Installation and Configuration Guide

vCenter Operations Manager Enterprise 5.0

This document supports the version of each product listed and supports all subsequent versions until the document is replaced by a new edition. To check for more recent editions of this document, see http://www.vmware.com/support/pubs.

EN-000820-00

vmware®

You can find the most up-to-date technical documentation on the VMware Web site at:

http://www.vmware.com/support/

The VMware Web site also provides the latest product updates.

If you have comments about this documentation, submit your feedback to:

docfeedback@vmware.com

Copyright © 2012 VMware, Inc. All rights reserved. This product is protected by U.S. and international copyright and intellectual property laws. VMware products are covered by one or more patents listed at http://www.vmware.com/go/patents.

VMware is a registered trademark or trademark of VMware, Inc. in the United States and/or other jurisdictions. All other marks and names mentioned herein may be trademarks of their respective companies.

VMware, Inc.
3401 Hillview Ave.
Palo Alto, CA 94304
www.vmware.com

Contents

About This Book 5

1 Before Installing vCenter Operations Manager Enterprise 7
- Overview 7
- Architecture 7
- 8

2 System Requirements 9
- Operating System Requirements 9
- Hardware Requirements 9
- Database Server Requirements 9
- Hardware and Software Requirements for Client Systems 10

3 Installation and Configuration Checklist 11
- Installation Checklist 11

4 vCenter Operations Manager Enterprise Database Configuration 13
- Prepare a SQL Database that Requires Super User Access 13
- Prepare a SQL Database that Requires Regular User Access 14
- Prepare a SQL Database When You Cannot Run Executable Files 15
- Preparing an Oracle Database on a Windows Host 15

5 Installing vCenter Operations Manager Enterprise 17
- Installing vCenter Operations Manager Enterprise on Windows 17
- Installing vCenter Operations Manager Enterprise on Linux – GUI Mode 20
- Installing vCenter Operations Manager Enterprise on Linux – Console Mode 22
- Advanced vCenter Operations Manager Enterprise Configuration 23

6 Managing Program Groups 27

7 Installing a vCenter Operations Manager Enterprise Collector 29
- Installing a vCenter Operations Manager Enterprise Collector 29

8 Installing a vCenter Operations Manager Adapter 31

9 Installing the Analytics Processor 33
- Installing the Processor 33
- Validating the vCenter Operations Manager Enterprise Installation 34

Index 35

About This Book

The *VMware vCenter Operations Manager Enterprise Installation Guide* describes how to install, configure, and maintain VMware® vCenter Operations Manager Enterprise, an automated intelligence system for IT operations.

Intended Audience

This guide is intended for vCenter Operations Manager Enterprise system administrators. For information about using vCenter Operations Manager Enterprise to monitor the performance and efficiency of your network, please refer to the *vCenter Operations Manager Enterprise User's Guide*.

VMware Technical Publications Glossary

VMware Technical Publications provides a glossary of terms that might be unfamiliar to you. For definitions of terms as they are used in VMware technical documentation go to http://www.vmware.com/support/pubs.

Document Feedback

VMware welcomes your suggestions for improving our documentation. If you have comments, send your feedback to docfeedback@vmware.com.

VMware vCenter Operations Manager Enterprise Documentation

The documentation set for VMware vCenter Operations Manager Enterprise consists of the following documents.

- *VMware vCenter Operations Manager Enterprise Administration Guide*. Explains installation and administration of vCenter Operations Manager Enterprise
- *VMware vCenter Operations Manager Enterprise User's Guide*. Contains conceptual and procedural information on using vCenter Operations Manager Enterprise.
- *Analytics Guide for VMware vCenter Operations Manager Enterprise*. Contains conceptual information that describes the principles of the vCenter Operations Manager Enterprise analytics features.
- *Integration Guide for vCenter Operations Manager Enterprise and EMC Smarts*. Contains conceptual and procedural information on integrating vCenter Operations Manager Enterprise with EMC Smarts.
- VMware vCenter Operations Manager Enterprise online help. Contains conceptual and procedural information to help you complete your tasks when administering and using vCenter Operations Manager Enterprise.
- *VMware vCenter Operations Manager Enterprise Release Notes*. Contains late-breaking news and descriptions of known issues and workarounds.

Technical Support and Education Resources

The following sections describe the technical support resources available to you. To access the current version of this book and other books, go to http://www.vmware.com/support/pubs.

Online and Telephone Support

To use online support to submit technical support requests, view your product and contract information, and register your products, go to http://www.vmware.com/support.

Customers with appropriate support contracts should use telephone support for the fastest response on priority 1 issues. Go to http://www.vmware.com/support/phone_support.

Support Offerings

To find out how VMware support offerings can help meet your business needs, go to http://www.vmware.com/support/services.

