Active IQ® Unified Manager 9.6

Installation Guide

For Red Hat® and CentOS Linux

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NetApp®

Contents

Introduction to Active IQ Unified Manager

Active IQ Unified Manager (formerly OnCommand Unified Manager) enables you to monitor and manage the health and performance of your ONTAP storage systems from a single interface. You can deploy Unified Manager on a Linux server, on a Windows server, or as a virtual appliance on a VMware host.

After you have completed the installation and have added the clusters that you want to manage, Unified Manager provides a graphical interface that displays the capacity, availability, protection, and performance status of the monitored storage systems.

Related information

NetApp Interoperability Matrix Tool

What the Unified Manager server does

The Unified Manager server infrastructure consists of a data collection unit, a database, and an application server. It provides infrastructure services such as discovery, monitoring, role-based access control (RBAC), auditing, and logging.

Unified Manager collects cluster information, stores the data in the database, and analyzes the data to see if there are any cluster issues.

Active IQ Unified Manager product documentation

Active IQ Unified Manager is accompanied by a set of guides that describe how to install and use the product. Online help is also provided in the user interface.

Active IQ Unified Manager Installation Guide

Provides installation, upgrade, and setup instructions for Unified Manager on the VMware, Linux, and Windows platforms.

Active IQ Unified Manager System Configuration Guide

Provides initial setup and configuration instructions for Unified Manager. This includes adding clusters, adding users, configuring alerts, and setting up remote authentication.

Active IQ Unified Manager Workflow Guide for Managing Cluster Health

Provides information about using Unified Manager to manage and troubleshoot cluster storage health issues. This guide also describes how to use the Unified Manager maintenance console to perform special operations such as restoring a database backup and connecting to an external data provider to offload performance statistics.

Active IQ Unified Manager Workflow Guide for Managing Cluster Performance

Provides information about using Unified Manager to manage and troubleshoot cluster storage performance issues. This includes identifying workloads that are overusing cluster components so that you can take corrective action to bring performance back to normal levels of operation.

Active IQ Unified Manager Reporting Guide

Provides information about using Unified Manager to create custom reports about the capacity, health, performance, and protection status of your ONTAP storage objects. This includes scheduling the report for delivery to specified users on a regular schedule through email.

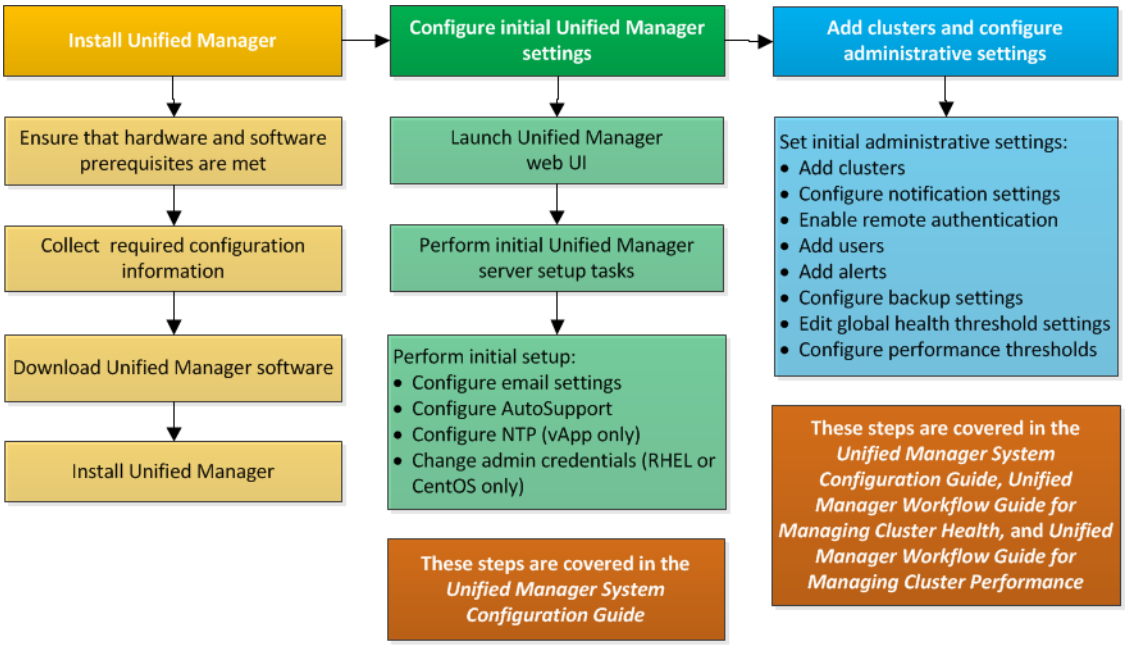
Active IQ Unified Manager Online Help

Provides information about using Unified Manager to manage and troubleshoot cluster storage health and performance issues. Additionally, it provides field level descriptions for every UI page in the product. The online help is included with the software, and is also available as a PDF document that you can review offline.

Overview of the installation sequence

The installation workflow describes the tasks that you must perform before you can use Unified Manager.

The chapters of this installation guide describe each of the items shown in the workflow below.



Requirements for installing Unified Manager

Before you begin the installation process, ensure that the server on which you want to install Unified Manager meets the specific software, hardware, CPU, and memory requirements.

NetApp does not support any modification of the Unified Manager application code. If you need to apply any security measures to the Unified Manager server, you should make those changes to the operating system on which Unified Manager is installed.

For more details about applying security measures to the Unified Manager server, see the Knowledge Base article.

Supportability for Security Measures applied to Active IQ Unified Manager for Clustered Data ONTAP

Related information

NetApp Interoperability Matrix Tool

Virtual infrastructure and hardware system requirements

Depending on whether you are installing Unified Manager on virtual infrastructure or on a physical system, it must meet minimum requirements for memory, CPU, and disk space.

The following table displays the values that are recommended for memory, CPU, and disk space resources. These values have been qualified so that Unified Manager meets acceptable performance levels.

Hardware configuration	Recommended settings
RAM	12 GB (minimum requirement 8 GB)
Processors	4 CPUs
CPU cycle capacity	9572 MHz total (minimum requirement 9572 MHz)
Free disk space	150 GB, where the capacity is allocated as follows: • 50 GB allotted to the root partition • 100 GB of free disk space allotted to the `/opt/netapp/data` directory, which is mounted on an LVM drive or on a separate local disk attached to the target system **Note:** For separately mounted `/opt` and `/var/log` directories, ensure that `/opt` has 15 GB and `/var/log` has 16 GB of free space. The `/tmp` directory should have at least 10 GB of free space.

Unified Manager can be installed on systems with a small amount of memory, but the recommended 12 GB of RAM ensures that enough memory is available for optimal performance, and so that the system can accommodate additional clusters and storage objects as your configuration grows. You must not set any memory limits on the VM where Unified Manager is deployed, and you must not enable any features (for example, ballooning) that hinder the software from utilizing the allocated memory on the system.

Additionally, there is a limit to the number of nodes that a single instance of Unified Manager can monitor before you need to install a second instance of Unified Manager. See the *Best Practices Guide* for more details.

Technical Report 4621: Unified Manager Best Practices Guide

Memory-page swapping negatively impacts the performance of the system and the management application. Competing for CPU resources that are unavailable because of overall host utilization can degrade performance.

