

Installation and Configuration Guide for Windows and Linux

vCenter Operations Manager 5.6

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vCenter Operations Manager Installation Guide

The *vCenter Operations Manager Installation and Configuration Guide* provides information about installing and upgrading VMware® vCenter Operations Manager on Windows or Linux operation systems.

Intended Audience

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

Before Installing vCenter Operations Manager

This section introduces the vCenter Operations Manager server installation.

Overview

Installing vCenter Operations Manager consists of two procedures:

- 1 Preparing a database in either SQL Server or Oracle to hold the vCenter Operations Manager data.
- 2 Installing the vCenter Operations Manager software.

vCenter Operations Manager is designed as an enterprise solution, so planning and preparing your environment is critical to successful deployment. You should consider several factors when planning your vCenter Operations Manager environment:

- Environment size and landscape—the vCenter Operations Manager architecture needs to take into account how large the environment is, including the number of applications, data sources, resources and metrics, the physical environment distribution (the number of data centers), and the number of users.
- Environment complexity—what specific architectural and service level requirements must be met, including security, availability, and accessibility.

Architecture

vCenter Operations Manager architecture allows for deployment flexibility.

vCenter Operations Manager is a Java-based application with four interdependent components:

- vCenter Operations Manager server—Hosts the user interface and coordinates the functions of the software, including controlling communications between the other components.
- vCenter Operations Manager analytics—Receives metrics gathered from monitored resources, analyzes the data, and creates statistical models to detect abnormal behavior. This includes the dynamic thresholds processor, which can be installed separately to distribute the processing load, as described in [“Installing the Analytics Processor,”](#) on page 22.

- vCenter Operations Manager collector— Acts as the gateway between vCenter Operations Manager and the adapters used to collect data from the collection landscape. It is installed by default as part of the primary server but can also be distributed as a stand-alone component. You can install one or more remote collectors to navigate firewalls, share bandwidth across data centers, and reduce the load on the vCenter Operations Manager server. You can install the collector on a shared server.
- vCenter Operations Manager messaging— The message bus (ActiveMQ) passes metric information between vCenter Operations Manager components.

vCenter Operations Manager uses two data storage solutions. A relational database (Oracle or Microsoft SQL Server) stores configuration and state data. A proprietary high-performance file system-based repository (FSDB) stores the collected raw metrics.

The installation script installs all vCenter Operations Manager components—server (including messaging), collector, and analytics—in the same folder structure. It also installs several vCenter Operations Manager system tools.

System Requirements

vCenter Operations Manager has specific hardware and software requirements.

Operating System Requirements

You must install vCenter Operations Manager on a supported operating system.

vCenter Operations Manager is compatible with the following operating systems.

Table 1. Operating Systems

Operating System	Version	Service Pack
Windows Server 2003	64-bit	SP2 or later
Windows Server 2008	64-bit	N/A
Red Hat Enterprise Linux 5	64-bit	N/A

Hardware Requirements

You must install vCenter Operations Manager Server on a 64-bit machine that meets specific hardware requirements.

Table 2. Hardware Requirements

Hardware Component	One Million Metrics	Two Million Metrics	Six Million Metrics
CPU	4CPU	8CPU	32CPU
Memory	14GB	28GB	72GB
Disk Storage	1.5TB FSDB: 1.5TB Database: 100GB	3TB FSDB: 2.8TB Database: 200GB	8.8TB FSDB: 8.4TB Database: 400GB
Disk I/O for Analytics VM	2,000 IOPS	4,000 IOPS	12,000 IOPS

Database Server Requirements for vCenter Operations Manager

vCenter Operations Manager requires an SQL or Oracle database to store data. The database server should be dedicated to the vCenter Operations Manager database. The database must be configured and available to the vCenter Operations Manager Server host.

vCenter Operations Manager supports the following database servers and versions.

- Oracle 10g Release 2
- Oracle 11g Release 2
- Microsoft SQL Server 2005 SP2 or later
- Microsoft SQL Server 2008

NOTE Microsoft SQL Server is supported only on Windows hosts.

The computer that hosts the database server must meet minimum hardware requirements.

NOTE You cannot use Integrated Windows Authentication while using Microsoft SQL server. The JDBC driver supports the use of Type 2 integrated authentication on Windows operating systems through the `integratedSecurity` connection string property. To use integrated authentication, copy the `sqljdbc_auth.dll` file to folder `%ALIVE_BASE%/common/bin`.

- 2GB RAM
- Two 32-bit CPUs, P4 2GHz or faster

For systems that collect more than one million metrics, the database server host should have 8GB RAM and two 64-bit CPUs.

The ping time between the database server host and the vCenter Operations Manager Server host should be less than one millisecond.

Hardware and Software Requirements for Client Systems

Make sure that your system supports the vCenter Operations Manager client.