VMware Professional Services

VMware Education Services courses offer extensive hands-on labs, case study examples, and course materials designed to be used as on-the-job reference tools. Courses are available onsite, in the classroom, and live online. For onsite pilot programs and implementation best practices, VMware Consulting Services provides offerings to help you assess, plan, build, and manage your virtual environment. To access information about education classes, certification programs, and consulting services, go to http://www.vmware.com/services.

Before Installing vCenter Operations Manager Enterprise

1

This chapter introduces the vCenter Operations Manager Enterprise server installation. It contains the following sections:

- "Overview" on page 7
- "Architecture" on page 7

Overview

Installing vCenter Operations Manager Enterprise consists of two procedures:

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

vCenter Operations Manager Enterprise 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 Enterprise environment:

- Environment size and landscape—the vCenter Operations Manager Enterprise 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

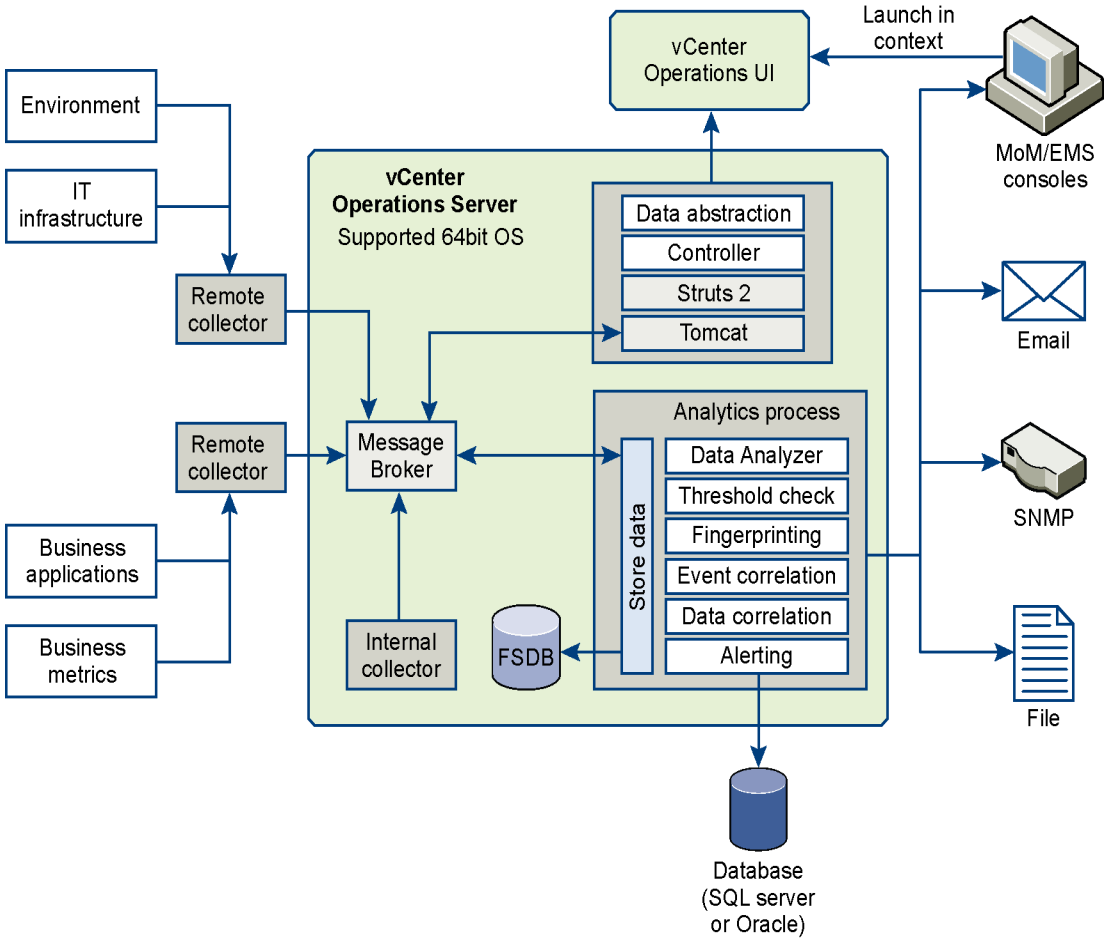
vCenter Operations Manager Enterprise's architecture allows for deployment flexibility. vCenter Operations Manager Enterprise is a Java-based application with four interdependent components:

- vCenter Operations Manager Enterprise server—Hosts the user interface and coordinates the functions of the software, including controlling communications between the other components.
- vCenter Operations Manager Enterprise 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 33.
- vCenter Operations Manager Enterprise collector—Acts as the gateway between vCenter Operations Manager Enterprise 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 Enterprise server. You can install the collector on a shared server.

- vCenter Operations Manager Enterprise messaging—The message bus (ActiveMQ) passes metric information between vCenter Operations Manager Enterprise components.

vCenter Operations Manager Enterprise 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. Figure 1-1 depicts vCenter Operations Manager Enterprise's logical architecture.

