Unisphere Central
Release number 4.0

Installation
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REV 06
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Introduction

Unisphere Central is a virtual appliance that enables administrators to remotely monitor the status, activity, and resources of multiple VNX®, VNXe™, vVNX, and CLARiiON CX4™ systems. The Unisphere Central server runs within a VMware virtual environment that includes at least one ESX or ESXi host. The Unisphere Central server obtains aggregated status, alert, capacity, and performance information from all the systems Unisphere Central is monitoring.

**Note**

Unisphere Central does not provide active management capability or real time status view of the systems in your environment. Instead, it provides these capabilities by linking to and launching Unisphere for the specific system you want to manage.

**Unisphere Central environment**

The Unisphere Central environment consists of the following components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unisphere Central server</td>
<td>A VMware virtual appliance that collects and aggregates status information from appropriately configured VNX, VNXe, vVNX, and CX4 systems. The Unisphere Central server runs as a virtual machine within a VMware virtualized environment. It is downloaded as an Open Virtualization Appliance (OVA) file and subsequently deployed to one or more of your ESX or ESXi hosts.</td>
</tr>
<tr>
<td>VNX, VNXe, vVNX, and CX4 storage systems</td>
<td>Unified VNX, VNXe, and vVNX storage systems that provide network-accessible block and file-based storage resources for applications and hosts running on a variety of operating systems. Also, CX4 storage systems that provide network-accessible block-based storage resources.</td>
</tr>
<tr>
<td>VMware environment</td>
<td>A virtualized environment consisting of access to a VMware server running on one ESX or ESXi hosts. ESX and ESXi hosts abstract processor memory storage, and networking resources into multiple VMs so that each VM can run its own operating system and application.</td>
</tr>
</tbody>
</table>

**Note**

The use of VMware vCenter to manage ESX or ESXi hosts is optional.

| Workstation | A computer running a supported browser to access the Unisphere Central application interface. |

**Note**

You can configure multiple instances of the Unisphere Central server in your environment but each server should monitor different storage systems. Do not monitor the same storage system with more than one instance of Unisphere Central.
Before you begin
Before you install and deploy Unisphere Central, ensure that you perform the following tasks:

Table 2 Prerequisite tasks

<table>
<thead>
<tr>
<th>Task</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Set up a product support account</td>
<td>If you do not already have a product support account, go to support.emc.com/products to set one up. You need a support account for access to the latest documentation and troubleshooting information, online chat, product downloads, installation and maintenance videos, and utilities.</td>
</tr>
<tr>
<td>Ensure that your environment meets the system minimum requirements</td>
<td>See System requirements.</td>
</tr>
<tr>
<td>Collect network information</td>
<td>Use Network planning to collect information necessary to install and configure the Unisphere Central environment.</td>
</tr>
</tbody>
</table>

Note
Do not enable any VMware vCenter feature on the Unisphere Central server VM unless it is documented in this installation guide.

System requirements

The following resources are required for configuring the Unisphere Central environment:
One or more storage systems that support one of the following OE versions:

Table 3 System OE version

<table>
<thead>
<tr>
<th>System</th>
<th>Operating Environment Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>vVNX</td>
<td>3.1 or later</td>
</tr>
<tr>
<td>VNXe</td>
<td>2.2.0 or later</td>
</tr>
<tr>
<td>VNX</td>
<td>VNX OE for Block 05.31.000.5.502 or later VNX OE for File 7.0.35.3 or later</td>
</tr>
<tr>
<td>CX4</td>
<td>OE for Block 04.30.000.5.525 or .526</td>
</tr>
</tbody>
</table>

Note
You can use system configuration profiles with VNXe systems running versions 2.4 and 3.1 or later.

A browser that meets the following requirements:

Table 4 Browser version

<table>
<thead>
<tr>
<th>Browser</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chrome</td>
<td>v33 or later</td>
</tr>
</tbody>
</table>
Table 4 Browser version (continued)

<table>
<thead>
<tr>
<th>Browser</th>
<th>Version</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internet Explorer</td>
<td>v10 or later</td>
</tr>
<tr>
<td>Firefox</td>
<td>v28 or later</td>
</tr>
<tr>
<td>Safari</td>
<td>v6 or later</td>
</tr>
</tbody>
</table>

A Dynamic Host Control Protocol (DHCP) server (DHCPv4) (required to assign an IPv4 address dynamically).