Table 3. Client System Hardware and Software Requirements

Component	Requirement
RAM	At least 2GB
Browser	<ul style="list-style-type: none"> ■ Internet Explorer 7.x, 8.x, or 9 ■ Mozilla Firefox 16.x JavaScript must be enabled. Popup blockers must be either removed or disabled.
PDF viewer	Adobe Reader or a similar PDF viewer for viewing reports.

Installation and Configuration Checklist

Use this checklist to track the progress of vCenter Operations Manager standalone installation and configuration, including any changes you make from the default configuration settings.

NOTE Changing the configuration settings is not covered in this guide. Consult your VMware representative to determine the proper settings for your installation.

Table 4. Installation Checklist

Action Item	Notes
Pre-Installation	
Acquire hardware based on sizing projection.	
Download the software.	
Prepare the Database	
For SQL Server:	
<ul style="list-style-type: none"> ■ Install SQL Server. ■ Create a Windows or SQL authentication account with sufficient privileges to create a new database. 	
For Oracle:	
<ul style="list-style-type: none"> ■ Install Oracle. ■ Install and configure the SQLPlus tool. ■ Create a user with sufficient Oracle privileges to create a tablespace and user schemas. 	
Prepare Hardware	
Confirm external port access to vCenter Operations Manager server and the database server. The default server ports include:	
<ul style="list-style-type: none"> ■ Remote Collectors: 80, 1100, 61616 ■ External: 1433, 1521 	
Confirm the following ports are reserved on the vCenter Operations Manager server: 1099, 1100, 1199, 1201, 1202, 1203, 61616	
Confirm that the response time between vCenter Operations Manager server and database server is: greater than 1 millisecond	
Installation	
Install and configure the primary vCenter Operations Manager server.	
<ul style="list-style-type: none"> ■ Test vCenter Operations Manager database configuration ■ Validate FSDB Home path ■ Before completing configuration wizard, move all unused adapters (For example, Hyperic, ITM, SCOM) to the plugins directory. 	
(Optional) Install and configure a secondary server using the backup option.	
(Optional) Install and configure any remote collectors.	

Preparing the vCenter Operations Manager Database

Before you can install vCenter Operations Manager, you must create a database in either Microsoft SQL Server or Oracle to store the vCenter Operations Manager data.

Prepare a SQL Database on a Windows Host

Prepare a SQL database for vCenter Operations Manager by running SQL scripts. The SQL scripts are included in the vCenter Operations Manager installation package.

Prerequisites

- Familiarize yourself with the database server requirements for vCenter Operations Manager. See [“Database Server Requirements for vCenter Operations Manager,”](#) on page 7.
- Install SQL Server.
- Create a Windows authentication account or an SQL authentication account that has sufficient privileges to create a new database and new SQL user.
- Obtain the vCenter Operations Manager installation package.
- Extract the zip file that contains the SQL scripts: `vcops-db-scripts-sqlserver-<build number>.zip`.

Procedure

- 1 If you are using Windows authentication for SQL Server, log in as a user who has sufficient privileges to create a database.
- 2 Create a new database in the Microsoft SQL Server instance.
- 3 In SQL Server Management Studio, connect to the new database and run the `vcops_sqlserver_10.sql` script from the extracted zip file.
- 4 Alternatively, you can use the command line tool `sqlcmd` to execute the script `vcops_sqlserver_10.sql`:

```
sqlcmd -S <databaseServer> -i vcops_sqlserver_10.sql -U <databaseUsername> -P
<databasePassword> -d <databaseName>
```

To execute the script, you must download and install the Microsoft SQL Server 2008 R2 Command Line Utilities and dependency packages from the Microsoft Web site:

<http://www.microsoft.com/en-us/download/details.aspx?id=16978>.

What to do next

Install vCenter Operations Manager server. See [“Install vCenter Operations Manager on Windows,”](#) on page 10.

Prepare an Oracle Database on a Windows Host

If the Oracle database is on a Windows host, you can run a batch file to prepare the database to store vCenter Operations Manager data. The batch file is included in the vCenter Operations Manager installation package.

The batch file creates a 500MB Oracle tablespace named `vcops10_TS`, an Oracle schema named `vcops`, database objects for vCenter Operations Manager (including tables, indexes, and sequences), and a trigger that makes the database case insensitive. For more control over the configuration, you can perform these operations manually. See the `Readme.txt` file in the vCenter Operations Manager installation directory for instructions on the manual configuration process.

Prerequisites

- Familiarize yourself with the database server requirements. See [“Database Server Requirements for vCenter Operations Manager,”](#) on page 7.
- Install Oracle.
- Install and configure the sqlplus tool.
- Create a user that has sufficient Oracle privileges to create a tablespace and user schemas.
- Decide where on the disk to create the tablespace.
- Obtain the vCenter Operations Manager installation package.