Dedicated use requirement

The physical or virtual system on which you install Unified Manager must be used exclusively for Unified Manager and must not be shared with other applications. Other applications might consume system resources and can drastically reduce the performance of Unified Manager.

Space requirements for backups

If you plan to use the Unified Manager backup and restore feature, you must allocate additional capacity so that the "data" directory or disk has 150 GB of space. A backup can be written to a local destination or to a remote destination. The best practice is to identify a remote location that is external to the Unified Manager host system that has a minimum of 150 GB of space.

Host connectivity requirements

The physical system or virtual system on which you install Unified Manager must be configured in such a way that you can successfully `ping` the host name from the host itself. In case of IPv6 configuration, you should verify that `ping6` to the host name is successful to ensure that the Unified Manager installation succeeds.

You can use the host name (or the host IP address) to access the product web UI. If you configured a static IP address for your network during deployment, then you designated a name for the network host. If you configured the network using DHCP, you should obtain the host name from the DNS.

If you plan to allow users to access Unified Manager by using the short name instead of using the fully qualified domain name (FQDN) or IP address, then your network configuration has to resolve this short name to a valid FQDN.

Mounted `/opt/netapp` or `/opt/netapp/data` requirements

You can mount `/opt/netapp` or `/opt/netapp/data` on an NAS or SAN device. Note that using remote mount points may cause scaling issues. If you do use a remote mount point, ensure that your SAN or NAS network has sufficient capacity to meet the I/O needs of Unified Manager. This capacity will vary and may increase based on the number of clusters and storage objects you are monitoring.

If you have mounted `/opt/netapp` or `/opt/netapp/data` from anywhere other than the root file system, and you have SELinux enabled in your environment, you must set the correct context for the mounted directories.

See the topic *SELinux requirements for mounting /opt/netapp or /opt/netapp/data on an NFS or CIFS share* for information about setting the correct SELinux context.

Related tasks

SELinux requirements for mounting /opt/netapp or /opt/netapp/data on an NFS or CIFS share on page 13

If you are planning to mount `/opt/netapp` or `/opt/netapp/data` on an NAS or SAN device, and you have SELinux enabled, you need to be aware of the following considerations.

Linux software and installation requirements

The Linux system on which you install Unified Manager requires specific versions of the operating system and supporting software.

Operating system software

Third-party software

The Linux system must have the following versions of the operating system and supporting software installed:

- Red Hat Enterprise Linux or CentOS version 7.x based on x86_64 architecture
  Red Hat Enterprise Linux 6.x is not supported starting with Unified Manager 9.4.

See the Interoperability Matrix for the complete and most current list of supported Red Hat Enterprise Linux and CentOS versions.

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The following third-party packages are required. These packages are automatically installed by the `yum` installer during installation, provided you have configured the repositories as mentioned in the following sections.

- MySQL Community Edition version 5.7.26 or later versions in the 5.7 family (from the MySQL repository)
- OpenJDK version 11.0.3 (from the Red Hat Extra Enterprise Linux Server repository)

  Note: Oracle Java is not supported starting with Unified Manager 9.5.
- p7zip version 16.02 or later (from the Red Hat Extra Packages for Enterprise Linux repository)

Note: If you plan to upgrade any of the third-party software after Unified Manager has been running, you must shut down Unified Manager first. After the third-party software installation is complete, you can restart Unified Manager.

User authorization requirements

Installation of Unified Manager on a Linux system can be performed by the root user or by non-root users by using the `sudo` command.

Installation requirements

The best practices for installing Red Hat Enterprise Linux or CentOS and the associated repositories on your system are listed below. Systems installed or configured differently, or deployed off premise (in the cloud), may require additional steps, and Unified Manager may not run properly in such deployments.

- You must install Red Hat Enterprise Linux or CentOS according to Red Hat best practices, and you should select the following default options, which requires selecting the "Server with GUI" base environment.
- While installing Unified Manager on Red Hat Enterprise Linux or CentOS, the system must have access to the appropriate repository so that the installation program can access and install all the required software dependencies.
- For the `yum` installer to find dependent software in the Red Hat Enterprise Linux repositories, you must have registered the system during the Red Hat Enterprise Linux installation or afterwards by using a valid Red Hat subscription.
  See the Red Hat documentation for information about the Red Hat Subscription Manager.

- You must enable the Extra Packages for Enterprise Linux (EPEL) repository to successfully install the required third-party utilities on your system.

  If the EPEL repository is not configured on your system, you must manually download and configure the repository.

  Manually configuring the EPEL repository
- If the correct version of MySQL is not installed, you must enable the MySQL repository to successfully install MySQL software on your system.

  If the MySQL repository is not configured on your system, you must manually download and configure the repository.

  Manually configuring the MySQL repository

If your system does not have internet access, and the repositories are not mirrored from an internet-connected system to the unconnected system, you should follow the installation instructions to determine the external software dependencies of your system. Then you can download the required software to the internet-connected system, and copy the `.rpm` files to the system on which you plan to install Unified Manager. To download the artifacts and packages, you must use the `yum install` command. You must ensure that the two systems are running the same operating system version and that the subscription license is for the appropriate Red Hat Enterprise Linux or CentOS version.

Important: You must not install the required third-party software from repositories other than the repositories that are listed here. Software installed from the Red Hat repositories is designed explicitly for Red Hat Enterprise Linux, and conforms to Red Hat best practices (directory layouts, permissions, and so on). Software from other locations might not follow these guidelines, which might cause the Unified Manager installation to fail, or might cause issues with future upgrades.

Port 443 requirement

Generic images of Red Hat Enterprise Linux and CentOS may block external access to port 443. Due to this restriction, you may be unable to connect to the Administrator web UI after installing Unified Manager. Running the following command allows access to port 443 for all external users and applications on a generic Red Hat Enterprise Linux or CentOS system.

```
# firewall-cmd --zone=public --add-port=443/tcp --permanent; firewall-cmd --reload
```

You must install Red Hat Enterprise Linux and CentOS with the "Server with GUI" base environment. It provides the commands used by Unified Manager installation instructions. Other base environments may require you to install additional commands to validate or complete the installation. If the `firewall-cmd` is not available on your system, you must install it by running the following command:

```
# sudo yum install firewalld
```

Contact your IT department before running the commands to see if your security policies require a different procedure.

Note: THP (Transparent Huge Pages) should be disabled on CentOS and Red Hat systems. When enabled, in some cases it can cause Unified Manager to be shut down when certain processes consume too much memory and are terminated.

Supported browsers

To access the Unified Manager UI, you must use a supported browser.

Unified Manager has been tested with the following browsers; other browsers might work but have not been qualified. See the Interoperability Matrix for the complete list of supported browser versions.

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- Mozilla Firefox ESR 60
- Google Chrome version 72 and 73

Note: Microsoft Internet Explorer is no longer supported.

For all browsers, disabling popup blockers helps ensure that software features display properly.

If you are planning to configure Unified Manager for SAML authentication so that an identity provider (IdP) authenticates users, check the list of browsers supported by the IdP as well.

Protocol and port requirements

Using a browser, API client, or SSH, the required ports must be accessible to the Unified Manager UI and APIs. The required ports and protocols enable communication between the Unified Manager server and the managed storage systems, servers, and other components.

