

# vApp Deployment and Configuration Guide

vCenter Operations Manager 5.8.1

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# vCenter Operations Manager Deployment and Configuration Guide

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The *vCenter Operations Manager Deployment and Configuration Guide* provides information about installing and upgrading VMware® vCenter Operations Manager.

## Intended Audience

This guide is intended for anyone who wants to install or upgrade vCenter Operations Manager.



# Introducing vCenter Operations Manager

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# 1

vCenter Operations Manager is an application used to monitor and manage the health, capacity, and performance of your virtual environment.

vCenter Operations Manager includes the Standard, Advanced, and Enterprise Editions. All editions are available in vApp format.

This chapter includes the following topics:

- [“vCenter Operations Manager Architecture,”](#) on page 7
- [“vCenter Operations Manager and vCenter Server Connections,”](#) on page 8
- [“Integrating vCenter Operations Manager and the vSphere Client,”](#) on page 9
- [“Integrating with VMware vCenter Infrastructure Navigator,”](#) on page 9
- [“vCenter Operations Manager Licensing,”](#) on page 10
- [“Certificate Warnings,”](#) on page 10
- [“How vCenter Operations Manager Uses Network Ports,”](#) on page 10
- [“Deployment Planning Worksheet,”](#) on page 11
- [“Finding More Information,”](#) on page 11

## vCenter Operations Manager Architecture

vCenter Operations Manager is a vApp that you import and deploy with a vCenter Server system.

### Understanding the vCenter Operations Manager vApp

vCenter Operations Manager is distributed as a vApp that you can import and deploy to a Virtualization platform, such as ESX. A vApp has the same basic operation as a virtual machine, but can contain multiple virtual machines or appliances. The same vApp exists for the Standard, Advanced, and Enterprise Editions.

### Distribution Formats

The vApp is distributed as an Open Virtualization Format (OVF) file. The vSphere Client provides an import vApp workflow that guides you in deploying vApps in OVF format.

The vCenter Operations Manager vApp is managed using the Administration Portal which is a Web console for configuration and management tasks.

## vApp Components

vCenter Operations Manager architecture consists of two virtual machines. The following section describes the vCenter Operations Manager key components of the vApp Architecture.

### UI VM

The UI VM allows you to access the results of the analytics in the form of badges and scores using the Web-based application for the UI VM. It also allows you access to the Administration Portal in order to perform management tasks. The applications in UI VM are described as follows:

<b>vSphere Web Application</b>	The vCenter Operations Manager vSphere UI provides a summary and deeper views into the vSphere environment.
<b>Enterprise Web Application</b>	The vCenter Operations Manager Enterprise application provides a customizable Web-based user interface. It is available using the Enterprise edition and provides a view into the entire enterprise.
<b>Administration Web Application</b>	The vCenter Operations Manager Administration Portal provides a user interface for vCenter Operations Manager maintenance and management tasks.

### Analytics VM

The Analytics VM is responsible for collecting data from vCenter Server, vCenter Configuration Manager, and third party data sources, such as metrics, topology, and change events. Raw data is stored in its scalable File System Database (FSDB). The components in Analytics VM are described as follows:

<b>Capacity and Performance Analytics</b>	Checks the incoming metrics for abnormalities in real time, updates health scores, and generates alerts when necessary.
<b>Capacity Collector</b>	Collects metrics and computes derived metrics.
<b>FileSystem Database</b>	Stores the collected metrics statistics.
<b>Postgres DB</b>	Stores all other data collected, including objects, relationships, events, dynamic thresholds, and alerts.

## vCenter Operations Manager and vCenter Server Connections

A single vCenter Operations Manager server can connect to one or to multiple vCenter Server instances. All communications between vCenter Operations Manager and vCenter Server take place over an SSL connection and are authenticated by public key certificates or stored certificates.

When vCenter Operations Manager is connected to multiple vCenter Server instances, you have a common view across all vCenter Server instances for all reporting features.

### Basic Deployment

A basic deployment connects vCenter Operations Manager to a single vCenter Server.



## Multi-Site Deployment

vCenter Operations Manager can connect to vCenter Server instances that are linked. These servers are required to have common logins. If you configure vCenter Operations Manager to connect to multiple vCenter Server instances, you must have login privileges to all the vCenter Server instances and use the same password for login.

## Integrating vCenter Operations Manager and the vSphere Client

You can start vCenter Operations Manager from the vSphere Client.

To integrate with the vSphere Client, install the vCenter Operations Manager plug-in. After the plug-in is installed and you start the vSphere Client, it will discover the plug-in and load it automatically. After the plug-in is initialized and loaded, the **vCenter Operations Manager** icon is available under the **Solutions and Applications** section of the vSphere Client's home page. Click the icon to launch vCenter Operations Manager in a new view.

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**NOTE** This functionality only works with the vSphere Client 4.0 Update 2 or later.

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## Integrating with VMware vCenter Infrastructure Navigator

vCenter Operations Manager supports the integration with vCenter Infrastructure Navigator.

Infrastructure Navigator is an application awareness plug-in to the vCenter Server. Infrastructure Navigator probes the virtual machine entities inside the vCenter Server and provides application related information.

After Infrastructure Navigator integration with vCenter Operations Manager, the application related information is displayed in the **Relationships** tab under the **Environment** tab of vCenter Operations Manager.

## Compatibility Requirements

Infrastructure Navigator can integrate vCenter Operations Manager with vCenter Server 5.0 or later with Infrastructure Navigator version 1.2 and 2.0.

## Deployment

The integration of Infrastructure Navigator with vCenter Operations Manager is seamless. After vCenter Operations is downloaded and installed, the Infrastructure Navigator adapter is created when you register a vCenter Server to monitor. If the vCenter Server has Infrastructure Navigator installed and configured, vCenter Operations Manager displays application related information in the vSphere user interface.