A Domain Name System (DNS) server (required for environments using both IPv4 and IPv6 addresses).

A Network Time Protocol (NTP) server (optional but highly recommended).

At least one 64-bit ESX or ESXi host running 4.0 or later that meets the following requirements:

Table 5 ESX/ESXi requirements

<table>
<thead>
<tr>
<th>Component</th>
<th>Base Configuration</th>
<th>Recommended Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Memory</td>
<td>4 GB</td>
<td>8 GB</td>
</tr>
<tr>
<td>Network Interfaces</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Storage</td>
<td>20 GB</td>
<td>40 GB</td>
</tr>
</tbody>
</table>

If metrics collection is enabled, the ESX/ESXi host must meet the following requirements:

Table 6 Metrics sizing recommendations

<table>
<thead>
<tr>
<th></th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems (VNX and CS4)</td>
<td>10</td>
<td>25</td>
<td>50</td>
</tr>
<tr>
<td>Systems (VNXe and vVNX)</td>
<td>75</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>Storage resources (LUNs and file systems)</td>
<td>10000</td>
<td>25000</td>
<td>50000</td>
</tr>
<tr>
<td>Disks</td>
<td>5000</td>
<td>10000</td>
<td>20000</td>
</tr>
<tr>
<td>CPU</td>
<td>2</td>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>Memory (GB)</td>
<td>4</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Recommended storage size (GB)</td>
<td>25</td>
<td>65</td>
<td>120</td>
</tr>
</tbody>
</table>

The total number of objects in small, medium, or large VNXe and vVNX environments is substantially lower than the number of objects in the corresponding VNX or CX4 environments. Consequently, the recommended storage size provides more than enough metrics storage for VNXe and vVNX environments.

Note

High Availability configurations are only available when using ESX hosts managed by a VMware vCenter server. A minimum of two ESX hosts are required.
The use of vCenter to manage ESX or ESXi hosts is optional. If you are using vCenter, the Unisphere Central environment needs access to a VMware server running vCenter 4.0 or later.

**Network planning**

To deploy and configure Unisphere Central, you must provide network configuration information. Contact your network administrator to gather the necessary network setting information before you install.

Unisphere Central can be configured to use:
- Only an IPv4 address (either static or dynamic)
- Only an IPv6 address (static)
- Both IPv4 and IPv6 addresses

To monitor VNX and CX4 systems, Unisphere Central must be configured with an IPv4 address.

To monitor VNXe systems prior to version 3.1 (single and dual SP configurations), Unisphere Central must be configured with an IPv4 address. To monitor VNXe systems running version 3.1 and later (dual SP configurations) or vVNX systems, Unisphere Central can be configured with an IPv4 address, an IPv6 address, or both.

**Table 7 Network settings**

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server name</td>
<td>Name of the Unisphere Central server.</td>
</tr>
<tr>
<td>MAC address</td>
<td>Network address for Ethernet network connection.</td>
</tr>
<tr>
<td>Server management IP address</td>
<td>Server management IP address through which you can connect to the Unisphere Central server. IPv4, IPv6, or both.</td>
</tr>
<tr>
<td>Domain name</td>
<td>Name of the network on which Unisphere Central resides.</td>
</tr>
<tr>
<td>IPv4 address</td>
<td></td>
</tr>
<tr>
<td>Subnet mask</td>
<td>IP address mask of the subnet where Unisphere Central resides.</td>
</tr>
<tr>
<td>Gateway</td>
<td>IP address of the local subnet router.</td>
</tr>
<tr>
<td>IPv6 address</td>
<td></td>
</tr>
<tr>
<td>Prefix length</td>
<td>IP address prefix of the subnet where Unisphere Central resides.</td>
</tr>
<tr>
<td>Gateway</td>
<td>IP address of the local subnet router.</td>
</tr>
<tr>
<td>DNS server</td>
<td>IP address of the DNS server.</td>
</tr>
<tr>
<td></td>
<td>If you do not configure a DNS server, you must enter IP addresses for any storage system setting that requires a network address. If Unisphere Central is configured with a single IP address, either IPv4 or IPv6, a DNS server is optional but highly recommended.</td>
</tr>
<tr>
<td></td>
<td>If Unisphere Central is configured with both an IPv4 and IPv6 address, a DNS configuration is required. Select DNS servers which can resolve the specified domain name to both IP addresses.</td>
</tr>
<tr>
<td>NTP server</td>
<td>Network name or IP address of the NTP server.</td>
</tr>
</tbody>
</table>
Table 7 Network settings (continued)