Connections to the Unified Manager server

In typical installations you do not have to specify port numbers when connecting to the Unified Manager web UI, because default ports are always used. For example, because Unified Manager always attempts to run on its default port, you can enter `https://<host>` instead of `https://<host>:443`.

The Unified Manager server uses specific protocols to access the following interfaces:

Interface	Protocol	Port	Description
Unified Manager web UI	HTTP	80	Used to access the Unified Manager web UI; automatically redirects to the secure port 443.
Unified Manager web UI and programs using APIs	HTTPS	443	Used to securely access the Unified Manager web UI or to make API calls; API calls can only be made using HTTPS.
Maintenance console	SSH/SFTP	22	Used to access the maintenance console and retrieve support bundles.
Linux command line	SSH/SFTP	22	Used to access the Red Hat Enterprise Linux or CentOS command line and retrieve support bundles.
MySQL database	MySQL	3306	Used to enable OnCommand Workflow Automation and OnCommand API Services access to Unified Manager.
Syslog	UDP	514	Used to access subscription-based EMS messages from ONTAP systems and to create events based on the messages.
REST	HTTPS	9443	Used to access realtime REST API-based EMS events from authenticated ONTAP systems.

Note: The ports used for HTTP and HTTPS communication (ports 80 and 443) can be changed using the Unified Manager maintenance console. See the *Active IQ Unified Manager System Configuration Guide* for more information.

Connections from the Unified Manager server

You must configure your firewall to open ports that enable communication between the Unified Manager server and managed storage systems, servers, and other components. If a port is not open, communication fails.

Depending on your environment, you can choose to modify the ports and protocols used by the Unified Manager server to connect to specific destinations.

The Unified Manager server connects using the following protocols and ports to the managed storage systems, servers, and other components:

Destination	Protocol	Port	Description
Storage system	HTTPS	443/TCP	Used to monitor and manage storage systems.
Storage system	NDMP	10000/TCP	Used for certain Snapshot restore operations.
AutoSupport server	HTTPS	443	Used to send AutoSupport information. Requires Internet access to perform this function.
Authentication server	LDAP	389	Used to make authentication requests, and user and group lookup requests.
	LDAPS	636	Used for secure LDAP communication.
Mail server	SMTP	25	Used to send alert notification emails.
SNMP trap sender	SNMPv1 or SNMPv3	162/UDP	Used to send alert notification SNMP traps.
External data provider server	TCP	2003	Used to send performance data to an external data provider, such as Graphite.
NTP server	NTP	123/UDP	Used to synchronize the time on the Unified Manager server with an external NTP time server. (VMware systems only)

Completing the worksheet

Before you install and configure Unified Manager, you should have specific information about your environment readily available. You can record the information in the worksheet.

Unified Manager installation information

The details required to install Unified Manager.

System on which software is deployed	Your value
Host fully qualified domain name	
Host IP address	
Network mask	
Gateway IP address	
Primary DNS address	
Secondary DNS address	
Search domains	
Maintenance user name	
Maintenance user password	

Unified Manager configuration information

The details to configure Unified Manager after installation. Some values are optional depending on your configuration.

Setting	Your value
Maintenance user email address	

Setting	Your value
SMTP server host name or IP address	
SMTP user name	
SMTP password	
SMTP port	25 (Default value)
Email from which alert notifications are sent	
Authentication server host name or IP address	
Active Directory administrator name or LDAP bind distinguished name	
Active Directory password or LDAP bind password	
Authentication server base distinguished name	
Identity provider (IdP) URL	
Identity provider (IdP) metadata	
SNMP trap destination host IP addresses	
SNMP port	

Cluster information

The details for the storage systems that you will manage using Unified Manager.

Cluster 1 of N	Your value
Host name or cluster-management IP address	
ONTAP administrator user name **Note:** The administrator must have been assigned the "admin" role.	
ONTAP administrator password	
Protocol (HTTP or HTTPS)	

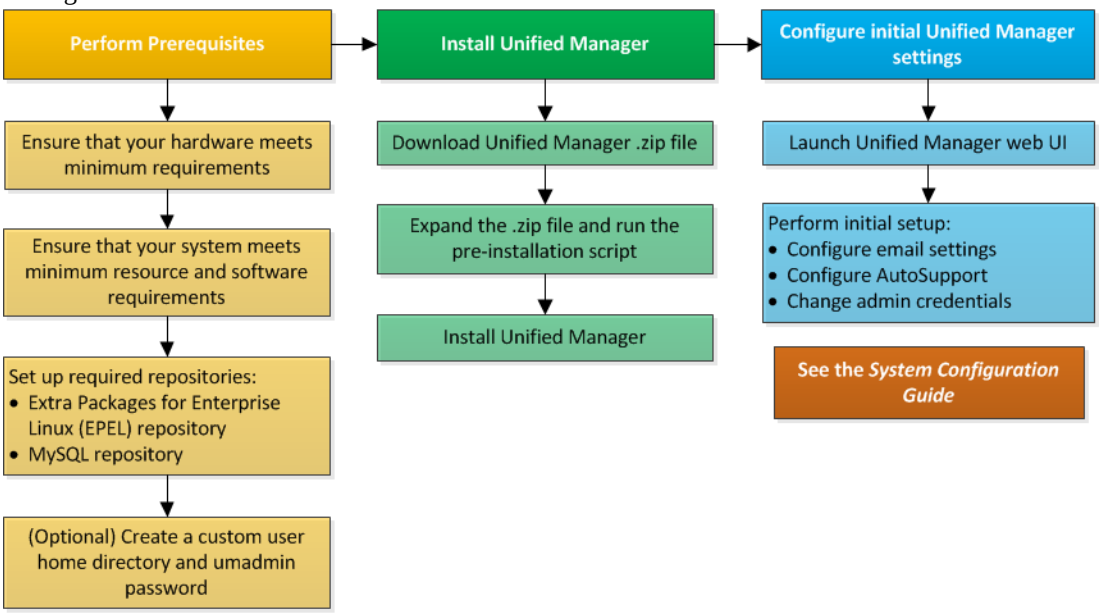
Installing, upgrading, and removing Unified Manager software

On Linux systems, you can install Unified Manager software, upgrade to a newer version of software, or remove Unified Manager.

Unified Manager can be installed on Red Hat Enterprise Linux or CentOS servers. The Linux server on which you install Unified Manager can be running either on a physical machine or on a virtual machine running on VMware ESXi, Microsoft Hyper-V, or Citrix XenServer.

Overview of the installation process

The installation workflow describes the tasks that you must perform before you can use Unified Manager.



Setting up required software repositories

The system must have access to certain repositories so that the installation program can access and install all required software dependencies.

Manually configuring the EPEL repository

If the system on which you are installing Unified Manager does not have access to the Extra Packages for Enterprise Linux (EPEL) repository, then you must manually download and configure the repository for a successful installation.

About this task

The EPEL repository provides access to the required third-party utilities that must be installed on your system. You use the EPEL repository whether you are installing Unified Manager on a Red Hat or CentOS system.

Steps

1. Download the EPEL repository for your installation:

   ```
   wget https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm
   ```

2. Configure the EPEL repository:

   `yum install epel-release-latest-7.noarch.rpm`

Manually configuring the MySQL repository

If the system on which you are installing Unified Manager does not have access to the MySQL Community Edition repository, then you must manually download and configure the repository for a successful installation.