Procedure

- 1 In the `tnsnames.ora` file, add a connection name that the vCenter Operations Manager server can use to connect to the Oracle server.
- 2 Extract the files from `vcops.oracle.zip` to any available directory.
`vcops.oracle.zip` is located in the same folder as the vCenter Operations Manager executable files.
- 3 Run `setup.bat`.
For example: `setup.bat connection user password`
`connection` is the connection name defined in `tnsnames.ora`. The user that you specify with `user` and `password` must have permission to log in to the Oracle database as SYSDBA.
- 4 Verify that the tablespace and user schema were created properly.

What to do next

Install vCenter Operations Manager server. See [“Install vCenter Operations Manager on Windows,”](#) on page 10

Installing vCenter Operations Manager

You can install the vCenter Operations Manager software on a supported version of either Windows or Linux. There are separate procedures for Windows, Linux using GUI mode, and Linux using console mode.

Install vCenter Operations Manager on Windows

Install the vCenter Operations Manager on a supported version of Windows.

Prerequisites

- VMware recommends using an administrator user name.
- You must log on as user with enough privileges to create services.
- If you are using SQL Server with Windows authentication, you must also be able to create and modify databases.

Procedure

- 1 Log on to the host machine and navigate to the folder containing the vCenter Operation Manager executable files.
- 2 Run the `VMware-vcops-5.0.exe` file. The first page of the vCenter Operations Manager installation wizard appears.
- 3 Click **Next**.

- 4 Read the Patent Agreement in its entirety. Click **Next**.
- 5 Read the License Agreement in its entirety. Select I Accept the Terms of the License Agreement and click **Next**.
- 6 On the Choose Install Set page, click the icon beside Full Installation and click **Next**.

This installs all vCenter Operations Manager components. If you attempt to install vCenter Operations Manager on a 32-bit system, Full Installation is not an option. You can install only a vCenter Operations Manager remote collector or the separate analytics processor on a 32-bit system.

NOTE The Collector option installs just the vCenter Operations Manager collector on a remote server to improve performance and accessibility, see [“Install a vCenter Operations Manager Collector,”](#) on page 20.

- 7 On the Choose Install Folder page, click **OK** to accept the default installation folder, or click Browse and select the installation folder you want. The default installation folder is `\vmware\vmcenter-operations` beneath the default program installation folder for your system. We recommend you accept the default. Click **Next**.
- 8 The Pre-installation Summary page lists the components that will be installed. Click **Install** to begin the installation. When this part of the process is finished (it may take several minutes), the Configuration Mode page appears.
- 9 On the Configuration Mode page, select **Basic** or **Advanced**. Use advanced configuration only if one or more of the following is true:
 - Communication between a remote vCenter Operations Manager Collector and the vCenter Operations Manager Server will be via firewall or HTTP proxy.
 - vCenter Operations Manager will be monitoring more than 100,000 resources.
 - Replication is enabled between the primary vCenter Operations Manager server and a backup server.
 - For security reasons, you do not want the vCenter Operations Manager components to use default passwords and ports.
- 10 On the Full Configuration page, select **Primary** or **Backup** under Server Configuration.
- 11 In the Database Type field select **SQL** or **Oracle**. Fields appropriate for the selected database appear on the page.

For an Oracle database, the Database Name and Instance Name fields do not appear and an SID field is added.
- 12 If you are using an Oracle database, type its System Identifier in the SID field.
- 13 In the Database Host field, enter the IP address of the database server.
- 14 In the Database Port field, leave the default entry (1433 for SQL Server or 1521 for Oracle) unless you installed the database using a different port number.
- 15 If you are using a SQL Server database, enter the name of the vCenter Operations Manager database in the Database Name field.
- 16 If you are using a SQL Server database, enter the name of the vCenter Operations Manager database in the Database Name field.
- 17 In the Authentication, User Name, and Password fields, select the type of authentication to use (for SQL Server databases only) and enter the user name and password for a user with permission to read and write to the SQL Server database or Oracle schema.

vCenter Operations Manager requires a user account with SQL authentication credentials to establish a connection with the database. If you want to use Windows authentication with SQL Server, there are additional steps to perform after completing the installation.

