for LCM on Windows (Continued)

Component or Action	Options
Sample ActiveDirectory groups that correspond to LCM roles	<p>The roles are:</p> <ul style="list-style-type: none"> ■ LCM Administrator ■ LCM IT Staff ■ LCM Approver ■ LCM Tech Requester ■ LCM Requester
Determine a static account for each VMware VirtualCenter Server (VirtualCenter Server) that LCM and Orchestrator Configurator can use	
Ensure that the LCM groups have appropriate permissions	<p>The permissions include the following:</p> <ul style="list-style-type: none"> ■ Read to obtain power status ■ PowerUser to create snapshots and open console ■ The MKS ActiveX control works only with Mozilla Firefox and Microsoft Internet Explorer 6 and 7. ■ Allow the Orchestrator Configurator Administrator to deploy from VirtualCenter templates ■ RDP access in the guest operating system (OS) Use xrdp for Linux virtual machines.
LCM Database	<p>This database allows you to do the following:</p> <ul style="list-style-type: none"> ■ Use VirtualCenter Server This comes with SQL 2005 Express. ■ Create an LCM database that uses Microsoft SQL Server Management Studio Express
LCM Windows 2003 Server	<p>This server requires the following:</p> <ul style="list-style-type: none"> ■ 1.5 GB memory, especially if you are using the same server as VirtualCenter. ■ A production environment needs 2 GB. ■ 2 CPUs for production ■ Sufficient disk space ■ Installation needs 300 MB, and the product needs 10 GB. ■ A static IP address

Table 2-1. Installation Prerequisites for LCM on Windows (Continued)

Component or Action	Options
An ActiveDirectory domain with all sysprep information, including Windows license keys	
DHCP server and fixed range of IP addresses for new virtual machines	

System Requirements to Install Lifecycle Manager on Windows

The system requirements to install LCM on Windows are the following:

- Windows 2003 R2
- Microsoft SQL 2005 SP2 or Oracle 10g
- ActiveDirectory bundled with Windows 2003 R2
- One of the following browsers:
 - Microsoft Internet Explorer 6 or 7 or Mozilla Firefox 2
 - Mozilla Firefox 3.x (experimental)
 - Safari 3.x (experimental)

To install LCM on Windows

- 1 Go to <http://www.vmware.com/products/lcm/> and download `vmware_lifecycle_manager_1_0_1_xxx.exe`.
- 2 Double-click this .exe file.
- 3 Accept the EULA and choose the install directory.
- 4 Select **Client–Server**.
- 5 After the installation has finished, go to `http://</lcmserver>:3944/` to access the Orchestrator Configurator Web interface.
- 6 Log in with the following credentials:
 - User name: **vmware**
 - Password: **vmware**

This is an Orchestrator Configurator internal user name and password. You can change the password if you want. To configure the Orchestrator Configurator, see [Chapter 3, “Setting Up the Orchestrator Configurator,”](#) on page 27.

Install the Lifecycle Manager Appliance

The LCM Appliance is a preconfigured, prepackaged version of LCM that can be used for evaluation and runs on Ubuntu Linux. It is configured to run out-of-the-box, using the locally installed database and the local OpenLDAP directory service for user authentication. Using the email server is optional, and the user can also reconfigure the server to use an external database or an external directory service.

The following section describes the system requirements and steps to install the LCM Appliance.

System Requirements for the Lifecycle Manager Appliance

To install the LCM Appliance, you need an environment that comprises VirtualCenter and a hypervisor, such as VMware Fusion™, VMware Player, VMware Server, and so on.

The LCM Appliance is preconfigured with the following software:

- Operating System
 - Ubuntu GNU/Linux 7.10 (Gutsy Gibbon)
 - Kernel 2.6.22-14-server
 - OpenSSH 4.6p1 (OpenSSL 0.9.8e)
- Database
 - PostgreSQL 8.2.6
 - Directory Service
 - OpenLDAP (slapd) 2.3.35
- Orchestrator Configurator
 - Orchestrator Configurator 3.x, installed as a service
 - Web configuration application on port 3944

The email server that is installed is Postfix 2.4.5-3ubuntu.

Installing the LCM Appliance

VMware recommends that you install the LCM Appliance only for proof of concept. For a production environment, install LCM and Orchestrator Configurator using the Windows installer.

You can install the LCM Appliance using the OVF tool or using the VMware Infrastructure Client 2.5.

To install the LCM Appliance using the OVF tool

- 1 Go to http://www.vmware.com/download/eula/ovf_eula.html and download the OVF tools.

LCM is the name of the directory created for .vmx and .vmdk files.

- 2 Click **Yes** to accept the agreement.
- 3 Confirm that you have at least Java 1.5 installed on the machine on which you plan to install the LCM Appliance and do the following:
 - a Run the following command line:


```
java -jar ovftool.jar -i
```

 This will open a graphical tool to handle OVF files.
 - b Select **Install OVF Package**.
 - c Read the information in the dialog box and click **Next**.
 - d Select a destination folder for the new virtual machine.
 - e Select the **Flat** check box and click **Next**.

To install the LCM Appliance using VI Client 2.5

- 1 Log in to the VI Client.
- 2 Choose **File > Virtual Appliance > Import**.
- 3 Select the OVF file from the directory in which it was saved.

This automatically imports the LCM Appliance and makes it available in ESX host or VirtualCenter.

The LCM Appliance is downloaded and expanded in the target directory.

- 4 Open the `.vmx` file in the target directory with your hypervisor and start the LCM Appliance.

In your hypervisor, you must enable “connected” for the network and the root password must be entered. Otherwise you do not have network connectivity, and you cannot complete the rest of the process.
- 5 Open the LCM Appliance console and enter:
 - User name: **vmware**
 - Password: **vmware**
- 6 When prompted about using a static IP address or DHCP, enter **d** for DHCP or enter **s** for static IP configuration.

For DHCP, the LCM Appliance assigns an available IP address.
- 7 For static IP, provide:
 - **Desired Static IP address** (for example, **192.168.1.200**)
 - **Static netmask** (for example, **255.255.255.000**)
 - **Default network gateway** (for example, **192.168.001.001**)
 - **Primary DNS Address** (for example, **192.168.1.100**)
 - **Secondary DNS address** (leave blank if you have no secondary DNS)
 - **DNS suffix** (for example, **vmware.com**)

Leave this field blank if you do not have a DNS suffix.
- 8 The LCM Appliance displays the current time zone and asks you if you want to change it.
 - Enter **y** to change the time zone.
 - Enter **n** if the time zone is correct.
- 9 Follow the prompts to enter the value for the correct time zone
- 10 If the information is not correct, enter **n** for no and re-enter the information. If the information is correct, enter **y** for yes.

After the time zone is selected, the LCM Appliance logs you out as the administrator and provides information on how to log in to the Web configuration tool to continue configuring the LCM Appliance.

To configure the LCM Appliance

- 1 In a browser enter the configuration URL that appeared in the console, `http://<appliance_name_or_IP_address>:3944`.
3944 is the port reserved to configure the Orchestrator Configurator.
- 2 Log into the Orchestrator Configurator by entering the following:
 - User name: **vmware**
 - Password: **vmware**

This is not the LCM Appliance password but a specific password for the configuration. You are prompted to change this password during the initial configuration of LCM. This is done in the Orchestrator Configurator by choosing **General > Change Password**.
- 3 Choose **Network > SSL Certificate**.
- 4 In **URL to import certificate from:**, enter the URL of the VirtualCenter server to which you want to connect (for example, **https://vcenter**).
- 5 Click **Import**.
The **Imported SSL Certificates** table displays one additional row with a certificate description.
- 6 Click **VMware Virtual Infrastructure 3** and click **New VirtualCenter 2.0 host** to set up a VirtualCenter connection.
- 7 In **Host**, enter the name of the host from which you imported the certificate (for example, **vcenter**).
- 8 In **User name** and **Password**, enter the VirtualCenter administrator password.
- 9 Select the **Share a unique session** check box.
- 10 In the second **User name** and **Password** fields, enter the VirtualCenter administrator credentials you need for the backend connection from LCM to VMware Infrastructure Client.
- 11 Click **Apply Changes**.
The URL to the newly configured VirtualCenter host appears in the list.
- 12 Install the license
For more information on installing a license, see [“Install the License”](#) on page 37.