About this task

The MySQL repository provides access to the required MySQL software that must be installed on your system.

Note: This task will fail if the system does not have Internet connectivity. Refer to the MySQL documentation if the system on which you are installing Unified Manager does not have Internet access.

Steps

1. Download the appropriate MySQL repository for your installation:

   `wget http://repo.mysql.com/yum/mysql-5.7-community/el/7/x86_64/mysql57-community-release-el7-7.noarch.rpm`

2. Configure the MySQL repository:

   `yum install mysql57-community-release-el7-7.noarch.rpm`

SELinux requirements for mounting `/opt/netapp` or `/opt/netapp/data` on an NFS or CIFS share

If you are planning to mount `/opt/netapp` or `/opt/netapp/data` on an NAS or SAN device, and you have SELinux enabled, you need to be aware of the following considerations.

About this task

If are planning to mount `/opt/netapp` or `/opt/netapp/data` from anywhere other than the root file system, and you have SELinux enabled in your environment, you must set the correct context for the mounted directories. Follow these two steps for setting and confirming the correct SELinux context.

- Configure SELinux context when `/opt/netapp/data` is mounted
- Configure SELinux context when `/opt/netapp` is mounted

Configuring the SELinux context when `/opt/netapp/data` is mounted

If you have mounted `/opt/netapp/data` in your system and SELinux is set to `Enforcing`, ensure that the SELinux context type for `/opt/netapp/data` is set to mysqld_db_t, which is the default context element for the location of the database files.

1. Run this command to check the context:

   `ls -dZ /opt/netapp/data`

   A sample output:

   ```
   drwxr-xr-x. mysql root unconfined_u:object_r:default_t:s0 /opt/netapp/data
   ```

   In this output, the context is default_t that must be changed to mysqld_db_t.

2. Perform these steps to set the context, based on how you have mounted `/opt/netapp/data`.

   a. Run the following commands to set the context to mysqld_db_t:

```
semanage fcontext -a -t mysql_db_t "/opt/netapp/data"
```

```
restorecon -R -v /opt/netapp/data
```

b. If you have configured `/opt/netapp/data` in `/etc/fstab`, you must edit the `/etc/fstab` file. For the `/opt/netapp/data/` mount option, add the MySQL label as:

```
context=system_u:object_r:mysqld_db_t:s0
```

c. Unmount and remount `/opt/netapp/data/` for enabling the context.

d. If you have a direct NFS mount, run the following command to set the context to mysql_db_t:

```
mount <nfsshare>:/<mountpoint> /opt/netapp/data -o
context=system_u:object_r:mysql_db_t:s0
```

3. Verify whether the context is set correctly:

```
ls -dZ /opt/netapp/data/
```

```
drwxr-xr-x. mysql root unconfined_u:object_r:mysqld_db_t:s0 /opt/netapp/data/
```

Configuring the SELinux context when `/opt/netapp` is mounted

After setting the correct context for `/opt/netapp/data/`, ensure that the parent directory `/opt/netapp` does not have the SELinux context set to file_t.

1. Run this command to check the context:

```
ls -dZ /opt/netapp
```

A sample output:

```
drwxr-xr-x. mysql root unconfined_u:object_r:file_t:s0 /opt/netapp
```

In this output, the context is file_t that must be changed. The following commands set the context to usr_t. You can set the context to any value other than file_t based on your security requirements.

2. Perform these steps to set the context, based on how you have mounted `/opt/netapp`.

a. Run the following commands to set the context:

```
semanage fcontext -a -t usr_t "/opt/netapp"
```

```
restorecon -v /opt/netapp
```

b. If you have configured `/opt/netapp` in `/etc/fstab`, you must edit the `/etc/fstab` file. For the `/opt/netapp` mount option, add the MySQL label as:

```
context=system_u:object_r:usr_t:s0
```

c. Unmount and remount `/opt/netapp` for enabling the context.

d. If you have a direct NFS mount, run the following command to set the context:

```
mount <nfsshare>:/<mountpoint> /opt/netapp -o context=system_u:object_r:usr_t:s0
```

3. Verify whether the context is set correctly:

```
ls -dZ /opt/netapp
```

```
drwxr-xr-x. mysql root unconfined_u:object_r:usr_t:s0 /opt/netapp
```

Installing Unified Manager

It is important that you understand that the sequence of steps to download and install Unified Manager varies according to your installation scenario. Before you install Unified Manager on Red Hat Enterprise Linux or CentOS, you can decide if you want to configure Unified Manager for high availability.

Creating a custom user home directory and umadmin password prior to installation

You can create a custom home directory and define your own umadmin user password prior to installing Unified Manager. This task is optional, but some sites might need the flexibility to override Unified Manager installation default settings.

Before you begin

- The system must meet the requirements described in *Hardware system requirements*.
- You must be able to log in as the root user to the Red Hat Enterprise Linux or CentOS system.

About this task

The default Unified Manager installation performs the following tasks:

- Creates the umadmin user with `/home/umadmin` as the home directory.
- Assigns the default password "admin" to the umadmin user.

Because some installation environments restrict access to `/home`, the installation fails. You must create the home directory in a different location. Additionally, some sites might have rules about password complexity or require that passwords be set by local administrators rather than being set by the installing program.

If your installation environment requires that you override these installation default settings, follow these steps to create a custom home directory and to define the umadmin user's password.

When this information is defined prior to installation, the installation script discovers these settings and uses the defined values instead of using the installation default settings.

Additionally, the default Unified Manager installation includes the umadmin user in the sudoers files (`ocum_sudoers` and `ocie_sudoers`) in the `/etc/sudoers.d/` directory. If you remove this content from your environment because of security policies, or because of some security monitoring tool, you must add it back. You need to preserve the sudoers configuration because some Unified Manager operations require these sudo privileges.

No security policies should restrict sudo privileges for the Unified Manager maintenance user or some Unified Manager operations will fail. Verify that you are able to run the following sudo command when logged in as the umadmin user after successful installation.

`sudo /etc/init.d/ocie status`
This command should return the appropriate status of the ocie service without any issues.

Steps

1. Log in as the root user to the server.
2. Create the umadmin group account called "maintenance":

   `groupadd maintenance`
3. Create the user account "umadmin" in the maintenance group under a home directory of your choice:

   `adduser --home <home_directory> -g maintenance umadmin`
4. Define the umadmin password:

   `passwd umadmin`
   The system prompts you to enter a new password string for the umadmin user.

After you finish

After you have installed Unified Manager you must specify the umadmin user login shell.

Downloading Unified Manager

You must download the Unified Manager `.zip` file from the NetApp Support Site to install Unified Manager.

Before you begin

You must have login credentials for the NetApp Support Site.

About this task

You download the same Unified Manager installation package for both Red Hat Enterprise Linux and CentOS systems.

Steps

1. Log in to the NetApp Support Site, and navigate to the Download page for installing Unified Manager on the Red Hat Enterprise Linux platform.
2. Download the Unified Manager `.zip` file to a directory on the target system.
3. Verify the checksum to ensure that the software downloaded correctly.

Installing Unified Manager

You can install Unified Manager on a physical or virtual Red Hat Enterprise Linux or CentOS platform.

Before you begin

- The system on which you want to install Unified Manager must meet the system and software requirements.
  Hardware system requirements
  Red Hat and CentOS software and installation requirements
- You must have downloaded the Unified Manager `.zip` file from the NetApp Support Site to the target system.
- You must have a supported web browser.
- Your terminal emulation software must have scrollback enabled.