- 18 Click the **Test** button to test the connection to the database. If the test fails, check your entries, make any needed corrections, and try again.
- 19 In vCenter Operations Server Configuration, choose **HTTP** or **HTTPS**. This sets the protocol to use for client connections to the vCenter Operations Manager server.
vCenter Operations Manager sends alert email messages containing hyperlinks to the vCenter Operations Manager server so administrators can find more information about the alert. If you want offsite administrators to be able to use these links, be sure to enter a public IP address for the vCenter Operations Manager server. You should not set the host name to `localhost`.
- 20 If you want adapters which use the HTTP post method to use Web authentication, check the HTTP Post adapter web authentication enabled box. If you check this box, only a vCenter Operations Manager user with the Administrative Access right will be able to post data to vCenter Operations Manager.
- 21 The vCenter Operations Server Port field displays the default port number for the protocol you chose. If you need to change this, port, type the correct number.
- 22 To enable Internet connections to the vCenter Operations Manager server, type the server name or public IP address for the server in the vCenter Operations Server Host field. (The installer tries to detect the host name or IP address of the server and fill it in as the default.) If you leave this field blank, users will not be able to connect from outside the local network.
- 23 In the FSDB Home (File System Database) field, type the path to the directory where vCenter Operations Manager should save the metrics it collects. You can enter up to eight locations to distribute drive I/O use. If you enter more than one, separate them with semi-colons. For best performance, this should not be on the same drive where the vCenter Operations Manager software is installed.
- 24 In SMTP Host and SMTP Port, enter the host name or IP address and port number for the SMTP server for vCenter Operations Manager to use to send email messages.
- 25 In Recipient, enter one or more email addresses; if you enter more than one, separate them with commas. If a vCenter Operations Manager service fails or experiences problems, an email will be sent to each recipient.
- 26 If desired, click the **Test** button to test the email configuration. This checks the SMTP host and port settings and attempts to send an email message to the entered recipients. It displays an appropriate message if any of its tests fail. However, it cannot ensure that the email addresses entered as recipients actually exist, as sending a message to a non-existent address does not fail immediately.
- 27 Click **Finish** to complete the installation. The Install Complete page appears.
- 28 On the Install Complete page, click **Done**.
- 29 If the server host has two IP addresses:
 - Choose **No** and click **Done**.
 - Open the file `vcenter-ops\user\conf\collector\wrapper.conf`.
 - Add this line to the file:
`wrapper.java.additional.9=-Djava.rmi.server.hostname=IP Address/Name where IP address/Name is the IP address or host name to use for the collector.`
 - Save your change and close the file.
 - Reboot the system.

The vCenter Operations Manager installation is complete.

Install vCenter Operations Manager on Linux - GUI Mode

Install vCenter Operations Manager on a supported version of Linux.

If a previous version of vCenter Operations Manager is already installed on the Linux host, you must stop its processes before you install vCenter Operations Manager . You can do this using the `vcenter-ops/vcops.sh`. Run the script with the `stop` parameter:

```
vcops.sh stop
```

To make sure the services have all stopped, use the `status` parameter:

```
vcops.sh status
```

Prerequisites

- The Linux user account for installing vCenter Operations Manager must have root-level privileges. If you need to be able to install under a non-root account, please contact VMware Professional Services.
- X Windows System release 11 (X11) needs to be running on the Linux server.
- You must have a standard terminal emulator for X Windows System.

Procedure

- 1 Using binary mode, upload `vcops.bin` to the target Linux host.
- 2 Navigate to the folder containing `vcops.bin`.
- 3 Change the permission on this file to make it executable:

```
chmod +x vcops.bin
```
- 4 From within any standard terminal emulator for X Windows, execute the program `vcops.bin`.
The first page of the vCenter Operations Manager installation wizard appears.
- 5 Click **Next**.
- 6 Read the Patent Agreement in its entirety. Click **Next**.
- 7 Read the License Agreement in its entirety. Select **I Accept the Terms of the License Agreement** and click **Next**.
- 8 On the Choose Install Set page, click the icon beside Full Installation and click **Next**.

This installs all vCenter Operations Manager components. If you attempt to install vCenter Operations Manager on a 32-bit system, Full Installation is not an option. You can install only a vCenter Operations Manager remote collector or the separate analytics processor on a 32-bit system.

NOTE The Collector option installs just the vCenter Operations Manager collector on a remote server to improve performance and accessibility, see [“Install a vCenter Operations Manager Collector,”](#) on page 20.

- 9 On the Choose Install Folder page, click **OK** to accept the default installation folder, or click **Browse** and select the installation folder you want. The default installation folder is `/root/vmware/vcenter-operations`. We recommend you accept the default. Click **Next**.
- 10 The Pre-installation Summary page lists the components that will be installed. Click **Install** to begin the installation. When this part of the process is finished (it may take several minutes), the Configuration Mode page appears.
- 11 On the Configuration Mode page, select **Basic** or **Advanced**. Use advanced configuration only if one or more of the following is true:
 - Communication between a remote vCenter Operations Manager Collector and the vCenter Operations Manager Server will be via firewall or HTTP proxy.
 - vCenter Operations Manager will be monitoring more than 100,000 resources.

- Replication is enabled between the primary vCenter Operations Manager server and a backup server.
 - For security reasons, you do not want the vCenter Operations Manager components to use default passwords and ports.
- 12 On the Full Configuration page, select **Primary** or **Backup** under Server Configuration.
 - 13 In the Database Type field select **SQL** or **Oracle**. Fields appropriate for the selected database appear on the page.