Figure 1-1. vCenter Operations Manager Enterprise Architecture



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

System Requirements 2

This chapter includes the system requirements for vCenter Operations Manager Enterprise server. It contains the following sections:

- "Operating System Requirements" on page 9
- "Hardware Requirements" on page 9
- "Database Server Requirements" on page 9
- "Hardware and Software Requirements for Client Systems" on page 10

Operating System Requirements

You must install vCenter Operations Enterprise Server on a supported operating system.

Table 2-1.

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 Enterprise Server on a 64-bit machine that meets specific hardware requirements.

Hardware Component	One Million Metrics	Two Million Metrics	Six Million Metrics
CPU	4CPU	8CPU	32CPU
Memory	14GB	28GB	84GB
Disk Storage	1.5TB FSBD: 1.5TB Database: 100GB	3TB FSDB: 2.8TB Database: 200GB	8.8TB FSDB: 8.4TB Database: 400GB

Database Server Requirements

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

vCenter Operations Enterprise 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.

- 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 Enterprise Server host should be less than one millisecond.

Hardware and Software Requirements for Client Systems

Table 2-2. Client System Hardware and Software Requirements

Component	Required
RAM	At least 2GB
Browser	■ Internet Explorer 7.x or 8.x ■ Mozilla Firefox 3.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

3

This chapter contains a checklist you can use to track the progress of vCenter Operations Manager Enterprise installation and configuration, including any changes you make from the default configuration settings. Changing the configuration settings is not covered in this manual—consult your VMware representative to determine the proper settings for your installation.

Installation Checklist

Action Item	Notes
Pre-Installation	
Acquire hardware based on sizing projection	
Download software from VMware FTP site	
Prepare the Database	
If using SQL Server:	
■ Install SQL Server	
■ Create a Windows or SQL authentication account with sufficient privileges to create a new database	
■ Run vCenter Operations Manager Enterprise database installer	
If using Oracle:	
■ Install Oracle	
■ Install and configure SQLPlus tool	
■ Create a user with sufficient Oracle privileges to create a tablespace and user schemas	
■ Run vCenter Operations Manager Enterprise database installer	
Prepare Hardware	
Confirm external port access to vCenter Operations Manager Enterprise server and the database server (defaults: vCenter Operations Manager Enterprise server if using remote collectors 80/1100/61616: DB server, if external 1433/1521)	
Confirm ports are reserved on vCenter Operations Manager Enterprise server (1099, 1100, 1199, 1201, 1202, 1203, 61616)	
Confirm response time between vCenter Operations Manager Enterprise server and database server is < 1 ms	

Action Item	Notes
Installation	
Install and configure the primary vCenter Operations Manager Enterprise server as described in "Installing vCenter Operations Manager Enterprise" on page 17.	
■ Test vCenter Operations Manager Enterprise database configuration	
■ Validate FSDB Home path	
■ Before completing configuration wizard, move all unused adapters (for example, Hyperic, ITM, SCOM, and so on) to the plugins directory	
(Optional) Install and configure a secondary server using the backup option	
(Optional) Install and configure any remote collectors, as described in "Installing a vCenter Operations Manager Enterprise Collector" on page 29.	

vCenter Operations Manager Enterprise Database Configuration

4

Before you can install vCenter Operations Manager Enterprise, you must create a database in either Microsoft SQL Server or Oracle to sore the vCenter Operations Manager Enterprise data. This chapter contains the following sections:

- "Prepare a SQL Database that Requires Super User Access" on page 13
- "Prepare a SQL Database that Requires Regular User Access" on page 14
- "Prepare a SQL Database When You Cannot Run Executable Files" on page 15
- "Preparing an Oracle Database on a Windows Host" on page 15

Prepare a SQL Database that Requires Super User Access

If you can run executable files, and your configuration and security policies allow vCenter Operations Manager Enterprise to use a user name that has database creation privileges (a super user) when it communicates with SQL Server, you can prepare the SQL database by running the `vcops_SQL_Server_xxxx.exe` program. This program is included in the vCenter Operations Manager Enterprise installation package.

Prerequisites

- Familiarize yourself with the database server requirements for vCenter Operations Manager Enterprise. See "Database Server Requirements" on page 9.
- 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 Enterprise installation package.

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. Extract the files from `vcops_sqlserver.zip` to any available directory.

   vcops_sqlserver.zip is located in the same folder as the vCenter Operations Manager Enterprise executable files.
3. Run `vcops_SQLServer_xxxx.exe`.
   a. Type the IP address of the database server, or type `ip_address\instance_name` to select a specific instance of the database.
   b. Select **SQL Server authentication**.

c Type the super user name and password that vCenter Operations Manager Enterprise will use when it connects to SQL Server. The database is crated under this user name

d Select **Make a database**. The default configuration values work for most installations. Do not click Advanced unless a VMware support representative instructs you to do so.

e Click **Run**.