## Managing the vCenter Infrastructure Navigator Adapter

You can view the Infrastructure Navigator adapter from the custom user interface. You cannot add, edit, or delete the Infrastructure Navigator adapter. For management tasks, see [Chapter 5, "Managing the Infrastructure Navigator Adapter,"](#) on page 27.

## vCenter Operations Manager Licensing

vCenter Operations Manager and vCenter Server licensing are separate. You can purchase a product license for the Standard, Advanced, and Enterprise editions of vCenter Operations Manager.

A full license is a permanent license that gives you access to editions of vCenter Operations Manager and all updates. This license does not have an expiration date. For vCenter Operations Manager Standard and Advanced, the license is virtual machine based and sets the limit on how many virtual machines vCenter Operations Manager call pull data from. For vCenter Operations Manager Enterprise, the license is not virtual machine based and there are no limits on virtual machines or resources.

To apply a license key, see [“Assign the vCenter Operations Manager License,”](#) on page 17.

For more information about licensing, see the VMware licensing portal.

## Certificate Warnings

When you access vCenter Operations Manager from a browser, security warnings are reported. Warnings are generated if the certificate is self-signed and not signed by a recognized Certificate Authority (CA) or the distinguished name field of the certificate does not match the hostname of the server. You must accept the certificate to proceed with the connection.

## How vCenter Operations Manager Uses Network Ports

vCenter Operations Manager uses several different network ports to communicate with vCenter Server and vCenter Operations Manager components.

The vCenter Operations Manager client uses the following TCP ports to connect to the vCenter Operations Manager server. Configure your external firewalls so that these ports are open.

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**NOTE** VMware does not support the customization of server ports.

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## Network Ports

The following table lists the default vCenter Operations Manager port access connections.

**Table 1-1.** Port Access Requirements for vCenter Operations Manager vApp

Port Number	Description
22	Enables SSH access to the vCenter Operations Manager vApp
80	Redirects to port 443
443	Used to access the vCenter Operations Manager Admin Portal and the vCenter Operations Manager application
1194	Sets the tunnel between UI VM and Analytics VM

## Deployment Planning Worksheet

Use the deployment planning worksheet to prepare for your vCenter Operations Manager deployment.

**Table 1-2.** Deployment Planning Worksheet

Component	Considerations
vApp	Determine the sizing requirements. Read the vCenter Operations Manager Sizing Guidelines KB article (2057607) at <a href="http://kb.vmware.com/kb/2057607">http://kb.vmware.com/kb/2057607</a> .
vCenter Server	Determine which vCenter Server you will deploy vCenter Operations Manager from. The vCenter Server must be compatible with vCenter Operations Manager. See the vCenter Operations Manager release notes for supported versions at <a href="https://www.vmware.com/support/pubs/vcops-pubs.html">https://www.vmware.com/support/pubs/vcops-pubs.html</a> .
vCenter Server Network Parameters	Use the vSphere Client to configure the network parameters before you deploy the vCenter Operations Manager vApp. See “Configure Network Parameters for the vCenter Operations Manager vApp,” on page 13.
Port Number Assignments	Make sure that you configure your firewalls so that the following ports are open: <ul style="list-style-type: none"> <li>■ 22: Enables SSH access</li> <li>■ 80: Redirects to port 443</li> <li>■ 443: vApp Admin UI and the vCenter Operations Manager application.</li> <li>■ 1194: Tunnel for the UI VM and Analytics VM</li> </ul> See “How vCenter Operations Manager Uses Network Ports,” on page 10 for port requirements.
vCenter Server Hostname or IP Address	Determine which Hostname or IP address vCenter Operations Manager will monitor and collect data from.
vCenter Server Password	You must have the administrator username and password for the vCenter Server vCenter Operations Manager will monitor and collect data from.
vCenter Operations Manager License	Obtain a license key and register vCenter Operations Manager. See “Assign the vCenter Operations Manager License,” on page 17.
VMware VirtualCenter Management Webservices	vCenter Operations Manager requires vCenter Server to run this service.
Time synchronization	The time of the ESX system that hosts the vCenter Operations Manager vApp and the vCenter Server must be synchronized. The vApp clock synchronizes with and depends on the ESX host clock.

## Finding More Information

See the following documents for additional information about using vCenter Operations Manager.

### vCenter Operations Manager Documentation

The vCenter Operations Manager 5.7 Release Note provides product overview and a description of known issues.

The vCenter Operations Manager Advanced Getting Started Guide provides information about the vCenter Operations Manager planning process.

The vCenter Operations Manager in-product help is a Web-based help system. Online help is available through the help menu and from context-sensitive links within the vCenter Operations Manager user interface.

The vCenter Operations Manager Administration Portal in-product help is a Web-based system. Online help is available through the help menu and from context-sensitive links within the Administration Portal user interface.

# Installing vCenter Operations Manager

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# 2

The installation process for vCenter Operations Manager includes configuring network and clock settings, deploying and registering vCenter Operations Manager with a vCenter Server system, licensing the vCenter Operations Manager extension on the vCenter Server system, and granting user access.