For an Oracle database, the Database Name and Instance Name fields do not appear and an SID field is added.
 - 14 If you are using an Oracle database, type its System Identifier in the SID field.
 - 15 In the Database Host field, enter the IP address of the database server.
 - 16 In the Database Port field, leave the default entry (1433 for SQL Server or 1521 for Oracle) unless you installed the database using a different port number.
 - 17 If you are using a SQL Server database, enter the name of the vCenter Operations Manager database in the Database Name field.
 - 18 In the Authentication, User Name, and Password fields, select the type of authentication to use (for SQL Server databases only) and enter the user name and password for a user with permission to read and write to the SQL Server database or Oracle schema.

vCenter Operations Manager requires a user account with SQL authentication credentials to establish a connection with the database. If you want to use Windows authentication with SQL Server, there are additional steps to perform after completing the installation.
 - 19 Click the **Test** button to test the connection to the database. If the test fails, check your entries, make any needed corrections, and try again.
 - 20 In vCenter Operations Server Configuration, choose **HTTP** or **HTTPS**. This sets the protocol to use for client connections to the vCenter Operations Manager server.

vCenter Operations Manager sends alert email messages containing hyperlinks to the vCenter Operations Manager server so administrators can find more information about the alert. If you want offsite administrators to be able to use these links, be sure to enter a public IP address for the vCenter Operations Manager server. You should not set the host name to localhost.
 - 21 If you want adapters which use the HTTP post method to use Web authentication, check the HTTP Post adapter web authentication enabled box. If you check this box, only a vCenter Operations Manager user with the Administrative Access right will be able to post data to vCenter Operations Manager.
 - 22 The vCenter Operations Server Port field displays the default port number for the protocol you chose. If you need to change this, port, type the correct number.
 - 23 To enable Internet connections to the vCenter Operations Manager server, type the server name or public IP address for the server in the vCenter Operations Server Host field. (The installer tries to detect the host name or IP address of the server and fill it in as the default.) If you leave this field blank, users will not be able to connect from outside the local network.
 - 24 In the FSDB Home (File System Database) field, type the path to the directory where vCenter Operations Manager should save the metrics it collects. You can enter up to eight locations to distribute drive I/O use. If you enter more than one, separate them with semi-colons. For best performance, this should not be on the same drive where the vCenter Operations Manager software is installed.
 - 25 In SMTP Host and SMTP Port, enter the host name or IP address and port number for the SMTP server for vCenter Operations Manager to use to send email messages.

- 26 In **Recipient**, enter one or more email addresses; if you enter more than one, separate them with commas. If a vCenter Operations Manager service fails or experiences problems, an email will be sent to each recipient.
- 27 If desired, click the **Test** button to test the email configuration. This checks the SMTP host and port settings and attempts to send an email message to the entered recipients. It displays an appropriate message if any of its tests fail. However, it cannot ensure that the email addresses entered as recipients actually exist, as sending a message to a non-existent address does not fail immediately.
- 28 Click **Finish** to complete the installation. The Install Complete page appears.
- 29 On the Install Complete page, click **Done**.
- 30 If the server host has two IP addresses:
 - Choose **No** and click **Done**.
 - Open the file `vcenter-ops\user\conf\collector\wrapper.conf`.
 - Add this line to the file:


```
wrapper.java.additional.9=-Djava.rmi.server.hostname=IP Address/Name where IP address/Name is the IP address or host name to use for the collector.
```
 - Save your change and close the file.
 - Reboot the system.

The vCenter Operations Manager installation is complete.

Install vCenter Operations Manager on Linux - Console Mode

Install vCenter Operations Manager on a supported version of Linux.

Prerequisites

If a previous version of vCenter Operations Manager is already installed on the Linux host, you must stop its processes before you install vCenter Operations Manager. You can do this using the script file `vcops.sh`. Run the script with the stop parameter:

```
vcops.sh stop
```

To make sure the services have all stopped, use the status parameter:

```
vcops.sh status
```

Procedure

- 1 Using binary mode, upload `vcops.bin` to the target Linux host.
- 2 Navigate to the folder containing `vcops.bin`. Change the permission on this file to make it executable:


```
chmod +x vcops.bin
```
- 3 Enter this command to start the console mode installation:


```
./vcops.bin -i console
```
- 4 All of the information entered in the GUI - mode installation will be prompted for in console mode.

After you finish the installation, see [“Advanced vCenter Operations Manager Configuration,”](#) on page 16.

Advanced vCenter Operations Manager Configuration

To perform advanced configuration, access Configuration Mode and follow the procedure below to complete the installation.

Prerequisites

Install vCenter Operations Manager.

Procedure

- 1 From Advanced Configuration, select **Primary** or **Backup** under Server Configuration.
- 2 In vCenter Operations Server Configuration, choose **HTTP** or **HTTPS**.
This sets the protocol to use for client connections to the vCenter Operations Manager server.
- 3 To enable Internet connections to the vCenter Operations Manager server, type the server name or public IP address for the server in the vCenter Operations Server Host field.
The installer attempts to detect the host name or IP address of the server and fill it in as the default. If you leave this field blank, users will not be able to connect from outside the local network.

NOTE vCenter Operations Manager sends alert email messages containing hyperlinks to the vCenter Operations Manager server so administrators can find more information about the alert. If you want offsite administrators to be able to use these links, be sure to enter a public IP address for the vCenter Operations Manager server. You should not set the host name to localhost.