4 When the process has fished, click **OK**.

5 In SQL Server Management Studio, confirm that the new database exists.

Prepare a SQL Database that Requires Regular User Access

If you can run executable files, and your configuration and security policies allow vCenter Operations Manager Enterprise to use a user name that has database creation privileges (a super user) when it communicates with SQL Server, you can prepare the SQL database by running the `vcops_SQL_Server_xxxx.exe` program. This program is included in the vCenter Operations Manager Enterprise installation package.

Prerequisites

- Familiarize yourself with the database server requirements for vCenter Operations Manager Enterprise. See "Database Server Requirements" on page 9.
- 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 Enterprise installation package.

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 Extract the files from `vcops_sqlserver.zip` to any available directory.

`vcops_sqlserver.zip` is located in the same folder as the vCenter Operations Manager Enterprise executable files.

3 In SQL Server, create a database to hold the vCenter Operations Manager Enterprise schema and data.

You can give the database any name. Keep a record of the database name. You will need the name when you configure the database.

4 In SQL Server Management Studio or another tool that runs SQL scripts, run `createuser.sql` under the database that you created. Use the same super user privileges that you used to create the database.

The script creates an SQL Server user that has the name vcops and a default password. You can change the user name and password after the user is created.

5 Run `vcops_SQLServer_xxxx.exe`.

a Type the IP address of the database server, or type `ip_address\instance_name` to select a specific instance of the database.

b Select **SQL Server authentication**.

c Type the user name and password for the SQL Server user that was created when you ran `createuser.sql`. The database is created under this user name

d Select **Upgrade an existing a database**. The default configuration values work for most installations. Do not click **Advanced** unless a VMware support representative instructs you to do so.

e Type the name of the database that you created when you created to hold the vCenter Operations Manager Enterprise schema and data.

f Click **Run**.

6 When the process has fished, click **OK**.

7 In SQL Server Management Studio, confirm that the new database exists.

Prepare a SQL Database When You Cannot Run Executable Files

If you cannot run executable files, you can prepare an SQL database for vCenter Operations Enterprise by running SQL scripts. The SQL scripts are included in the vCenter Operations Manager Enterprise installation package.

Prerequisites

- Familiarize yourself with the database server requirements for vCenter Operations Manager Enterprise. See "Database Server Requirements" on page 9.
- 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 Enterprise installation package.

Procedure

1 If you are using Windows authentication for SQL server, log on as a user with enough privileges to create a database.

2 Extract the files from `vcops_sqlserver.zip` to any available directory.

vcops_sqlserver.zip is located in the same folder as the vCenter Operations Manager Enterprise executable files.

3 In SQL Server, create a database to hold the vCenter Operations Manager Enterprise schema and data.

You can give the database any name. Keep a record of the database name. You will need the name when you configure the database.

4 In SQL Server Management Studio or another tool that runs SQL scripts, run `createuser.sql` under the database that you created.Use the same super user privileges that you used to create the database.

The script creates an SQL Server user that has the name vcops and a default password. You can change the user name and password after the user is created.

5 Attach to the database you created to hold the vCenter Operations Manager Enterprise schema and data. Use the user name and password for the SQL Server user that was created when you ran `createuser.sql`.

6 Run the `vcops_SQLServer_`*xxxx*`Schema.sql` script.

7 Run the `vcops_SQLServer_`*xxxx*`Data.sql` script.

8 In SQL Server Management Studio, verify that the new database exists.

Preparing 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 Enterprise data. The batch file is included in the vCenter Operations Manager Enterprisee installation package.

Prerequisites

Before you begin the process below, make sure you have done the following:

- Familiarize yourself with the database server requirements. See "Database Server Requirements" on page 9.

- 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 Enterprise installation package.

Procedure

1. In the tnsnames.ora file, add a connection name that the vCenter Operations Manager Enterprise server can use to connect to the Oracle server.
2. Navigate to the folder containing the vCenter Operations Manager Enterprise executable files.
3. Extract all the files from the `vcops.oracle.zip` file to any available directory.
4. Run `setup.bat`.

   For example,

   `setup.bat` *`connection user password`*

   connection is the connection name as defined in `tnsnames.ora`. The user you specify with *user* and *password* must have permission to log into the Oracle database as SYSDBA.
5. Verify that the tablespace and user schema were created properly.

Installing vCenter Operations Manager Enterprise

5

You can install the vCenter Operations Manager Enterprise 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. This chapter contains the following sections:

- "Installing vCenter Operations Manager Enterprise on Windows" on page 17
- "Installing vCenter Operations Manager Enterprise on Linux – GUI Mode" on page 20
- "Installing vCenter Operations Manager Enterprise on Linux – Console Mode" on page 22
- "Advanced vCenter Operations Manager Enterprise Configuration" on page 23

Installing vCenter Operations Manager Enterprise on Windows

To install vCenter Operations Manager Enterprise on a Windows server

1 Log on as a 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. We recommend using an administrator user name.

2 Navigate to the folder containing the vCenter Operations Manager Enterprise executable files.

3 Run the VMware-vCOps-1.0.exe file. The first page of the vCenter Operations Manager Enterprise installation wizard appears.

