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

https://docs.vmware.com/

The VMware Web site also provides the latest product updates.

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

docfeedback@vmware.com
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About This User's Guide


Intended Audience

This guide is intended for service provider administrators with access privileges to manage vCloud Usage Meter. These individuals must be familiar with data center operations.

Related Documentation

In addition to this guide, see the following documentation for vCloud Usage Meter and VMware Cloud Provider Program:

- vCloud Usage Meter Release Notes - contains information about the new features and issues fixed in the latest release
- vCloud Usage Meter API Reference - contains information about the vCloud Usage Meter REST APIs
- VMware Cloud Provider Program Guide - contains information about the VMware Cloud Provider Program and the service provider reporting requirements
- VMware Cloud Provider Program Product Usage Guide - contains information about the VMware products available for service providers and the usage points for each product

Note You can download the VMware Cloud Provider Program Guides at http://www.vmware.com/partners/service-provider/

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.
### Updated Information

This vCloud Usage Meter 3.6 User’s Guide is updated with each release of the product or when necessary.

This table provides the update history of the vCloud Usage Meter 3.6 User’s Guide.

<table>
<thead>
<tr>
<th>Revision</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 SEP 2017</td>
<td>- Renamed vCloud Air Network to VMware Cloud Provider Program.</td>
</tr>
<tr>
<td></td>
<td>- Renamed chapter Troubleshooting vCloud Usage Meter to Chapter 9, “vCloud Usage Meter Administration,” on page 49.</td>
</tr>
<tr>
<td></td>
<td>- Added topics “Error Management,” on page 52 and “Change the vCloud Usage Meter Root Password,” on page 54.</td>
</tr>
<tr>
<td></td>
<td>- Updated the information in the following topics:</td>
</tr>
<tr>
<td></td>
<td>- “vCenter Server Operational Requirements,” on page 11</td>
</tr>
<tr>
<td></td>
<td>- Chapter 4, “Upgrading vCloud Usage Meter,” on page 15</td>
</tr>
<tr>
<td></td>
<td>- “Migrate Data to vCloud Usage Meter 3.6.0.1,” on page 15</td>
</tr>
<tr>
<td></td>
<td>- “Configure Service Provider Details,” on page 17</td>
</tr>
<tr>
<td></td>
<td>- “Configuring Email Settings,” on page 18</td>
</tr>
<tr>
<td></td>
<td>- “Add vCenter Server,” on page 26</td>
</tr>
<tr>
<td></td>
<td>- “Add vCloud Director,” on page 29</td>
</tr>
<tr>
<td></td>
<td>- “License Sets and Billing Categories,” on page 44</td>
</tr>
<tr>
<td></td>
<td>- “Generate a Product Consumption Report,” on page 47</td>
</tr>
<tr>
<td></td>
<td>- “Back up the vCloud Usage Meter Database,” on page 54</td>
</tr>
<tr>
<td></td>
<td>- “Technical Support,” on page 56</td>
</tr>
<tr>
<td>13 JUL 2017</td>
<td>Initial release.</td>
</tr>
</tbody>
</table>
Introduction to vCloud Usage Meter

vCloud Usage Meter is a virtual appliance that is installed on a vCenter Server instance. vCloud Usage Meter meters, collects product consumption data, and generates reports for products that are part of the VMware VMware Cloud Provider Program bundles.

Service providers send the data reported in the monthly reports to their VMware VMware Cloud Provider Program aggregator for diagnostic purposes.

For information about the VMware VMware Cloud Provider Program, see http://www.vmware.com/partners/service-provider.

Figure 2-1. Service Provider Workflow

Accessing vCloud Usage Meter After Installation

After you install vCloud Usage Meter, there are several methods for accessing settings and data.
### Table 2-1. Access Methods

<table>
<thead>
<tr>
<th>Access Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual machine console</td>
<td>Provides access to configuration settings.</td>
</tr>
<tr>
<td>Web application</td>
<td>Provides menus, tabs, and pages to manage settings, metering, and reports.</td>
</tr>
<tr>
<td>Java Management Extensions (JMX) service</td>
<td>Provides access to internal data such as database size, customer count, customer rules count.</td>
</tr>
<tr>
<td>REST API</td>
<td>Provides access to the vCloud Usage Meter REST API for external clients such as portals, scripts, and other applications. See the vCloud Usage Meter API Reference.</td>
</tr>
</tbody>
</table>

### About Data Collections

vCloud Usage Meter collects consumption data from vCenter Server instances and other products.

- Collected data from the VMware vSphere® host includes DNS name, RAM (physical memory), and license type.
- Collected data from the virtual machine includes the VMware vCenter® name, hostname, allocated and billing vRAM (virtual memory), CPU, instance universal unique identifier (UUID), and location in the vSphere inventory.
- Collected data from products includes billing vRAM, storage, and other metrics specific to the product.

vCloud Usage Meter stores collected data in the VMware® vFabric™ Postgres database of the virtual appliance itself.

### About Customer and Rule Management

vCloud Usage Meter enables you to add, edit, delete, export, and import customers that use service provider resources. After you create customers, you create rules allowing you to associate vCenter Server objects with a customer’s cloud infrastructure. Customer and rule management enables monthly customer product consumption reporting and also aids in planning, billing, general account management, dispute resolution.

With customer rules, you gain granular control of a vCenter Server inventory, where you can link objects in the inventory from as high as the vCenter Server down to the individual unique ID for a virtual machine or IP address.

### About Reports

vCloud Usage Meter allows the end user to generate various reports to monitor and track resource consumption. You can generate and browse a report at any time, and can export it as a tab-separated file text file or as a ZIP file. You can also set up vCloud Usage Meter to automatically generate sets of reports and email them to an aggregator.
Installing vCloud Usage Meter

vCloud Usage Meter is a virtual appliance that you install by using vSphere Web Client. Installation of the virtual appliance includes verifying access on the appropriate TCP ports, setting the time zone and passwords, and configuring your network.

The size of your data set and vCenter Server inventories that vCloud Usage Meter meters, affects its speed of data collection, so you must note system requirements and metering capacities. For large data sets and vCenter Server inventories, consider installing more than one vCloud Usage Meter virtual appliance. You can consolidate reported data from multiple virtual appliances in monthly reports to your VMware VMware Cloud Provider Program aggregator.

To avoid configuration problems and ensure accurate metering of products, the vCloud Usage Meter time must be synchronized with other product hosts. A best practice is to use the same NTP server for the vCloud Usage Meter host and the metered products hosts.

To upgrade from previous versions, see Chapter 4, “Upgrading vCloud Usage Meter,” on page 15.

This chapter includes the following topics:

- “vCenter Server Operational Requirements,” on page 11
- “TCP Port Configuration,” on page 12
- “Install vCloud Usage Meter,” on page 12
- “Configuring an IP Pool for vCloud Usage Meter,” on page 13
- “Change the Time Zone,” on page 13
- “Configure the Web Application Password,” on page 14

vCenter Server Operational Requirements

To collect accurate usage data, vCloud Usage Meter requires specific configuration of the metered vCenter Server instances.

Lookup Service

The vCloud Usage Meter appliance connects to the single sign-on server (lookup service) before connecting to a vCenter Server. If the lookup service does not reside on the same vCenter Server, enter the IP address of the single sign-on server when registering your vCenter Server in the vCloud Usage Meter Web application. The vCloud Usage Meter assumes that the default port number of the lookup service is 7444.

If you do not meet the vCenter Server requirement, all vCenter Server collections fail with the following error message in the Monitor tab of the Web application: vCenter Server connection failed. Please make sure that vCenter Server SSO service is up, and it is NTP configured.
vCenter Server Clusters

Service providers normally host customer and administrative virtual machines on a single vCenter Server. Tenants consume compute resources from the customer virtual machines, whereas service providers use the administrative virtual machines for internal purposes. To ensure accurate reporting to service providers and to VMware, you must apply a degree of segregation between customer and administrative virtual machines. The best practice is to create a dedicated cluster for both types. For example, create a Customer cluster to host all customer VMs and a Management cluster to host all VMs vital to the service provider business operations. The separation of VMs based on their function ensures that vCloud Usage Meter reports do not contain usage data for mixed customer and administrative VMs.

ESXi Licenses

After you create dedicated clusters for VMs based on their functions, you must assign proper ESXi licenses to the cluster hosts. Select VCPP license for both Customer and Management clusters. For more information, see “License Sets and Billing Categories,” on page 44 and “Manage Billing Categories,” on page 44.

TCP Port Configuration

To access vCloud Usage Meter, use predetermined TCP ports. If you manage network components from outside a firewall, you might need to configure the firewall to allow access on the appropriate ports.

<table>
<thead>
<tr>
<th>Port</th>
<th>Source</th>
<th>Target</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>vCloud Usage Meter</td>
<td>Horizon Workspace - Data</td>
<td>Used for collecting data.</td>
</tr>
<tr>
<td>443</td>
<td>vCloud Usage Meter</td>
<td>vCenter Server</td>
<td>vsphere API. If default value does not work, you can change it.</td>
</tr>
<tr>
<td>8443</td>
<td>Client browser</td>
<td>vCloud Usage Meter</td>
<td>Used for the Web application.</td>
</tr>
<tr>
<td>9003</td>
<td>Jconsole or custom JMX client</td>
<td>vCloud Usage Meter</td>
<td>Used for Java Management Extensions (JMX).</td>
</tr>
<tr>
<td>9007</td>
<td>vCloud Usage Meter</td>
<td>Site Recovery Manager 5.x</td>
<td>Used for invoking APIs on the server.</td>
</tr>
<tr>
<td>9086</td>
<td>vCloud Usage Meter</td>
<td>Site Recovery Manager 6.x</td>
<td>Used for all Site Recovery Manager management traffic.</td>
</tr>
</tbody>
</table>

Install vCloud Usage Meter

Use the vSphere Web Client to install the vCloud Usage Meter virtual appliance.

Prerequisites

- Download the vCloud Usage Meter OVA installation file from the product page and save it locally.
- Verify that you have access and sufficient privileges to deploy an OVA with the vSphere Web Client.

Procedure

1. In the vSphere Web Client, navigate to Hosts and Clusters.
2. Choose a target host or cluster for your vCloud Usage Meter and right-click it in the vSphere Web Client Navigator.
3. Select Deploy OVF Template from the drop-down menu.
4 In the Deploy OVF Template dialog box, specify the location of the saved OVA file, and click Next.

5 Verify the OVF Template details and click Next.

6 Accept the end-user license agreement.

7 Specify the name and target location for the appliance.

8 Select the installation target resource in which to run the vCloud Usage Meter.
   You can choose a cluster, a host, a vApp, or a resource pool.

9 Select a location to store the vCloud Usage Meter files.
   Select the virtual disk format, the VM storage policy, and the datastore for the appliance.

10 Select a network for the installed template.
    By default, the appliance is deployed with IP allocation set to DHCP and protocol set to IPv4. Do not
    change the IP protocol to IPv6.