- 13 Click **Server** and click **Start service**.

This starts the Orchestrator Configurator and LCM server for the first time and may take up to 10 minutes.

Your LCM Appliance is now configured to do the following:

- Use the IP address of the LCM Appliance defined on the first login.
 - Use the local openLDAP server, which is configured with the following user name and passwords:
 - lcmadmin/admin
 - lcmuser/user
 - lcmtechuser/techuser
 - lcmitstaff/itstaff
 - lcmapprover/approver
- 14 Use the local PostgreSQL database for data storage.
 - 15 Use the Virtual Center configured in LCM Appliance configuration.

Getting Administrative Rights on the LCM Appliance

To execute commands as root, you need to use the `sudo` command. For example, when trying to reboot the LCM Appliance, if you enter **reboot**, an error message appears showing that it failed.

If you enter **sudo reboot**, you are prompted for a password. If you logged in using user name **vmware** and password **vmware**, enter **vmware** as the password for the reboot. If you need a root shell, enter **sudo su** and when prompted for the password, enter your login password, for example, **vmware**. You are now logged in as root. If you changed VMware account password at the first login, enter the new password when prompted.

You can now set up LCM for the first time. See [“Supported Guest Operating Systems for LCM”](#) on page 44.

Check Configuration Readiness

This section describes how you can check whether the configuration service is ready.

To check configuration readiness on Windows

- 1 In Windows, choose **Start > All Programs > Administrative Tools > Services**.
- 2 In **Services**, select **VMware Orchestrator Configuration** and open the window.

If the status is not **Started**, contact your LCM Administrator.

To check configuration readiness in Linux

- 1 Boot the virtual machine.
This starts the configuration service in Linux.
- 2 Ensure that the configuration server is installed as a service by checking the `/etc/init.d/` folder for the `jettyd` script.
- 3 Check the `/etc/rc#.d/` folders for links to `jettyd`.

See the Linux distribution's documentation for distribution-specific troubleshooting information.

Migrate to Lifecycle Manager 1.0.1

This section describes how to migrate from LCM 1.0 to LCM 1.0.1.

Before You Migrate

This section describes the tasks that need to be completed before you can migrate to LCM 1.0.1.

Back Up the LCM and Networking Tables

The LCM table contains virtual machine-specific data that is managed by LCM, such as when the virtual machine was created, who created it, why it was created, its history, the decommission date, its specifications, where it is located, its criteria, and the mapping criteria.

The Networking table contains the data related to the management of the pools of IP addresses, such as which ranges or subnets are allocated to LCM, which IP addresses are already booked, and which IP addresses are free for future virtual machine requests.

The Orchestrator Configurator Administrator completes this process.

NOTE Contact your database administrator to backup databases that are used by LCM 1.0. This procedure is optional, but VMware recommends it for databases in a production environment. Your backup procedure depends on your database vendor.

Export your Orchestrator Configurator Configuration

This section describes how to export your Orchestrator Configuration file.

To export your configuration

- 1 Log in to the Orchestrator Configurator as the Administrator.
- 2 In the **General** view, click the **Export Configuration** view.
- 3 Click **Export**.

To migrate to LCM 1.0.1

- 1 In Windows, choose **Start > Programs > Administrative Tools > Services**.
- 2 Stop the following services:
 - **VMware Orchestration Configuration**
 - **VMware Orchestration Server**
- 3 Start the LCM 1.0.1 Installer.

Ensure that the installation folder is the same folder as LCM 1.0.
- 4 Click **Yes** when prompted for a minor upgrade.
- 5 Restart Windows.

Setting Up the Orchestrator Configurator

3

After installing VMware Lifecycle Manager – Standard (LCM), you need to configure the VMware Orchestrator Configurator. The Orchestrator Configurator is installed with LCM when you select **Client-Server** during the installation.

The Orchestrator Configurator is the tool that is used to configure the components that are related to the engine, such as the database, network, server certificate, and so on. These components need to be configured correctly for LCM (or any other applications running on the Orchestrator Configurator) to function properly.

This chapter includes the following topics:

- [“Working with the Orchestrator Configurator”](#) on page 28
- [“Set Up Optional and Advanced Configurations”](#) on page 29
- [“Configure the Network”](#) on page 32
- [“Determine the Database”](#) on page 33
- [“Select the SSL Certificate”](#) on page 34
- [“Configure LDAP”](#) on page 35
- [“Install the License”](#) on page 37
- [“Configure the Plug-Ins”](#) on page 38
- [“Determine the Email Default”](#) on page 38
- [“Import the Server Certificate”](#) on page 39
- [“Add VMware Infrastructure 3”](#) on page 40

Working with the Orchestrator Configurator

Before you log in to the Orchestrator Configurator, there are some things you should know:

- The server status, which appears at the bottom of the Orchestrator Configurator main page, is one of the following:
 - **Running**
 - **Not available**
 - **Stopped**
- Server status is different from the green circles on the views.

These circles show only that you have configured a view correctly. The server could be stopped and you might see green circles, or the server could be running and you might see red triangles.

- The minimum resolution you should use is 1280 x 768.
- After you install LCM, wait about five minutes and choose **Start > VMware > Configuration**.

If you have any problems, in Windows, go to your **Services** console for your LCM and check whether the service is running. In the LCM Appliance, ensure that the configuration server is running. The output of `ps -e 500 | grep jetty` should have a java line. Because `ps` lists run processes, and the `grep` command is a filter, it should generate only processes with jetty in their description.

To log in to the Orchestrator Configurator

- 1 Enter `http://<lcmserver>:3944/`.
- 2 Enter the following:
 - **User name: vmware**
 - **Password: vmware**

These values are the defaults. After the first login, you can change the password in the **General** view.

Set Up Optional and Advanced Configurations

This section describes how to configure the items in the **General** view, such as installing a Orchestrator Configurator application and exporting or importing a configuration. When you export or import a configuration, you save a local file of your Orchestrator Configurator configuration. This way, you can back up your configuration or if you reinstall Orchestrator Configurator, you can import the configuration information.

Install an Application

This section describes how to install an application, such as LCM, on Orchestrator Configurator.

To install an application

- 1 Click **Install Application**.
- 2 Click **Browse**.
- 3 Select the file you want to install and click **Open**.

Select a file with a `.vmoapp` or a `.dar` extension. The `.vmoapp` file can comprise multiple plug-ins, and each `dar` file has one plug-in.

- 4 Click **Install**.

Configure Events and Executions

This section describes how to determine the maximum number of executions and events.

Events

Events are created and stored in the database. Multiple events are known as elements. You can have automatically generated events, such as “workflow started,” “workflow finished”, and so on, and events that are generated in the code. If you enter **5000** as the maximum number of events for an element (a workflow, a policy, and so on), and this maximum is reached, the database deletes the oldest events to create the new event.

Executions

In the Orchestrator Configurator, when you execute a workflow, a workflow token is created in the database. This token contains all parameters related to the execution of this workflow. For example, if you run the workflow “Test” three times, three workflow tokens are created. The three executions appear in Orchestrator Configurator Client above the workflow “Test”.

If you enter **100** as the maximum number of executions, when a workflow is run 100 times, for the 101st time, the database deletes the oldest execution to store the latest execution.

The rolling over only occurs on finished executions, and the Orchestrator Configurator does not count the number of all executions. For example, you enter **100** for the maximum number of executions. If you have 90 running executions and 30 finished executions, there is no rolling over ($30 < 100$).

An example of an event is:

- 1 A workflow is started.

This step is generated by the system.

- 2 A virtual machine is cloned.

The user created this event from scripts using the command `Server.log (clone VM: + vm.name)`.

- 3 Get IP address.

The user created this event from scripts using the command `Server.log (VM IP address: + vm.guest.ipAddress)`.

- 4 Workflow ended.

This step is generated by the system.

When this event is complete, the database returns to the top, overwrites the first event, and starts the next event.

If time is an issue, and if for legal reasons you need to keep a trace of every change in your infrastructure, enter **0** (zero = infinite) in **Maximum Number of Events**. This means that the server never rolls over, but it may crash. The database administrator has to periodically clean the server and archive the events. If time is not an issue, you can enter any number. When the server rolls over, events are overwritten.