NOTE You can click **Cancel** to stop the process at any time.

4 Click **Next**.

5 Read the Patent Agreement in its entirety. Click **Next**.

6 Read the License Agreement in its entirety. Select **I Accept the Terms of the License Agreement** and click **Next**.

7 On the Choose Install Set page, click the icon beside **Full Installation** and click **Next**.

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

NOTE The **Collector** option installs just the vCenter Operations Manager Enterprise collector on a remote server to improve performance and accessibility; see "Installing a vCenter Operations Manager Enterprise Collector" on page 29.

8 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\vcenter-operations` beneath the default program installation folder for your system. We recommend you accept the default. Click **Next**.

NOTE Throughout this manual, we refer to the folder where you install vCenter Operations Manager Enterprise as *vcenter-ops*.

9 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.

10 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 Enterprise Collector and the vCenter Operations Manager Enterprise Server will be via firewall or HTTP proxy.
- vCenter Operations Manager Enterprise will be monitoring more than 100,000 resources.
- Replication is enabled between the primary vCenter Operations Manager Enterprise server and a backup server.
- For security reasons, you do not want the vCenter Operations Manager Enterprise components to use default passwords and ports.

If you choose **Basic**, continue this procedure. If you choose **Advanced**, continue with "Advanced vCenter Operations Manager Enterprise Configuration" on page 23.

11 On the Full Configuration page, select **Primary** or **Backup** under **Server Configuration**.

NOTE If you configure a backup server, if there is a problem with your primary server you can use the configuration wizard to make the backup server the primary server. All remote collectors will then send metrics to the new primary server.

12 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.

13 If you are using an Oracle database, type its System Identifier in the **SID** field.

14 In the **Database Host** field, enter the IP address of the database server.

15 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.

16 If you are using a SQL Server database, enter the name of the vCenter Operations Manager Enterprise database in the **Database Name** field.

17 If you are using a SQL Server database and need to specify an **Instance Name** for the database, type it in that 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.

NOTE vCenter Operations Manager Enterprise 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 Enterprise server.

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 Enterprise user with the Administrative Access right will be able to post data to vCenter Operations Manager Enterprise.

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 Enterprise 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.

NOTE vCenter Operations Manager Enterprise sends alert e-mail messages containing hyperlinks to the vCenter Operations Manager Enterprise 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 Enterprise server.You should not set the host name to **`localhost`**.

---

24 In the **FSDB Home** (File System Database) field, type the path to the directory where vCenter Operations Manager Enterprise 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 Enterprise 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 Enterprise to use to send e-mail messages.

26 In **Recipient**, enter one or more e-mail addresses; if you enter more than one, separate them with commas (,). If a vCenter Operations Manager Enterprise service fails or experiences problems, an e-mail will be sent to each recipient.

27 If desired, click the **Test** button to test the e-mail configuration. This checks the SMTP host and port settings and attempts to send an e-mail message to the entered recipients. It displays an appropriate message if any of its tests fail. However, it cannot ensure that the e-mail 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:

   a Choose **No** and click **Done**.

   b 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.

vCenter Operations Manager Enterprise installation is complete.

Installing vCenter Operations Manager Enterprise on Linux – GUI Mode

Prerequisites

- The Linux user account for installing vCenter Operations Manager Enterprise 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.