11 Set the passwords for the root and usgmrtr accounts.
   **Note** Keep a record of the root password. The password cannot be recovered, but can be changed. See
   “Change the vCloud Usage Meter Root Password,” on page 54 for instructions about changing the
   vCloud Usage Meter root password.

12 Review the information in the Ready to complete dialog box and click Finish.
   Wait for the process to complete.

**What to do next**

If you selected fixed for the IP allocation policy, configure an IP pool for vCloud Usage Meter. See

Set the vCloud Usage Meter appliance vRAM as needed. Most service providers can run well with 3600 MB
(default). Memory use can be monitored on the Support page and adjusted as needed.

**Configuring an IP Pool for vCloud Usage Meter**

When you install vCloud Usage Meter, you must create an associated IP pool.
Because the OVF template uses network properties, vCloud Usage Meter might not work correctly unless
assigned networks have an associated IP pool. If not, the vCloud Usage Meter virtual machine does not
power on and users get a message that there is no associated network protocol profile.
To configure an IP Pool for your vCloud Usage Meter appliance, you must use IPv4 configuration.
For more information about configuring a network protocol profile, see Add a Network Protocol Profile
topic in the *VMware vSphere Documentation Center*.

**Change the Time Zone**

The vCloud Usage Meter virtual machine time is not synchronized at OVF deployment, which can cause
time reporting inconsistencies in your collections. You can change the time zone in the vCloud Usage Meter
virtual machine console.

**Important** If you are migrating data from older vCloud Usage Meter versions, the time zone of the new
vCloud Usage Meter appliance must match the time zone of the old instance to avoid report discrepancies.

A best practice to avoid connection timeout problems is to synchronize the vCloud Usage Meter with the
time of the metered products.
**Prerequisites**
Verify that the vCloud Usage Meter virtual machine is powered on.

**Procedure**
1. In the vSphere Web Client, start the vCloud Usage Meter remote console.
2. Select **Set Timezone** and press Enter.
3. Change your time zone.
4. Log in as root.
5. Type `service tomcat restart` to restart the Tomcat service.
6. Type `exit` to return to the virtual machine console.

**Configure the Web Application Password**
Configure your Web application password and note the URL so you can provide credentials to your users.

**Prerequisites**
Verify that the vCloud Usage Meter virtual machine is powered on.
Verify that you have installed VMware Remote Console (VMRC). For more information about the VMRC, see About VMware Remote Console in the VMware vSphere 6.5 Documentation Center.

**Procedure**
1. Locate the vCloud Usage Meter virtual machine in the vSphere Web Client Navigator and select it.
2. Go to the **Summary** tab.
3. Right-click the virtual machine and select **Open Console**.
4. Select one of the console connection types.
   - To connect to the virtual machine console using a web browser, select **Web Console**. A best practice is to use the **Web Console** connection.
   - To connect to the virtual machine console using a standalone remote console application, select **VMware Remote Console**.
5. Log in with **usgmtr** user name and the password that was configured at installation and press Enter.
6. To create your Web application password, at the prompt, type `webpass` and press Enter.
7. Type a Web application password and press Enter.
8. Type `exit` to return to the virtual machine console.

**Note** Keep a record of the Web Application password.

**What to do next**
- Note the URL for accessing the vCloud Usage Meter Web application that appears in the console.
- Use **admin** as user name and the password configured for **webpass** to log in to the Web application.
Upgrading vCloud Usage Meter

vCloud Usage Meter 3.6.0.1 is installed as a new appliance. After you install and configure the vCloud Usage Meter 3.6.0.1 appliance, you can optionally migrate data from vCloud Usage Meter 3.5.0.0 and 3.6.0.0.

To upgrade to vCloud Usage Meter 3.6.0.1, you can deploy and configure a new appliance. Alternatively, you can deploy a new vCloud Usage Meter 3.6.0.1 appliance and migrate configuration and collected consumption data from your vCloud Usage Meter 3.5.0.0 or 3.6.0.0 appliance.

Regardless if you migrated data, or deployed and configured a new appliance, run both vCloud Usage Meter appliances for at least two months. Use the vCloud Usage Meter 3.6.0.1 for reporting. Then shut down and backup the old vCloud Usage Meter appliance.

VMware Cloud Provider Program stipulates that Service Providers keep the product consumption data for 24 months going back from the current month.

Migrate Data to vCloud Usage Meter 3.6.0.1

You can migrate data from vCloud Usage Meter 3.5.0.0 and 3.6.0.0 to your vCloud Usage Meter 3.6.0.1 appliance.

vCloud Usage Meter 3.6.0.1 is installed as a new appliance. You can migrate the configuration data, which includes all data displayed on the Manage page, and the collected measurements data from vCloud Usage Meter 3.5.0.0 or 3.6.0.0.

Prerequisites

- Back up or take a snapshot of the source vCloud Usage Meter appliance from which you are migrating. For more information, see “Back up the vCloud Usage Meter Database,” on page 54.
- Verify that you have the TCP host name or IP address and usgmtr password of the source vCloud Usage Meter appliance.

Procedure

1. Log in to the source vCloud Usage Meter console as root.
2. Turn on the sshd service in the source vCloud Usage Meter appliance by running the following command.
   ```
   service sshd start
   ```
3. Log in to the target vCloud Usage Meter 3.6.0.1 console as usgmtr.
To migrate data to the target vCloud Usage Meter 3.6.0.1 appliance, run the following command.

```bash
migrateum <hostname>
```

**IMPORTANT** This operation overwrites the local vCloud Usage Meter data.

The `<hostname>` is the TCP host name or IP address of the source vCloud Usage Meter appliance that you are migrating data from.

The `migrateum` command uses `ssh` and `scp` to export the database from the source system and copy it and the keystore files to vCloud Usage Meter 3.6.0.1. You are prompted one time for the `usgmtr` password of the source vCloud Usage Meter appliance. Confirm that you want to migrate vCloud Usage Meter data.

You must enter the `usgmtr` password of the source vCloud Usage Meter and confirm that you want to proceed with the data migration.

In the source vCloud Usage Meter console, disable the `sshd` service by running the following command.

```bash
service sshd stop
```

The password for the vCloud Usage Meter 3.6.0.1 Web application is the same as the password of the source system. You can change it by using the `webpass` command. All trusted self-signed VMware product certificates you accepted on the source vCloud Usage Meter are copied to vCloud Usage Meter 3.6.0.1. You can run the `migrateum` script more than one time.

**IMPORTANT**
- To retrieve additional certificates and validate product connectivity, after migrating configuration and measurements data, click **Edit** and **Save** for each product in the **Manage > Products** page of the Web application.
- To ensure that vCloud Usage Meter 3.6.0.1 is working correctly, run the new appliance in parallel with the source system for at least two months.

**What to do next**

If you have not configured an outgoing email server in the vCloud Usage Meter 3.5.0.0 Web application, the **Email Alerts**, **Products**, **Reports**, **Collections**, **API**, and **LDAP** tabs in the **Manage** page of the Web application are disabled. To enable all tabs, configure an outgoing email server in the vCloud Usage Meter 3.6.0.1 Web application. For more information, see “Configure Outgoing Email Server,” on page 19.

If you have vCenter Server instances that use an external Platform Service Controller (PSC), enter the additional PSC information in vCloud Usage Meter. For more information about configuring PSC, see “Add vCenter Server,” on page 26.
You can configure vCloud Usage Meter to determine how you receive information about product consumption. This includes setting email alerts, managing access to vCloud Usage Meter, and setting collecting times that do not conflict with your server operations.

When you configure vCloud Usage Meter, you provide information about you as a service provider. vCloud Usage Meter uses that information to report consumption data.

You can configure several settings:

- You can send metering alerts to email addresses that you provide.
- You can set up LDAP authentication to manage who can use the application.
- You can also adjust collection timing, in order to avoid conflicts with other server operations.

This chapter includes the following topics:

- “Configure Service Provider Details,” on page 17
- “Configuring Email Settings,” on page 18
- “Configure a Proxy Server,” on page 20
- “About Automatic Reporting,” on page 21
- “Configure Collection Settings,” on page 22
- “Manage Reports,” on page 22
- “Provide API Access,” on page 23
- “Configure LDAP Authentication,” on page 23

**Configure Service Provider Details**

After accepting the legal agreement for using vCloud Usage Meter, you must configure your contact details as a service provider. The service provider details appear in vCloud Usage Meter reports.

**Procedure**

1. In the Web application, navigate to Manage > Provider.
2 Enter the service provider details.

**IMPORTANT** Make sure that the Partner ID, Contract Number, and Site ID values you enter in the vCloud Usage Meter Web application match the values you enter in the VMware Cloud Provider Program Business Portal. If you have entered different values in the VMware Cloud Provider Program Business Portal, correct the information in the vCloud Usage Meter Web application.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company</td>
<td>Name of your company.</td>
</tr>
<tr>
<td>Contact Name</td>
<td>Name of the person who is the single point of contact. Enter the name in a <strong>Last Name, First Name</strong> format.</td>
</tr>
<tr>
<td>Phone</td>
<td>Phone number of the contact. Enter the number in a <strong>+country code phone number</strong> format.</td>
</tr>
<tr>
<td>Email</td>
<td>The email address of the contact person listed as a single point of contact. This is the email address that vCloud Usage Meter uses as the From address for sending emails to VMware. This email address must be known for the outgoing email server. The email server must also be accessible for the vCloud Usage Meter appliance. For more information, see “Configure Outgoing Email Server,” on page 19.</td>
</tr>
<tr>
<td>Partner ID</td>
<td>Your VMware VMware Cloud Provider Program Partner ID. If you do not have or know your partner ID, you can obtain it from your aggregator.</td>
</tr>
<tr>
<td>Contract Number</td>
<td>Your contract number with VMware.</td>
</tr>
<tr>
<td>Site ID</td>
<td>Enter the SP-defined ID for the vCloud Usage Meter location. Service Providers can create sites to report multiple locations with multiple vCloud Usage Meter instances. The Site ID can be used to report back to an individual site for each vCloud Usage Meter appliance. If you are not using site reporting, enter None. If you are using site reporting, enter the site ID and name in the text box. You can obtain a site ID and name from the VMware Cloud Provider Program Business portal. If you are configuring a vCloud Usage Meter instance for testing purposes, enter 00 - <strong>TestSite</strong> in the text box.</td>
</tr>
</tbody>
</table>

3 Click **Save**.

Your service provider details are now saved and vCloud Usage Meter navigates you to configure an outgoing email server.

**What to do next**

You must configure your email settings. For more information, see “Configuring Email Settings,” on page 18.

**Configuring Email Settings**

You must configure an outgoing email server, so that vCloud Usage Meter can send emails. You can also configure the email alerts to receive monthly billing reports and alerts of failed and successful collections.

After you configure the email settings, vCloud Usage Meter alerts you of conditions that affect metering. If a product is offline or unreachable for more than 24 hours, vCloud Usage Meter permanently stops collecting product consumption data for that product.

