

vRealize Business for Cloud Install Guide

vRealize Business for Cloud Standard 7.0.1 and vRealize Business for Cloud Advanced 7.0.1
vRealize Business 7.0.1
vRealize Business for Cloud 7.0.1

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vRealize Business for Cloud Installation and Administration

The VMware® *vRealize Business for Cloud™ Installation and Administration* guide provides information about installing and configuring vRealize Business for Cloud.

Intended Audience

This information is intended for anyone who wants to install and configure vRealize Business for Cloud. The information is written for administrators who are familiar with virtual machine technology and data center operations.

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>.

Introduction to vRealize Business for Cloud

1

VMware vRealize Business for Cloud provides capabilities that allow users to gain greater visibility into financial aspects of their cloud infrastructure and let them optimize and improve these operations.

This chapter includes the following topics:

- [“Challenges Faced by the Manager of Cloud Operations,”](#) on page 7
- [“vRealize Business for Cloud Goals,”](#) on page 7
- [“vRealize Business for Cloud Architecture,”](#) on page 8
- [“Supported Product Integrations,”](#) on page 10

Challenges Faced by the Manager of Cloud Operations

The Manager of cloud operations in an organization constantly faces the following challenges regarding cost visibility and optimization in the delivery of Infrastructure as a Service (IaaS).

- What is the total spending and of what is it comprised?
- What is the cost of delivering a unit of IaaS?
- How does consumption change over time?
- What are these services used for and what is the cost allocation for each?
- How is my cost efficiency compared to that of other public cloud infrastructures?
- What is the cost of potential alternatives to delivering IaaS?
- How do I use the information above to optimize the cost of my existing and future operations?
- How do I create an accurate consumption report to show it to the stakeholders?

vRealize Business for Cloud Goals

vRealize Business for Cloud provides business management and cost transparency capabilities to your infrastructure and public cloud.

- Determine pricing of vRealize Automation blueprints by using the current cost and utilization levels of virtual machines as a reference.
- Make decisions related to placement of workloads, either in the private or public clouds, based on the cost and the services available in your cloud environment.
- Provide consumption cost of virtual machine and blueprints based on business unit across the cloud environment.
- Let infrastructure stakeholders manage costs based on capital expenditure and operating expenditure.

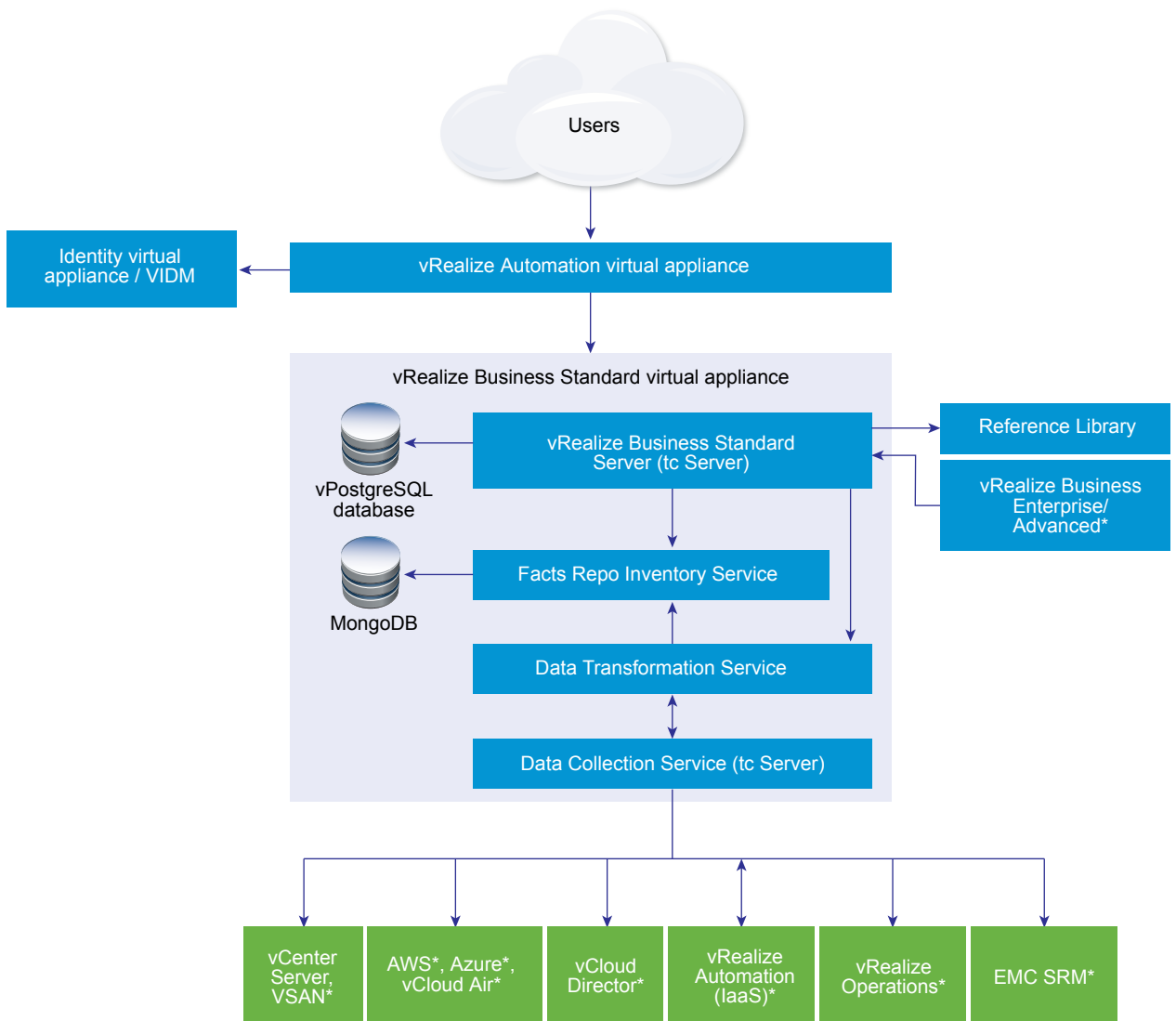
- Get accurate cost of virtual machines without performing any financial configuration.
- Provide cost visibility of storage and public cloud accounts.
- Support costing of non-ESXi physical servers managed by vRealize Automation.