Before the Installation

If a previous version of vCenter Operations Manager Enterprise is already installed on the Linux host, you must stop its processes before you install vCenter Operations Manager Enterprise. 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
```

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 From within any standard terminal emulator for X Windows (for example, X-Win32), execute the program vcops.bin. The first page of the vCenter Operations Manager Enterprise installation wizard appears.

4 Click **Next**.

5 Read the Patent Agreement in its entirety. Click **Next**.

6 Read the License Agreement in its entirety. Select **I Accept the Terms of the License Agreement** and click **Next**.

7 On the Choose Install Set page, click the icon beside **Full Installation** and click **Next**. This installs all vCenter Operations Manager Enterprise components. (If you are trying to install vCenter Operations Manager Enterprise on a 32-bit system, **Full Installation** will not be a choice. You can install only a vCenter Operations Manager Enterprise remote collector or the separate analytics processor on a 32-bit system.)

NOTE The **Collector** option installs just the vCenter Operations Manager Enterprise collector on a remote server to improve performance and accessibility. The procedure for this is in the *vCenter Operations Manager Enterprise User's Guide*. The **Collector with HTTP Post & HP OV Adapters** option installs the Tomcat Web Server; this raises security and resource issues, so we recommend you do this only if advised to by vCenter Operations Manager Enterprise support. For contact information, please see "Online and Telephone Support" on page 6.

---

8 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**.

9 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.

10 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 Enterprise Collector and the vCenter Operations Manager Enterprise Server will be via firewall or HTTP proxy.
- vCenter Operations Manager Enterprise will be monitoring more than 100,000 resources.
- Replication is enabled between the primary vCenter Operations Manager Enterprise server and a backup server.
- You are installing vCenter Operations Manager Enterprise to be used as a backup server.
- For security reasons, you do not want the vCenter Operations Manager Enterprise components to use default passwords and ports.

If you choose **Basic**, continue this procedure. If you choose **Advanced**, continue with "Advanced vCenter Operations Manager Enterprise Configuration" on page 23.

11 On the Full Configuration page, select **Primary** or **Backup** under **Server Configuration**.

NOTE If you configure a backup server, if there is a problem with your primary server you can use the configuration wizard to make the backup server the primary server. All remote collectors will then send metrics to the new primary server.

---

12 In the **Database Type** field, choose **Oracle** as this is the only database supported on Linux.

13 Type the Oracle database's System Identifier in the **SID** field.

14 In the **Database Host** field, enter the IP address of the database server.

15 In the **Database Port** field, leave the default entry (**`1521`**) unless you installed Oracle using a different port number.

16 In the **User Name** and **Password** fields, enter the user name and password for a user with permission to read and write to the Oracle schema.

17 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.

18 In **vCenter Operations Server Configuration**, choose **HTTP** or **HTTPS**. This sets the protocol to use for client connections to the vCenter Operations Manager Enterprise server.

19 If you want adapters which use the HTTP post method to use Web authentication, check the **HTTP Post adapter web authentication enabled** box.

20 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.

21 To enable Internet connections to the vCenter Operations Manager Enterprise 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.

NOTE vCenter Operations Manager Enterprise sends alert e-mail messages containing hyperlinks to the vCenter Operations Manager Enterprise 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 Enterprise server.You should not set the host name to **`localhost`**.

---

22 In the **FSDB Home** (File System Database) field, type the path to the directory where vCenter Operations Manager Enterprise 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 system where the vCenter Operations Manager Enterprise software is installed.

23 In **SMTP Host** and **SMTP Port**, enter the host name or IP address and port number for the SMTP server for vCenter Operations Manager Enterprise to use to send e-mail messages.

24 In **Recipient**, enter one or more e-mail addresses; if you enter more than one, separate them with commas (,). If a vCenter Operations Manager Enterprise service fails or experiences problems, an e-mail will be sent to each recipient.

25 Click **Finish** to complete the installation. The Install Complete page appears.

26 On the Install Complete page, click **Done**.

27 If the server host has two IP addresses:

   a Choose **No** and click **Done**.

   b Using a text 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.

vCenter Operations Manager Enterprise installation is complete. Please contact vCenter Operations Manager Enterprise support or professional services for assistance in adjusting the vCenter Operations Manager Enterprise configuration to meet your needs.

Installing vCenter Operations Manager Enterprise on Linux – Console Mode

Before the Installation

If a previous version of vCenter Operations Manager Enterprise is already installed on the Linux host, you must stop its processes before you install vCenter Operations Manager Enterprise. 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. For a description of the information required at each prompt, see steps 5 and after on page 20.

After finishing the installation, see "Advanced vCenter Operations Manager Enterprise Configuration" on page 23.

Advanced vCenter Operations Manager Enterprise Configuration

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

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 Enterprise server.

3 To enable Internet connections to the vCenter Operations Manager Enterprise 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 Enterprise sends alert e-mail messages containing hyperlinks to the vCenter Operations Manager Enterprise 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 Enterprise 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 Enterprise Web JVM process:

   - **Maximum Memory** – maximum heap size allocated to the vCenter Operations Manager Enterprise user.
   - **Maximum Permanent Memory** – maximum heap size allocated to compile and run JVM classes.

7 Click **Next**.