<table>
<thead>
<tr>
<th>Settings</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Note</strong></td>
<td>The accuracy of the time on your Unisphere Central server is important to the proper function of Unisphere Central. If you do not configure NTP, Unisphere Central gets its time from the ESX/ESXi host.</td>
</tr>
</tbody>
</table>

*Note*
You can have an IPv4 address assigned dynamically if a DHCP server is available in your environment.

*Note*
Verify that port 443 is open prior to installation. The GUI client communicates with the Unisphere Central server and the VNX, CX4, VNXe, and vVNX systems using this port.

### Download Unisphere Central

**Before you begin**
In order to download the Unisphere Central software, you must set up a product support account. If you do not already have an account, go to your product support site to set one up.

**Procedure**
1. Using a web browser, go to EMC Online Support at support.emc.com/products.
2. Select Unisphere Central.
3. Click **Downloads** to open the Downloads page.
4. Select the Unisphere Central version you want from the list of downloads.
   - Unisphere Central is provided as an Open Virtualization Appliance (OVA) file.
5. Save the OS_Unisphere_Central-xxx.ova file to your computer.

### Deploy the OVF template directly to an ESX/ESXi host

**Procedure**
1. Launch VMware vSphere Client to access your ESX or ESXi host.

   *Note*
   This procedure is based on vSphere 5.5. Depending on the version of vSphere you are using, the path to various tasks may vary.

2. Select the ESX or ESXi host on which you want to create the Unisphere Central VM. Select **Deploy OVF Template** to launch the wizard. Using the wizard, complete the following steps.
3. To select the source from which to deploy, click **Browse** to locate and select the OVA file you downloaded to your computer.

4. Verify the OVF template details.

5. Accept the End User License Agreements.

6. Specify a name for the Unisphere Central server. The name you enter will appear in the vSphere list.

7. Select a folder or datacenter location for the deployed template.

8. Select a datastore from the list of datastores accessible from the resource you selected in which to create the virtual disks used to store the VM configuration files.

9. Select a disk format for provisioning the VM's virtual disks.

10. Confirm the settings, select the **Power on after deployment** checkbox (if available), and then click **Finish** to deploy the OVF template.

   It may take up to 3 minutes to boot the VM. The Unisphere Central VM appears in the left pane of the vSphere Client under the ESX or ESXi host you specified in the OVF template wizard.

11. Select the Unisphere Central VM. Select the Summary tab to view information about the VM. If it is not already powered on, select **Power On** to start the VM.

12. Open the vSphere console. Complete the following steps to configure the Unisphere Central network settings.

13. To configure an IPv4 address, enter **Y** when prompted.

14. To use a dynamic IPv4 address, enter **Y** when prompted. Select dynamic addressing only if a DHCP server is available in your environment.

15. If you enter **N**, provide the settings for the static IPv4 address: IPv4 address, netmask, and default gateway.

16. To configure an IPv6 address, enter **Y** when prompted and provide the settings for the static IPv6 address: IPv6 address, prefix, and default gateway.

17. Provide the IP addresses for up to 3 DNS servers.

   A DNS configuration is recommended if Unisphere Central is configured with a single IP address, either IPv4 or IPv6.

   A DNS configuration is required if Unisphere Central is configured with both an IPv4 and IPv6 address. Select DNS servers which can resolve the specified domain name to both IP addresses.