- 4 The vCenter Operations Server Port field displays the default port number for the protocol you chose. If you need to change this, port, type the correct number.
- 5 If you want adapters which use the HTTP post method to use Web authentication, check the HTTP Post adapter web authentication enabled box.
- 6 Under Memory Configuration, set the following for the vCenter Operations Manager Web JVM process:
 - **Maximum Memory** – maximum heap size allocated to the vCenter Operations Manager user.
 - **Maximum Permanent Memory** – maximum heap size allocated to compile and run JVM classes.
- 7 Click **Next**.
- 8 Under Memory Configuration, set the following for the vCenter Operations Manager Analytics JVM process:
 - **Maximum Memory** – maximum heap size allocated to metric calculations.
 - **Maximum Permanent Memory** – maximum heap size allocated to compile and run JVM classes.
- 9 Under RMI Configuration, set the host and port for RMI access to the analytics service.
- 10 Under Data Storage Location, set the location of the FSDB Home.
You can enter up to eight locations to distribute drive I/O use. If you enter more than one, separate them with semi-colons. For best performance, the FSDB should not be on the same drive where the vCenter Operations Manager software is installed.
- 11 Under Replication Server, check the **Enable Replication** box if you want to enable FSDB replication.
When enabled, vCenter Operations Manager will push FSDB data to a remote server. Enter the following parameters for the remote MQ server: Host, Port, Protocol, Control Queue Response Queue, Data Queue, User Name, and Password.

- 12 Check **Enable Synchronization** if you want to synchronize existing data between this server and the replication server.
If you do not check this box, only data gathered from this point forward will be copied to the replication server. This option is most often used when setting up a replication server after initial vCenter Operations Manager installation.
- 13 Click **Next**.
- 14 Under Memory Configuration, set the following for the vCenter Operations Manager Message Queue JVM process:
 - **Maximum Memory** – maximum heap size allocated to the vCenter Operations Manager user.
 - **Maximum Permanent Memory** – maximum heap size allocated to compile and run JVM classes.
- 15 Under Message Queue Configuration, check the **Enable JMX** box if you want to enable JMX monitoring on vCenter Operations Manager. If you enable JMX monitoring, set the following MQ parameters: Host, Port, Protocol, Collector Queue, Controller Queue, Data Queue, User Name, and Password.
- 16 Click **Next**.
- 17 Configure collection settings.
- 18 Under Memory Configuration, set the following for the vCenter Operations Manager Collector JVM process:
 - **Maximum Memory** – maximum heap size allocated to the vCenter Operations Manager resources.
 - **Maximum Permanent Memory** – maximum heap size allocated to compile and run JVM classes.
- 19 Under Collector Configuration, set the following connection parameters for the collector:
 - **Collector Name**
 - **RMI Port**
 - **Max Threads**
 - **Min Data Send Size:** Measured by the number of vCenter Operations Manager resources.
 - **Heart Beat Sleep Time:** Checks the health of the collector. Measured in milliseconds.
- 20 Check the **Enable Http Proxy** box to enable HTTP Proxy from the collector to vCenter Operations Manager. If you enable it, set the Host and Port.
- 21 In SMTP Host and SMTP Port, enter the host name or IP address and port number for the SMTP server for vCenter Operations Manager to use to send email messages.
- 22 In Recipient, enter one or more email addresses. If you enter more than one, separate them with commas. If a vCenter Operations Manager service fails or experiences problems, an email will be sent to each recipient.
- 23 Click **Next**.
The settings on this page are only used if the vCenter Operations Manager server is running in Backup mode.
 - Under Message Queue Configuration, set the parameters for the replication server: Host, Port, Protocol, Collector Queue, Controller Queue, Data Queue, User Name, and Password.
 - Under Data Storage Location, set the location of the local FSDB Home. You can enter up to eight locations to distribute drive I/O use. If you enter more than one, separate them with semi-colons.
- 24 Click **Next**.
 - In the Database Type field select **SQL** or **Oracle**. Fields appropriate for the selected database appear on the page.

For an Oracle database, the Database Name and Instance Name fields do not appear and an SID field is added.

- If you are using an Oracle database, type its System Identifier in the SID field.
- In the Database Host field, enter the IP address of the database server.
- In the Database Port field, leave the default entry (1433 for SQL Server or 1521 for Oracle) unless you installed the database using a different port number.
- If you are using a SQL Server database, enter the name of the vCenter Operations Manager database in the Database Name field.
- If you are using a SQL Server database and need to specify an Instance Name for the database, type it in that field.
- In the Authentication, User Name, and Password fields, select the type of authentication to use (for SQL Server databases only) and enter the user name and password for a user with permission to read and write to the SQL Server database or Oracle schema.

NOTE vCenter Operations Manager requires a user account with SQL authentication credentials to establish a connection with the database. If you want to use Windows authentication with SQL Server, there are additional steps to perform after completing the installation.