To continue collecting consumption data for deactivated products, navigate to the **Manage > Products** page of the web application and click **Activate** next to the affected product. The vCloud Usage Meter operator is responsible to act upon any issues affecting metering, such as network connectivity issues, credential updates of connected systems.
If you are configuring a vCloud Usage Meter instance in an environment with no access to Internet, consider the following best practices:

- Make sure that your mail server can relay messages from the service provider email address, using either authenticated or unauthenticated SMTP.

  **Note**  vCloud Usage Meter uses this email address as the From address for sending emails to VMware.

- If your mail server requires authentication, use encryption to avoid sending sensitive data in a plain text format.

- Verify the SMTP port number that is assigned to your mail server.

  It is a best practice to configure email alerts, so that you are informed of any issues affecting the accurate metering.

  **Important**  You must configure an outgoing email server before you can proceed setting up vCloud Usage Meter.

### Configure Outgoing Email Server

You must configure an outgoing email server, so that vCloud Usage Meter can send emails.

**Procedure**

1. In the Web application, navigate to Manage > Email.
2. Configure the Outgoing Email Server settings.

<table>
<thead>
<tr>
<th>Option</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td>Enter the host name.</td>
</tr>
<tr>
<td>Port</td>
<td>Enter the port number or accept the default of 25.</td>
</tr>
</tbody>
</table>

To send emails to VMware, it is mandatory to configure host name and port number.

3. (Optional) If necessary, select **Connection Security** from the drop-down.
4. (Optional) If you require authentication for the outgoing email server, enter a **User** name and **Password**.
5. To verify the email settings, click **Send email**.

   The **Save** button remains inactive until you successfully send a test email to VMware.

   vCloud Usage Meter sends a test email to um-reports@vmware.com using the email address listed on the Provider tab as the From address. vCloud Usage Meter sends a copy of the email to the service provider email address.

   Before you can proceed to save your settings, you must successfully send an email to VMware. If you do not send an email to VMware, the Email Alerts, Products, Reports, Collections, API, and LDAP tabs in the Manage page of the Web application are not activated.

6. Click **Save**.

   You have successfully sent an email to VMware and to the service provider email address and all tabs on the Manage page of the Web application are active.
Configure Email Alerts

You can configure the email alerts to receive monthly billing reports and alerts of failed and successful collections.

Procedure

1. In the Web application, navigate to Manage > Email Alerts.
2. Configure the Email Alerts settings to receive Email alerts.
   To avoid missing an alert, a best practice is to configure a shared mailbox to receive the email alerts.

<table>
<thead>
<tr>
<th>Option</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Email</td>
<td>Enter the name that appears in the from line of the email alert.</td>
</tr>
<tr>
<td>To Email</td>
<td>Enter the email address or a comma-separated list of email addresses</td>
</tr>
<tr>
<td></td>
<td>which receive the email alert.</td>
</tr>
</tbody>
</table>

3. Select the collection alert type.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Successful collection</td>
<td>Receive email alerts for successful collections.</td>
</tr>
<tr>
<td>Failed collection</td>
<td>Receive email alerts for failed collections.</td>
</tr>
</tbody>
</table>

4. (Optional) To verify that the outgoing email server is working correctly and that the alerts are sent, select the Send a test email alert after saving check box.

5. Click Save.

Configure a Proxy Server

Configure a proxy server between the vCloud Usage Meter appliance and the Internet. You use the proxy server when sending Monthly Usage, Customer Monthly Usage, Cluster History, and Virtual Machine History reports to VMware.

Procedure

1. In the vCloud Usage Meter, navigate to Manage > Proxy.
2. Enter the IP or hostname of the network proxy server in text box.
3. Enter the port number in the text box.
   The port number value must be a number between 0 and 65535.
4. (Optional) If necessary, select the Enable SSL for Proxy connection.
5. (Optional) If necessary, select Proxy Server needs authentication and enter your credentials in the Username and Password text boxes.
6. Click Save.

   You receive a Proxy configuration successfully saved message after the settings are correctly populated and saved.

What to do next

Verify that you have successfully configured the Provider and Email settings. For more information, see “Configure Service Provider Details,” on page 17 and “Configuring Email Settings,” on page 18.
About Automatic Reporting

vCloud Usage Meter generates and sends Monthly Usage, Customer Monthly Usage, Cluster History, and Virtual Machine History reports to VMware. You can also configure vCloud Usage Meter to generate and send reporting sets to yourself, an aggregator, or elsewhere.

When you first log in to the vCloud Usage Meter Web application, you get a pop-up window containing the terms and conditions of the automatic reporting to VMware. If you do not accept the terms and conditions, vCloud Usage Meter cannot be used.

After you accept the terms and conditions of the automatic reporting to VMware, you must configure the service provider details, the email settings, and set a proxy server if necessary. For more information, see “Configure Service Provider Details,” on page 17, “Configuring Email Settings,” on page 18, and “Configure a Proxy Server,” on page 20.

On the first day of each month between 00:05 AM and 00:35 AM, vCloud Usage Meter generates and sends Monthly Usage, Customer Monthly Usage, Cluster History, and Virtual Machine History reports to VMware. If a problem prevents the reports submission, vCloud Usage Meter retries to send the mail within 5 minutes. If the problem still persists, vCloud Usage Meter tries to send the reports to VMware again on the next day between 00:05 AM and 00:35 AM.

If you stop the appliance during the transmission period, vCloud Usage Meter attempts to send the reports 5 minutes after you start the appliance.

To resubmit reports to VMware manually, go to Automatic Reporting tab in the vCloud Usage Meter Web application and click Submit Now in the Submit reports to VMware.

vCloud Usage Meter encrypts all reports and obfuscates customer sensitive data before submitting the reports to VMware.

You can also configure vCloud Usage Meter to generate and send reporting sets to you, an aggregator, or elsewhere. For more information, see “Create Automatically Generated Reporting Sets,” on page 21.

Create Automatically Generated Reporting Sets

You can configure vCloud Usage Meter to create automatically generated sets of reports and email them to an aggregator, or elsewhere. If you report to multiple aggregators, you can configure a report set for each one. Alternatively, you can list all aggregators email addresses for a single reporting set.

If you stop vCloud Usage Meter during the transmission of reports, the appliance attempts to send the reports on the next day at 00:10 AM after you start it.

Procedure

1. Click Automatic Reporting in the top right menu bar of the Web application.
2. In the Submit reports to self section, enter a name for the reporting set in the details pane.
3. In the Reporting Day drop-down menu, select the day of the month on which to send the reports.
4. Select the reports to include in the set.
5. You can select license sets for filter. This filtering only applies to the Virtual Machine History report.
6. Configure the email settings.

<table>
<thead>
<tr>
<th>Option</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>From Email</td>
<td>Enter the email address which appears in the from line of the reporting set.</td>
</tr>
<tr>
<td>To Email</td>
<td>Enter the email address or a comma-separated list of email addresses which receive the reporting set.</td>
</tr>
</tbody>
</table>
7 Click Save.

The reports are sent every month on the date you set. The name of the new reporting set appears in the left pane list. Use the left pane to edit a previously created report.

**Configure Collection Settings**

vCloud Usage Meter collects consumption data from vCenter Server instances and other products based on a start time that you can set. If the default start time competes with other scripts that are working with your vCenter Server instances, you can change and test the start time.

**Procedure**

1. Click **Manage** in the top right menu bar of the Web application.
2. Click the **Collections** tab.
3. Select the minute of the hour to start collecting.
   - Setting the time at zero starts collections at the beginning of the hour.
4. Click **Save**.

**What to do next**

Monitor your collections. See “Monitor Collections,” on page 32.

**Manage Reports**

You can configure vCloud Usage Meter to report usage of vRealize Operations Manager and NSX as standalone and not part of a bundle. These report types are useful for end-user reporting.

**Procedure**

1. Click **Manage** in the top right menu bar of the Web application.
2. Click the **Reports** tab.
3. If directed to by the VMware Cloud Provider Program, you can set the Per-VM Memory Cap.
4. Select the check boxes for vRealize Operations Manager and NSX if you want to report the usage as standalone and not as part of a bundle.

If you select any of the check boxes, the selected feature usage is metered as standalone and not as part of a bundle in the Monthly Usage Report and Customer Monthly Usage Report, if there is an associated rule for such VMs.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
</table>
| **Report NSX Enterprise usage as standalone** | When selected, NSX Enterprise features usage is metered and reported as standalone and not as part of a bundle. As an example result, the Monthly Usage Units Report consists of the following:  
  - VMware NSX Enterprise  
  - VMware vCloud SP Advanced Bundle |
| **Report vRealize Operations Manager Enterprise usage as standalone** | When selected, vRealize Operations Manager Enterprise features usage is metered and reported as standalone and not as part of a bundle. As an example result, the Monthly Usage Units Report consists of the following:  
  - VMware vRealize Operations Manager (managed)  
  - VMware vCloud SP Advanced Bundle |

5. Click **Save**.
Provide API Access

You can add or revoke API access.

**Procedure**

1. Click **Manage** in the top right menu bar of the Web application.
2. Click the **API** tab.
3. To view Admin Token, click **Add Admin Token**
   - Click **Revoke** to remove the displayed Admin Token.
4. To view User Token, click **Add User Token**.
   - Click **Revoke** to remove the displayed User Token.

Admin and User Tokens are added or revoked according to the user action.

Configure LDAP Authentication

vCloud Usage Meter can authenticate users against an LDAP service.

**Prerequisites**

- Verify that vCloud Usage Meter supports your LDAP server. See [Interoperability Pages For vCloud Usage Meter](#).
- Verify a base distinguished name of the LDAP hierarchy to allow login to vCloud Usage Meter. Use a specific Base DN that only contains your intended user group.
- Verify a user name and password for a user account within the LDAP hierarchy user group to allow login to vCloud Usage Meter.
- Verify a valid SSL certificate if using SSL security.

**Procedure**

1. On the **LDAP** tab, enter details.
2. **Host**

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hostname</td>
<td>(Most commonly used.) Requires vCloud Usage Meter appliance to have DNS configured. (DNS configuration is verified in appliance console.)</td>
</tr>
<tr>
<td>Domain Name</td>
<td>Requires the vCloud Usage Meter appliance to have DNS configured and supports failover. (DNS configuration is verified in appliance console.)</td>
</tr>
<tr>
<td>IP Address</td>
<td>Does not require DNS configuration.</td>
</tr>
</tbody>
</table>

3. **Port**

   389 is the default port for LDAP.

4. (Optional) **Use SSL** check box.

5. **Username DN**

   (60 characters) The user account that connects to LDAP for the purposes of locating the account of someone logging in to vCloud Usage Meter.
Password
Password of the user account that connects to LDAP to locate the account for login to vCloud Usage Meter.

LDAP Schema
a User Base DN
(60 characters) Base distinguished name of LDAP hierarchy group that allows log in to vCloud Usage Meter. Use a specific user base DN that contains only your intended user group.
b Object Class - for example, User.
c User Name Attribute - for example, sAMAccountName.

Click Save.