In the **Miscellaneous** view, enter values in the following fields:

- **Maximum number of executions** – Maximum number of workflow executions (workflow tokens) allowed for a given workflow. When the maximum value is reached, the oldest workflow execution is removed. This impacts what is stored in the database and what is shown under the workflow in the **Workflows** view.
- **Web auto-login user name and password** – Administrators can determine for which Web pages they want to allow users access to everything in the page. In this case you need to specify in the page that auto-login is used. The server comes to this page and uses the auto-login credentials to enable access to the page.

- **WebView development enable** – Developers can select this check box and enter a path where all the Web application files are kept. The path is local to the server. Developers can make changes and see the changes live.



CAUTION Only developers should select the **WebView development enable** check box.

Configure Other Advanced Options

This section describes how to configure the rest of the advanced options under the **General** view.

To configure miscellaneous information

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Click **Miscellaneous**.
- 3 Enter a maximum number of events.
- 4 Enter a maximum number of executions.
- 5 Enter a Web auto-login user name and password.
- 6 Click **Apply Changes**.

To change an administrator's password

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Click **Change Password**.
- 3 Enter the current password.
- 4 Re-enter and confirm the new password.
- 5 Click **Apply Changes**.

To export your configuration

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Click **Export Configuration**.
- 3 Enter the password, if you have one.
- 4 Click **Export**.
- 5 Save the file to disk and click **OK**.

To import your configuration

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Click **Import Configuration**.
- 3 Enter a password, if you have one.
- 4 Browse to the configuration file.
- 5 Click **Import**.

To display the webviews

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Ensure that the server is started.
- 3 Click **Webview**.

The link to LCM appears. You can click the link to navigate to the login page. This is another way to access LCM.

Configure the Network

This section describes how to configure the network you need to use Orchestrator Configurator and LCM.

To configure your network

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Click **Network**.
- 3 In **IP Address**, select a valid IPV4 address of your server.

NOTE The Orchestrator server expects this IP address to remain constant while it is running. Orchestrator administrators should make sure that the network provides a fixed IP, which is obtained by using a properly configured DHCP server (using reservations) or by setting a static IP.

- 4 Enter information in the following fields:
 - **Look up port** – The main port to communicate with Orchestrator Configurator server (JNDI port). All other ports communicate with the Orchestrator Configurator smart client through this one. It is part of the JBoss Application server infrastructure.
 - **Command port** – The application communication port (RMI container port), it is used for remote invocations. It is part of the JBoss Application server infrastructure.

- **Messaging port** – The Java messaging port used to dispatch events. It is part of the JBoss Application server infrastructure.
- **Data port** – This is the port used to access all Orchestrator Configurator data models, such as workflows and policies. It is part of the part of the JBoss Application server infrastructure.
- **HTTP server port** – The port for the HTTP connector used to connect to the Web frontend.
- **HTTPS server port** – The port for the SSL HTTP connector used to connect to the Web frontend.

To run LCM, you need the HTTP and HTTPS ports because you only need to access Web pages. If you are using LCM – Customization Option, because you might want to edit the application, you need the rest of the ports. To edit the application, you need the smart client, which uses the first four ports to communicate with its server.

- 5 Click **Save**.
- 6 Verify that the red triangle has changed to a green circle.

Determine the Database

This section describes how to configure all plug-ins that use a database, such as LCM.

To determine the database connection

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Click **Database**.
- 3 Under **Database Type**, select your database.

If you do not have this information, contact your database administrator. The Orchestrator Configurator supports only Oracle and SQLServer, but you can use PostGres or MySQL for evaluation purposes.

- 4 If you selected **SQLServer**, specify the following connection parameters:
 - **User name**
 - **Password**
 - **Hostname or IP** – Enter, for example, **localhost**.
 - **Database name** – Enter **lcm**.

- **Instance name** – Enter **SQLEXP_VIM** if you are using a VirtualCenter database.
- **Domain** – Enter, for example, **vmware.local**.

If a message states that no database is found, you have successfully configured the database.

5 If you selected **Oracle**, specify the following connection parameters:

- **User name**
- **Password**
- **Hostname or IP**
- **Instance Name**

6 Click **Install**.

The tables in the SQLServer LCM database are now using SQLServer Management Studio Express.

7 Set the network to use the valid static IP address of the LCM/Orchestrator Configurator server.

8 Click **Apply Changes**.

9 Verify that the red triangle has changed to a green circle.

Select the SSL Certificate

Orchestrator Configurator uses SSL certificates to communicate with VMware VirtualCenter 2.0.

To select the SSL certificate

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Click **Network**.
- 3 Click **SSL Certificate**.
- 4 Click **Import from URL**.
- 5 Enter **https://<your_vc_server>**.

Entering a URL in this field also checks that the communication with VirtualCenter through its Web service is working properly. Administrators can also download the SSL file from the virtual center server by navigating to `C://Documents and settings/All Users/Application Data/VMware/VMware VirtualCenter/SSL` and downloading `ruicert.crt`.

- 6 Click **Import**.
A message that the import was successful appears.
- 7 Repeat [Step 1](#) to [Step 8](#) for each VirtualCenter server.
- 8 Verify that the red triangle has changed to a green circle.

If **Import from URL** does not work, you can use **Import From File**. Ensure that you first have a connection with the remote disk. If you do not, you need to go to the file system, establish a connection, and click **Browse** to search for the file.

Configure LDAP

This section describes how to configure your LDAP.

To configure your LDAP

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Click **LDAP**.
- 3 Select **Active Directory** as the LDAP client.
- 4 Enter **server.vmware.local** as the primary LDAP host.

The Primary LDAP Host is the first host on which Orchestrator Configurator checks credentials. If this host is not available, the Secondary LDAP Host is contacted.

- 5 Check the value that appears in **Port**.

This value is the default for the LDAP you selected in [Step 2](#).

- 6 In **Root**, enter, for example, **dc=vmware** and **dc=local**.

This is the node you use to browse your service directory after entering the appropriate credentials. For large service directories, specifying a node in the tree narrows the search and improves performance. For example, rather than search in the entire directory, you can specify “Employees,” which displays all the users in this group.

- 7 Enter a user name and password.

Because the LCM administrator group has not been defined, the user who logs in must have the right to browse the LDAP directory. The user name you enter must specify the root (for example, username@vmware.local). With ActiveDirectory, you do not have to enter an LDAP string for the user name. You only need the login credentials.

- 8 Leave the **Use SSL** checkbox deselected.

Active Directory does not use SSL. If an error message appears that no user was found, this is OK.

- 9 Click the **LDAP Lookup Paths** view.

- 10 In **User lookup base**, search for user lookup information, such as **dc=vmware,dc=local**.

When you use the search link, enter your top-level domain, **vmware**, and the LDAP connection string for the discovered branch appears.

- 11 Click on the LDAP string to insert it into the field.

If no matches are found, check your LDAP connection string in the main LDAP page.

- 12 Repeat [Step 8](#) and [Step 9](#) for the **Group lookup base**.

You can enter, for example, **dc=vmware,dc=local**.

- 13 Repeat [Step 8](#) and [Step 9](#) for the **VMO Admin group**.

You can enter, for example, **cn=LCM Administrators,cn=Users,dc=vmware,dc=local**.

This group comprises the administrators of the full servers. If you enter **LCM Administrators** in this example, the result is the LDAP connection string.

- 14 In **Request Timeout (ms)**, enter a value.

The Orchestrator Configurator server sends out a query to the service directory. The directory searches and sends a reply. But, because timeouts can occur, you should modify the value to determine whether the timeout is occurring in the Orchestrator Configurator Server. If the timeouts continue to occur after you make your modifications, the issue is on the service directory side and nothing can be done.

- 15 Leave the **Deference Links** check box selected.

- 16 Leave the **Filter Attributes** check box deselected.

Selecting this check box makes searching in LDAP faster, but you might miss some LDAP attributes that you may need later for automation.

- 17 Verify that the red triangle has changed to a green circle.

Install the License

This section describes how to install your license.