This chapter includes the following topics:

- [“Configure Network Parameters for the vCenter Operations Manager vApp,”](#) on page 13
- [“Deploy the vCenter Operations Manager vApp,”](#) on page 14
- [“Set the ESX Host Time,”](#) on page 15
- [“Define the vCenter Server System to Monitor,”](#) on page 16
- [“Assign the vCenter Operations Manager License,”](#) on page 17
- [“Configure the SMTP and SNMP Settings for vCenter Operations Manager,”](#) on page 18
- [“Configure the Default Sender in Email Notifications,”](#) on page 19
- [“Install a Custom SSL Certificate for vCenter Operations Manager,”](#) on page 19
- [“Grant Access to vCenter Operations,”](#) on page 20

## Configure Network Parameters for the vCenter Operations Manager vApp

Before you deploy the vCenter Operations Manager vApp, configure the network parameters to supply the information for the network. Use the vSphere Client to configure network parameters before you deploy the vApp and connect it to a network. Use the IP Pool configuration option to enter network parameters including the network base address, net mask, and the default gateway address. IP pools provide a network configuration that is assigned to a network used by a vApp. The vApp can then leverage vCenter Server to automatically provide an IP configuration to its virtual machines.

### Prerequisites

- Identify the subnet and gateway information for the network that will be used for the virtual machine in the vApp.
- From a Windows virtual machine or system on the network, identify the DNS servers in your network with the `ipconfig /all` command and be prepared to use the name of one of those servers.
- Verify that you are connected to a vCenter Server system with the vSphere Client.

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**NOTE** If you do not configure an IP pool, the vSphere Client reports network errors. Without IP Pool configuration, you will not be able to assign static IP addresses to the vApp.

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**Procedure**

- 1 In the vSphere Client inventory, select the target datacenter for the vCenter Operations Manager deployment process.
- 2 Select the **IP Pools** tab.
- 3 Click **Add** to add a new IP pool.
- 4 In the properties dialog box, select the **IPv4** tab.
- 5 Type an IP pool name that you can recognize during future testing of IP pools.
- 6 Enter the **IP Subnet** and **Gateway** in their respective fields.

Do not select the **Enable IP Pool** checkbox and do not specify a range of IP addresses. You specify the IP address for the virtual machines in the vApp using the vApp OVF Deployment Wizard.

- 7 Select the **DHCP** tab.
- 8 Select the **IPv4 DHCP Present** check box if a DHCP server is available on this network.
- 9 Select the **DNS** tab.
- 10 Enter the DNS server information.  
Enter the DNS Domain name of the DNS servers in your network in the IPv4 DNS Servers text box.
- 11 In the **Associations** tab, select the network for the IP pool.  
Use this network when you configure a virtual machine network in the vApp OVF Deployment Wizard.
- 12 Click **OK**.

The IP pool facilitates the future use of a static IP address during the vApp deployment process. A DHCP deployment can work without an IP pool but generates warnings in the vSphere Client interface. You can ignore the warnings.

**What to do next**

Deploy the vCenter Operations Manager vApp.

## Deploy the vCenter Operations Manager vApp

Download and deploy the vCenter Operations Manager vApp through the vSphere Client. VMware distributes the vApp as a .ova file.

**Prerequisites**

- Read the vCenter Operations Manager Sizing Guidelines KB article (2057607) at <http://kb.vmware.com/kb/2057607>.
- Verify that you have permissions to deploy OVF templates to the inventory.
- Do not deploy vCenter Operations from an ESX host. Deploy only from vCenter <https://www.vmware.com/support/pubs/vcops-pubs.html>
- If the ESX host is part of a cluster, enable DRS in the cluster. If an ESX host belongs to a non-DRS cluster, all resource pool functionality is disabled.
- Verify that the virtual machine network that you connect this vApp to has an IP pool and select that network during the .ova deployment.
- Download the vCenter Operations Manager .ova file to a location that is accessible to the vSphere Client.

- If you download the vApp and the file extension is .tar, change the file extension to .ova.
- Verify that you are connected to a vCenter Server system with the vSphere Client.
- Do not select the transient IP allocation scheme during the deployment wizard. vCenter Operations Manager supports only fixed and DHCP IP allocation.

### Procedure

- 1 In the vSphere Client, select **File > Deploy OVF Template**.
- 2 Follow the prompts in the Deploy OVF Template wizard.
- 3 Select a disk format.
  - **Thick Provision Lazy Zeroed** creates a virtual disk in a default thick format.
  - **Thick Provision Eager Zeroed** creates a type of thick virtual disk that supports clustering features such as Fault Tolerance.
  - **Thin Provision** creates a disk in thin format. Use this format to save storage space.

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**NOTE** Thick provisioned eager-zeroed format provides about a 10 percent performance improvement over the other two disk formats. VMware recommends that you select the thick provisioned eager-zero option when possible.

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**NOTE** Snapshots can negatively affect the performance of a virtual machine and typically result in a 25-30 percent degradation for the vCenter Operations Manager workload. VMware recommends that you do not use Snapshots.

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- 4 When you specify an IP allocation scheme, select Fixed or DHCP IP allocation and click **Next**. Fixed IP allocation requires you to provide two IP addresses for the two virtual machines in the vApp. DHCP allocation requires that you enabled DHCP in your IP pool.
- 5 Click **Finish** and wait for the deployment process to end.

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**NOTE** Because of the size of the vCenter Operations Manager vApp, the deployment process can take significantly longer than deploying smaller virtual machines. It may appear that the deployment hangs when you wait for the deployment process to end. This is the expected behavior when deploying vCenter Operations Manager.

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The vApp appears as a virtual machine in the inventory.

- 6 Power on the vCenter Operations Manager vApp.
- 7 Select the vCenter Operations Manager virtual machine and check its IP address on the **Summary** tab.

The vCenter Server inventory shows the vApp that contains two child objects named UI VM and Analytics VM.

### What to do next

Set the ESX Host time.

## Set the ESX Host Time

Set the time of the ESX system that hosts the vCenter Operations Manager vApp. The vApp clock synchronizes with and depends on the ESX host clock.

vCenter Operations Manager depends on the accuracy of the ESX host clock.