What to do next
Test your LDAP login.
1 To verify and confirm the certificate fingerprint, log out of vCloud Usage Meter.
2 Log in with the user name and password of a user in the intended user group.
3 If successful, LDAP login is verified.
Preparing vCloud Usage Meter for Metering

You must provide and maintain certain details for vCloud Usage Meter to collect product consumption data from vCenter Server instances. These details include the host name and credentials.

vCenter Server 5.5u2 and earlier versions only support TLS 1.0. If you are using vCenter Server 5.5u2 or earlier version, vCloud Director must only use TLS 1.0.

vCloud Usage Meter detects vSAN consumption, so you do not need to register it through the Web application. vCloud Usage Meter also detects the vSAN edition based on use of features.

vCloud Usage Meter collects usage information on an hourly basis at the cluster level and it is averaged over the month in which the use occurs. The consumption information for individual virtual machines is not available.

vCloud Usage Meter detects NSX editions based on the use of features at virtual machine granularity.

vCloud Usage Meter now reports the total number of VMs protected by the vCloud Availability for vCloud Director solution at the end of the month. vCloud Usage Meter detects usage of vCloud Availability for vCloud Director after you add the vCloud Director product, so you do not need to register the vCloud Availability for vCloud Director solution through the Web application. You must set up a DNS server for the vCloud Usage Meter appliance, to get accurate reporting data.

If a product is offline or unreachable for more than 24 hours, vCloud Usage Meter permanently stops collecting consumption data for that product. You can configure email alerts to receive notifications about failed collections. For more information about the vCloud Usage Meter email settings, see “Configuring Email Settings,” on page 18.

This chapter includes the following topics:

- “Add vCenter Server,” on page 26
- “Metering vRealize Operations Manager,” on page 27
- “Add NSX Manager,” on page 29
- “Add vCloud Director,” on page 29
- “Add vRealize Automation,” on page 30
- “Add Horizon DaaS,” on page 30
- “Change Product Information,” on page 31
- “Delete or Reactivate Product Servers,” on page 31
- “Monitor Collections,” on page 32
- “Delete Old Data,” on page 32
Add vCenter Server

To begin metering, you must provide a host name and credentials for at least one vCenter Server instance. You can add one or more instances.

Prerequisites

- Verify that you have additional vCenter Server user permissions, other than Read-only. To add the required additional permissions, perform the following steps.
  a. Log in to the vSphere Web Client as an administrator.
  b. Navigate to Administration > Roles.
  c. Click the Create role button.
  d. Type a name for the new role.
  e. Select the following permission: Profile-driven storage > Profile-driven storage view
  f. Assign the new role to the user which you use for vCloud Usage Meter collection.
- If your vCenter Server is protected by Site Recovery Manager, credentials are needed for both the protected and recovery site vCenter Server instances. For more information about configuring Site Recovery Manager, see Site Recovery Manager Installation and Configuration in the VMware vCenter Site Recovery Manager Documentation Center.
- vCloud Usage Meter cannot successfully collect metering data from a vCenter Server managed by multiple vRealize Operations Manager servers. Verify that a single vRealize Operations Manager instance manages the vCenter Server you add.

Procedure

1. Click Manage in the top right menu bar of the Web application.
2. Click the Products tab.
3. Click the Add button located in the vCenter Server area.
4. (Optional) If you are using an external Platform Services Controller (PSC), select the External Platform Services Controller check box.
   a. Enter the external PSC hostname in the text box.
   b. Enter the PSC port.
      By default, the PSC port is 7444.
5. Enter a host name, IP address for the vCenter Server in the vCenter Server hostname text box.
6. Enter the user name in the Administrator User Name text box.
7. Enter the password in the Password text box.
8. Select the Meter check box.
   Do not select if this site is a recovery site vCenter Server instance.
9. Click the Site Recovery Manager Peer vCenter Server drop-down.
   If this site is a protected site instance, select and link it to the corresponding recovery site instance in the drop-down menu. To appear on the drop-down, the recovery site instance must be added. You must not add Site Recovery Manager servers to vCloud Usage Meter because vCloud Usage Meter detects them through their associated vCenter Server instance.
10 Click Save.

**Note** For each product server that you add, vCloud Usage Meter might present a certificate that you can verify. You might be prompted to accept the server certificate before proceeding.

11 The newly added virtual machines are not displayed immediately under the vCenter rules inventory. As the rules section uses only the vCenter Server inventory tree, a sync is required in order for the changes to reflect. Click **Synchronize All vCenter Inventories**.

The changes made are reflected immediately under the vCloud Usage Meter Rules section.

**Note** When adding a vCenter Server that is using a demo or perpetual license, update the correct license information within an hour of adding the product. If you do not update the license information, that vCenter Server gets metered and charged.

The vCenter Server instance is added to the list of vCenter Server instances. If an error occurs, a message appears and the server instance is not added. vCloud Usage Meter performs collections against all added vCenter Server instances and Site Recovery Manager instances in both the protected and recovery sites.

![Figure 6-1. vCenter Servers Set Up](image)

**Metering vRealize Operations Manager**

You can generate usage reports for all or a subset of virtual machines that vRealize Operations Manager controls.

**Configure Metering for a Subset of Virtual Machines**

vCloud Usage Meter can generate reports for a subset of virtual machines that vRealize Operations Manager controls. To support such a topology, you must create a specific user vRealize Operations Manager and add it to vCloud Usage Meter.

**Prerequisites**

- Verify that you have administrator privileges for the vRealize Operations Manager user interface.

**Procedure**

1. Log in to the administration interface of vRealize Operations Manager.
2. Navigate to **Administration > Access Control** and click the **Add** button in the **User Accounts** tab. The **Add User** window opens.
3. Enter the basic user information and click **Next**.
4. In the **Assign Groups and Permissions** window, click **Objects** to assign role and allocate resources.
5. From the **Select Role** drop-down menu, select **Administrator** and select the **Assign this role to the user** check box.
6 In the Select Object Hierarchies pane, select the vSphere Storage check box. The vSphere inventory tree appears in the Select Object pane.

7 In the Select Object pane, select the virtual machines to be metered and click Finish.

8 Go to the vCloud Usage Meter Web application and add or update the user credentials for vRealize Operations Manager.

For more information about adding credentials for vRealize Operations Manager, see “Add Credentials for vRealize Operations Manager,” on page 28.

You can now add the new vRealize Operations Manager credentials and generate reports only for the subset of virtual machines you selected.

Add Credentials for vRealize Operations Manager

If vRealize Operations Manager servers are associated with a vCenter Server instance that you added, vCloud Usage Meter locates and adds them for you. To begin metering, you must provide the correct vRealize Operations Manager credentials.

Prerequisites

- Verify that you have properly configured the vRealize Operations Manager solutions and adapters. For more information, see Configuring Solutions and Adapters in vRealize Operations Manager.
- Verify that you have registered vRealize Operations Manager as a vCenter Server extension. For more information, see Register a Plug-In Package as a vCenter Server Extension.
- Verify that you have at least read-only administrator privileges.

Procedure

1 Click Manage in the top right menu bar of the Web application.

2 Click the Products tab.

3 Click Edit in the vRealize Operations Manager area and enter the administrator user name and password.

   To add vRealize Operations Manager, accept the certificate. If you miss accepting the certificate, delete the vCenter Server associated with that vRealize Operations Manager and then reactivate it.

   **IMPORTANT** Providing the correct vRealize Operations Manager user name and password is essential to ensuring proper metering. Make sure that you provide the correct vRealize Operations Manager credentials.

4 Click Save.

The credentials for the vRealize Operations Manager server are added to vCloud Usage Meter.

If you change the vRealize Operations Manager certificate or password, or prevent vCloud Usage Meter from connecting to it, the vRealize Operations Manager server state changes to Inactive. In this case vCloud Usage Meter stops metering. After you set the correct certificate or password, vRealize Operations Manager might still not be visible on the Products page. In this case, delete the vCenter Server that is associated with vRealize Operations Manager, and then add the vCenter Server again so that the vRealize Operations Manager server is auto-detected.
Add NSX Manager

To add NSX Manager to be metered, you must provide the NSX Manager host name and credentials.

**Prerequisites**
- Verify that the NSX Manager is registered with vCenter Server. For more information, see [Register vCenter Server with NSX Manager](#).
- Verify that you have read-only administrator privileges.

**Procedure**
1. Click **Manage** in the top right menu bar of the Web application.
2. Click the **Products** tab.
3. Click **Add** in the NSX Manager area.
4. Enter a host name or IP address in the **Host Name or IP** text box.
5. Enter the user name in the **User Name** text box in the `domain\user` format.
6. Enter the password in the **Password** text box.
7. Enter the referencing vCenter Server host name or IP address in the **vCenter Host Name or IP** text box.
8. Click **Save**.

After successfully adding NSX Manager server, if you enter an incorrect Password when editing it, the NSX Manager gets deleted. To reactivate, provide the correct credentials.

**Note** If an NSX certificate changes, click the corresponding **Edit** button so that vCloud Usage Meter can reevaluate the product. After it detects the certificate change, accept the new certificate so that the collection runs successfully.

You added the NSX Manager server to the list of instances. If an error occurs, a message appears and the server is not added.

Add vCloud Director

To add vCloud Director to be metered, you must provide the vCloud Director host name and credentials.

**Prerequisites**
- Verify that you have system administrator privileges.
- When adding vCloud Director, make sure that you also register the vCenter Server associated with that vCloud Director instance.

**Procedure**
1. Click **Manage** in the top right menu bar of the Web application.
2. Click the **Products** tab.
3. Click the **Add** button located in the vCloud Director area.
4. Enter a host name, IP address, or DNS name for the vCloud Director in the **Host Name or IP** text box.
   - Use a comma to separate multiple servers. They must all have the same user name and password.
5. Enter the port number.
6. Enter the user name in the **Administrator User Name** text box.
Enter the password in the Password text box.

Click Save.

You successfully added vCloud Director to the list of instances. If an error occurs, a message appears and the instance is not added.

**Add vRealize Automation**

To add vRealize Automation to be metered, you must provide the vRealize Automation server’s host name and credentials.

**Prerequisites**

- Verify that you have read-only administrator privileges.
- Verify that you have a vSphere endpoint created in your vRealize Automation. For more information, see Create a vSphere Endpoint in the vRealize Automation documentation.

**Procedure**

1. Click Manage in the top right menu bar of the Web application.
2. Click the Products tab.
3. Click the Add button located in the vRealize Automation area.
4. Enter a host name or IP address for the vRealize Automation IaaS Server in the Host Name or IP text box.
   Use a comma to separate multiple servers. They must all have the same user name and password.
5. Enter the user name in the User Name text box.
   This user is the system user that you used to do the initial vRealize Automation IaaS server installation. Provide the user name in the domain\user format.
6. Enter the password in the Password text box.
7. Add the vRealize Automation Cafe appliance details to generate an authentication certificate.
8. Enter a host name or IP address for the vRealize Automation appliance in the Host Name or IP text box.
9. Enter the administrator user name in the User Name text box.
   For vRealize Automation 6.X, enter the user name with domain, for example administrator@vsphere.local.
   For vRealize Automation 7.X, enter the user name without domain, for example administrator. This name must be from the vsphere.local domain.
10. Enter the administrator password in the Password text box.
11. Click Save.