About this task

The Red Hat Enterprise Linux or CentOS system may have all the required versions of the required supporting software (Java, MySQL, additional utilities) installed, or it may have only some of the required software installed, or it may be a newly installed system with none of the required software installed.

Steps

1. Log in to the server on which you are installing Unified Manager.
2. Enter the appropriate commands to assess what software might require installation or upgrade on the target system to support installation:

Required software and minimum version	Command to verify software and version
OpenJDK version 11.0.3	`java -version`
MySQL 5.7.26 Community Edition	`rpm -qa | grep -i mysql`
p7zip 16.02	`rpm -qa | grep p7zip`

3. If any version of the listed software is earlier than the required version, enter the appropriate command to uninstall that module:

Software to uninstall	Command to uninstall the software
MySQL **Note:** Uninstall any version that is not MySQL 5.7.26 Community Edition or later.	`rpm -e <mysql_package_name>` **Note:** If you receive dependency errors, you must add the `--nodeps` option to uninstall the component.
All other modules	`yum remove module_name`

4. Navigate to the directory where you downloaded the installation `.zip` file and expand the Unified Manager bundle:

   `unzip ActiveIQUnifiedManager-9.6.zip`

   The required `.rpm` modules for Unified Manager are unzipped to the target directory.

5. Verify that the following modules are available in the directory:

   `ls *.rpm`

   - `ocie-au-<version>.x86_64.rpm`
   - `ocie-server-<version>.x86_64.rpm`
   - `ocie-serverbase-<version>.x86_64.rpm`
   - `netapp-application-server-<version>.x86_64.rpm`
   - `netapp-platform-base-<version>.x86_64.rpm`
   - `netapp-ocum-<version>.x86_64.rpm`

6. Run the pre-installation script to ensure that there are no system configuration settings or any installed software that will conflict with the installation of Unified Manager:

   `sudo ./pre_install_check.sh`

   The pre-installation script checks that the system has a valid Red Hat subscription, and that it has access to the required software repositories. If the script identifies any issues, you must fix the issues prior to installing Unified Manager.

   Note: You must perform *step 7 only* if you are required to manually download the packages that are required for your installation. If your system has Internet access and all the required packages are available, go to *step 8*.

7. Optional: For systems that are not connected to the Internet or that are not using the Red Hat Enterprise Linux repositories, perform the following steps to determine whether you are missing any required packages, and then download those packages:

   a. On the system on which you are installing Unified Manager, view the list of available and unavailable packages:

      `yum install *.rpm --assumeno`

      The items in the "Installing:" section are the packages that are available in the current directory, and the items in the "Installing for dependencies:" section are the packages that are missing on your system.

   b. On a system that has Internet access, download the missing packages:

      `yum install <package_name> --downloadonly --downloaddir=.`

      Note: Because the plug-in "yum-plugin-downloadonly" is not always enabled on Red Hat Enterprise Linux systems, you might need to enable the functionality to download a package without installing it:

      `yum install yum-plugin-downloadonly`

   c. Copy the missing packages from the Internet-connected system to your installation system.

8. As the root user, or using `sudo`, run the following command to install the software:

`yum install *.rpm`
This command installs the `.rpm` packages, all other necessary supporting software, and the Unified Manager software.

Important: Do not attempt installation by using alternative commands (such as `rpm -ivh ...`). The successful installation of Unified Manager on a Red Hat Enterprise Linux or CentOS system requires that all Unified Manager files and related files are installed in a specific order into a specific directory structure that is enforced automatically by the `yum install *.rpm` command.

9. Disregard the email notification that is displayed immediately after the installation messages.

   The email notifies the root user of an initial cron job failure, which has no adverse effect on the installation.

10. After the installation messages are complete, scroll back through the messages until you see the message in which the system displays an IP address or URL for the Unified Manager web UI, the maintenance user name (umadmin), and a default password.
    The message is similar to the following:

```
Active IQ Unified Manager installed successfully.
Use a web browser and one of the following URL(s) to configure and access the Unified
Manager GUI.
https://default_ip_address/    (if using IPv4)
https://[default_ip_address]/  (if using IPv6)
https://fully_qualified_domain_name/

Log in to Unified Manager in a web browser by using following details:
  username: umadmin
  password: admin
```

11. Record the IP address or URL, the assigned user name (umadmin), and the current password.
12. If you created a umadmin user account with a custom home directory prior to installing Unified Manager, then you must specify the umadmin user login shell:

    `usermod -s /bin/maintenance-user-shell.sh umadmin`

After you finish

You can access the web UI to perform the initial setup of Unified Manager, as described in the *Active IQ Unified Manager System Configuration Guide*.

Related tasks

Creating a custom user home directory and umadmin password prior to installation on page 15
You can create a custom home directory and define your own umadmin user password prior to installing Unified Manager. This task is optional, but some sites might need the flexibility to override Unified Manager installation default settings.

Users created during Unified Manager installation

When you install Unified Manager on Red Hat Enterprise Linux or CentOS, the following users are created by Unified Manager and third-party utilities: umadmin, jboss, and mysql.

umadmin

Used to log in to Unified Manager for the first time. This user is assigned an "Administrator" user role and is configured as the "Maintenance User" type. This user is created by Unified Manager.

jboss

Used to run Unified Manager services related to the JBoss utility. This user is created by Unified Manager.

mysql

Used to run MySQL database queries of Unified Manager. This user is created by the MySQL third-party utility.

In addition to these users, Unified Manager also creates corresponding groups: maintenance, jboss, and mysql. The maintenance and jboss groups are created by Unified Manager, while the mysql group is created by a third-party utility.

Note: If you created a custom home directory and defined your own umadmin user password prior to installing Unified Manager, the installation program does not recreate the maintenance group or the umadmin user.

Changing the JBoss password

You can create a new, custom JBoss password to overwrite the default password that is set during installation. This task is optional, but some sites might require this security capability to override the Unified Manager installation default setting. This operation also changes the password JBoss uses to access MySQL.

Before you begin

- You must have root user access to the Red Hat Enterprise Linux or CentOS system on which Unified Manager is installed.
- You must be able to access the NetApp-provided `password.sh` script in the directory `/opt/netapp/essentials/bin`.

Steps

1. Log in as root user on the system.
2. Stop the Unified Manager services by entering the following commands in the order shown:

   ```
   service ocieau stop
   ```

   ```
   service ocie stop
   ```

   Do not stop the associated MySQL software.
3. Enter the following command to begin the password change process:

   ```
   /opt/netapp/essentials/bin/password.sh resetJBossPassword
   ```
4. When prompted, enter the old JBoss password.

   The default password is `D11h1aMu@79%`.
5. When prompted, enter the new JBoss password, and then enter it a second time for confirmation.
6. When the script completes, start the Unified Manager services by entering the following commands in the order shown:

   ```
   service ocie start
   ```

   ```
   service ocieau start
   ```
7. After all of the services are started, you can log in to the Unified Manager UI.

Setting up Unified Manager for high availability

You can create a high-availability setup by using the Veritas Cluster Server (VCS). The high-availability setup provides failover capability and helps in disaster recovery.