**Prerequisites**

Deploy the vCenter Operations Manager vApp.

The time of the ESX host and the vCenter Server must be synchronized.

**Procedure**

- 1 In the vSphere Client, select the host in the inventory.
- 2 In the Software section of the **Configuration** tab, click **Time Configuration**.
- 3 Click **Properties** to adjust the time and click **OK**.

The vCenter Operations Manager vApp synchronizes time with the ESX host time.

**What to do next**

Define the vCenter Server system to monitor.

## Define the vCenter Server System to Monitor

Before you can use the vCenter Operations Manager vApp, you must define the vCenter Server system to monitor and collect data from.

**Prerequisites**

- Verify that the vCenter Operations Manager vApp is powered on.
- Set the time of the ESX host to ensure that the time settings of the vApp synchronizes with the time settings of the ESX host. For information about the host clock, see [“Set the ESX Host Time,”](#) on page 15.
- Set the time of vCenter Server to ensure that the time settings of the vApp synchronizes with the time settings of vCenter Server.
- Synchronize the time of the vCenter Server system with a standard time source. For information about setting up the Windows Time service, see the Microsoft knowledge base article 307897 on the Microsoft Web site.
- Verify that the vCenter Operations Manager main login page appears when you copy the vApp IP address from the **Summary** tab of the vSphere Client into a browser.
- VMware recommends that users should be Active Directory users.
- In non-linked multi-vCenter Server system configuration, users with the same username but different passwords in different domains will not be able to log in to vCenter Operations.
- In linked vCenter Server system configuration, register each vCenter Server individually. If you register only one of the linked vCenter Server systems, no data displays for the other vCenter Server system.

**Procedure**

- 1 Log in to the vCenter Operations Manager main application with the default credentials of **admin** as the user name and **admin** as the password.

The URL format is `https://<IP>/admin` where <IP> is the IP address or fully qualified host name of the vApp.

This first-time login process opens the First Boot Wizard.

- 2 Update the administrator password that provides access to the Administration Portal and SSH access to the vApp.

The default administrator password is `admin`.

The password requires a minimum of eight characters that include at least one letter and one digit.



- 3 Update the root password for the operation system of the vApp.  
The default root password is `vmware`.  
The password requires a minimum of eight characters that include at least one letter and one digit.
- 4 Type a name for the vCenter Server system.  
This name is for your reference when you monitor the vCenter Server system and does not affect the object in the actual virtual infrastructure.
- 5 Type the IP address or fully qualified domain name of the vCenter Server system to monitor and from which to collect information.
- 6 Type the registration credentials for vCenter Operations Manager to use when connecting to the vCenter Server system.  
The user you provide must have administrator privileges on the vCenter Server system.
- 7 (Optional) Type the collection credentials for vCenter Operations Manager to use when collecting data from vCenter Server objects.  
You can use the same registration credentials that access all of the vCenter Server objects or limited credentials for a subset of the inventory.
- 8 (Optional) To check if vCenter Operations Manager can connect to the vCenter Server system, click **Test**.  
A message appears with information on the test result.
- 9 If you have linked vCenter Server systems, select the appropriate members of the linked group to register with and provide a name for each system.  
You can register vCenter Operations Manager with a subset of vCenter Server systems for scalability or inventory management purposes. Each vCenter Server must be registered individually.
- 10 Click **Save** to apply the changes.  
The selected vCenter Server system appears in the **Registration** tab of the Administration Portal.  
If you were already logged in to the vSphere Client when you registered vCenter Operations Manager, reconnect the vSphere Client to see the vCenter Operations Manager icon.

### What to do next

Assign a license key for the vCenter Operations Manager vApp in the vSphere Client.

## Assign the vCenter Operations Manager License

Assign a license for vCenter Operations Manager. vCenter Operations Manager is registered as an extension to the vCenter Server system and appears as a license asset on the vSphere Client Licensing page.

### Prerequisites

- Verify that you installed the vCenter Operations Manager vApp and registered it to the vCenter Server system to monitor.
- If you were already logged in to the vSphere Client when you defined the vCenter Server system to monitor, reconnect the vSphere Client.

### Procedure

- 1 Log in to the registered vCenter Server system.
- 2 In the vSphere Client, select **Home > Licensing**.
- 3 From the View by options, select **Asset**.

- 4 In the list of assets, right-click your vCenter Operations edition and select **Change License Key**.
- 5 In the Assign License window, select **Assign a new license key to this solution**.
- 6 Click **Enter Key**.
- 7 Type the new license key and click **OK**.

The license key appears in the Assign License window.

- 8 Click **OK** to assign the license key.

The vSphere Client assigns the new license key to vCenter Operations Manager.

#### **What to do next**

Configure the SMTP and SNMP settings for vCenter Operations Manager.

## **Configure the SMTP and SNMP Settings for vCenter Operations Manager**

Configure an optional SMTP server to activate email service for reports and for notification messages when a problem occurs.

Administrative alerts occur when vCenter Operations Manager detects a problem with one or more of its components and cannot collect data from the monitored objects.

#### **Prerequisites**

- Verify that the vCenter Operations Manager vApp is powered on.
- Verify that you have administrator privileges to access the Administration portal and log in to the portal.

#### **Procedure**

- 1 On the **SMTP** tab, select the **Enable report email service** check box.
- 2 Type the SMTP server address and port number.
- 3 Type the name and email address to use when sending alerts or reports.
- 4 If the SMTP server uses an encrypted connection, select the **Server requires an encrypted connection** check box and select the encryption protocol.
- 5 If the email service needs to authenticate with the SMTP server when sending alerts, select the **Outgoing SMTP server requires authentication** check box and type the credentials.
- 6 Select the **Enable SNMP** check box and type the destination host, port, and community information.
- 7 Click **Update** to apply your settings.

vCenter Operations can send email notifications and scheduled reports.