LCM 1.0.1 has the following types of Orchestrator licenses:

- **Server** – LCM provides all the functionality described in this guide to the users. Users can access all Web applications through the Webviews, and they can also use the fat client to view, create, and modify workflows based on their needs. Workflow customization function is supported with this type of license.
- **Player** – Users can use the LCM Webview as they would for the server license. They can also use the fat client to display workflows in the system. But they are not allowed to create or modify workflows. Workflow customization function is disabled with this type of license.

Users can import multiple Orchestrator licenses into the Orchestrator Configurator. If multiple licenses are applied, the Orchestrator Configurator automatically takes the one with the maximum rights.

For example, License A is a player type license and is valid from January 1, 2008 to December 31, 2010. License B is a server type license and is valid from June 1, 2008 to December 31, 2009. Between January 1, 2008 to May 31, 2008, the player license is applied, and between June 1, 2008 to December 31, 2009, the server license is applied. From January 1, 2010 to December 31, 2010, the player license is applied.

To install your license

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Click **Licenses**.
- 3 Click **Import License**.
- 4 Browse to the .xml license file for Orchestrator Configurator.
- 5 Click **Import** and verify that the Orchestrator Configurator server, Microsoft, VS-O server, SSH and VIM3 licenses are installed.
- 6 Verify that the red triangle has changed to a green circle.

Configure the Plug-Ins

This section describes how to configure the necessary plug-ins.

To configure the plug-ins

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Click **Plugins**.
- 3 Enter the user name and password from the LCM Administrators group.
- 4 Click **Apply changes**.
- 5 Verify that the red triangle has changed to a green circle.

Determine the Email Default

This section describes how to configure the email default.

To determine the email default

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Click **Mail**.
- 3 Select the **Use default values** check box.
This allows you to enter a default variable and send email from LCM.
- 4 In **SMTP host**, enter the IP address or host name for your SMTP server.
- 5 Change the port number if necessary.
- 6 Enter your email server's user name and password.

The **From name** and **From address** fields appear in all emails that originate from LCM.

- 7 Click **Apply Changes**.
- 8 Verify that the red triangle has changed to a green circle.

Determine Your Database Connection

This section describes how to determine your database connection.

To determine your database connection

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Click **Networking**.
- 3 Select **Custom**.
- 4 Select the database type.
- 5 Enter a user name and password.
- 6 Leave the **Hostname or IP field** and the **Port** field unchanged.
- 7 Select or enter a database name.
- 8 Click **Apply Changes**.
- 9 Verify that the red triangle has changed to a green circle.

For more information about configuring the database, see [“Determine the Database”](#) on page 33.

Import the Server Certificate

This section describes how to import the server certificate.

To import the server certificate

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Click **Server Certificate**.
- 3 Click the **Create a new Certificate Database and server certificate** link.
- 4 Enter values for the following:
 - **Common Name: VMware**
All the items in this field appear as **VMware**. This is hard coded in VirtualCenter installation and cannot be changed.
 - **Organization Name: VMware**
 - **Organization: Sales**

- 5 Select the appropriate country.
- 6 Click **Create**.
- 7 Verify that the red triangle has changed to a green circle.

Add VMware Infrastructure 3

This section describes how to add VMware Infrastructure 3.

To add VMware Infrastructure 3

- 1 Log in to the Orchestrator Configurator as an administrator.
- 2 Click **VMware Virtual Infrastructure**.
- 3 Click **New VirtualCenter 2.x host**.
- 4 Enter the FQDN for the VirtualCenter host.
- 5 Enter the VirtualCenter administrator user name and password.
- 6 Orchestrator Configurator can connect in one of the following ways:
 - Select **share a unique session** and enter a user name and password.
This user must be a VirtualCenter administrator.
 - Select session per user and change **DOMAIN_NAME\USERID** to, for example, **VMWARE\smith**.
If you choose this option, make sure you provided VirtualCenter permissions to your LCM ActiveDirectory groups. An SSL Certificate exception is corrected after the Orchestrator Configurator service is restarted.
- 7 Click **Apply Changes**.
- 8 Repeat [Step 1](#) to [Step 5](#) for each VirtualCenter instance.
- 9 Click **Restart the VMO Configuration Server**.
- 10 Verify that the red triangle has changed to a green circle.
- 11 Log in to Orchestrator Configurator with the following:
 - **User name: vmware**
 - **Password: vmware**
- 12 Click **Server**.

13 Click **Start service**.

If the Orchestrator Configurator server is not installed as a service, click **Install as Service**.

14 Click **Start service**.

A message states that the service is started. Verify that the service is running in the Windows services applet. The first time the service is started, it takes around 5-10 minutes because it is building database tables, and so on.

Using LCM

After VMware Lifecycle Manager – Standard (LCM) is installed and the Orchestrator Configurator has been configured, you need to complete the initial configuration of LCM before you can use it. This configuration involves setting up the virtual machine naming convention, specifying your groups, and selecting your date and currency formats. Many of these settings, such as the naming convention and date and currency formats, can be changed later.

Once LCM has been initially configured, there are tasks that an LCM Administrator must complete in LCM. After these tasks are completed, other roles, such as the Requester and Approver can complete their tasks. For example, setting approval modes or configuring email notifications allows an LCM Approver to receive an email notification that a requested virtual machine is waiting for approval.

This chapter includes the following topics:

- [“LCM Compatibility with VirtualCenter”](#) on page 44
- [“Supported Guest Operating Systems for LCM”](#) on page 44
- [“Initial Configuration of Lifecycle Manager”](#) on page 47
- [“Configure Webviews”](#) on page 48
- [“Set Approval Modes”](#) on page 49
- [“Change Archiving Settings”](#) on page 50
- [“Change Authorization Groups”](#) on page 50
- [“Modify the Base Name”](#) on page 51
- [“Enable Email Notifications”](#) on page 51

- [“Define Custom Elements”](#) on page 53
- [“Configure Criteria for a Requested Virtual Machine”](#) on page 56
- [“Determine the Infrastructure for a Requested Virtual Machine”](#) on page 57
- [“Request a New Virtual Machine”](#) on page 62
- [“Review the Catalog of Virtual Machines”](#) on page 64
- [“Working with the Administration View”](#) on page 65
- [“Map Roles and Tasks”](#) on page 69

LCM Compatibility with VirtualCenter

LCM requires at least one VirtualCenter to be specified in the Orchestrator Configurator (see [“Add VMware Infrastructure 3”](#) on page 40). LCM is compatible with VirtualCenter 2.0 and VirtualCenter 2.5, update 2, but it is not compatible with VirtualCenter 2.5 or VirtualCenter 2.5, update 1. Before you install LCM, make sure you have the compatible version of VirtualCenter.

Supported Guest Operating Systems for LCM

This section describes the guest operating system requirements for guest operating system in VirtualCenter 2.0 and 2.5 update 2.

Virtual Hardware Requirements for Guest Customization in VirtualCenter

In VirtualCenter 2.0 and VirtualCenter 2.5 update 2, the guest customization requires that the source virtual machine used to create the clone or templates has the following items:

- VMware Tools installed
- One configured network interface card (NIC)

When a virtual machine is cloned or used for a template, the new virtual machine has the same number and type of NICs, for example, AMD VLance/PcNet rather than high performance VMware vmxnet. You cannot change this configuration during the deployment or guest customization process.

- SCSI disks

VirtualCenter customization operates on the disk attached to the virtual SCSI node with the lowest address on the SCSI controller with the lowest index. As a result, you must make sure that the guest operating system being customized resides on a disk attached as SCSI 0:0 node in the virtual machine configuration.

- **Windows Guest Operating Systems** – Active partition (the partition that contains the `boot.ini` file) and the system partition (the partition that contains the system directory, for example, `\WINNT` or `\WINDOWS`), are on the same virtual disk and attached to the SCSI 0:0 virtual SCSI node. Active and system partitions are not required to be in the same partition.
- **Linux Guests** – The virtual disk that contains the system partition (the partition that contains the `/etc` directory) must reside on the SCSI 0:0 node.
- 32-bit or 64-bit hardware that corresponds to the 32-bit or 64-bit operating system being installed.

Windows Requirements for Guest Customization with VirtualCenter 2.0

Guest customization of a Windows guest operating system can occur if the following conditions exist:

- The guest operating system is not a primary or backup domain controller.
- The clone or template has one of the following Windows versions installed:
 - Windows 2000 Server, Advanced Server, or Professional
 - Windows XP Professional
 - Windows Server 2003, Web, Standard, or Enterprise Editions
- Windows XP Home or Windows NT4 operating system guest customization is not supported. Guest customization of 64-bit Windows operating systems is not supported.
- The Microsoft Sysprep tools are installed on the VirtualCenter server.