- Click the **Test** button to test the connection to the database. If the test fails, check your entries, make any needed corrections, and try again.
- 25 Click **Finish** to complete the installation. The Install Complete page appears.
 - 26 On the Install Complete page, choose whether to restart the computer automatically or manually. If the server host has only one IP address, choose Yes, restart the system and click Done. The system reboots.

If the server host has two IP address:

 - a Choose **No** and click **Done**.
 - b Using Notepad or another editor, open the file `vcenter-ops\user\conf\collector\wrapper.conf`.
 - c Add this line to the file: `wrapper.java.additional.9=-Djava.rmi.server.hostname=IP Address/Name` where IP Address/Name is the IP address or host name to use for the collector.
 - d Save your change and close the file.
 - e Reboot the system.

Validate the vCenter Operations Manager Installation

After you complete the installation of your vCenter Operations Manager server, you can perform the following procedure to make sure the installation completed successfully and vCenter Operations Manager is operating as it should.

These instructions are for a Windows server. Adjust them as necessary if your vCenter Operations Manager server runs on Linux.

Prerequisites

vCenter Operations Manager server is installed.

Procedure

- 1 If you did not use the Test button to validate the database connection during installation, use the Configure VMware vCenter Operations utility to do so:
 - a From the Start menu, select **All Programs > VMware > vCenter Operations Manager Enterprise > Configure VMware vCenter Operations**.
 - b On the Full Configuration dialog box, click **Test**.
- 2 Open the Services window. From the Control Panel, select Administrative Tools > Services.
Confirm that the vCenter Operations Manager services are running: ActiveMQ, vcopsWebService, AnalyticsService, CollectorService
- 3 From your browser, go to the vCenter Operations Manager Enterprise URL and login with the user admin and password admin.
- 4 On the Home page, make sure the default dashboards load properly.
- 5 From the Environment menu, select **Environment Overview**. Make sure the default tags are listed on the left and the vCenter Operations Manager resources display on the right.
- 6 After 15 minutes, validate that the health for the vCenter Operations Manager resources has turned from blue to green.
- 7 From the Admin menu, select **Support**. On the Support page, click the **Info** tab. Make sure the Describe Info pane shows **Adapter describe successfully finished**.
- 8 Click the **About** tab. Make sure the vCenter Operations Manager Enterprise version and database version are correct.
- 9 Click the **Logs** tab. Make sure the services have started successfully for each of these logs:
 - In the vCenter Operations Web folder, the controller.log
 - In the vCenter Operations Web folder, the controller.log
 - In the vCenter Operations Web folder, the controller.log

Managing Program Groups

Installing vCenter Operations Manager on Windows creates a vCenter Operations Manager program group beneath the VMware program group on the Windows Start, All Programs menu.

The program group contains four items:

Configure VMware vCenter Operations Manager

Lets you change vCenter Operations Manager configuration settings. You can select either basic or advanced configuration. You then see the same dialog boxes as either basic installation or advanced installation.

Start all services

Starts all vCenter Operations Manager-related services on the server:

- vcopsWebService
- AnalyticsService
- ActiveMQ
- CollectorService
- DTProcessorService (runs only if Analytics Processor is installed)

- ReplicationServerService (runs only on a vCenter Operations Manager replication server)

Stop all services

Stops all vCenter Operations Manager-related services, as listed above.

Uninstall

Uninstalls vCenter Operations Manager. This uninstalls the components installed by the vCenter Operations Manager installer—the vCenter Operations Manager server, vCenter Operations Manager collector, and analytics. It does not uninstall any adapters, or any vCenter Operations Manager components on remote servers.

Install a vCenter Operations Manager Collector

To install the vCenter Operations Manager Enterprise collector on a remote host, follow the procedure below. You may want to do this to distribute vCenter Operations Manager Enterprise activity for better performance.

Prerequisites

Log on as a user with enough privileges to create services. VMware recommends using an administrator user name.

This procedure is written for Windows; follow similar steps for a Linux remote host.

Procedure

- 1 Log in to a remote host and navigate to the folder containing the vCenter Operations Manager executable files.

- 2 Run the `vcops.exe` file.

The first page of the vCenter Operations Manager installation wizard appears.

- 3 Click **Next**.

- 4 On the Choose Install Set page, click the icon next to Collector and click **Next**.

- 5 On the Choose Install Folder page, click **OK** to accept the default installation folder, or click **Browse** and select the installation folder you want.

The default installation folder is `\vmware\vcoper-operations` beneath the default program installation folder for your system.

The Pre-installation Summary page lists the components that will be installed.

- 6 Click **Next**.

- 7 Click **Install** to begin the installation.

When this part of the process is finished (it may take several minutes), the Configuration Mode page appears.

- 8 On the Configuration Mode page, select **Basic**.

- 9 In Collector Name, the default value is vCenter Operations Server, which is the same name as the local collector.

Do not use the default. Enter a unique name for the collector.

- 10 In vCenter Operations Server Configuration, choose **HTTP** or **HTTPS**.