#### **What to do next**

Install a custom SSL certificate for vCenter Operations Manager .

## Configure the Default Sender in Email Notifications

An email plug-in is installed with vCenter Operations Manager and is used for email notifications. The only option available for this plug-in is to use set default values for the sender field. You can set the default to use Fully Qualified Domain Names for email messages.

By default, the email plug-in uses the IP address of the Analytics VM for the sender field of the email notification. If you want to change the default, you can configure the plug-in to use an Fully Qualified Domain Name for the sender field.

### Prerequisites

Verify that you have administrator privileges to access the Analytics VM.

Verify that you have administrator privileges to access the Administration portal and log in to the portal.

### Procedure

- 1 In the vSphere Client inventory, locate the Analytics VM and log in as admin.
- 2 Edit the `/usr/lib/vmware-vcops/user/conf/email.properties` file and add the following property:  
`emailPlugin.alwaysResolveHostName=true`  
 When the `alwaysResolveHostName` property is set to `true`, the email plug-in attempts to resolve the Fully Qualified Domain Name of the Analytics VM. If that fails, a default host name is used that is set by the Java mail API.
- 3 To override the Java mail API default host name if the Fully Qualified Domain Name fails to resolve, set the following additional property: `emailPlugin.defaultHostName=<hostname_to_be_used>`
- 4 From the Administration Portal, select the SMTP tab and deselect the Enable SMTP check box.
- 5 Select the **Enable report email service** check box to enable the SMTP configuration.

vCenter Operations Manager can send email notifications with Fully Qualified Domain Names in the sender field.

## Install a Custom SSL Certificate for vCenter Operations Manager

vCenter Operations Manager installs a self-signed SSL certificate on the vApp. The self-signed certificate generates security warnings when you connect to the vCenter Operations Manager interface. If you do not want to use a self-signed security certificate, you can install a custom SSL certificate. This task is optional and does not affect the vCenter Operations Manager features.

### Prerequisites

- Verify that the vCenter Operations Manager virtual appliance is powered on.
- Verify that you are logged in to the vCenter Operations Manager Administration page.  
 The URL format is `https://VM-IP/admin/`, where *VM-IP* is the IP address or fully qualified host name of the *UI VM* virtual machine that is part of the vCenter Operations Manager virtual appliance.
- Verify that your custom SSL certificate meets the following requirements.
  - The certificate file contains both a valid private key and a valid certificate chain.
  - The private key is generated by the RSA or the DSA algorithm.
  - The private key is not encrypted by a pass phrase.
  - If the certificate is signed by a chain of other certificates, all other certificates must be included in the certificate file that you plan to import

- All the certificates and the private key that are included in the certificate file are must be PEM-encoded. vCenter Operations Manager does not support DER-encoded certificates and private keys.
- All the certificates and the private key that are included in the certificate file must be in the PEM format. vCenter Operations Manager does not support certificates in the PFX, PKCS12, PKCS7, or other formats.

### Procedure

- 1 Click the **SSL Certificate** tab.
- 2 Click **Browse**, locate the certificate file, and click **Open** to load the file in the Certificate field.  
The file extension of the certificate file that you want to import does not matter. However the certificate file must contain both a valid private key and a valid certificate chain.
- 3 Type the certificate password and alias name.
- 4 Click **Upload** to replace the default self-signed certificate on the vCenter Operations vApp.

The custom certificate replaces the default self-signed certificate that vCenter Operations Manager installed.

### What to do next

Grant access to vCenter Operations Manager.

## Grant Access to vCenter Operations

Assign privileges in the vSphere Client to grant access to vCenter Operations Manager.

You can perform all operations in vCenter Operations Manager as a vCenter Server administrator or with the **vCenter Operations Admin** global privilege. You can access vCenter Operations Manager as an individual user without the ability to perform global operations with the **vCenter Operations User** global privilege. These privileges are available under **All Privileges > Global**.

### Prerequisites

- Register vCenter Operations Manager with a vCenter Server system. The registration process generates vCenter Operations Manager privileges under Global privileges in the vSphere Client.
- Restart the vSphere Client before you assign privileges.
- Understand the process of creating and editing roles to assign privileges to in the vSphere Client. For more information about roles and privileges, see the VMware vSphere documentation.

### Procedure

- 1 Restart the vSphere Client.
- 2 From the vSphere Client Home page, click **Roles**.
- 3 Add a vCenter Operations Manager privilege under Global privileges to a new or existing role.
  - Select the **vCenter Operations Admin** privilege to provide power user access to all operations at the individual or global level.
  - Select the **vCenter Operations User** privilege to provide access to all of the operations and customization options in the main vCenter Operations interface that do not affect global settings or global thresholds.

---

**NOTE** With the **vCenter Operations User** global privilege, you can view the objects that you have read access to within vCenter Server.

---

- 4 In the inventory tree, right-click the root vCenter Server folder and select **Add Permission**.
- 5 Assign the new or existing role to the user who accesses vCenter Operations Manager.
- 6 From the Inventory tree, right-click the top level object and select **Add Permission**.
- 7 Assign the new or existing role to the user who accesses vCenter Operations Manager.

After a user gains privileges, the user can log in to the vSphere Client and access vCenter Operations Manager. The vCenter Operations Manager icon appears in the vSphere Client.

**What to do next**

Verify the vCenter Operations Manager installation.