18. Enter the domain name. The network administrator can provide you with the domain name.

   A domain name is required if Unisphere Central is configured with both an IPv4 and IPv6 address (dual stack).

   If you are using DHCP to provide a dynamic IPv4 IP address, the best practice is to use the domain name to open Unisphere Central.

19. Verify the network settings and enter **Y** to continue. The VM reboots to save the network settings. If dynamic IPv4 addressing was selected, the vSphere console displays the IP address you can use to access Unisphere.

20. Enter the Unisphere Central server management IP address or domain name in your browser to open Unisphere Central.

   If Unisphere Central is configured with both an IPv4 and IPv6 address, the browser is redirected to the domain name when either IP address is entered.

---

Deployment Directly to ESX/ESXi Host
After you finish

The IP addresses and DNS servers can be changed after installation using the Unisphere Central Settings dialog.

Deploy Unisphere Central through a vCenter server

Procedure

1. Launch VMware vSphere Client to access your ESX or ESXi host.

   Note
   
   This procedure is based on vSphere 5.5. Depending on the version of vSphere you are using, the path to various tasks may vary.

2. Select the host, click Actions and select Deploy OVF template to launch the Deploy OVF Template wizard. Using the wizard, complete the following steps.

3. To select the source from which to deploy, click Browse to locate and select the OVA file you downloaded to your computer.

4. Verify the OVF template details.

5. Accept the End User License Agreements.

6. Specify a name for the Unisphere Central server. The name you enter will appear in the vSphere list.

7. Select a folder or datacenter location for the deployed template.

8. Select a datastore from the list of datastores accessible from the resource you selected in which to create the virtual disks used to store the VM configuration files.

   Note
   
   For High Availability you should select a datastore that multiple ESX hosts can share.

9. Select a disk format for provisioning the VM’s virtual disks.

10. Open the vSphere console. Complete the following steps to configure the Unisphere Central network settings.

11. For a dynamic IPv4 address using a DHCP server, check the DHCP box and leave the static IPv4 address settings blank. Select the DHCP option only if a DHCP server is available in your environment.

12. Otherwise, provide the settings for a static IPv4 address: IPv4 address, netmask, and default gateway.

13. To configure Unisphere Central with an IPv6 address, provide the settings for a static IPv6 address: IPv6 address, prefix, and default gateway.

14. Provide the IP addresses for up to 3 DNS servers.

   A DNS configuration is recommended if Unisphere Central is configured with a single IP address, either IPv4 or IPv6.

   A DNS configuration is required if Unisphere Central is configured with both an IPv4 and IPv6 address. Select DNS servers which can resolve the specified domain name to both IP addresses.

15. Enter the domain name. The network administrator can provide you with the domain name.
A domain name is required if Unisphere Central is configured with both an IPv4 and IPv6 address (dual stack).

If you are using DHCP to provide a dynamic IPv4 IP address, the best practice is to use the domain name to open Unisphere Central.

16. Confirm the settings, select the **Power on after deployment** checkbox (if available), and then click **Finish** to deploy the OVF template.

It may take up to 3 minutes to boot the VM. The Unisphere Central VM appears in the left pane of the vSphere Client under the ESX or ESXi host you specified in the OVF template wizard.

17. Enter the Unisphere Central server management IP address or domain name in your browser to open Unisphere Central.

If Unisphere Central is configured with both an IPv4 and IPv6 address, the browser is redirected to the domain name when either IP address is entered.

**After you finish**

The IP addresses and DNS servers can be changed after installation using the Unisphere Central Settings dialog.

---

**Start Unisphere Central**

1. Launch Unisphere Central. To do so, enter the IP address or domain name in your browser.

2. Log in with the default username and password.

**Note**

Unisphere Central ships with a default username, admin, and password, Password123#. You must change the administrator password during this first login. You can also change the service password at this time, either making it the same as the administrator password or creating a separate service password.

The Unisphere Central interface opens.