For information about installing the Microsoft Sysprep tools, see “Installing the Microsoft Sysprep Tools” in *Basic System Administration: ESX Server 3.0.1 and VirtualCenter 2.0.1*.

Microsoft Sysprep tools have certain requirements and impose restrictions on the source machine. For additional information, see the Microsoft Sysprep documentation.

Linux Requirements for Guest Customization with VirtualCenter 2.0

Guest customization of a Linux guest operating system can occur if:

- The clone or template has one of the following Linux versions installed:
 - Red Hat Enterprise Linux AS 3.0
 - Red Hat Advanced Server 2.1
 - SUSE LINUX Enterprise Server 8, 9, or 10
- The clone or template has a root volume formatted with an ext2, ext3, or ReiserFS file system.

Guest operating system customization is not supported for Linux virtual machines with disks managed by Logical Volume Managers. For more information, see *Basic System Administration: ESX Server 3.0.1 and Virtual Center 2.0.1*.

Windows Requirements for Guest Customization with VirtualCenter 2.5 Update 2

When the VirtualCenter 2.5 Update 2 is applied, LCM supports the guest OSs listed in [“Windows Requirements for Guest Customization with VirtualCenter 2.0”](#) on page 45.

In addition, it also supports some 64-bit guest OSs that are provided in the following list:

- Windows 2000 Server, Advanced Server, or Professional (32 bits)
- Windows XP Professional (32 bits or 64 bits)
- Windows Server 2003, Web, Standard, or Enterprise Editions (32 bits or 64 bits)

Windows XP Home or Windows NT4 operating system guest customization is not supported.

Linux Requirements for Guest Customization with VirtualCenter 2.5 Update 2

When the VirtualCenter 2.5 Update 2 is applied, LCM supports the guest OSs listed in [“Linux Requirements for Guest Customization with VirtualCenter 2.0”](#) on page 46.

In addition, it also supports some 64-bit guest OSs that are provided in the following list:

- Red Hat Enterprise Linux AS 3.0
- Red Hat Advanced Server 2.1
- SUSE LINUX Enterprise Server 8, 9, or 10
- Red Hat Enterprise Linux 5 64 bits

Guest operating system customization is not supported for Linux virtual machines with disks managed by Logical Volume Managers. For more information, see *Basic System Administration: ESX Server 3.0.1 and Virtual Center 2.0.1*.

Initial Configuration of Lifecycle Manager

This section describes how you can complete the initial configuration of LCM.

To complete the initial configuration of LCM

- 1 Start the Orchestrator Configurator by doing the following:
 - a Log into `http://<lcmserver>:3944/`.
 - b Click **Server**.
 - c Click **Start Service**.
- 2 Go to `http://<lcmserver>:8080/vmo/lifecycle` to log in to LCM for the first time.

You need to log in with the credentials of a user who is a member of the administrator group that is selected in Orchestrator Configurator.
- 3 Modify the default virtual machine naming convention.

The default is `lcm-001`, `lcm-002`, and so on.
- 4 Select a currency from the drop-down menu.
- 5 Select the date format you want to use and click **Next**.
- 6 Specify your Requester group (LCM Requester).

- 7 Enter the first few letters of the group name and the LDAP search matches the choices or click **Search** to browse the LDAP inventory.
- 8 Specify your Technical Requester and Requester groups (LCM Tech Requester and LCM Requester).
- 9 Specify your Approvers group (LCM Approvers).
- 10 Specify your IT Staff group (LCM Staff).
- 11 Specify your IT Administrators group (LCM Administrators) and click **Next**.
- 12 Accept the approvals, archiving, and notification defaults and click **Submit**.
These values can be changed later. The **LCM – Standard** Webview is started.
- 13 Log in to LCM again as the LCM Administrator, who is a member of the group Administrator specified in the first configuration of LCM.
Do not change your LDAP settings in the Orchestrator Configurator after completing [Step 13](#).

Configure Webviews

This section describes how to edit advanced configurations for Webviews.

To edit your advanced configuration

- 1 Log in to LCM as an LCM administrator.
- 2 Click the **Configuration** view.
- 3 In the left pane, click **Edit Advanced Configuration** to display **WebView Advanced Configuration**.
- 4 In **Display**, you can whether display the details of an execution token after submitting a workflow.
- 5 In **URL**, enter a Webview URL.
- 6 Click **Submit**.

Set Approval Modes

This section describes how to configure approval modes. This information determines whether, for example, approval is required when virtual machines are requested, extended, or shaped. You can also configure whether approval is required before a machine is archived.

To edit your approval mode

- 1 Log in to LCM as an administrator.
- 2 Click the **Configuration** view.
- 3 Click **Edit Approval Modes**.
- 4 Under **Creation**, **Extension**, and **Customization** select **Yes** or **No** as appropriate.
If you select **No**, the approval is not required for this option. If you select **Yes**, an approval is required for this option. You can always change these values later.
- 5 Click **Submit**.
- 6 Click **Edit Archiving**.
- 7 Under **Archive Configuration**, choose whether to archive by default and select **Yes** or **No**.
- 8 Under **Archive folder**, in **Destination Datastores**, enter or select a datastore.
- 9 Click **Submit**.

Virtual machines are decommissioned on the date that the requester selected when requesting the machine. LCM administrators can extend the life of a machine. LCM notifies the owner of the virtual machine five days before the virtual machine is going to be decommissioned with the option for the requester to request an extension. The owner can log in to the **Catalog** page and request an extension. This process might require an approval process, depending on whether approvals are configured to be automatic or manual.

The Requester role is associated with virtual machine extension and virtual machine change requests. After a virtual machine is created, requesters can extend this machine and request that it be changed. For example, they might want to request a memory upgrade from 2GB to 4GB.

Change Archiving Settings

This section describes how to edit your archiving settings.

To change archiving settings

- 1 Log in to LCM as an administrator.
- 2 Click the **Configuration** view.
- 3 Click **Edit Archiving**.
- 4 Choose whether you want to archive by default.
- 5 Select your archive folder.
- 6 Click **Submit**.

Change Authorization Groups

This section describes how to configure authorization groups. These settings allow you to determine the levels of changes each role can make.

To edit authorization groups

- 1 Log in to LCM as an LCM administrator.
- 2 Click the **Configuration** view.
- 3 Click **Edit Authorization Groups**.
- 4 Under **Management Groups**, select or enter appropriate values in the following:
 - **IT Administrators Group**
 - **IT Staff Group**
 - **Approvers Group**
- 5 Under **User Groups**, select or enter values in the following:
 - **Technical User Group**
 - **User Group**
- 6 Click **Submit**.

Modify the Base Name

This section describes how to change the default naming convention for a virtual machine, which is **lcm-##**.

To edit the base name of your virtual machines

- 1 Log in to LCM as an administrator.
- 2 Click the **Configuration** view.
- 3 Click Edit Base Name.
- 4 Under **VM Naming Convention**, in **Name**, enter your naming convention.
- 5 Under **Allow to change name?**, select **Yes** or **No**.

If you select **Yes**, the LCM Approver and the LCM IT staff can change the virtual machine name when they approve a request.

- 6 Click **Submit**.

Enable Email Notifications

This section describes how to edit email notifications. These settings determine the types of email notifications that are sent.

To enable email notifications

- 1 Log in to LCM as an administrator.
- 2 Click the **Configuration** view.

If the email icon does not appear, email notifications are disabled. To enable email notifications, click **Edit Email Notifications** in the left pane of the **Configuration** view.

- 3 Click **Mail**.
- 4 Enter email addresses for the following:

- **Administrator**
- **IT Staff**
- **Approver**

- 5 Add the following variables that are inserted in the body of the notification:
 - **#vmName** – Requested machine name
 - **#decommissionDate** – Decommissioning date of the requested machine
 - **#error** – Error message about the requested machine
 - **#requester** – If there is a change request, it is returned to the requester of change
 - **#ipAddress** – IP address of the virtual machine
 - **#webviewUrl** – Webview URL of LCM
 - 6 Click **Submit**.
 - 7 In the **Advanced Settings** view, you can do the following:
 - (Optional) To modify the default URL for your environment, click the **Advanced Settings** view and **Webview URL** for your environment
 - In **Debug mode for Webview**, examine additional logs that Support can use for troubleshooting.