   a Under **Memory Configuration**, set the following for the vCenter Operations Manager Enterprise 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.

   b Under **RMI Configuration**, set the host and port for RMI access to the analytics service.

   c 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 Enterprise software is installed.

   d Under **Replication Server**, check the **Enable Replication** box if you want to enable FSDB replication. When enabled, vCenter Operations Manager Enterprise 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**.

   e Check **Enable Synchronization** is 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 Enterprise installation.

8 Click **Next**.

   a Under **Memory Configuration**, set the following for the vCenter Operations Manager Enterprise Message Queue JVM process:

      - **Maximum Memory** – maximum heap size allocated to the vCenter Operations Manager Enterprise user.
      - **Maximum Permanent Memory** – maximum heap size allocated to compile and run JVM classes.

   b Under **Message Queue Configuration**, check the Enable JMX box if you want to enable JMX monitoring on vCenter Operations Manager Enterprise. If you enable JMX monitoring, set the following MQ parameters: **Host**, **Port**, **Protocol**, **Collector Queue**, **Controller Queue**, **Data Queue**, **User Name**, and **Password**.

9 Click **Next**.

10 Configure collection settings.

   a Under **Memory Configuration**, set the following for the vCenter Operations Manager Enterprise Collector JVM process:

      - **Maximum Memory** – maximum heap size allocated to the vCenter Operations Manager Enterprise resources.
      - **Maximum Permanent Memory** – maximum heap size allocated to compile and run JVM classes.

   b Under **Collector Configuration**, set the following connection parameters for the collector:

      - **Collector Name**
      - **RMI Port**
      - **Max Threads**
      - **Min Data Send Size** – this is measured by the number of vCenter Operations Manager Enterprise resources.
      - **Heart Beat Sleep Time** – this checks the health of the collector. Measured in milliseconds.

   c Check the **Enable Http Proxy** box to enable HTTP Proxy from the collector to vCenter Operations Manager Enterprise. If you enable it, set the **Host** and **Port**.

   d In **SMTP Host** and **SMTP Port**, enter the host name or IP address and port number for the SMTP server for vCenter Operations Manager Enterprise to use to send e-mail messages.

   e In **Recipient**, enter one or more e-mail addresses; if you enter more than one, separate them with commas (,). If a vCenter Operations Manager Enterprise service fails or experiences problems, an e-mail will be sent to each recipient.

11 Click **Next**.

NOTE The settings on this page are only used if the vCenter Operations Manager Enterprise server is running in Backup mode.

   a Under **Message Queue Configuration**, set the parameters for the replication server: **Host**, **Port**, **Protocol**, **Collector Queue**, **Controller Queue**, **Data Queue**, **User Name**, and **Password**.

   b 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.

12 Click **Next**.

13 Configure the Database settings.

   a In the **Database Type** field select **SQL** or **Oracle**. Fields appropriate for the selected database appear on the page. This figure shows the fields for a SQL Server database.

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

   b If you are using an Oracle database, type its System Identifier in the **SID** field.

c In the **Database Host** field, enter the IP address of the database server.

d 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.

e If you are using a SQL Server database, enter the name of the vCenter Operations Manager Enterprise database in the **Database Name** field.

f If you are using a SQL Server database and need to specify an **Instance Name** for the database, type it in that field.

g 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 Enterprise 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.

---

h 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.

14 Click **Finish** to complete the installation. The Install Complete page appears.

15 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 addresses:

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.

Managing Program Groups 6

Installing vCenter Operations Manager Enterprise on Windows creates a vCenter Operations Manager Enterprise program group beneath the VMware program group on the Windows **Start**, **All Programs** menu. This program group contains four items:

- **Configure VMware vCenter Operations** – Lets you change vCenter Operations Manager Enterprise's 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 Enterprise-related services on this server:
  - vcopsWebService
  - AnalyticsService
  - ActiveMQ
  - CollectorService
  - DTProcessorService (runs only if Analytics Processor is installed)
  - ReplicationServerService (runs only on a vCenter Operations Manager Enterprise replication server)
- **Stop all services** – Stops all vCenter Operations Manager Enterprise-related services, as listed above.
- **Uninstall** – Uninstalls vCenter Operations Manager Enterprise. This uninstalls the components installed by the vCenter Operations Manager Enterprise installer—the vCenter Operations Manager Enterprise server, vCenter Operations Manager Enterprise collector, and analytics. It does not uninstall any adapters, or any vCenter Operations Manager Enterprise components on remote servers.

Installing a vCenter Operations Manager Enterprise Collector 7

This chapter describes how to install the vCenter Operations Manager Enterprise. It contains the following sections:

- "Installing a vCenter Operations Manager Enterprise Collector" on page 29

Installing a vCenter Operations Manager Enterprise 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. This procedure is written for Windows; follow similar steps for a Linux remote host.

1. Log on as a user with enough privileges to create services. We recommend using an administrator user name.
2. Navigate to the folder containing the vCenter Operations Manager Enterprise executable files.
3. Run the vcops.exe file. The first page of the vCenter Operations Manager Enterprise installation wizard appears.
4. Click **Next**.
5. Read the License Agreement in its entirety and select **I Accept the Terms of the License Agreement**.
6. Click **Next**.
7. On the Choose Install Set page, click the icon next to **Collector** and click **Next**.
8. 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\vcenter-operations` beneath the default program installation folder for your system. Click **Next**.
9. 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.
10. On the Configuration Mode page, select **Basic**.
11. 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.