**Use single sign-on for VNXe and vVNX systems**

The Unisphere Central single sign-on capability is an easy way for you to log into each system without requiring you to re-authenticate. Using single sign-on, you can:

- Log into Unisphere Central, then select and launch Unisphere on a VNXe or vVNX system without re-authenticating.
- Log into one VNXe or vVNX system, open another browser window, and launch another VNXe or vVNX system by entering the URL for that system without having to re-authenticate to open the second system (the VNXe or vVNX systems must be associated with the same Unisphere Central).

Additionally, this feature provides a single sign-off capability; that is, when you log off Unisphere Central, you log off all of the associated VNXe or vVNX system sessions at once.

To use single sign-on:

- The VNXe and vVNX systems must be running OE version 3.1 or later.
- Both the Unisphere Central server and the VNXe or vVNX systems must be configured to authenticate against the same AD/LDAP directory.
The LDAP user must be directly mapped to a Unisphere role, or be a member of an AD/LDAP group that maps to a Unisphere role on both the VNXe or vVNX and Unisphere Central.

Each VNXe or vVNX system must have single sign on enabled.

The user must log in as an LDAP user.

In cases where these requirements are not met, the user must log in to the individual system as a local user and provide authentication credentials to access that system.

For information about setting up single sign-on support, see the *VNXe Security Configuration Guide*.

### Configure Unisphere Central

To configure Unisphere Central server settings and control access:

**Procedure**

1. Click the Settings icon and select Settings. Under Management Settings, select Network Settings. You can configure the Unisphere Central server name and NTP servers. You can also change the IP addresses and DNS servers provided during installation as well as change the VNXe verification method. The Unisphere Central online help describes how to configure these settings.

2. If required, click the Settings icon and select Settings. Select Users and Group to add new user accounts. The Unisphere Central online help describes how to add users.

### Add storage systems to Unisphere Central

Use the Add Storage System wizard to add a system to monitor with Unisphere Central:

**Procedure**


2. Click the Add icon and select the type of system you want to add. The wizard appears.

**After you finish**

The Unisphere Central online help describes how to use the wizard to add VNX, CX4, VNXe, and vVNX systems.

You also have the option of configuring VNXe and vVNX systems to provide status information to the Unisphere Central server from the VNXe Unisphere GUI or CLI. The VNXe Unisphere online help and VNXe Unisphere CLI User Guide provide more information.

### Configure metrics collection

Use Metrics to analyze system performance metrics collected on VNX, CX4, VNXe, and vVNX storage systems. But before you can view and interact with the charts that display metrics data, you must:

1. Create the device or virtual disk on which to allocate metrics storage using vSphere Client if you are deploying the Unisphere Central server directly to an ESX/ESXi host.

2. Allocate storage space for this metrics data using the Create Metrics Storage wizard.

3. Enable metrics collection using the Create Metrics Storage wizard.
Create metrics storage directly on ESX/ESXi hosts

1. In vSphere Client, select the Unisphere Central VM in the left pane of the vSphereClient window, right-click and select **Edit Settings**.
2. In Unisphere Central - Virtual Machine Properties, click **Add** to add a device.
3. In the list of device types, select **Hard Disk**.
4. Create a new virtual disk.
5. Specify the virtual disk size and provisioning policy. Change the disk size to the size recommended for your environment as outlined in the Metrics sizing recommendations table.
6. Skip the advanced options.
7. Confirm the settings and click **Finish**.
8. The hardware devices list now includes New Hard Disk (adding). Click **OK**.

The virtual disk you created will now appear in the list of devices in which to allocate metrics storage in the Unisphere Central Create Metrics Storage wizard.

Create metrics storage on ESX/ESXi hosts through vCenter

Give the vCenter IP address, username and password so you can assign the storage directly from vCenter to the UC server.

1. In vSphere Client, select the Unisphere Central VM in the left pane of the vSphereClient window, right-click and select **Edit Settings**.
2. In Unisphere Central - Virtual Machine Properties, click **Add** to add a device.
3. In the list of device types, select **Hard Disk**.
4. Create a new virtual disk.
5. Specify the virtual disk size and provisioning policy. Change the disk size to the size recommended for your environment as outlined in the Metrics sizing recommendations table.
6. Skip the advanced options.
7. Confirm the settings and click **Finish**.
8. The hardware devices list now includes New Hard Disk (adding). Click **OK**.