Under **Display business state**, you can see the state of the workflow when it is running.
 - 8 Click **Submit**.
- After the updates are successful, log back into LCM and click on the **Configuration** view.

Configure Currency and Date Formats

This section describes how you can set the currency and date formats.

To configure currency and date formats

- 1 Log in to LCM as an LCM administrator.
- 2 Click the **Configuration** view.
- 3 Select a date format.
- 4 Select a currency format.
- 5 Click **Submit**.

Configure Email Notification Content

This section describes how to configure the content of an email notification.

To determine the content of an email notification

- 1 Log in to LCM as the administrator.
- 2 Click the **Configuration** view.
- 3 Click **Mail**.

A list of actions for which you can set up notifications appears. You can also activate and deactivate each action.

- 4 Click an action in the left pane.

The details about this action appear in the right pane.

- 5 Click **Edit**.

- 6 For each action, do the following:

- In **Enabled?** select **Yes** to enable the action.
- In the **E-Mail Body**, **Recipients**, **Copy recipients**, **Blind copy recipients**, **Subject** fields enter the relevant information and click **Submit**.

Repeat [Step 1](#) to [Step 6](#) for each of the email notifications you want to create.

Define Custom Elements

Adding new customization elements is useful when using the Lifecycle Manager – Customized Option where you are building new workflows that you want to execute in the LCM user interface. To add buttons, in the drop-down list, select the screen you would like to modify and add a description of the button you want to add. This button can be linked to new workflows that are created in VMware Orchestrator Client. For more information, see *Configuration and Usage – VMware Orchestrator Configurator*.

On this page in the **Configuration** view, you can do the following:

- **Change the application logo** – Allows you to upload a new logo to replace the VMware LCM logo in the user interface. This option helps the interface look more like your corporate intranet.
- **Modify your navigation items** – Allows you to add an external link at the end of navigations items.
- **Run an RDP session** – Allows you to change RDP settings when the LCM UI starts an RDP session from the **Catalog** view. You need to use this to modify the RDP file, which is used to connect to a virtual machine.

To create a new custom style sheet

- 1 Log in to LCM as an administrator.
- 2 Click the **Configuration** view.
- 3 Click **Custom Element**.
This button is located to the right of the **Configuration** button.
- 4 Click **New**.
- 5 In **Location**, select **Custom style sheet**.
- 6 Click **Next**.
- 7 Upload your custom style sheet or write directly to your custom style sheet.
- 8 Click **Submit**.

To modify a custom style sheet

- 1 Log in to LCM as an administrator.
- 2 Click the **Configuration** view.
- 3 Click **Custom Element**.
This button is located to the right of the **Configuration** button.
- 4 Click the **Custom style sheet** to modify to display its contents.
- 5 Complete the relevant tasks.
- 6 Click **Submit**.

To change the application logo

- 1 Log in to LCM as an administrator.
- 2 Click the **Configuration** view.
- 3 Click **Application Logo**.
In the right pane, the current logo file appears.
- 4 You can complete the following tasks for each logo:
 - **Upload**
 - **Download**
 - **Reinitialize**

When you click **Reinitialize**, LCM reverts to the default values.

To modify a navigation item

- 1 Click **Navigation Items**.
- 2 In the right pane, the current navigation items template appears with the following buttons:
 - **Edit**
 - **Reinitialize**
- 3 Click **Submit**.

To modify an RDP template

- 1 Log in as the LCM administrator.
- 2 Click the **Configuration** view.
- 3 Click **Custom Element**.

This button is located to the right of the **Configuration** button.

- 4 Click **RDP Template**.

In the right pane, the current RDP template appears with the following buttons at the top:

- **Edit**
 - **Upload**
 - **Download**
 - **Reinitialize**
- 5 Click **Submit**.

To add a new custom element

- 1 Log in as the LCM administrator.
- 2 Click the **Configuration** view.
- 3 Click **Custom Element**.

This button is located to the right of the **Configuration** button.

- 4 Click **New**.
- 5 Select a custom element from the **Location** drop-down menu and click **Next**.

The drop-down list comprises buttons, detail lists, or style sheets, and the fields that appear in the next page depend on your selection.

- 6 Enter the relevant information in the fields.
- 7 Click **Submit**.

Configure Criteria for a Requested Virtual Machine

The criteria comprises the options for location, organization, server environment, and so on that the requester selects when requesting a virtual machine. For example, a requester can request a virtual machine that comprises a location called Palo Alto, select Administrative as the Organization, select Production as the server environment, select a comprehensive service level, and select high performance. As an LCM administrator, you can modify these selections, if the needs of the company change or resources change.

You can rename and delete existing elements or reconfigure mapping options. Reconfiguring these options means that you are modifying the elements that comprise the criteria for a virtual machine. To create a criterion, at least one criterion of a type must currently exist.

To rename a criterion element

- 1 Click a criterion element.
- 2 Click **Edit**.
- 3 Modify the name and description.
- 4 Click **Submit**.

You can edit the current mapping option for any of your criteria elements. For example, you can change the network, datastore, VM folder, and so on.

To reconfigure current mapping objects

- 1 Click a criterion option.
- 2 Click **Edit Options for Mapping**.
- 3 Modify the mapping objects.
- 4 Click **Submit**.

To delete a criterion element

- 1 Select a criterion option.
- 2 Click **Delete**.

Determine the Infrastructure for a Requested Virtual Machine

For the requested virtual machine to be provisioned, the infrastructure needs to be determined. To set up the infrastructure for a requested virtual machine, the LCM administrator selects the following elements:

- **Resource pool** – Allows you to whether you register the requested virtual machine to an existing resource pool in VirtualCenter or create a new one.
- **Datastore** – Allows you to register the requested machine to an existing datastore.
- **Virtual machine folder** – Allow you to determine how you can categorize items in VirtualCenter folders, based on different organizations. For example, if you select IT organization, all the virtual machines that are created are associated with the VM folder that was created for the IT organization in VirtualCenter.
- **Network** – Allows you to associate a new network instance with VirtualCenter or your ESX host.
- **Template profile** – Combining templates that exist in VirtualCenter is part of the provisioning process in addition to customization parameters that are used to configure LCM, such as sysprep. An example of a template profile is Windows XP.
- **Domain** – The domain that the requested virtual machine can join.
- **Customization template** – Used to associate an portion of computer resources to a virtual machine as part of the provisioning process. LCM uses the template to apply to correct levels of the resources.

If multiple infrastructure elements are mapped to the same criterion, LCM does not know which element to use and notifies the IT Staff that an element must be selected on the **Placement** view.

Automatic Placement

During the automatic placement of a virtual machine, one of the following may occur:

- If one path is found, the autoplacement process places the virtual machine.
- If an exception, such as no solution found, occurs, the autoplacement process fails. Information about the exception is displayed, which allows the ITStaff to manual place the virtual machine and overwrite the initial criteria.
- If a conflict occurs, for example, if several solutions are found, the autoplacement process fails. Information about the conflict and solution is displayed, which allows IT Staff enter the new placement and overwrite the initial criteria.

Another example of a conflict is if the datastore is full.

To register a resource pool

- 1 Click **Register**.
- 2 Enter the name of a resource pool you want to register.
- 3 Choose whether you want to automatically register all child resource pools.
- 4 Click **Submit**.

To create a resource pool

- 1 Click **+Create**.
- 2 Enter or select the name of the parent in the new resource pool.
- 3 Enter the name of the new resource pool and click **Next**.
- 4 Enter or select the appropriate information and click **Next**.
- 5 Enter or select the appropriate information and click **Submit**.
- 6 In the main **Infrastructure** page, select the appropriate options and click **Submit**.

For example, suppose you have created a resource pool called Test, and you map it to the server environment criterion called Test. The system automatically maps the request for a test environment to the Test resource pool. If you mapped three resource pools to the server environment criteria of Test, the system allows IT staff to select from one of the three resource pools in the Placement view. Once your criterion has been successfully updated, you can select Datastores.