In a high-availability setup, only one node remains active at a time. When one node fails, VCS service recognizes this event and immediately transfers control to the other node. The second node in the setup becomes active and starts providing services. The failover process is automatic.

A VCS cluster configured with the Unified Manager server consists of two nodes, with each node running the same version of the Unified Manager. All of the Unified Manager server data must be configured for access from a shared data disk.

After you install Unified Manager in VCS, you must configure Unified Manager to work in the VCS environment. You can use configuration scripts to set up Unified Manager to work in VCS environments.

Requirements for Unified Manager in VCS

Before installing Unified Manager in a Veritas Cluster Server (VCS) environment, you must ensure that the cluster nodes are properly configured to support Unified Manager.

You must ensure that the VCS configuration meets the following requirements:

- Both the cluster nodes must be running a supported operating system version.
- The same version of Unified Manager must be installed using the same path on both the cluster nodes.
- The MySQL user on both the nodes must have the same user ID and group ID.
- Native ext3, ext4 file systems, and Logical Volume Manager (LVM) must be used.
- Unified Manager must be connected to the storage system through Fibre Channel (FC) or iSCSI.

  You must also ensure that the FC link is active and that the LUNs created on the storage systems are accessible to both the cluster nodes.
- The shared data disk must have enough space (minimum 80 GB) for the Unified Manager database, reports, certificates, and script plug-in folders.
- A minimum of two network interfaces must be set up on each system: one for node-to-node communication and the other for node-to-client communication.

  The name of the network interface used for node-to-client communication must be the same on both the systems.
- A separate heartbeat link must be established between the cluster nodes; otherwise, the network interface is used to communicate between the cluster nodes.
- Optional: SnapDrive for UNIX should be used to create a shared location that is accessible to both the nodes in a high availability setup.

  See the *SnapDrive for UNIX Installation and Administration Guide* for information about installing and creating a shared location. You can also manage LUNs using SnapDrive or the storage system command-line interface. See the SnapDrive for UNIX compatibility matrix for more information.
- Additional RAM must be available for the SnapDrive and VCS applications.

Installing Unified Manager on VCS

For configuring high availability, you must install Unified Manager on both the cluster nodes of VCS.

Before you begin

- VCS must be installed and configured on both the nodes of the cluster.

  See the instructions provided in the *Veritas Cluster Server 6.2.1 Installation Guide* for more information about installing VCS.
- You must have clear root privileges to log in to the Unified Manager server console.

About this task

You must configure both the instances of Unified Manager to use the same database and to monitor the same set of nodes.

Steps

1. Log in to the first node of the cluster.
2. Install Unified Manager on the first node.

   Installing Unified Manager on page 14
3. Repeat Steps 1 and 2 on the second node of the cluster.
4. On the second instance of Unified Manager, log in as the root user to the Red Hat Enterprise Linux or CentOS server and enter the same umadmin password as you defined on the first instance of Unified Manager.

   ```
   passwd umadmin
   ```

Configuring Unified Manager with VCS using configuration scripts

You can configure Unified Manager with Veritas Cluster Server (VCS) using configuration scripts.

Before you begin

- Unified Manager must be installed on both the nodes in the VCS setup.
- The XML:: LibXML module must be bundled with Perl for VCS scripts to work.
- You must have created a shared LUN with sufficient size to accommodate the source Unified Manager data.
- You must have specified the absolute mount path for the script to work.

  The script will not work if you create a folder inside the mount path.
- You must have downloaded the `ha_setup.pl` script at `/opt/netapp/ocum/scripts`.

About this task

In the VCS setup, the node for which the virtual IP interface and mount point are active is the first node. The other node is the second node.

Steps

1. Log in to the first node of the cluster.

   You must have stopped all the Unified Manager services on the second node in the high availability setup.
2. Add the VCS installation directory `/opt/VRTSvcs/bin` to the PATH environmental variable.
3. If you are configuring an existing Unified Manager setup, create a Unified Manager backup and generate the support bundle.
4. Run the `ha_setup.pl` script:

   ```
   perl ha_setup.pl --first -t vcs -g group_name -e eth_name -i cluster_ip -m net_mask -n
   fully_qualified_cluster_name -f mount_path -v volume_group -d disk_group -l
   install_dir -u user_name -p password
   ```

   ```
   perl \ha_setup.pl --first -t vcs -g umgroup -e eth0 -i 10.11.12.13 -m 255.255.255.0 -n
   cluster.eng.company.com -f /mnt/ocumdb -v ocumdb_SdHv -d ocumdb_SdDg -l /opt/netapp/ -
   u admin -p wx17yz
   ```
5. Use the Veritas Operation Manager web console or VCS Cluster Manager to verify that a failover group is created, and that the Unified Manager server services, mount point, virtual IP, network interface card (NIC), and volume group are added to the cluster group.
6. Manually move the Unified Manager service group to the secondary node and verify that cluster failover is working.
7. Verify that VCS has switched over to the second node of the cluster.

   You must verify that the data mount, virtual IP, volume group, and NIC are online on the second node of the cluster.

8. Stop Unified Manager using Veritas Operation Manager.
9. Run the `perl ha_setup.pl --join -t vcs -f mount_path` command on the second node of the cluster so that the Unified Manager server data points to the LUN.
10. Verify that the Unified Manager server services are starting properly on the second node of the cluster.
11. Regenerate the Unified Manager certificate after running the configuration scripts to obtain the global IP address.
    a. In the toolbar, click  , and then click **HTTPS Certificate** from the **Setup** menu.
    b. Click **Regenerate HTTPS Certificate**.

    The regenerated certificate provides only the cluster IP address, not the fully qualified domain name (FQDN). You must use the global IP address to set up Unified Manager for high-availability.
12. Access the Unified Manager UI using the following link:

    `https://<FQDN of Global IP>`

After you finish

You must create a shared backup location after high availability is configured. The shared location is required for containing the backups that you create before and after failover. Both the nodes in the high-availability setup must be able to access the shared location.

Unified Manager service resources for VCS configuration

You must add the cluster service resources of Unified Manager to Veritas Cluster Server (VCS). These cluster service resources are used for various purposes, such as monitoring storage systems, scheduling jobs, processing events, and monitoring all the other Unified Manager services.

The following table lists the category of all the Unified Manager services:

Category	Services
Storage resource	• *vol* • *mount*
Database resource	• *mysqld*
Network resource	• *nic* • *vip*
Unified Manager resource	• *ocie* • *ocieau*

Updating an existing Unified Manager setup for high availability

You can update your existing Unified Manager installation and configure your setup environment for high availability.

Before you begin

- You must have created a backup and support bundle of your existing data.
- You must have the Administrator or Storage Administrator role.
- You must have added a second node to your cluster and installed Veritas Cluster Server (VCS) on the second node.

  See the *Veritas Cluster Server 6.2.1 Installation Guide*.

- The newly added node must be configured to access the same shared location as that of the existing node in the high-availability setup.

Steps

1. Log in to the new node of the cluster.
2. Install Unified Manager on the node.
   Installing Unified Manager on page 14
3. Configure the Unified Manager server using configuration scripts on the existing node with data.
4. Initiate manual fail over to the second node.
5. Run the `perl ha_setup.pl --join -t vcs -f` *`mount_path`* command on the second node of the cluster so that the Unified Manager server data points to the shared LUN.
6. If OnCommand Workflow Automation (WFA) is configured for Unified Manager, disable and then reconfigure the WFA connection.
7. If SnapProtect is configured with Unified Manager, reconfigure SnapProtect with a new cluster IP address and the existing storage policies.
8. Regenerate the custom reports and add these reports to Unified Manager with the new cluster IP address.