vRealize Business for Cloud Architecture

vRealize Business for Cloud provides users greater visibility into the financial aspects of their IaaS delivery and lets them optimize and improve these operations.

The architecture illustrates the main components of vRealize Business for Cloud, the server, FactsRepo inventory service, data transformation service, data collection services, and reference database.

Figure 1-1. vRealize Business for Cloud Architecture



*Optional

Data Collection Services

Data collection services include a set of services for each private and public cloud endpoint such as vCenter Server, vCloud Director, AWS, and vCloud Air for retrieving both inventory information (servers, virtual machines, clusters, storage devices, and associations between them) and usage (CPU and memory) statistics. The data collected from data collection services is used for cost calculations.

FactsRepo Inventory Service

It is an inventory service built on MongoDB to store the collected data that the vRealize Business for Cloud server uses for the cost computation.

Data Transformation Service

The data transformation service converts the source specific data received from data collection services into the structures consumable by FactsRepo. The data transformation service is a single point of aggregation of data from all data collectors.

vRealize Business for Cloud Server

vRealize Business for Cloud server is a web application that runs on Pivotal tc Server. vRealize Business for Cloud has multiple data collection services that run periodically to collect inventory information and statistics and uses vPostgres as the persistent store. The data collected from data collection services is used for cost calculations.

NOTE The vPostgres stores only computed data; FactsRepo stores raw data.

Reference Database

This component is responsible for providing default, out-of-the-box costs for each of the supported cost drivers. Reference database is updated automatically or manually, and user can download the latest data set and import the data set into vRealize Business for Cloud. The new values affect cost calculation. Reference data that is used depends on currency you select during installation. You cannot change the currency configuration after deploying vRealize Business for Cloud.

Communication between Server and Reference Database

Reference database is a compressed and encrypted file, which the users can download and install manually or update automatically. You can update the most current version of reference database. For more information, see [“Update the Reference Database for vRealize Business for Cloud,”](#) on page 53.

Other Sources of Information

These sources are optional, and are used only if installed and configured. The sources include vRealize Automation, vCloud Director, vRealize Operations Manager, Amazon Web Services (AWS), Microsoft Azure, and vCloud Air, and EMC Storage Resource Manager (SRM).

How vRealize Business for Cloud works

vRealize Business for Cloud collects data from external sources continuously and periodically updates FactsRepo. The collected data can be viewed on the dashboard or can generate the report. The data synchronization or update happens at regular interval. However, you can manually trigger the data collection process when the inventory changes occur, such as initialization of the system or addition of a private, public, or hybrid cloud account.