The virtual disk you created will now appear in the list of devices in which to allocate metrics storage in the Unisphere Central Create Metrics Storage wizard.

Enable metrics collection

1. In Unisphere Central, click the **Settings** icon and select Management Settings > Metrics.
2. Click **Create Metrics Storage**. The wizard appears.

By default, metrics data collection starts immediately after storage is successfully allocated. If you choose to not start collecting metrics data immediately after storage is successfully configured, you can enable metrics collection by selecting the checkbox on Management Settings > Metrics.

The Unisphere Central online help describes how to use the wizard to create metrics storage, enable metrics collection, and display and analyze metrics data.
To display and analyze metrics data from VNX and CX4 systems, the system must have statistics logging enabled. The VNX Unisphere online help describes how to enable statistics logging.

**Metrics storage sizing recommendations**

The Create Metrics Storage (and Expand Metrics Storage) wizard recommends a storage size based on the data retention values selected and the number of VNX, CX4, VNXe, and vVNX systems being monitored.

Refer to the following table for detailed information about the factors that go into calculating the recommended storage size.

<table>
<thead>
<tr>
<th></th>
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<th>Large</th>
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</tr>
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</table>

The total number of objects in small, medium, or large VNXe or vVNX environments is substantially lower than the number of objects in the corresponding VNX or CX4 environments. Consequently, the recommended storage size provides more than enough metrics storage for VNXe and vVNX environments.

**High Availability**

In order to achieve High Availability, Unisphere Central takes advantage of VMware High Availability (HA) support provided by the VMware vSphere environment. VMware HA is a feature of the host cluster. The vSphere environment provides the following levels of HA:

- Host-level HA
- VM-level HA
- Application-level HA

**Note**

High Availability configurations are only available when using ESX hosts managed by a VMware vCenter server. A minimum of two ESX hosts are required.
Note
The ESX/ESXi hosts may or may not be running VMs other than the Unisphere Central server. It is up to you, as the system administrator, to ensure that the Unisphere Central server receives the resources it requires to function properly, such as, CPU, memory, disk space, and so on.

Note
VMware Fault Tolerance (FT) is currently not supported by Unisphere Central.

Host-level HA
For the highest level of HA, the Unisphere Central virtual appliance runs in a cluster of at least two hosts. This is the recommended HA configuration for maximizing Unisphere Central services. At any given moment, the Unisphere Central virtual appliance runs on a single host. When vSphere detects a failure of the current Unisphere Central host (loss of heartbeat) or the failure of the Unisphere Central VM, the Unisphere Central virtual appliance is restarted on the other host in the cluster. For this level of HA, the Unisphere Central VM must reside on storage shared by both hosts.

VM-level HA
When only a single host is available for the Unisphere Central virtual appliance, HA can still be configured; however, it does not protect against ESX failures. In this case, the Unisphere Central host must still be a part of a single-host cluster, which is properly configured for HA. When vSphere detects a VM failure (loss of heartbeat), the VM is restarted on the same host.

Application-level HA
Application-level HA in the Unisphere Central VM is handled internally. No user setup is required. However, if the Unisphere Central fails more than three times in ten minutes there are no further attempts to restart it. In this situation an administrator needs to reboot the Unisphere Central VM using the vSphere GUI. If that does not help, the VM is probably corrupted and must be restored from backup (previously saved VM snapshot).

Set up HA

Before you begin
The following description of Unisphere Central HA assumes the host-level HA is configured. Since the VMware HA does not perform the storage failover, the storage where the Unisphere Central VM resides must be shared between ESX hosts in the Unisphere Central cluster.