You added the vRealize Automation server to the list of instances. If an error occurs, an error message appears and the server is not added.

**Add Horizon DaaS**

To add Horizon DaaS to be metered, you must provide the Horizon DaaS server host name and credentials.

**Prerequisites**

Verify that you have read-only administrator privileges.
Procedure

1. Click **Manage** in the top right menu bar of the Web application.
2. Click the **Products** tab.
3. Click **Add** in the Horizon DaaS area.
4. Enter a host name, IP address, or DNS name in the **Host Name or IP** text box.
5. Enter the user name in the **User Name** text box in the domain\user format.
6. Enter the password in the **Password** text box.
7. Enter the value of **number of VDI Session Model**.
   
   The **number of VDI Session Model** is the number of VDI virtual machines that you use to support Remote Desktop Sessions Host (RDSH) for the connection of remote desktops. The VDI concurrent connections count reduces by the **number of VDI Sessions Model**.

8. Click **Save**.
9. After adding the Horizon DaaS server, you can edit the **number of VDI Session Model**. To view the updated value in the Monthly Usage Report, you can only increase the VDI quota by entering a smaller value for the **number of VDI Session Model**. For example, if you initially entered the number as 12, you can change it to 4. Any mistake in configuring the right session model reflects in the Monthly Usage Report until you correct the error.

The Horizon DaaS server is added to the list of instances. If an error occurs, a message appears and the server is not added.

**Change Product Information**

You can change the user name and password details for products.

**Prerequisites**

Verify that you have read-only administrator privileges.

**Procedure**

1. Click **Manage** in the top right menu bar of the Web application.
2. Click the **Products** tab.
3. Locate the product and click **Edit**.
4. Change the product details as necessary.
5. Click **Save**.

**Delete or Reactivate Product Servers**

You can delete the product servers that are no longer in use. vCloud Usage Meter designates the server as inactive. An inactive server can be reactivated to reinclude it in collections.

**Procedure**

1. Click **Manage** in the top right menu bar of the Web application.
2. Click the **Products** tab.
3. On the **Products** tab, to delete a server, in the appropriate product area, select the server, click **Delete**.

   The product is placed in an inactive state and it can be reactivated again later. After deletion or reactivation, force a collection or wait for the hourly collection to ensure the change in metering.
4 Manage the scope of metering for a product.

### Table 6-1. Manage Servers

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delete server</td>
<td>Locate the server you want to remove and click <strong>Delete</strong>. Irrespective of whether any data was collected before the deletion, vCloud Usage Meter designates the server as inactive. Any data that was collected before deletion remains in the database.</td>
</tr>
<tr>
<td>Display inactive servers</td>
<td>Locate the product area and click the <strong>Show Inactive</strong> check box. The deleted products that have collected data is shown in the list.</td>
</tr>
<tr>
<td>Reactivate server</td>
<td>Locate the product area and click the <strong>Show Inactive</strong> check box. Select the inactive server and click <strong>Activate</strong>. It is moved to the active list.</td>
</tr>
</tbody>
</table>

### Monitor Collections

You can view times of successful or failed collections for metered products.

**Procedure**

1. Click **Monitor** in the top right menu bar of the Web application.
2. Select the year and month to view.
3. Click **Submit**.
4. To view collection times, point to the **OK** or **Fail** count in any column.

**What to do next**

To minimize failed collections, you can change collection times or memory settings.

- If your collection start time is competing with other scripts that are working with your vCenter Server instances, you can change the start time. See “Configure Collection Settings,” on page 22.
- Verify your memory settings.

### Delete Old Data

You can delete old product consumption data from the vCloud Usage Meter database.

This operation deletes collection data older than the selected period from the following tables in the database:

- CollectionMsg
- Collection
- VcopsVmCollection
- VmHistory

The related records in the following tables are also deleted:

- InventoryItem
- Vm
- HostHistory
- Host
License
License
VcServer
You do not delete products with this operation.

**IMPORTANT** You cannot undo this action.

**Prerequisites**

- If you delete data that is still within the 24 months retention period, back up the vCloud Usage Meter appliance first.
- Verify that you have administrative privileges in the vCloud Usage Meter Web application.

**Procedure**

1. Log in to the vCloud Usage Meter Web application.
2. Go to the **Support** page.
3. Click **Delete Old Data** in the **Database** section of the page.
4. Enter the age of data in days that you want to keep. The data that is older than the entered number of days is deleted.
5. Enter the word **CONFIRM**.
6. Click **Delete**.
Managing Customers and Rules

vCloud Usage Meter meters compute resource consumption in your entire vCenter Server inventory. With customers and rules, you have detailed control and can organize consumption reporting by customer.

When you are ready to organize consumption reporting by a customer, you can create a rule that meters objects in your inventory for an entire vCenter Server instance. For example, for the unique ID of a virtual machine or IP address.

This chapter includes the following topics:

- “vCloud Usage Meter Customers,” on page 35
- “vCloud Usage Meter Customer Rules,” on page 37
- “Import Customers and Rules,” on page 40
- “Export Customers and Rules,” on page 41

vCloud Usage Meter Customers

You can add customers individually or import multiple customers to vCloud Usage Meter. The import and export capability on the Customer tab can support you keep the same customer list on multiple vCloud Usage Meter.

This ability can aid when customer consumption is shared among multiple vCenter Server instances. For more information, see “Import Customers and Rules,” on page 40 and “Export Customers and Rules,” on page 41.

Customers that require confidentiality can still be represented and metered in vCloud Usage Meter. If confidentiality is necessary, you can designate that customer as restricted, and work with your VMware Cloud Provider Program coordinator to set up a code. That way confidential names and locations are never visible. For more information, see “About Restricted Customers,” on page 35.

About Restricted Customers

If a customer name or location is considered confidential or sensitive, you can designate this customer as restricted. The customer is given a code name.

You can work with your VMware Cloud Provider Program administrator to use code details for metering and reporting instead of the customer’s actual details. Confidential details of restricted customers are maintained at the VMware Cloud Provider Program operations.

**Note** You can import most customer details by using tab separated files. You can only set the restricted status manually through the vCloud Usage Meter Web application’s Customer menu.

For more information about how to restrict status, see “Add a Customer,” on page 36.
Add a Customer

To report product consumption by customer, you must add the customer to vCloud Usage Meter.

Procedure
1. Click Customers in the top right menu bar of the Web application.
2. Click Add.
3. Provide the customer information.
4. (Optional) If the customer details are coded as confidential, select the Restricted check box.
5. Click Save.

What to do next
You can add multiple customers and rules and duplicate them to multiple vCloud Usage Meter virtual appliances by importing or exporting tab separated files.

Note
You can import most of the customers details by using tab separated files. You can only set the restricted status manually through the vCloud Usage Meter Web application.

For more information, see “Import Customers and Rules,” on page 40.

Change Customer Information

You can change the name, country, and postal code details for customers.

Procedure
1. Click Customers in the top right menu bar of the Web application.
2. Locate the customer to be updated and select the corresponding check box.
3. Click Edit.
4. Change the information as required.
5. Click Save.

Remove a Customer

You can remove one or more customers from the metering scope of vCloud Usage Meter.

Procedure
1. Click Customers in the top right menu bar of the Web application.
2. Locate the customers to be removed and select the check boxes.
3. Click Delete Selected and confirm the removal.

You removed the selected customers from the list of customers. Data that is collected before the removal remains in the vCloud Usage Meter database.
vCloud Usage Meter Customer Rules

By creating customer rules in vCloud Usage Meter, you associate customers with virtual machines that the appliance meters.

vCloud Usage Meter rebuilds customer rules on every collection. If you create, change, or remove a rule, it will be applied to reports after a subsequent collection. You must wait for the next collection to finish successfully to update the new association between customers and virtual machines in the vCloud Usage Meter reports.

- **Object and Value Types in Customer Rules** on page 37
  
  You can add a rule by linking a customer to specific objects in your vCenter Server inventory. Each object has a value type that uniquely identifies it for metering. When you construct a rule, the value type varies, depending on the object.

- **Add a Rule** on page 38
  
  You can add rules to collect product consumption data about your customers.

- **Change Rule Information** on page 39
  
  You can change rules that collect product consumption data for your customers. To change a rule, you must delete it and then construct a replacement rule.

- **Remove a Rule** on page 39
  
  You can remove rules based on the relationship between a vSphere inventory object and a customer. When a rule is deleted, only the relationship between the vSphere inventory object and the customer is removed. All product consumption data is maintained.

Object and Value Types in Customer Rules

You can add a rule by linking a customer to specific objects in your vCenter Server inventory. Each object has a value type that uniquely identifies it for metering. When you construct a rule, the value type varies, depending on the object.

Object Type Definitions

Object types aid you in metering and reporting specific customer activity.

<table>
<thead>
<tr>
<th>Table 7-1. Object Type Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Object Type in Inventory</strong></td>
</tr>
<tr>
<td>vCenter Server</td>
</tr>
<tr>
<td>Cluster</td>
</tr>
<tr>
<td>Data center</td>
</tr>
<tr>
<td>Host</td>
</tr>
<tr>
<td>Resource Pool</td>
</tr>
<tr>
<td>Folder</td>
</tr>
<tr>
<td>VM</td>
</tr>
<tr>
<td>VM vCenter Server Name</td>
</tr>
<tr>
<td>VM DNS Name</td>
</tr>
</tbody>
</table>
Table 7-1. Object Type Definitions (Continued)

<table>
<thead>
<tr>
<th>Object Type in Inventory</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>vApp</td>
<td>A format that packages and manages applications containing multiple virtual machines.</td>
</tr>
<tr>
<td>IPv4 address</td>
<td>An IP network address in your inventory.</td>
</tr>
</tbody>
</table>

Supported Object and Value Type Combinations

Each combination of supported objects requires specific value types, and some also need identification of the vCenter Server. Exact string, substring, regular expression, and CIDR notation apply to all vCenter Server instances registered with vCloud Usage Meter.

Table 7-2. Supported Object and Value Types

<table>
<thead>
<tr>
<th>Object Type</th>
<th>Value Type</th>
<th>vCenter Server Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>VM, host, cluster, data center, or vCenter Server</td>
<td>Unique ID</td>
<td>Yes</td>
</tr>
<tr>
<td>VM vCenter Server Name or VM DNS Name</td>
<td>Exact string</td>
<td>Yes</td>
</tr>
<tr>
<td>IP V4 address</td>
<td>IP V4 CIDR notation</td>
<td>Yes</td>
</tr>
<tr>
<td>Folder, resource pool, or vApp</td>
<td>Unique ID</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Exact string</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Substring</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>Regular expression</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Add a Rule

You can add rules to collect product consumption data about your customers.

Prerequisites

Review your vSphere inventory for object types that correspond to your customers. See “Object and Value Types in Customer Rules,” on page 37.