# Verifying the vCenter Operations Manager Installation

---

# 3

This chapter includes the following topics:

- “Verifying the vCenter Operations Manager Installation from the vSphere Client,” on page 23
- “Verify the vCenter Operations Manager Installation from a Browser,” on page 24

## Verifying the vCenter Operations Manager Installation from the vSphere Client

Verify that vCenter Operations Manager is installed so that you can start monitoring your virtual environment from the vSphere Client.

### Prerequisites

- Complete the installation, licensing, and registration process for the vCenter Operations Manager vApp.
- Verify that you have a supported browser on the machine where the vSphere Client runs. For information about browser requirements, see the vCenter Operations Manager release notes at <https://www.vmware.com/support/pubs/vcops-pubs.html>.

### Procedure

- 1 Log in to the vCenter Server system and locate the vCenter Operations Manager icon in the Solutions and Applications pane of the Home page.
- 2 Click the icon to open your edition of vCenter Operations Manager.

You can ignore the certificate warnings that might appear.

- 3 Look at the dashboard and verify that the inventory objects you expect to see appear.

If you set collection credentials during the registration process, you can see only the objects that the collection credentials provide read access to in the vSphere Client. If you have linked vCenter Server systems, you can see only the vCenter Server objects that are connected to that vSphere Client instance.

vCenter Operations Manager starts collecting data. As it becomes available, more information is displayed in vCenter Operations Manager. This process might take a few minutes. The availability of some metrics depends on the vCenter Server and ESX host versions.

---

**NOTE** Even if you do not have privileges to view certain inventory objects, the performance data for these objects is used when calculating metrics for higher inventory levels. For example, you might not have privileges to monitor an ESX host, but the data for its performance is calculated in the Datacenter performance metrics that you can view.

---

## Verify the vCenter Operations Manager Installation from a Browser

Verify that vCenter Operations Manager is installed so that you can start monitoring your virtual environment from a browser.

### Prerequisites

- Complete the installation, licensing, and registration process for the vCenter Operations Manager vApp.
- Use a supported browser. For information about browser requirements, see the vCenter Operations Manager release notes at <https://www.vmware.com/support/pubs/vcops-pubs.html>.

### Procedure

- 1 Enter the vCenter Operations Manager URL in a supported browser. The URL format is `https://<IP>/admin` where <IP> is the IP address or fully qualified host name of the vApp.
- 2 Log in to the vCenter Operations Manager main application with the default credentials of **admin** as the user name and **admin** as the password.
- 3 Look at the dashboard and verify that the inventory objects you expect to see appear.

vCenter Operations Manager starts collecting data. As data becomes available, more information is displayed in vCenter Operations Manager. This process might take a few minutes. The availability of some metrics depends on the vCenter Server and ESX host versions.

---

**NOTE** Even if you do not have privileges to view certain inventory objects, the performance data for these objects is used when calculating metrics for higher inventory levels. For example, you might not have privileges to monitor an ESX host, but the data for its performance is calculated in the Datacenter performance metrics that you can view.

---



# Installing a vCenter Operations Manager Adapter

# 4

This chapter describes how to install and configure an adapter on the vCenter Operations Manager vApp.

## Install an Adapter on a vApp

Follow this procedure to install the Text File adapter if you have a vCenter Operations Manager Advanced vApp installation.

### Prerequisites

- Obtain the PAK file for the adapter from VMware technical support.
- Read the documentation that is included with the PAK file. It might contain additional installation instructions.

### Procedure

- 1 Save the PAK file in a temporary folder.
- 2 Log in to the Admin user interface as the admin user.  
For example: `https://ipaddress/admin/`
- 3 On the **Update** tab, click **Browse** to locate the temporary folder and select the PAK file.
- 4 Click **Update** and click **OK** to confirm the update.  
The Admin user interface uploads the PAK file. The upload might take several minutes.
- 5 Read and accept the EULA and click **OK**.
- 6 Click **OK** to confirm and start the update process.  
The update might take several minutes. Status information appears on the **Update** tab when the update is finished.
- 7 Log in to the Custom user interface as an administrator.  
For example: `https://ipaddress/vcops-custom/`
- 8 Select **Admin > Support**.
- 9 On the **Info** tab, click the **Describe** icon in the Adapters pane.  
The **Describe** icon is located at the top right of the Adapters Info pane.

- 10 Click **Yes** to start the describe process and click **OK**.

The Custom user interface finds the adapter files, gathers information about the abilities of the adapter, and updates the user interface with information about the adapter.

The describe process might take several minutes. When the describe process is finished, the adapter appears in the Adapters Info pane. The build number is in the Adapter Version column.

- 11 Verify that the build number in the Adapter Version column for the adapter matches the build number in the PAK file that you uploaded.

# Managing the Infrastructure Navigator Adapter

# 5

The Infrastructure Navigator adapter is an embedded adapter for vCenter Operations Manager Advanced. The adapter retrieves application-related information from Infrastructure Navigator. Infrastructure Navigator is a virtual appliance that is deployed on a vCenter Server system.

This chapter includes the following topics:

- [“Modifying Adapter Configuration Properties,”](#) on page 27
- [“Viewing System Log Files,”](#) on page 28
- [“Infrastructure Navigator Adapter Classes,”](#) on page 28

## Modifying Adapter Configuration Properties

You can customize Infrastructure Navigator adapter operation by modifying properties in the `vin.properties` file.