Upgrading Unified Manager on Red Hat Enterprise Linux or CentOS

You can upgrade Unified Manager when a new version of software is available.

Patch releases of Unified Manager software, when provided by NetApp, are installed using the same procedure as new releases.

If Unified Manager is paired with an instance of OnCommand Workflow Automation, and there are new versions of software available for both products, you must disconnect the two products and then set up a new Workflow Automation connection after performing the upgrades. If you are performing an upgrade to only one of the products, then you should log into Workflow Automation after the upgrade and verify that it is still acquiring data from Unified Manager.

Upgrading Unified Manager

You can upgrade from Unified Manager version 9.4 or 9.5 to 9.6 by downloading and running the installation file on the Red Hat platform.

Before you begin

- The system on which you are upgrading Unified Manager must meet the system and software requirements.
  Hardware system requirements
  Red Hat and CentOS software and installation requirements
- Starting with Unified Manager 9.5, Oracle Java is no longer supported. You must install, or upgrade, to the correct version of OpenJDK prior to upgrading Unified Manager.
  Upgrading JRE on Linux
- Starting with Unified Manager 9.6, MySQL is not upgraded automatically during the Unified Manager upgrade. You must upgrade to the correct version of MySQL prior to beginning the upgrade to Unified Manager.
  Upgrading MySQL on Linux
- You must have a subscription to the Red Hat Enterprise Linux Subscription Manager.
- To avoid data loss, you must have created a backup of the Unified Manager database in case there is an issue during the upgrade. It is also recommended that you move the backup file from the `/opt/netapp/data` directory to an external location.

- You should have completed any running operations, because Unified Manager is unavailable during the upgrade process.

About this task

Note: These steps contain information for systems that are configured for high availability using Veritas Operation Manager. If your system is not configured for high availability, ignore these additional steps.

Steps

1. Log in to the target Red Hat Enterprise Linux or CentOS server.
2. Download the Unified Manager bundle to the server.

   Downloading Unified Manager for Red Hat or CentOS
3. Navigate to the target directory and expand the Unified Manager bundle:

   `unzip ActiveIQUnifiedManager-9.6.zip`
   The required RPM modules for Unified Manager are unzipped to the target directory.
4. Confirm the presence of the listed modules:

   `ls *.rpm`
   The following RPM modules are listed:

   - `ocie-au-<version>.x86_64.rpm`
   - `ocie-server-<version>.x86_64.rpm`
   - `ocie-serverbase-<version>.x86_64.rpm`
   - `netapp-application-server-<version>.x86_64.rpm`
   - `netapp-platform-base-<version>.x86_64.rpm`
   - `netapp-ocum-<version>.x86_64.rpm`
5. Optional: For systems that are not connected to the Internet or that are not using the RHEL repositories, perform the following steps to determine whether you are missing any required packages and download those packages:
   a. View the list of available and unavailable packages:

      `yum install *.rpm --assumeno`

      The items in the "Installing:" section are the packages that are available in the current directory, and the items in the "Installing for dependencies:" section are the packages that are missing on your system.
   b. Download the missing packages on another system that has Internet access:

      `yum install package_name --downloadonly --downloaddir=.`

      Note: Because the plug-in "yum-plugin-downloadonly" is not always enabled on Red Hat Enterprise Linux systems, you might need to enable the functionality to download a package without installing it:

      `yum install yum-plugin-downloadonly`
   c. Copy the missing packages from the Internet-connected system to your installation system.
6. If Unified Manager is configured for high availability, then using Veritas Operation Manager, stop all Unified Manager services on the first node.
7. Upgrade Unified Manager using the following script:

   `upgrade.sh`
   This script automatically executes the RPM modules, upgrading the necessary supporting software and the Unified Manager modules that run on them. Additionally, the upgrade script checks whether there are any system configuration settings or any installed software that will

conflict with the upgrade of Unified Manager. If the script identifies any issues, you must fix the issues prior to upgrading Unified Manager.

Important: Do not attempt to upgrade by using alternative commands (such as `rpm -Uvh ...`). A successful upgrade requires that all Unified Manager files and related files are upgraded in a specific order to a specific directory structure that are executed and configured automatically by the script.

8. For high availability installations, stop all Unified Manager services on the second node with Veritas Operation Manager.
9. For high availability installations, switch the service group to the second node in the high-availability setup and upgrade Unified Manager on the second node.
10. After the upgrade is complete, scroll back through the messages until you see the message displaying an IP address or URL for the Unified Manager web UI, the maintenance user name (umadmin), and the default password.
The message is similar to the following:

```
Active IQ Unified Manager upgraded successfully.
Use a web browser and one of the following URLs to access the Unified Manager GUI:

https://default_ip_address/    (if using IPv4)
https://[default_ip_address]/  (if using IPv6)
https://fully_qualified_domain_name/
```

After you finish

Enter the specified IP address or URL into a supported web browser to start the Unified Manager web UI, and then log in by using the same maintenance user name (umadmin) and password that you set earlier.

Upgrading the host OS from Red Hat Enterprise Linux 6.x to 7.x

If you previously installed Unified Manager on a Red Hat Enterprise Linux 6.x system and now need to upgrade to Red Hat Enterprise Linux 7.x, you must follow one of the procedures listed in this topic. In both cases you must create a backup of Unified Manager on the Red Hat Enterprise Linux 6.x system, and then restore the backup onto a Red Hat Enterprise Linux 7.x system.

About this task

The difference between the two options listed below is that in one case you are performing the Unified Manager restore onto a new RHEL 7.x server, and in the other case you are performing the restore operation onto the same server.

Because this task requires that you create a backup of Unified Manager on the Red Hat Enterprise Linux 6.x system, you should create the backup only when you are prepared to complete the entire upgrade process so that Unified Manager is offline for the shortest period of time. Gaps in collected data will appear in the Unified Manager UI for the period of time during which the Red Hat Enterprise Linux 6.x system is shut down and before the new Red Hat Enterprise Linux 7.x is started.

See the *Workflows for managing cluster health* or the online help if you need to review detailed instructions for the backup and restore processes.

Upgrading the host OS using a new server

Follow these steps if you have a spare system on which you can install RHEL 7.x software so that you can perform the Unified Manager restore on that system while the RHEL 6.x system is still available.

1. Install and configure a new server with Red Hat Enterprise Linux 7.x software.

Red Hat software and installation requirements

2. On the Red Hat Enterprise Linux 7.x system, install the same version of Unified Manager software that you have on the existing Red Hat Enterprise Linux 6.x system.

   Installing Unified Manager on Red Hat Enterprise Linux

   Do not launch the UI or configure any clusters, users, or authentication settings when the installation is complete. The backup file populates this information during the restore process.
3. On the Red Hat Enterprise Linux 6.x system, from the Administration menu in the web UI, create a Unified Manager backup and then copy the backup file (`.7z` file) and the contents of the database repository directory (`/database-dumps-repo` subdirectory) to an external location.
4. On the Red Hat Enterprise Linux 6.x system, shut down Unified Manager.
5. On the Red Hat Enterprise Linux 7.x system, copy the backup file (`.7z` file) from the external location to `/opt/netapp/data/ocum-backup/` and the database repository files to the `/database-dumps-repo` subdirectory under the `/ocum-backup` directory.
6. Enter the following command to restore the Unified Manager database from the backup file:

   `um backup restore -f /opt/netapp/data/ocum-backup/<backup_file_name>`
7. Enter the IP address or URL into your web browser to start the Unified Manager web UI, and then log in to the system.