Procedure

1. Click Rules in the top right menu bar of the Web application.
2. Select a customer by entering part of the customer name and then locating it in the list that appears. vCloud Usage Meter populates a list of customer names that match the characters you enter.
3. In the Object Type drop-down menu, select an object type that is in your vSphere inventory.
   When you click a location in the vCenter Server Inventory tree, vCloud Usage Meter populates the rest of the rule accordingly. You can use the Filter option to aid your search through the inventory tree.
   The options for Value Type vary according to the object type that you select.
4. If the object type you select requires a value, for example, virtual machine vCenter Server or DNS name, enter a value in the Value text box.
5. Click Create.
You added the rule to the rules list and you can view it in the Rules List tab.

During customer rules creation, if a conflict occurs with another customer rule, an error message appears that lists the customer and virtual machines affected. The rule is not created.

**What to do next**

On the Mapped Virtual Machines tab, view a list of virtual machines that have rules associated with them for a particular customer.

On the Unmapped Virtual Machines tab, view a list of virtual machines that have no rules associated with them for a particular customer.

### Change Rule Information

You can change rules that collect product consumption data for your customers. To change a rule, you must delete it and then construct a replacement rule.

**Prerequisites**

Before deleting a rule, note any details that you plan to reinstate.

**Procedure**

1. Click Rules in the top right menu bar of the Web application.
2. Click the Rules List tab to view the existing rules.

**What to do next**

You can remove a rule. See “Remove a Rule,” on page 39.

You can also add a rule back to the list. See “Add a Rule,” on page 38.

### Remove a Rule

You can remove rules based on the relationship between a vSphere inventory object and a customer. When a rule is deleted, only the relationship between the vSphere inventory object and the customer is removed. All product consumption data is maintained.

**Procedure**

1. Click Rules in the top right menu bar of the Web application.
2. Click the Rules List tab to view the existing rules.
3. (Optional) Select a customer by entering part of the customer name and then locating it in the list that appears.
   - vCloud Usage Meter populates a list of customer names that match the characters you enter.
4. (Optional) Click the Show Rules for All Customers check box to see all rules for all customers.
5. Select check box next to one or more rules you want to remove.
6. Click Delete Selected Rules and confirm that you want to delete the selected rules.

You have removed the selected rules from the rules list.
Import Customers and Rules

You use a tab-separated file to import customers and rules to vCloud Usage Meter. You can manually generate the file, or you can base the file on an exported customers and customers rules list from vCloud Usage Meter.

**IMPORTANT** You cannot import restricted customers. You must be enter restricted customers manually. For more information, see “Add a Customer,” on page 36.

**Prerequisites**
- Prepare, or obtain from export, a tab-separated file. See “Export Customers and Rules,” on page 41. If you are transferring customer data from one vCloud Usage Meter virtual appliance to another, obtain a tab-separated file by export.
- Verify that the tab-separated file does not contain duplicate customer names.
- Verify that countries are listed in alpha-2 code format. See [http://www.iso.org/iso/country_codes/iso_3166_code_lists/country_names_and_code_elements.htm](http://www.iso.org/iso/country_codes/iso_3166_code_lists/country_names_and_code_elements.htm).
- Every vCenter Server in the tab-separated file must be configured in the target vCloud Usage Meter.
- The vCenter Server inventory must be synced in the target vCloud Usage Meter through Manage > Product > Synchronize All vCenter Inventories.

**Procedure**

1. Click Customers in the top right menu bar of the Web application.
2. In the Import area, click Browse to locate the tab-separated file on your system.
3. Click Import.

- If the import is successful, a page appears with a confirmation message.
- If the import fails, an error message appears that indicates the type of error and the line number producing the error.

**Example: Tab-Separated File Format for Importing Customers and Rules**

This example shows the format for tab-separated rows and columns for several sample customers and rules.

**Table 7-3. Tab-Separated File Format for Importing Customers and Rules**

<table>
<thead>
<tr>
<th>Row</th>
<th>Column A</th>
<th>Column B</th>
<th>Column C</th>
<th>Column D</th>
<th>Column E</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td># vCloud Usage Meter Customer Export</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td># Version: 3.5.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td># Customers</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td># Name</td>
<td>Country</td>
<td>Postal Code</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>NewCo</td>
<td>AF</td>
<td>44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>YourCo</td>
<td>US</td>
<td>94555</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>TheCo</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>ThisCo</td>
<td>US</td>
<td>95555</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td># Rules</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 7-3. Tab-Separated File Format for Importing Customers and Rules (Continued)

<table>
<thead>
<tr>
<th>Row</th>
<th>Column A</th>
<th>Column B</th>
<th>Column C</th>
<th>Column D</th>
<th>Column E</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td># Example rule: Exact string folder match for abc for customer CloudCo</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td># CloudCo</td>
<td>Folder</td>
<td>Exact String</td>
<td>abc</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td># Customer</td>
<td>Object Type</td>
<td>Value Type</td>
<td>Value</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>NewCo</td>
<td>10.255.79.10</td>
<td>VM</td>
<td>Unique ID</td>
<td>vm-100</td>
</tr>
<tr>
<td>14</td>
<td>NewCo</td>
<td>10.255.79.10</td>
<td>Host</td>
<td>Unique ID</td>
<td>host-77</td>
</tr>
<tr>
<td>15</td>
<td>NewCo</td>
<td>10.255.79.10</td>
<td>VM DNS name</td>
<td>Exact string</td>
<td>ad</td>
</tr>
<tr>
<td>16</td>
<td>NewCo</td>
<td>10.255.79.10</td>
<td>vApp</td>
<td>Unique ID</td>
<td>resgroup-v99</td>
</tr>
<tr>
<td>17</td>
<td>NewCo</td>
<td>10.255.79.10</td>
<td>VM</td>
<td>Unique ID</td>
<td>vm-103</td>
</tr>
<tr>
<td>18</td>
<td>NewCo</td>
<td>10.255.79.10</td>
<td>vApp</td>
<td>Unique ID</td>
<td>resgroup-v91</td>
</tr>
<tr>
<td>19</td>
<td>TheCo</td>
<td>192.168.128.1</td>
<td>Data Center</td>
<td>Unique ID</td>
<td>datacenter-2</td>
</tr>
</tbody>
</table>

Export Customers and Rules

You can export customers and rules from vCloud Usage Meter in a tab-separated file.

Procedure

1. Click Customers in the top right menu bar of the Web application.
2. Click Export All.

A tab-separated file is exported and you must save the file.

What to do next

- Use the file as an example for other imports.
- Use the file to import data to another vCloud Usage Meter virtual appliance. See “Import Customers and Rules,” on page 40.
Managing Product Consumption Reports

With vCloud Usage Meter, you can generate reports to monitor and track resource consumption by a customer or by a vSphere inventory object. You can generate a report manually at any time. You can export the report as a tab-separated text file or as a ZIP file.

License Sets and Billing Categories

You can use license sets to group license keys for convenience in reporting to aggregators. Because license keys can have different billing characteristics, you can indicate which license keys are billable by designating a billing category.

Report Types

vCloud Usage Meter provides a choice of reports. See “Product Consumption Reports,” on page 46.

Reporting Methods

You can view reports in the following ways.

- Browse a report in the user interface or save it to a file. See “Generate a Product Consumption Report,” on page 47.
- Create automatic reporting sets. See “Create Automatically Generated Reporting Sets,” on page 21.

Manual Reporting

Depending on the products in use in your environment, you might need to manually adjust or collect product usage information to accurately report all required data. For more information, see Appendix A. Adjusting Reports with Manually Collected Product Usage Data and Appendix B. Manually Collecting Product Usage Data in the VMware Cloud Provider Program Product Usage Guide in Partner Central at https://www.vmware.com/partners.html (login required).

- License Sets and Billing Categories on page 44
  The VMware Cloud Provider Program offers bundles to service providers for billing purposes. With billing groups, in vCloud Usage Meter you can designate some licenses as non-billable and can group licenses in sets.
- Product Consumption Reports on page 46
  You can use vCloud Usage Meter to generate different types of reports that monitor and track resource consumption.
License Sets and Billing Categories

The VMware Cloud Provider Program offers bundles to service providers for billing purposes. With billing groups, in vCloud Usage Meter you can designate some licenses as non-billable and can group licenses in sets.

vSphere license keys that service providers deploy might have different billing characteristics, so you can indicate which license keys are billable by defining the billing category. For more information about the billing categories, see “Manage Billing Categories,” on page 44.

VMware Cloud Provider Program partners can only leverage VMware perpetual licenses, including OEM versions, to support internal IT operations. Internal IT operations are any IT function that exclusively support a system that is not connected, either directly or in an ancillary manner, to the partner’s hosting environment. In addition, VMware perpetual licenses may not be used to support the management or operations of an environment utilized to host for unaffiliated third parties. Virtual machines running on hosts with perpetual license keys should be tagged in the vCloud Usage Meter and are not considered billable.

You can use license sets to group a list of licenses that you can later use as filter in the Virtual Machine History and Cluster History reports. You can also generate the Virtual Machine History and Cluster History reports for only a particular license set by selecting the license set when generating reports. For more information about creating, editing, and removing license sets, see “Create License Sets,” on page 45, “Edit License Sets,” on page 45, and “Remove License Sets,” on page 45 topics. For more information about generating reports for particular license set, see “Generate a Product Consumption Report,” on page 47.

- Manage Billing Categories on page 44
  You can indicate which license keys are billable by defining the billing category.
- Create License Sets on page 45
  Using license sets, you can group licenses in sets that are meaningful for reporting.
- Edit License Sets on page 45
  You can change which licenses are included in a license set.
- Remove License Sets on page 45
  If a license set is no longer meaningful or needed, you can remove individual licenses or an entire license set.

Manage Billing Categories

You can indicate which license keys are billable by defining the billing category.

Procedure

1. Click Licenses in the top right menu bar of the Web application.
2. Click the Billing Categories tab.
In the **Billing Category** drop-down menu, select a category.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCPP</td>
<td>License key obtained through the VMware Cloud Provider Program. All virtual machines running on hosts with these keys are considered to be billable.</td>
</tr>
<tr>
<td>Demo</td>
<td>License keys that are not billable that can be used for environments such as demonstration systems.</td>
</tr>
<tr>
<td>Perpetual</td>
<td>License keys obtained outside of the VMware Cloud Provider Program. Virtual machines running on hosts with these keys are not considered billable.</td>
</tr>
</tbody>
</table>

**Create License Sets**

Using license sets, you can group licenses in sets that are meaningful for reporting.

**Procedure**

1. Click **Licenses** in the top right menu bar of the Web application.
2. Click the **License Sets** tab.
3. Enter a name for the new license set.
4. Click **Create**.
5. Select the licenses you want to include in the set.
   - A license can belong to multiple sets.
6. Click **Save**.

**Edit License Sets**

You can change which licenses are included in a license set.

**Procedure**

1. Click **Licenses** in the top right menu bar of the Web application.
2. Click the **License Sets** tab.
3. Click the name of the license set you want to edit.
   - The included licenses are displayed.
4. Select or deselect licenses, as required.
5. Click **Save**.

**Remove License Sets**

If a license set is no longer meaningful or needed, you can remove individual licenses or an entire license set.