This sets the protocol to use for communicating heartbeat signals to the vCenter Operations Manager server. This should match the protocol set on the vCenter Operations Manager Server.

- 11 In vCenter Operations Server Host, enter the IP address of the vCenter Operations Manager Server.

- 12 In vCenter Operations Server Port, enter the same port set on the vCenter Operations Manager Server.
- 13 In Host, enter the IP address of the message queue.
This is typically the same as the vCenter Operations Manager Server host.
- 14 In Port, leave the default entry (61616) unless MQ is using a different port number.
- 15 Click **Finish** to complete the installation. The Install Complete page appears. Click **Done**.
- 16 If the host has two IP addresses, you need to define which one the collector should use:
 - a Open the file `vcenter-ops\user\conf\collector\wrapper.conf`.
 - b Add the following line to the file: `wrapper.java.additional.9=-Djava.rmi.server.hostname=IP Address/Name` where IP address/Name is the IP address or host name to use for the collector.
 - c Save your change and close the file.
 - d After changing `wrapper.conf`, restart the collector service.
 - e If the host uses Windows, from the Windows Start menu, select **Control Panel > Administrative Tools > Services**. Restart the `CollectorService` service.
 - f If the host uses Linux, enter these commands: `cd vcenter-ops/collector/bin/CollectorService.sh`
`restart`

Installation of the vCenter Operations Manager collector is complete.

Installing a vCenter Operations Manager Adapter

This section describes how to install and configure the vCenter Operations Manager Enterprise server.

When you install the vCenter Operations Manager Enterprise server, three adapters are deployed by default:

- **The vCenter Operations Manager Enterprise adapter.** This adapter monitors vCenter Operations Manager Enterprise.
- **The HTTP Post adapter.** This is a generic adapter used to push data to vCenter Operations Manager via HTTP.
- **The Container adapter.** vCenter Operations Manager uses this adapter to create container resources.

All other adapter files are supplied separately. Contact your VMware representative for the installation files for additional adapters. After you have the adapter installation files, follow the installation procedure. See the documentation supplied with the adapter for possible additional instructions.

Install an Adapter

Follow this procedure to install an adapter if you have a vCenter Operations Manager standalone installation.

You need to install an adapter only on the vCenter Operations Manager Enterprise server, not on any remote vCenter Operations Manager collectors you have installed. The adapter is "pushed" to all remote collectors when you click the Describe button in step 6, below.

Prerequisites

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

Procedure

- 1 Open and extract the adapter files in a temporary folder.

- 2 From the temporary folder, execute the `AdpaterName_intsall.exe` file.
- 3 Follow the instructions on the setup dialog boxes.
- 4 Start vCenter Operations Manager and log in as an administrator.
For example: `https://ipaddress/vcops-custom/`
- 5 Select **Admin > Support**.
- 6 On the **Info** tab, click the **Describe** icon in the Adapters pane.
vCenter Operations Manager finds the adapter files, gathers information about the abilities of the adapter, and updates the user interface with information about the adapter.

The adapter is installed. Define credentials and create new instances for the new adapter.

Installing the Analytics Processor

This section describes how to install and configure the vCenter Operations Manager analytics processor.

The vCenter Operations Manager server installation includes a process which performs all of the various vCenter Operations Manager analytics calculations: dynamic thresholds, fingerprinting, and so on. vCenter Operations Manager also gives you the option of installing a separate analytics processor on one or more remote hosts to handle only the dynamic threshold computation; this is called the DT Processor. This has two benefits:

- It distributes the analytics processing among two or more hosts to improve performance and reduce the demand on the server.
- When you have a separate process just for the dynamic threshold calculations, a problem with dynamic thresholds does not stop the entire analytics process.

Install the Analytics Processor

You can install the DT Processor on one or more remote hosts. It is supported on both Windows and Linux hosts; the installation process is the same on either.

Prerequisites

Perform the first six steps of the vCenter Operations Manager Enterprise server installation.

Procedure

- 1 On the Choose Install Set page, select Analytics Processor and click **Next**.
- 2 On the Choose Install Folder page, accept the default or click **Choose** and browse to the folder where you want to install the processor. Click **Next**.
- 3 The Pre-installation Summary page lists the components that will be installed. Click **Install** to begin the installation.
- 4 On the DT Processor Configuration page, type the host name or IP address of the vCenter Operations Manager server host in the vCenter Operations Server field, then type the port number for RMI access to the analytics service in the Port field. The default is 1199. Click **Save**.
- 5 On the Install Complete page, click **Done**.
- 6 On the vCenter Operations Manager Enterprise server host, edit the following file `vcenter-ops\user\conf\analytics\advanced.properties`.
- 7 Find the property `distributedDTCalculationEnabled` and set it to `true`.
- 8 Save your change and close the file.
- 9 Restart the Analytics service on the vCenter Operations Manager server host.

10 Check to see if the service starts on the remote host. The service name is Analytics Processor.

Installation of the DT processor is complete.

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