To register a datastore

- 1 Click **+Register**.
- 2 Select a datastore from VirtualCenter or ESX host you want to register and click **Submit**.

You cannot create a new datastore.

To register a virtual machine folder

- 1 Click **+Register**.
- 2 Enter or search for the name of the virtual machine folder you want to register.
- 3 Select **Yes** or **No** and click **Submit**.

To create a virtual machine folder

- 1 Click **+Create**.
- 2 Enter or search for the name of the parent folder.
- 3 Enter the name of the new folder and click **Submit**.

To register a network

- 1 Click **+Register**.
- 2 Enter or search for a network.
- 3 Click **Next**.
- 4 On the **IP Configuration** view, under **Network**, enter the appropriate information in the listed fields and click **Submit**.

In **Use DHCP**, if you select **No**, you need to create IP address ranges or subnets.

To create an IP address range

- 1 Click a network.
- 2 Click **Create Range**.
- 3 Enter a description.
- 4 Enter the first IP address in your range.
- 5 Enter the final IP address in your range.

Each time the virtual machine is provisioned, LCM pulls an IP address from the defined range. You can set up multiple ranges for each network.

- 6 Click **Submit**.

To create subnets that are associated with a virtual machine

- 1 Click a network.
- 2 Click **Create Subnet**.
- 3 Ensure that the IP addresses in your range are free.

The provisioning process fails if LCM tries to use an IP address that is currently being used. For example, you have three networks and you need to associate that with the network on which your virtual machines is located.

- 4 Under **DNS**, enter the appropriate information in the listed fields and click **Submit**.

For example, suppose you create a network called VM Network and you map it to the server environment criteria called QA. The system automatically maps the request for a QA environment to the virtual machine network. If you map four networks to the server environment criteria called QA, the system allows IT staff to select from one of the four networks in the Placement view. After your criteria are successfully updated, you can select Template Profiles.

To create a template profile

- 1 Click **+Create**.
- 2 Enter the appropriate information in the following fields and click **Next**:
 - **Display name** – Name of the template profile that is available for requesting.
 - **Description** – Memory, unit CPU, and disk size information that is in the template. It is used to set up every virtual machine that uses this template.
 - **State** – State of the requested virtual machine. Use the drop-down menu to select a state.
 - **Template to clone** – Source template from VirtualCenter or ESX host.
 - **Ongoing Monthly Cost (Dollars)** – Cost associated with setting up every virtual machine that uses this template.
 - **Initial Setup Cost (Dollars)** – Monthly cost of creating future virtual machines.

Use these last two fields to do chargeback through template profiles.

- 3 Enter the appropriate OS parameters in the following fields:
 - **Full Name** – Enter your name
 - **Organization name** – Enter the name of your organization (for example, **vmware**)
 - **New local administrator password** – Enter a password. If the template you register has a local administrator password set, the entered password is ignored. If the template you registered does not have a local administrator password, the one you entered is applied.
 - **Time zone for newly created virtual machine** – Enter the time zone in which the virtual machine is located
 - **Windows license key** – Enter the key even if the template uses a volume license key.

- **Server licensing mode** – Using the drop-down menu, select **perServer** or **perSeat**
- **Number of licenses** – Enter the appropriate value

Step 3 needs to only be completed for a Windows installation.

4 Click **Submit**.

For example, you have mapped three template profiles to a server environment. If you selected a Test server environment as your criteria, only the criteria associated with this server environment appear. If you close the test environment, the template profiles associated with that test environment appear. Once your criteria has been successfully updated, you can select your Domain.

To create a domain

- 1 Click **+Create**.
- 2 Choose whether you want to join a domain or workgroup.
- 3 If you selected **Yes**, do the following:
 - a Enter a name.
 - b Enter your domain administrator name
 - c Enter your domain password.
 - d Reenter the password.
- 4 Select a network.

This network was defined on the **Network** view.

5 Click **Submit**.

To create a customization template

- 1 Click **+Create**.
- 2 Enter a template name and click **Next**.
This is the name that the requester sees, so create a logical name.
- 3 Enter the appropriate information in the listed fields and click **Next**.
- 4 Enter or select your disk share.
- 5 Click **Submit**.

For example, you create a custom template called Standard. You would use this template to associate a performance level under the **Criteria** view. Once your customization template has been successfully updated, click the **Criteria** view.

Modify Catalog Options

The LCM administrator can change the attributes of a virtual machine in the **Catalog** view.

To modify the catalog options

- 1 Click the **Catalog** view.
- 2 Select a requested virtual machine in the left pane.

The following buttons appear on the right pane:

- **Edit** – Modifies provisioning and decommissioning dates.
- **Change State** – Moves virtual machine requests across different processes in the lifecycle. Used by VMware support to help with troubleshooting.



CAUTION Changing a state can move the request to an undesirable state.

- **Change Rights** – Allows an LCM administrator to change which groups or users can access, control, or view virtual machines.
- **Delete Request** – Allows the LCM administrator to delete the request (and all associated reports and other elements). This does not destroy the virtual machine. To destroy the virtual machine, select a virtual machine that is in an available state, and click the **Decommission** button.

Request a New Virtual Machine

This section describes how the LCM Administrator can request a new virtual machine.

To request a new virtual machine

- 1 Log in to LCM.
- 2 Click **+Request**.

The **Provisioning & Decommissioning** options appear in the right pane.

- 3 (Optional) To specify a commissioning date, select **Yes** for **Set commissioning date?**

- 4 Enter a date and time for commissioning the virtual machine.
If you do not specify a commissioning date, LCM creates the virtual machine at the first available opportunity after approval.
- 5 (Optional) To specify a decommissioning date, select **Yes** for **Set decommissioning date?**
- 6 Enter a date and time for decommissioning the virtual machine.
If you do not specify a decommissioning date, the virtual machine remains in service until it is decommissioned manually.
- 7 Specify who can control the virtual machine.
 - a From the **VM control by** drop-down menu, choose **Group** or **User**.
 - b Enter the name of the user or group.
 - c Search for a list of available group or user names and descriptions.
 - d Click the **X** icon to clear the field.
 - e Click the circular arrow icon to refresh the view.
If you leave the field blank, only you have control.
 - f If you specify a user or group, enter the email address for the user or group.
- 8 Specify who can connect to and view the virtual machine.
The groups or users specified in [Step 8](#) can connect to and view the virtual machine when it is running but cannot power it on or off.
 - a From the VM view by drop-down menu, choose **Group** or **User**.
The field name changes to **View group** or **View user** to reflect your choice.
 - b Enter the name of the user or group.
 - c Search for a list of available group or user names and descriptions.
 - d Click the **X** icon to clear the field.
 - e Click the circular arrow icon to refresh the view.
If you leave the field blank, no other users or groups can view the virtual machine.
 - f If you specify a user or group, enter the email address for the user or group.
- 9 Click **Next**.

- 10 Choose entries for **Location, Organization, Server Environment, Service Level, and Performance**.

The options for these settings are specified by your LCM Administrator.

- 11 Click the X icon beside a field to clear the field.
- 12 You can enter a different address in the Requester e-mail address field and click **Next**.
- 13 Choose the **Server type**.
- 14 The options you see for the server types depend on how your LCM Administrator has mapped the available template profiles.
- 15 To start the virtual machine as soon as it is provisioned, select **Yes** for **Start Virtual Machine**.
- 16 Click **Next**.
- 17 Enter your comments about the virtual machine.

Comments entered in this field appear in the summary information about the virtual machine, where the LCM Approver and other LCM users can see them.
- 18 Click **Submit**.
- 19 (Optional) Click the entry for the virtual machine you requested to see a summary of configuration and status information for the virtual machine.

Review the Catalog of Virtual Machines

This section describes how to display the virtual machines in the catalog.

To display a list of requested machines

- 1 Log in to LCM as an LCM administrator.
- 2 Click **+Catalog**.
- 3 Select one of the following filters from the drop-down menu:
 - **All** – This option displays all the requested virtual machines created by a user in the catalog.
 - **Available VMs** – Displays all available virtual machines created by a user.
 - **Rejected** – Displays all the rejected virtual machines that were created by a user.