**Procedure**

1. Click **Licenses** in the top right menu bar of the Web application.
2. Click the **License Sets** tab.
3. To delete an entire license set, select the name of the license set you want to delete. To delete a single (or several) licenses within a license set, click the license set name and select the licenses you want to delete.
4 Click \textit{Delete}.

The license set or individual licenses are removed.

**Product Consumption Reports**

You can use vCloud Usage Meter to generate different types of reports that monitor and track resource consumption.

Click \textit{Reports} in the top right menu bar of the Web application and then select the type from the Report drop-down.

**Monthly Usage**

The Monthly Usage report provides information about the monitored product, the unit type being metered, and the associated consumption, including usage information by VMware Cloud Provider Program bundles.

<table>
<thead>
<tr>
<th>Table 8-1. Monthly Usage Report Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Report Column</strong></td>
</tr>
<tr>
<td>Product</td>
</tr>
<tr>
<td>Unit of Measure</td>
</tr>
<tr>
<td>Units to be Reported</td>
</tr>
</tbody>
</table>

You might observe fluctuations in the Monthly Usage Report. If a Service Provider mixes perpetual and VMware Cloud Provider Program licensed hosts in a cluster and enables DRS, this mixing of licenses can increase the fluctuations. To reduce these fluctuations, create homogeneous clusters containing a single billing category. This homogeneous cluster approach results in a cluster of VMware Cloud Provider Program licensed hosts separate from a cluster of perpetually licensed hosts.

You can now generate Virtual Machines by Product Server (VMPS) reports for NSX and vSAN. To generate a VMPS report for NSX and vSAN, you must run at least one collection for the reporting period. The VMPS report for NSX is organized by product category (NSX-Base, NSX-Advanced, NSX-Enterprise) and NSX servers. The VMPS report for vSAN is organized by product category (vSAN Standard, vSAN Advanced, vSAN Enterprise) and vCenter Server instances.

\textbf{Note} If you change the name of a vSAN enabled cluster, you get the new cluster name with the license and version information in the Monthly Usage report. The record for the old name of the cluster is missing license and version information in the report.

**Customer Monthly Usage**

The Customer Monthly Usage report provides the same information as the monthly usage Units section of the Monthly Usage report, but presents the information by customer.

**Virtual Machine History**

Earlier vCloud Usage Meter versions collect information about the vCenter Server inventory on an hourly basis. The result is large amounts of redundant data, that takes storage resources and slows down the report generation process. vCloud Usage Meter now remains connected to each vCenter Server and continually collects the relevant changes from each instance. Only these changes are saved in the database. Instead of hourly samples the vCloud Usage Meter keeps time spans, during which everything relevant about a virtual machine remains constant. If you keep a virtual machine powered on for two months, then power it off, there is one record kept of that entire two-month interval. You can see this change in the vCenter Server
Generate a Product Consumption Report

You can generate a report to monitor product consumption.

Some reports cover only one month, for others you can select a range of months.

**Important** If you make a report request with an API that is more than one month for a report that does not support a range of months, the request fails with an error message.

**Procedure**

1. Click **Reports** in the top right menu bar of the Web application.
2. In the **Report** drop-down menu, select a report type.
3. Select the report criteria.
   - You can select a **Customer**, **Country**, or **Postal Code** by entering part of the item and then locating it in the list that appears. vCloud Usage Meter populates a list that matches the characters you enter. You can only select a report criteria for Virtual Machine History and Cluster History reports.
4. If you are using license sets, you can generate the reports for a particular license set by selecting the specific license set.
   - You can only generate Virtual Machine History and Cluster History reports for a specific license set. For more information about license sets, see “License Sets and Billing Categories,” on page 44. If you are not using license sets, skip this step.
5. Select the report’s beginning and ending month and year.
6. Select the **Include anonymized customer name in the report**, if necessary.
7. Select how to view the report:
   - **Browse** - view the report in a Web browser. There is a 6000 limit on the total rows.
   - **Export (tab separated)** - save the report to a file.
   - **Zip** - select check box to save the report as a ZIP file.

vCloud Usage Meter generates the report. vCloud Usage Meter retains the report in your browser’s cache until another report is generated or you log out from the virtual appliance.
Edit Reporting Sets

You can edit reporting sets and change their details.

Procedure

1. Click **Automatic Reporting** in the top right menu bar of the Web application.
2. Select the reporting set to edit from the left **Name** area.
   The last time the reporting set was sent appears at the bottom of the right area.
3. In the right details pane, change the details.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Enter the name of the reporting set. If you change the existing name, vCloud Usage Meter creates a set.</td>
</tr>
<tr>
<td>Reporting Day</td>
<td>Select the day of the month to send the automatic reporting set.</td>
</tr>
<tr>
<td>From Email</td>
<td>Enter the name to appear in the From line of the reporting set.</td>
</tr>
<tr>
<td>To Email</td>
<td>Enter the email address to receive the reporting set.</td>
</tr>
</tbody>
</table>
4. Click **Save**.

What to do next

You can delete old reporting sets. See “Remove Reporting Sets,” on page 48.

Remove Reporting Sets

You can remove reporting sets that are no longer needed.

Procedure

1. Click **Automatic Reporting** in the top right menu bar of the Web application.
2. Select the reporting set you want to remove from the left **Name** area.
3. Click **Delete**.

The reporting set is removed and is no longer included in the list.
Administrative and management tasks occur after you install and configure the vCloud Usage Meter virtual appliance. They include changes to the provisioned environment and routine administration and maintenance procedures.

This chapter includes the following topics:

- “Additional Configuration,” on page 49
- “Error Management,” on page 52
- “About SSL Certificates,” on page 53
- “vCloud Usage Meter Accounts Management,” on page 53
- “Back up the vCloud Usage Meter Database,” on page 54
- “Troubleshooting vCloud Usage Meter,” on page 55

Additional Configuration

After installing and configuring vCloud Usage Meter, you can change the default behaviour of the system.

Enable Java Management Extensions for vCloud Usage Meter

Enable Java Management Extensions (JMX) service to gain access to internal data such as database size, customer count, customer rules count, and other information. You can use any JMX client to access the vCloud Usage Meter JMX service.

Prerequisites

- Verify that you have a Java Management Extensions (JMX) client installed. JConsole is an example of a JMX client.
- Verify that you have a password to log in to the vCloud Usage Meter console as root.