**Table 5-1.** `vin_adapter.properties` File Properties

Property	Description	Default
<code>workerThreadCount</code>	Number of threads for retrieving Infrastructure Navigator documents from the vCenter Inventory service. You can configure up to 100 threads.	10
<code>docBuilderCount</code>	Number of DocumentBuilder objects for parsing Infrastructure Navigator data documents. You can configure up to 100 objects.	10
<code>syncInterval</code>	Time interval, in minutes, that the adapter synchronizes its entire local cache with the vCenter Operations Manager Advanced server.	60
<code>certCheckEnabled</code>	Boolean value that determines whether the adapter checks the vCenter Operations Manager Advanced server certificate.	<code>true</code> in a vApp installation <code>false</code> in a Standalone installation
<code>vin20Enabled</code>	Boolean value that determines whether to retrieve and process application-related information that is available only in Infrastructure Navigator 2.0.	<code>true</code>

## Viewing System Log Files

You can view Infrastructure Navigator adapter errors in the adapter and collector log files. You can view log files in the Custom user interface or in an external log viewer.

Infrastructure Navigator adapter log files are in the `/data/vcops/log/adapters/VinAdapter` folder and collector log files are in the `/data/vcops/log` folder on the Analytics virtual machine.

The logging level is set to ERROR by default. To troubleshoot issues, set the logging level to INFO. To view detailed messages, including micro steps, queries, and returned results, set the logging level to DEBUG.

---

**NOTE** If you set the logging level to DEBUG, log files can become large very quickly. Set the logging level to DEBUG only for short periods of time.

---

For information about viewing log files and modifying logging levels, see the online help.

## Infrastructure Navigator Adapter Classes

`com.integrien.adapter3.vin.VinAdapter` is the adapter entry class for the Infrastructure Navigator adapter. It extends the `AdapterBase` base class and overrides several base class functions.

# Updating vCenter Operations Manager

---

# 6

vCenter Operations Manager provides an upgrade path for the vApp.

This chapter includes the following topics:

- [“Updating Virtual Appliance Software to the vCenter Operations Manager vApp,”](#) on page 29
- [“Upgrade Paths for vCenter Operations Manager,”](#) on page 29
- [“Upgrade Requirements,”](#) on page 29
- [“Add a Hard Disk to a Virtual Machine,”](#) on page 30
- [“Upgrade the vApp,”](#) on page 31
- [“Upgrade the OS to SLES 11 SP2 for vCenter Operations Manager 5.8.1,”](#) on page 31

## Updating Virtual Appliance Software to the vCenter Operations Manager vApp

The upgrade process for the vCenter Operations Manager vApp involves a data migration in which the source virtual appliance can continue to run after the upgrade process.

## Upgrade Paths for vCenter Operations Manager

The VMware vCenter Operations Manager vApp supports upgrade paths from VMware vCenter Operations versions 5.0 and above.

The vCenter Operations Manager vApp supports the upgrade of vCenter Operations Manager 5.0, 5.0.1, 5.0.2, 5.0.3, 5.6, 5.7.x to vCenter Operations Manager 5.8.x.

## Upgrade Requirements

The following sections describe the upgrade requirements for vCenter Operations Manager.

### vApp Disk Space Requirements for Upgrades

For an upgrade to vCenter Operations Manager 5.8.1, the following amount of disk space configurations for UI VM and Analytics VM is required.

**Table 6-1.** Disk Space Requirements for Upgrading to vCenter Operations Manager 5.8.1

Resource	Minimum Requirement
UI VM	Disk 1: 4GB Data Disks: 250GB
Analytics VM	Disk 1: 4GB Data Disks: 120GB

## Add a Hard Disk to a Virtual Machine

You may need to add virtual disks to the UI VM and Analytics VM to support disk size requirements. Use the vSphere Client to add a hard disk to a virtual machine.

For each virtual machine in the vApp that needs more disk space, add a new hard disk to the virtual machine. You can add multiple disks as vCenter Operations Manager will mount and format all of them into the same logical disk where vCenter Operations Manager data is stored.

### Prerequisites

- Verify that you have read the system requirements for vCenter Operations Manager upgrades. For information about system requirements, see the vCenter Operations Manager release notes at <https://www.vmware.com/support/pubs/vcops-pubs.html>.
- Verify that the vCenter Operations Manager vApp is powered off.

### Procedure

- 1 In the vSphere Client inventory, right-click the virtual machine and select **Edit Settings**.
- 2 Click the **Hardware** tab and click **Add**.
- 3 Select **Hard Disk** and click **Next**.
- 4 Select **Create a new virtual disk** and click **Next**.
  - a Type the disk capacity.
  - b Select a disk format.
    - **Thick Provision Lazy Zeroed** creates a virtual disk in a default thick format.
    - **Thick Provision Eager Zeroed** creates a type of thick virtual disk that supports clustering features such as Fault Tolerance.
    - **Thin Provision** creates a disk in thin format. Use this format to save storage space.

---

**NOTE** Thick provisioned eager-zeroed format provides about a 10 percent performance improvement over the other two disk formats. VMware recommends that you select the thick provisioned eager-zero option when possible.

---



---

**NOTE** Snapshots can negatively affect the performance of a virtual machine and typically result in a 25-30 percent degradation for the vCenter Operations Manager workload. VMware recommends that you do not use Snapshots.

---

- c If you specify a datastore, browse for the datastore location, and click **Next**.
- 5 Accept the default virtual device node.
- 6 Click **Next**.
- 7 Review the information and click **Finish**.
- 8 Click **OK** to save your changes and close the dialog box.

**What to do next**

After you finishing adding new disks for the UI VM and Analytics VM, power on the vApp. The virtual machine discovers the new disk and adds it to the data volume.

**Upgrade the vApp**

This procedure is applicable when updating to the vCenter Operations Manager 5.8.x vApp from the following product versions: vCenter Operations Manager 5.0, 5.0.1, 5.0.2, 5.0.3, 5.6, and 5.7.x.