12. In **vCenter Operations Server Configuration**, choose **HTTP** or **HTTPS**. This sets the protocol to use for communicating heartbeat signals to the vCenter Operations Manager Enterprise server. This should match the protocol set on the vCenter Operations Manager Enterprise Server.
13. In **vCenter Operations Server Host**, enter the IP address of the vCenter Operations Manager Enterprise Server.
14. In **vCenter Operations Server Port**, enter the same port set on the vCenter Operations Manager Enterprise Server.

15 In **Host**, enter the IP address of the message queue. This is typically the same as the vCenter Operations Manager Enterprise Server host.

16 In **Port**, leave the default entry (61616) unless MQ is using a different port number.

17 Click **Finish** to complete the installation. The Install Complete page appears. Click **Done**.

18 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 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.

   c Save your change and close the file.

   d After changing wrapper.conf, restart the collector service:

   - If the host uses Windows, from the Windows Start menu, select **Control Panel**, **Administrative Tools**, **Services**. Restart the **CollectorService** service.
   - If the host uses Linux, enter these commands:

     ```
     cd vcenter-ops/collector/bin
     /CollectorService.sh restart
     ```

Installation of the vCenter Operations Manager Enterprise collector is complete.

Installing a vCenter Operations Manager Adapter

8

This chapter 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 itself and allows you to manage resource tags, as described later in this manual.
- The HTTP Post adapter – This is a generic adapter used to push data to vCenter Operations Manager Enterprise via HTTP.
- The Container adapter – vCenter Operations Manager Enterprise uses this adapter to create container resources.

All other adapter files are supplied separately. Ask your vCenter Operations Manager Enterprise representative for the installation files for the adapters you need. Once you have the adapter installation files, follow the procedure below. See the documentation supplied with the adapter for possible additional instructions.

You need to install an adapter only on the vCenter Operations Manager Enterprise server, not on any remote vCenter Operations Manager Enterprise collectors you have installed. The adapter is "pushed" to all remote collectors when you click the **Describe** button in step 5, below.

To install an adapter

1. Open the compressed file supplied by VMware for the adapter and extract all files from it into a temporary folder.
2. In the temporary folder, execute the *AdapterName*_install.exe file.
3. Follow the instructions on the setup dialog boxes.
4. Sign in to vCenter Operations Manager Enterprise as an administrator.
5. From the **Admin** menu, select **Support**.
6. On the **Info** tab, click the **Describe** icon in the **Adapters Info** pane. This causes the vCenter Operations Manager Enterprise server to find the new adapter files, gather information about the abilities of the adapter, and update the vCenter Operations Manager Enterprise user interface with information about the adapter. It also installed the adapter on any remote collectors.
7. You can now define credentials for the new adapter and create instances for it.

Installing the Analytics Processor 9

This chapter describes how to install and configure the vCenter Operations Manager Enterprise analytics processor. It contains the following sections:

- "Installing the Processor" on page 33
- "Validating the vCenter Operations Manager Enterprise Installation" on page 34

The vCenter Operations Manager Enterprise server installation includes a process which performs all of the various vCenter Operations Manager Enterprise analytics calculations: dynamic thresholds, fingerprinting, and so on. vCenter Operations Manager Enterprise 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.

Installing the 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.

Procedure

1. Perform the first six steps of the vCenter Operations Manager Enterprise server installation, as described in either "Installing vCenter Operations Manager Enterprise on Windows" on page 17 or "Installing vCenter Operations Manager Enterprise on Linux – Console Mode" on page 22.
2. On the Choose Install Set page, select **Analytics Processor** and click **Next**.
3. 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**.
4. The Pre-installation Summary page lists the components that will be installed. Click **Install** to begin the installation.
5. On the DT Processor Configuration page, type the host name or IP address of the vCenter Operations Manager Enterprise 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**.
6. On the Install Complete page, click **Done**.
7. On the vCenter Operations Manager Enterprise server host, edit the following file `vcenter-ops\user\conf\analytics\advanced.properties`.
8. Find the property **distributedDTCalculationEnabled** and set it to **true**.

9 Save your change and close the file.

10 Restart the Analytics service on the vCenter Operations Manager Enterprise server host.

11 Check to see if the service stars on the remote host. The service name is Analytics Processor.

Installation of the DT processor is complete.

Validating the vCenter Operations Manager Enterprise Installation

After completing the installation of your vCenter Operations Manager Enterprise server, you can perform the following procedure to make sure the installation completed successfully and vCenter Operations Manager Enterprise is operating as it should. (These instructions are for a Windows server. Adjust them as necessary if your vCenter Operations Manager Enterprise server runs on Linux.)

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**) and make sure the vCenter Operations Manager Enterprise services are running: ActiveMQ, vcopsWebService, AnalyticsService, CollectorService.

3 In 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 Enterprise resources show on the right.

6 After 15 minutes, validate that the health for the vCenter Operations Manager Enterprise 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 Analytics` folder, the `analytics.log`
   - In the `vCenter Operations Collector` folder, the `collector.log`

Index

A

architecture **7**

C

collector
- installation **29**
- setting IP address **19**, **22**, **25**, **30**, **33**

I

installation **7**
- collector **29**
- on Linux (console mode) **22**
- on Linux (GUI mode) **20**
- on Windows **17**
- preparation **7**
- preparing the database **13**
- vCenter Operations Enterprise server **17**

L

Linux installation (console mode) **22**
Linux installation (GUI mode) **20**

P

product architecture **7**
program group **27**

R

reconfiguring vCenter Operations Enterprise **27**

S

services, starting and stopping **27**

U

uninstalling vCenter Operations Enterprise **27**

W

wrapper.conf file **19**, **22**, **25**, **30**, **33**