Once you have verified that the system is operating properly you can remove Unified Manager from the Red Hat Enterprise Linux 6.x system.

Upgrading the host OS on the same server

Follow these steps if you do not have a spare system on which you can install RHEL 7.x software.

1. From the Administration menu in the web UI, create a Unified Manager backup and then copy the backup file (`.7z` file) and the contents of the database repository directory (`/database-dumps-repo` subdirectory) to an external location.
2. Remove the Red Hat Enterprise Linux 6.x image from the system and completely wipe the system.
3. Install and configure Red Hat Enterprise Linux 7.x software on the same system.

   Red Hat software and installation requirements
4. On the Red Hat Enterprise Linux 7.x system, install the same version of Unified Manager software that you had on the Red Hat Enterprise Linux 6.x system.

   Installing Unified Manager on Red Hat Enterprise Linux

   Do not launch the UI or configure any clusters, users, or authentication settings when the installation is complete. The backup file populates this information during the restore process.
5. Copy the backup file (`.7z` file) from the external location to `/opt/netapp/data/ocum-backup/` and the database repository files to the `/database-dumps-repo` subdirectory under the `/ocum-backup` directory.
6. Enter the following command to restore the Unified Manager database from the backup file:

   `um backup restore -f /opt/netapp/data/ocum-backup/<backup_file_name>`
7. Enter the IP address or URL into your web browser to start the Unified Manager web UI, and then log in to the system.

Upgrading third-party products

You can upgrade third-party products, such as JRE and MySQL, on Unified Manager when installed on Linux systems.

The companies that develop these third-party products report security vulnerabilities on a regular basis. You can upgrade to newer versions of this software at your own schedule.

Upgrading JRE on Linux

You can upgrade to a newer version of Java Runtime Environment (JRE) on the Linux server on which Unified Manager is installed to obtain fixes for security vulnerabilities.

Before you begin

You must have root privileges for the Linux system on which Unified Manager is installed.

Steps

1. Log in as a root user on the Unified Manager host machine.
2. Download the appropriate version of Java (64-bit) to the target system.
3. Stop the Unified Manager services:

   ```
   service ocieau stop
   service ocie stop
   ```
4. Install the latest JRE on the system.
5. Start the Unified Manager services:

   ```
   service ocie start
   service ocieau start
   ```

Upgrading MySQL on Linux

You can upgrade to a newer version of MySQL on the Linux server on which Unified Manager is installed to obtain fixes for security vulnerabilities.

Before you begin

You must have root privileges for the Linux system on which Unified Manager is installed.

About this task

You can only upgrade to minor updates of MySQL 5.7, for example, 5.7.22 to 5.7.26. You cannot upgrade to major versions of MySQL, for example, version 5.8.

Steps

1. Log in as a root user on the Unified Manager host machine.
2. Download the latest MySQL Community Server `.rpm` bundle on the target system.
3. Untar the bundle to a directory on the target system.
4. You will get multiple `.rpm` packages in the directory after untarring the bundle, but Unified Manager only needs the following rpm packages:

   - mysql-community-client-5.7.x
   - mysql-community-libs-5.7.x
   - mysql-community-server-5.7.x
   - mysql-community-common-5.7.x
   - mysql-community-libs-compat-5.7.x

   Delete all other `.rpm` packages. Installing all packages in an rpm bundle will not cause any problems.
5. Stop the Unified Manager service and the associated MySQL software in the order shown:

   ```
   service ocieau stop
   service ocie stop
   service mysqld stop
   ```
6. Invoke the upgrade of MySQL by using the following command:

```
yum install *.rpm
```

`*.rpm` refers to the `.rpm` packages in the directory where you downloaded the newer version of MySQL.

7. Start Unified Manager in the order shown:

```
service mysqld start
service ocie start
service ocieau start
```

Restarting Unified Manager

You might have to restart Unified Manager after making configuration changes.

Before you begin

You must have root user access to the Red Hat Enterprise Linux or CentOS server on which Unified Manager is installed.

Steps

1. Log in as root user to the server on which you want to restart the Unified Manager service.
2. Stop the Unified Manager service and the associated MySQL software in the order shown:

```
service ocieau stop
service ocie stop
service mysqld stop
```

When installed in a high-availability setup, stop the Unified Manager service by using either VCS Operations Manager or VCS commands.

3. Start Unified Manager in the order shown:

```
service mysqld start
service ocie start
service ocieau start
```

When installed in a high-availability setup, start Unified Manager service by using either VCS Operations Manager or VCS commands.

Removing Unified Manager

If you need to remove Unified Manager from the Red Hat Enterprise Linux or CentOS host, you can stop and uninstall Unified Manager with a single command.

Before you begin

- You must have root user access to the server from which you want to remove Unified Manager.
- Security-Enhanced Linux (SELinux) must be disabled on the Red Hat machine. Change the SELinux runtime mode to "Permissive" by using the `setenforce 0` command.
- All clusters (data sources) must be removed from the Unified Manager server before removing the software.

About this task

These steps contain information for systems that are configured for high availability using Veritas Operation Manager. If your system is not configured for high availability, ignore these additional steps.

Steps

1. Log in as root user to the cluster node owning the cluster resources on which you want to remove Unified Manager.
2. Stop all Unified Manager services using VCS Operations Manager or VCS commands.
3. Stop and remove Unified Manager from the server:

   `rpm -e netapp-ocum ocie-au ocie-server netapp-platform-base netapp-application-server ocie-serverbase`
   This step removes all the associated NetApp RPM packages. It does not remove the prerequisite software modules, such as Java, MySQL, and p7zip.
4. Switch to the other node by using the VCS Operations Manager.
5. Log in to the second node of the cluster.
6. Stop all the services, and then and remove Unified Manager from the second node:

   `rpm -e netapp-ocum ocie-au ocie-server netapp-platform-base netapp-application-server ocie-serverbase`
7. Prevent the service group from using VCS Operations Manager or VCS commands.
8. Optional: If appropriate, remove the supporting software modules, such as Java, MySQL, and p7zip:

   `rpm -e p7zip mysql-community-client mysql-community-server mysql-community-common mysql-community-libs java-x.y`

Result

After this operation is complete, the software is removed; however, MySQL data is not deleted. All the data from the `/opt/netapp/data` directory is moved to the `/opt/netapp/data/BACKUP` folder after uninstallation.

Removing the custom umadmin user and maintenance group

If you created a custom home directory to define your own umadmin user and maintenance account prior to installing Unified Manager, you should remove these items after you have uninstalled Unified Manager.

About this task

The standard Unified Manager uninstallation does not remove a custom-defined umadmin user and maintenance account. You must delete these items manually.

Steps

1. Log in as the root user to the Red Hat Enterprise Linux server.
2. Delete the umadmin user:

   `userdel umadmin`
3. Delete the maintenance group:

   `groupdel maintenance`

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