- **Decommissioned** – Displays all the decommissioned virtual machines that were created by a user.
- **Cancelled** – Displays all the cancelled virtual machines that were created by a user.
- **Errors** – Displays all the virtual machines that were created by a user with errors.
- **Waiting for Approval** – Displays all the requested virtual machines created by a user in the catalog that are waiting for approval.
- **Waiting for Placement** – Displays all the requested virtual machines created by a user in the catalog that are waiting to be correctly placed.

The filters allow you to display requests that do not have yet a virtual machine and are in different states. For example, after a request is created, it is waiting for approval. After it is approved, the request may need to be manually placed, so it is waiting for placement status. The relevant requested machines appear in the left pane. If you select a request, the details display on the right.

Working with the Administration View

This section describes the options in the **Administration** view.

Activate Webview Debug Mode

This option allows you to look at the Webview to debug it.

To activate a webview in debug mode

- 1 Log into LCM as an administrator.
- 2 Click the **Administration** view.
- 3 In the left pane, click **Activate webview debug mode**.
- 4 Select **Yes**.
- 5 Click **Submit**.

Import Virtual Machines

The procedures in this section help you import existing virtual machines into LCM to be more efficiently managed. You can import a virtual machine manually or multiple machines from a virtual machine folder or from a resource pool. The virtual machines are not being physically imported into LCM, rather they are being registered.

To import a virtual machine

- 1 Log in to LCM as an LCM administrator.
- 2 Click the **Administration** view.
- 3 In the left pane, click **Import Virtual Machine**.
- 4 Enter the name of the virtual machine you want to import.
- 5 Enter a comment and click Next.
- 6 Under **Provisioning & Decommissioning**, under **Planning**, determine whether you want to set a decommissioning date.
- 7 Under **Group Authorization**, using the drop-down menu, select or enter the appropriate information for the following fields:
 - **VM control by**
 - **Control group**
 - **VM view by**
 - **View group**
- 8 Click **Next**.
- 9 Determine whether you want to use the virtual machine name as the request name.
- 10 (Optional) Determine whether you want to use the virtual machine name as the request name.
- 11 (Optional) Determine the following costs:
 - **Unit cost**
 - **Setup cost**
- 12 Click **Submit**.

To import virtual machines from a VM folder

- 1 Log in to LCM as an administrator.
- 2 Click the **Administration** view.
- 3 Click **Import VMs from VM folder**.
- 4 Select one or more virtual machine folders and enter a comment.
- 5 Click **Next**.
- 6 Enter a comment and click **Next**.

- 7 Under **Provisioning & Decommissioning**, under **Planning**, determine whether you want to set a decommissioning date.
- 8 Under **Group Authorization**, using the drop-down menu, select or enter the appropriate information for the following fields:
 - **VM control by**
 - **Control group**
 - **VM view by**
 - **View group**
- 9 Click **Next**.
- 10 Determine if you want to link this virtual machine to criteria.

If you select **Yes**, you need to decide whether you want to link the same criteria for all virtual machines or different criteria for each machine. If you select the same criteria for all the machines, you must enter the criteria. Otherwise, the workflow prompts you to enter the criteria.
- 11 Enter an email address and click **Next**.
- 12 (Optional) Determine whether you want to use the virtual machine name as the request name.
- 13 (Optional) Determine the following costs:
 - **Unit cost**
 - **Setup cost**
- 14 Click **Submit**.

To import virtual machines from a resource pool

- 1 Log in to LCM as an administrator.
- 2 Click the **Administration** view.
- 3 Select the resource pool of the virtual machines you want to import.
- 4 Enter a comment and click **Next**.
- 5 Under **Provisioning & Decommissioning**, under **Planning**, determine whether you want to set a decommissioning date.

- 6 Under **Group Authorization**, using the drop-down menu, select or enter the appropriate information for the following fields:
 - **VM control by**
 - **Control group**
 - **VM view by**
 - **View group**
- 7 Click **Next**.
- 8 Enter a contact email address and click **Next**.
- 9 (Optional) Determine whether you want to use the virtual machine name as the request name.
- 10 (Optional) Determine the following costs:
 - **Unit cost**
 - **Setup cost**
- 11 Click **Submit**.

Relink a Token that Lost the Link to its Virtual Machine

If the provisioning request was available with a virtual machine, but this virtual machine was not registered in VirtualCenter. The workflow can only connect to the virtual machine after it is registered again. VirtualCenter Support can unregister and register all virtual machines, and this workflow manages this process.

To relink a token that lost the link to its virtual machine

- 1 Log in to LCM as the LCM Administrator.
- 2 Click the **Administration** view.
- 3 In **Do you want to proceed?**, select **Yes** or **No**.

Export Logs and Application Settings

This view allows you to export logs and application settings for analysis.

To export logs and application settings

- 1 Log in to LCM as an LCM administrator.
- 2 Click the **Administration** view.

- 3 Click **Export**.
- 4 Click **Export Log and Application Settings**.

A log file, which you can download, is automatically generated.

Map Roles and Tasks

Table 4-1 describes how roles are mapped to tasks.

Table 4-1. Mapping Roles and Their Tasks

	LCM Admin	LCM IT Staff	LCM Approver	LCM Tech Requester	Requester
Request a virtual machine	X	X	X	X	X
Approve a virtual machine	X		X		
Set-up	X	X			
Approve Extension	X		X		
Reconfigure the Customization Template	X	X		X	
Decommission	X			X	X
Report	X	X	X		
Delete Token	X				

System Troubleshooting

This chapter describes troubleshooting issues for the following:

- [“Lifecycle Manager on Windows”](#) on page 71
- [“Lifecycle Manager Appliance”](#) on page 72

Lifecycle Manager on Windows

This section describes how to troubleshoot VMware Lifecycle Manager – Standard (LCM) in Windows.

To restart the Orchestrator server

- 1 Choose **Start > Programs > Administrative Tools > Services**.
- 2 Select **VMware Orchestrator Server**.
- 3 Right-click and select **Restart**.

To restart the Web Configuration server

- 1 Choose **Start > Programs > Administrative Tools > Services**.
- 2 Select **VMware Orchestrator Configurator**.
- 3 Right-click and select **Restart**.

To view log files

Navigate to <Orchestrator install directory>\app-server\server\vmo\log\.

Lifecycle Manager Appliance

This section describes how to troubleshoot the LCM Appliance.

To restart the Orchestrator Server

Run the following command:

```
sudo /etc/init.d/vmod restart
```

To restart the Web Configuration server

Run the following command:

```
sudo /etc/init.d/jettyd restart
```

To view the log files

Navigate to `/opt/vmo/app-server/server/vmo/log/`.

To reset the LCM Appliance to factory settings

- 1 Log in to the LCM Appliance's shell (using ssh on port 22 or console)
- 2 Open a terminal and run the following command:

```
sudo /opt/scripts/clean/mrproper clean
```



CAUTION This deletes system logs.

- 3 To have the initial configuration script appear at your next boot, but not delete a log file, run the following command instead:

```
sudo rm /home/vmware/.initialconfigrun
```

Glossary

C **Commission**

A date and time that is selected during the request process. The requested virtual machine, after being approved, is provisioned on this date at this time.

Criteria

These are the attributes attached to a requested virtual machine that are selected during the request process. Default criteria include location, organization, server environment, service level, and performance. The LCM Administrator The LCM Administrator maps these criteria to the infrastructure.

Customization Template

The template that determines the resources that the requested virtual machine uses, such as memory reservation, memory limit, CPU shares, disk shares, and so on. Only the LCM IT Staff, LCM Tech Requester, and LCM Administrator can modify the customization template. Template

D **Decommission**

A date and time that is selected during the request process. The requested machine reaches its end of life on this day and time. The machine can be archived or just deleted.

E **Extension**

The ability to extend the life of a virtual machine that is to be decommissioned. If approval is required, the request for extension must be approved before the owner of the virtual machine can continue to use it.

I Infrastructure

The attributes that comprise where in VMware Infrastructure the requested machine is placed. Attributes include network, domain, datastore, and so on.

P Placing

The requested virtual machine is created or moved into the infrastructure, based on the selected criteria and infrastructure.

T Template Profile

The profile that is used when a requested virtual machine is cloned. This is part of the infrastructure.

W Webview

The Web UI of an application. For example, the front end of Lifecycle Manager is a Webview.

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