**Prerequisites**

- Check the vCenter Operations Manager Release Notes for the latest information about upgrading vCenter Operations Manager and supported versions for the upgrade process.
- Read the vCenter Operations Manager Sizing Guidelines KB article (2057607) at <http://kb.vmware.com/kb/2057607>.
- VMware recommends that you take virtual machine snapshots before you upgrade the vApp. After the upgrade is successful, delete the snapshots.

**Procedure**

- 1 Save the .pak file of the latest vCenter Operations Manager build to your local storage.
- 2 Log in to the Administration portal using the `admin` user credentials.
- 3 On the **Update** tab, click **Browse** and select the .pak file that you saved to local disk.
- 4 Click **Update**.
- 5 Accept the EULA by selecting the check box and click **OK**.
- 6 Accept and confirm the update.
- 7 Log in to the Administration portal and verify that the **Status** tab indicates successful upgrade.  
You might need to refresh the browser to view the updated product version and build number.
- 8 Log in to the vCenter Server that manages the license for vCenter Operations Manager, and apply the new vCenter Operations Manager 5.8.1 license key.  
  
You must re-apply the new license key in the vCenter Server after the upgrade. If you do not, you will see reduced functionality in the vCenter Operations Manager interface.
- 9 In the Administration portal, navigate to the Status tab and restart all services.
- 10 Log in to the vSphere Client or the custom UI to verify that the vCenter Operations Manager interface is displayed properly.

**Upgrade the OS to SLES 11 SP2 for vCenter Operations Manager 5.8.1**

This procedure is applicable when performing an in-place vApp OS upgrade to SUSE Linux Enterprise Server (SLES) 11 SP2. An OS upgrade is required to run vCenter Operations Manager 5.8.1.

**Prerequisites**

- Verify that vCenter Operations Manager 5.8.1 is installed and running.
- Back-up the UI virtual machine and the Analytics virtual machine.

### Procedure

- 1 Download or copy the SLES 11 SP2 PAK file from the VMware download site for vCenter Operations Manager to the /data drive on the UI virtual machine.

```
scp VMware-vcops-SP2-1381807.pak root@ip_address_of_webui:/data
```

- 2 Start the SLES 11 SP2 upgrade, with the command:

```
/usr/lib/vmware-vcops/user/conf/upgrade/va_sles11_sp2_init.sh/data/VMware-vcops-SP2-1381807.pak
```

The process automatically upgrades both the UI virtual machine and the Analytics virtual machine.

- 3 After the upgrade completes successfully, restart the vApp.
- 4 Login to the vCenter Operations Manager UI to verify that it is working.



# Managing vCenter Operations Manager

# 7

The vCenter Operations Manager Administration portal provides a user interface for vCenter Operations Manager maintenance and management tasks.

Except for the initial settings that you must apply, all configurations on the Administration portal are optional and allow you to adapt the operation of vCenter Operations Manager to your environment and preferences.

This chapter includes the following topics:

- [“Change the Password of the Root User,”](#) on page 33
- [“Change the Password of the Administrator User,”](#) on page 33
- [“Create and Download a Support Bundle,”](#) on page 34

## Change the Password of the Root User

You can modify the password of the root user to keep the vCenter Operations Manager virtual appliance secure.

### Prerequisites

- Verify that the vCenter Operations Manager virtual appliance is powered on.
- Verify that you are logged in to the vCenter Operations Manager Administration page.

The URL format is `https://VM-IP/admin/`, where *VM-IP* is the IP address or fully qualified host name of the *UI VM* virtual machine that is part of the vCenter Operations Manager virtual appliance.

### Procedure

- 1 Click the **Account** tab.
- 2 Type the current password for the root user name.
- 3 Type the new password in the **New password** text box and in the **Re-enter password** text box.  
Passwords require a minimum of eight characters with at least one letter and one digit.
- 4 Click **Change** to save your settings.

## Change the Password of the Administrator User

You can modify the password of the administrator account to keep vCenter Operations Manager secure.

### Prerequisites

- Verify that the vCenter Operations Manager virtual appliance is powered on.

- Verify that you are logged in to the vCenter Operations Manager Administration page.  
The URL format is `https://VM-IP/admin/`, where *VM-IP* is the IP address or fully qualified host name of the *UI VM* virtual machine that is part of the vCenter Operations Manager virtual appliance.

#### Procedure

- 1 Click the **Account** tab.
- 2 Type the current password for the administrator user name.
- 3 Type the new password in the **New password** text box and in the **Re-enter password** text box.  
Passwords require a minimum of eight characters with at least one letter and one digit.
- 4 Click **Change** to save your settings.

## Create and Download a Support Bundle

If problems arise that cause vCenter Operations Manager not to operate as expected, you can send a copy of the log and configuration files to VMware for technical support.

#### Prerequisites

- Verify that the vCenter Operations Manager virtual appliance is powered on.
- Verify that you are logged in to the vCenter Operations Manager Administration page.  
The URL format is `https://VM-IP/admin/`, where *VM-IP* is the IP address or fully qualified host name of the *UI VM* virtual machine that is part of the vCenter Operations Manager virtual appliance.

#### Procedure

- 1 Click the **Status** tab.
- 2 In the Diagnostic information pane, click **Download**.  
The vCenter Operations Manager system collects the diagnostic information and streams the data to your browser in a compressed ZIP file.
- 3 In the File Download dialog box, click **Save**.
- 4 Select a location to which you want to save the ZIP file and click **Save**.

The log and configuration files are saved to the selected location as a ZIP archive.

#### What to do next

You can review the contents of log files for error messages. If you need troubleshooting assistance, you can send the diagnostic data to VMware support services. When you resolve or close the issue, delete the outdated support bundle to save disk space.

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