Procedure

1. Log in to the virtual machine console as root.
3. Create a JMX password file by running the following command:
   
   ```
   echo "monitorRole password" > jmxremote.password
   
   You can change the monitorRole user password for jconsole in the jmxremote.password file. For the provided monitorRole user, replace password in jmxremote.password with your desired password.
   
   4. Run jmxcontrol.sh enable, with a root privilege.
To check JMX status, type `jmxcontrol.sh status`.

**Connect with the Java Management Extensions Client to Use the JMX Service**

Connect with your Java Management Extensions (JMX) client to use the JMX service. With JMX service, you gain access to internal data such as database size, customer count, customer rules count, and other information.

**Prerequisites**

Verify that you have enabled JMX for vCloud Usage Meter. For more information, see “Enable Java Management Extensions for vCloud Usage Meter,” on page 49.

**Procedure**

1. Open the JMX Client.
2. Enter the IP address of the vCloud Usage Meter server.
3. Enter port number 9003.
4. Enter user name `monitorRole`.
5. Enter your JMX read-only user password.

**Disable Java Management Extensions for vCloud Usage Meter**

Disable the Java Management Extensions (JMX) service to remove access to internal data such as database size, customer count, customer rules count, and other information.

**Prerequisites**

Verify that you have a password to log in to the vCloud Usage Meter console as `root`.

**Procedure**

1. Log in to the virtual machine console.
2. Enter `/opt/vmware/cloudusagemetering/scripts/jmxcontrol.sh disable`.

**Change vCloud Usage Meter Logging Level**

You can change the logging level of vCloud Usage Meter to collect more details.

**Prerequisites**

Verify that you have user privileges.

**Procedure**

1. Click Support in the top right menu bar of the Web application.
2. Select a level from the Logging Level drop-down menu.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trace</td>
<td>Select to include finer-grained events information than the Debug logging level.</td>
</tr>
<tr>
<td>Debug</td>
<td>Select to include more log detail than Info. This option causes the log capacity to fill faster.</td>
</tr>
<tr>
<td>Info</td>
<td>Select to include Warn, Error, Fatal, and Info messages. This level is the default logging level for vCloud Usage Meter libraries.</td>
</tr>
<tr>
<td>Warn</td>
<td>Select to include Warn, Error, and Fatal messages.</td>
</tr>
</tbody>
</table>
Option | Description
--- | ---
Error | Select to include Error and Fatal messages.
Fatal | Select to include Fatal messages.

**What to do next**

After you review the changed logging activity, consider setting the level for a minimum effect on log rolling capacity. For more information, see “Change Log History Capacity,” on page 51.

**Change Third-Party Libraries Logging Level**

You can change the logging level of third-party libraries. By default, the logging level is Warn.

**Prerequisites**

Verify that you have sufficient user privileges.

**Procedure**

1. Click Support in the top right menu bar of the Web application.
2. Select a level for Third Party Libraries Logging Level from the drop-down menu.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trace</td>
<td>Select to include finer-grained events information than the Debug logging level.</td>
</tr>
<tr>
<td>Debug</td>
<td>Select to include more log detail than Info. This option causes the log capacity to fill faster.</td>
</tr>
<tr>
<td>Info</td>
<td>Select to include Warn, Error, Fatal, and Info messages.</td>
</tr>
<tr>
<td>Warn</td>
<td>Select to include Warn, Error, and Fatal messages. This level is the default logging level for third-party libraries.</td>
</tr>
<tr>
<td>Error</td>
<td>Select to include Error and Fatal messages.</td>
</tr>
<tr>
<td>Fatal</td>
<td>Select to include Fatal messages.</td>
</tr>
</tbody>
</table>

**Change Log History Capacity**

You can change the log rolling capacity that vCloud Usage Meter allots to increase or decrease the amount of log history recorded.

vCloud Usage Meter allots 100 MB for log activity, before deleting the older log history. Do not reduce below this log rolling capacity. Increasing the log rolling capacity can be useful when the log level is also increased. For more information about logging levels, see “Change vCloud Usage Meter Logging Level,” on page 50.

**Procedure**

1. In the vSphere Web Client, start the vCloud Usage Meter remote console.
2. Log in as the usgmr user.
4. Change the capacity.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>log4j.appender.rootRoll.MaxFileSize=10MB</td>
<td>Enter a new maximum file size.</td>
</tr>
<tr>
<td>log4j.appender.rootRoll.MaxBackupIndex=10</td>
<td>Enter a new maximum backup index.</td>
</tr>
<tr>
<td>Option</td>
<td>Description</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>log4j.appender.rootRollWarn.MaxBackupIndex=10</td>
<td>Enter a new maximum backup index.</td>
</tr>
<tr>
<td>log4j.appender.rulesRoll.MaxBackupIndex=10</td>
<td>Enter a new maximum backup index.</td>
</tr>
<tr>
<td>log4j.appender.treeRoll.MaxFileSize=10MB</td>
<td>Enter a new maximum file size.</td>
</tr>
<tr>
<td>log4j.appender.treeRoll.MaxBackupIndex=10</td>
<td>Enter a new maximum backup index.</td>
</tr>
<tr>
<td>log4j.appender.collectorRoll.MaxFileSize=10MB</td>
<td>Enter a new maximum file size.</td>
</tr>
<tr>
<td>log4j.appender.collectorRoll.MaxBackupIndex=10</td>
<td>Enter a new maximum backup index.</td>
</tr>
</tbody>
</table>

**What to do next**

Review log history and consider changing the log rolling capacity back to the default capacity to conserve resources.

### Error Management

vCloud Usage Meter notifies you of errors that affect the accuracy of metering. You receive the error messages in the **Monitor** page of the vCloud Usage Meter Web application and in the Monthly Usage Report.

**IMPORTANT** If an issue prevents vCloud Usage Meter from collecting consumption data for a product for more than 24 hours, vCloud Usage Meter stops collecting consumption data for that product permanently. To continue collecting consumption data, navigate to **Manage > Products** in the Web application and click **Activate** next to the affected product.

To ensure accurate reporting, it is a responsibility of the vCloud Usage Meter operator to take actions on error messages and resolve issues that affect the vCloud Usage Meter data collection.

**Table 9-1. Common vCloud Usage Meter Error Messages**

<table>
<thead>
<tr>
<th>Error Message</th>
<th>Cause</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>No route to host (Host unreachable)</td>
<td>There is a network connectivity failure in your environment or you must configure the DNS for the affected host.</td>
<td>Ping the affected host and use <strong>nslookup</strong> to determine if the problem is in the network or in the DNS server.</td>
</tr>
<tr>
<td>Unable to find valid certification path to requested target</td>
<td>The vCenter Server certificate changed.</td>
<td>In the vCloud Usage Meter Web application, navigate to <strong>Manage &gt; Products</strong>, click <strong>Edit</strong>, and then click <strong>Save</strong> for the affected vCenter Server to save the new certificate.</td>
</tr>
</tbody>
</table>
### Table 9-1. Common vCloud Usage Meter Error Messages (Continued)

<table>
<thead>
<tr>
<th>Error Message</th>
<th>Cause</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The server sent HTTP status code 503:</td>
<td>The vCenter Server API service is</td>
<td>The vCenter Server might be running but not responding to API requests.</td>
</tr>
<tr>
<td>Service Unavailable</td>
<td>unavailable.</td>
<td>Verify that the vCenter Server API services are started.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cannot complete login due to an incorrect user name</td>
<td>The provided vCenter Server credentials are</td>
<td>Provide correct credentials for the affected vCenter Server instance. For</td>
</tr>
<tr>
<td>or password</td>
<td>incorrect.</td>
<td>more information see, “Add vCenter Server,” on page 26.</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Note</strong> Consider using a service account with a password that does not</td>
</tr>
<tr>
<td></td>
<td></td>
<td>expire.</td>
</tr>
</tbody>
</table>

### About SSL Certificates

This section is regarding SSL certificates using internal server names. These changes are outside of VMware’s control and the following details are provided for an informational purpose.

For details of the requirements, see:

https://cabforum.org/internal-names/

https://www.digicert.com/internal-names.htm/

Any certificate issued after these requirements were implemented expired on November 1, 2015 and you will have to issue new certificates and might also have to implement an internal Certificate Authority (CA). The baseline requirements prevent Certificate Authorities (CAs) from issuing internal name certificates that expire after November 1, 2015. It is not possible to obtain a publicly trusted certificate for any host name that cannot be externally verified after 2015. In addition, any certificate issued before these guidelines were implemented and which expire after October 2016 are revoked then and you have to replace their certificates again.

These requirements also dictate that CAs must immediately begin to phase out issuance of SSL Certificates for internal server names or reserved IP addresses and eliminate (revoke) any certificates containing internal names. CA/B requires CAs to revoke any certificates containing internal names by October 2016.

To install a new certificate on vCloud Usage Meter, see https://kb.vmware.com/kb/2047572.

### vCloud Usage Meter Accounts Management

For security reasons, you can change the passwords of vCloud Usage Meter accounts.

- **Change the vCloud Usage Meter Root Password** on page 54
  
  After you deploy the vCloud Usage Meter appliance, you can change the root account password, due to security restrictions or other reasons.

- **Unlock Usgmtr Account** on page 54
  
  If you enter the wrong password for the usgmtr account too many times, the account locks. You can unlock the account by completing the following steps.
Change the vCloud Usage Meter Root Password

After you deploy the vCloud Usage Meter appliance, you can change the root account password, due to security restrictions or other reasons.

Procedure

1. In the vSphere Web Client, restart the guest operating system of the vCloud Usage Meter virtual appliance.
2. Click the console and wait for the GNU GRUB menu to appear.
3. In the GNU GRUB menu, use the arrow keys to select SLES 12-SP2 and press the E button.

   **Note** The GNU GRUB menu remains on the screen for several seconds before it starts the boot sequence.

4. Use the arrow keys to go to the line that begins with linux and append the init=/bin/bash string at the end of the line.
5. To boot the system, press Ctrl+X or F10.
6. To change the root account password, enter the following commands in the console:
   
   ```
   mount -o remount,rw /
   passwd
   ```

7. Enter the new password and re-enter the same password to confirm the change.
8. Restart the vCloud Usage Meter appliance by using the vSphere Web Client.

   You successfully changed the root account password of the vCloud Usage Meter appliance.

Unlock Usgmtr Account

If you enter the wrong password for the usgmtr account too many times, the account locks. You can unlock the account by completing the following steps.

Prerequisites

Verify that you have a password to log in to the vCloud Usage Meter console as root.

Procedure

1. Log in to the virtual machine console as the root user.
2. Run the `pam_tally2 --user=usgmtr --reset` command to unlock the usgmtr account.

Back up the vCloud Usage Meter Database

You can back up all product consumption data that vCloud Usage Meter collects. You can create backups in several formats and use the resulting file for troubleshooting or as a backup before upgrading.

**Important** All product consumption data that vCloud Usage Meter collects is maintained in the virtual appliance database. To maintain history, do not delete the vCloud Usage Meter virtual appliance.

Procedure

1. In the vSphere Web Client, start the vCloud Usage Meter remote console.
2. Log in as the usgmtr user.
3 Run the following command.

```
pg_dump -U usgmtr -O usgmtr | gzip > {partner_name}_um_{UM_version}_`date +%Y%m%d%H%M%S`_dbdump.sql.gz
```

The database is saved to a file.

**Troubleshooting vCloud Usage Meter**

If you have appropriate user privileges, you can troubleshoot vCloud Usage Meter operations to diagnose problems or change default settings. The procedures are available either in the vCloud Usage Meter Web application or through the console.

**About vCloud Usage Meter User Activity and Process Notifications**

vCloud Usage Meter displays notices about user activities and background processes at the top of the Web page. For example, a notification of user activity might include a confirmation that you changed the service provider name in the contact details. A process notification informs you about what the system is doing, such as generating a product consumption report.

Some notifications disappear, whereas some notifications persist from session to session unless cleared or the vCloud Usage Meter virtual machine is restarted. You can also view notifications as part of a log.

**Using vCloud Usage Meter Logs for Troubleshooting**

You can use vCloud Usage Meter logs for troubleshooting aid. In the logs, you can view and monitor details about activities and processes. You can change log settings to collect more details.

**Table 9-2. vCloud Usage Meter Log Operations**

<table>
<thead>
<tr>
<th>Operation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Review notifications</td>
<td>Review and clear notifications that vCloud Usage Meter displays at the top of each page about user activities and background processes. These notifications also appear in the logs. For more information, see “About vCloud Usage Meter User Activity and Process Notifications,” on page 55.</td>
</tr>
<tr>
<td>View vCloud Usage Meter logs</td>
<td>View logs to monitor activities in the virtual appliance or to troubleshoot problems. Click Support in the top right menu bar of the Web application to view the support bundle, which also includes logs.</td>
</tr>
<tr>
<td>Change logging level</td>
<td>Change the log level setting to collect more details. For more information, see “Change vCloud Usage Meter Logging Level,” on page 50.</td>
</tr>
<tr>
<td>Increase log rolling capacity</td>
<td>Change the allotted capacity for accumulating log history, so that more history is available for review. For more information, see “Change Log History Capacity,” on page 51.</td>
</tr>
<tr>
<td>Generate support bundles</td>
<td>Generate support bundle collections of log files as directed by technical support. For more information, see “Generate Troubleshooting Diagnostic Information,” on page 56.</td>
</tr>
</tbody>
</table>
Generate Troubleshooting Diagnostic Information

You can generate system and runtime information, and support bundle collections of log files, as directed by technical support to help diagnose problems.

Prerequisites

Verify that you have user privileges.

Procedure

1. Click Support in the top right menu bar of the Web application.
2. Review the diagnostic activity information.

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Runtime Information</td>
<td>Information such as heap used.</td>
</tr>
</tbody>
</table>

3. In the Support Bundle area, click Generate to generate a collection of log files. Coordinate with Technical Support to diagnose problems.

Support bundles use disk space. Delete them by clicking Delete support bundles when you no longer need them.

What to do next

See “Change vCloud Usage Meter Logging Level,” on page 50.

Technical Support

Service providers that encounter technical issues with the vCloud Usage Meter appliance follow the standard VMware support processes.

Self-Help

If you encounter technical issues, you can use the following self-help resources to find a solution:

- Knowledge Base
- VMware Communities

Support Requests

If you encounter technical issues in any of the following categories, open a Support Request:

- Installation and configuration issues
- Issues with generating product usage reports
- Issues with delivering product usage reports

To file a Support Request, follow the process at My VMware.

For information about filing a Support Request in My VMware, see http://kb.vmware.com/kb/2006985.

Provide the following information in the Support Request:

- The version of the vCloud Usage Meter that you use.
- The version of the vCenter Server where you deploy the vCloud Usage Meter .
- The vCloud Usage Meter support bundle.
For information about generating the vCloud Usage Meter support bundle, see “Generate Troubleshooting Diagnostic Information,” on page 56.

If the issue pertains to a particular report, generate the report, upload it in the Support Request, and send it to your aggregator.

For more information about generating reports with the vCloud Usage Meter appliance, see “Generate a Product Consumption Report,” on page 47.

The VMware support team might request additional information and actions from you, depending on the specific issue that you encounter.

License Requests

For license inquiries and product requests, get in touch with your aggregator contact first and then your VMware contact.

Other Issues

If you have difficulties understanding the VMware Cloud Provider Program, or analyzing reports, contact your aggregator sales contact.

For Partner Central issues and inquiries, email PartnerNetwork@vmware.com.

For contract-related issues and inquiries, email vCAN-Operations@vmware.com.

For other issues, contact a VMware Cloud Provider Program representative.

End of General Support

You can find the End of General Support date for a specific vCloud Usage Meter version at VMware Lifecycle Product Matrix.
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