Procedure
1. Launch vSphere Client to access the vCenter Server used to manage the ESX hosts on which the Unisphere Central VM is deployed.
2. Select an existing Datacenter, or right-click the vCenter Server and select New Datacenter to create a Datacenter for your Unisphere Central virtual appliance.
3. Select an existing cluster, or right-click the Datacenter and select New Cluster to open the New Cluster wizard. Configure your cluster as indicated, selecting the default settings unless instructed otherwise.
4. Add both Unisphere Central hosts to the cluster.
5. Right-click the Unisphere Central cluster in vSphere Client and select Edit Settings. Select the Turn On VMware HA checkbox.
6. Select VMware HA in the left pane, and select the **Enable Host Monitoring** checkbox.

**Note**
You may need to disable Admission Control (in the Admission Control field) if there are not enough resources in the cluster to support full HA, for example, when the Unisphere Central cluster has only one host available.

7. Select VM Monitoring in the left pane and select the **Enable VM Monitoring** checkbox.
8. Click **OK**.

The process of configuring HA may take several minutes.

**Troubleshoot HA**

You can solve most issues by unconfiguring and then reconfiguring High Availability. Refer to VMware Knowledge Base (KB) article 1001596 for troubleshooting information for VMware High Availability.

**Backup and recovery using snapshots**

VMware VM snapshots provide a simple and effective way to save the state of the Unisphere Central virtual machine. You can initiate snapshots from the vSphere Client GUI, as well as restore a VM from a selected snapshot, or delete snapshots.

The VM snapshot saves the state of a VM and its disks. The initial snapshot of a VM is a full backup. Subsequent snapshots (of the same VM) are essentially incremental backups relative to previous snapshots. By taking multiple snapshots, you can create a snapshot chain. When you delete a snapshot, its content is consolidated into a subsequent snapshot. If the initial snapshot is deleted, its content is added to a subsequent snapshot, which becomes a full backup at that point.

To achieve the integrity of the Unisphere Central VM snapshot, it is necessary to quiesce the VM's file system. The vSphere snapshot interface provides this option.

Unisphere Central does not include the VM snapshot management functions. You must create and manage the Unisphere Central snapshots using the vSphere Client GUI. Consequently, you must manually take the snapshots.

The vSphere Client GUI does not provide automatic or periodic snapshots. Additionally, if the Unisphere Central VM needs to be restored (for example, after a VM's image is corrupted), you must select the snapshot to be used (most often the latest one) and apply it to the Unisphere Central VM by using the “revert VM to snapshot” option.

**Create and manage snapshots**

To create and manage the Unisphere Central VM snapshots do the following:

**Procedure**

1. Right-click the Unisphere Central VM in the vSphere Client management interface.
2. Select **Snapshot** and then select one of the following:
   - **Take Snapshot** – Create a current snapshot of the Unisphere Central VM. Set the Snapshot the VM's memory and the Quiesce guest file system options.
• **Snapshot Manager** – Delete snapshots, select snapshot to be applied, and edit the snapshot name and description.

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**Recover Unisphere Central from a snapshot**

When the Unisphere Central server encounters a catastrophic failure, such as a corrupted file system, and it will not boot, you must restore the Unisphere Central VM from a snapshot. To do so, follow these steps:

**Procedure**

1. Right-click the Unisphere Central VM in the vSphere Client management interface.
2. Select **Snapshot** and then select one of the following:
   - **Revert to Current Snapshot** – Restores the VM using the most recent snapshot. During this process the state of the VM’s disks and memory are restored to the VM’s state when the last snapshot was taken. All VM changes from the time of the last snapshot are lost.
   - **Snapshot Manager** – Select a snapshot to be applied, and apply (revert to) the selected snapshot. You may select any snapshot other than the last snapshot taken. The restored Unisphere Central VM will not reflect any changes to the Unisphere Central VM that were made since the selected snapshot was taken.

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**Uninstall Unisphere Central**

To permanently remove Unisphere Central from your environment:

**Procedure**

1. In the vSphere Client, right-click the VM you want to remove and select Power > Power Off.
2. Once power is off, right-click the VM and select **Delete from Disk**.
   
   If you have taken any snaps or allocated any storage for performance metrics, they are deleted along with the VM.

**Results**

Unisphere Central is no longer available unless you later reinstall it in your environment.