External Interfaces

Below are the interfaces/APIs published to external applications.

Interface	Description
vRealize Automation	Call the vRealize Business for Cloud to get the cost profiles.
vRealize Business Enterprise	Can receive inventory information, which is used as a basis for cost model creation by using the REST APIs.

Supported Product Integrations

vRealize Business for Cloud integrates with various products and lets you use the information directly from the integration without having to manually enter the information.

VMware vSphere

vRealize Business for Cloud allows addition of one or more vCenter Server machines to get the complete inventory list. The inventory list contains information related to virtual machines configuration, ESXi host capacity, cluster capacity, storage policies, storage capacity, attributes and tags.

VMware vCloud Director

vRealize Business for Cloud integration with vCloud Director lets you view the organizational constructs from vCloud Director. vRealize Business for Cloud supports organization, organization virtual datacenter (vDC), virtual machines, and vApp constructs.

VMware vRealize Business Enterprise

vRealize Business for Cloud collects data by using REST APIs. The information includes object properties along with costs and allocations around virtual machines, physical servers, data stores, and the public cloud. vRealize Business Enterprise uses these APIs to collect private and public cloud information, which can be used in cost models and reports.

VMware vRealize Operations Manager

vRealize Business for Cloud can integrate with vRealize Operations Manager 5.x and 6.x through a vCenter Server. In an integrated environment, vRealize Business for Cloud collects the usable CPU and memory utilization for each clustered or unclustered ESXi host. It also collects information about the oversized virtual machines from vRealize Operations Manager.

When vRealize Business for Cloud is integrated with vRealize Operations Manager 6.x, vRealize Business for Cloud collects additional details about powered off and idle VMs and also details about used and remaining capacity of each data center in the registered vCenter Server. You can also set the expected CPU and memory utilization for the host by using the system defined value, which is computed by using historical averages, or by defining a global value, or by defining a value at each cluster level. This value is used for calculating the virtual machine cost allocation.

VMware vRealize Automation

vRealize Business for Cloud is tightly integrated with vRealize Automation. vRealize Business for Cloud appears as a tab, named as **Business Management**, in the vRealize Automation user interface. vRealize Business for Cloud uses the common services of vRealize Automation such as Single Sign-On support and identity management by means of an embedded VMware Identity Manager authentication and

authorization. The Infrastructure as a Service (IaaS) component of vRealize Automation consumes the base rate APIs of vRealize Business for Cloud to compute blueprint price of virtual machines.

vRealize Business for Cloud also has data integration with IaaS component of vRealize Automation. You can define rules and categorize according to vRealize Automation hierarchy.

Amazon Web Services, Microsoft Azure, and vCloud Air

vRealize Business for Cloud can integrate with public cloud platform such as Amazon Web Services (AWS) and Microsoft Azure, which enables your organization to dynamically scale its IT infrastructure.

vRealize Business for Cloud provides its users an overview of how their investments are spread across Amazon Web Services (AWS) and Microsoft Azure public cloud.

vRealize Business for Cloud integrates with vCloud Air to provide public services and hybrid capabilities.

vRealize Business for Cloud supports Dedicated Cloud, Virtual Private Cloud and Pay As You Go (PAYG) subscription types.

EMC Storage Resource Management

vRealize Business for Cloud can integrate with EMC Storage Resource Management (SRM), which provides information about arrays, disks, and LUNs. These attributes forms the storage infrastructure of an organization and helps to determine the storage cost of virtual machines based on computed data store base rates. vRealize Business for Cloud supports EMC SRM 3.2 and later versions. Only the following EMC array families are supported: VNX, VMAX, ISILON, and VPLEX.

Installing vRealize Business for Cloud

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You can install vRealize Business for Cloud as a virtual appliance on a vCenter Server or as a vApp on vCloud Director.

This chapter includes the following topics:

- [“vRealize Business for Cloud System Requirements,”](#) on page 14
- [“vRealize Business for Cloud Deployment Scenarios and Best Practices,”](#) on page 16
- [“Deploy vRealize Business for Cloud Virtual Appliance on vSphere,”](#) on page 17
- [“Deploy vRealize Business for Cloud Virtual Appliance on vCloud Director,”](#) on page 19
- [“Deploying a Remote Data Collector,”](#) on page 21
- [“Register a Remote Data Collector with vRealize Business for Cloud Server,”](#) on page 21
- [“Start the vRealize Business for Cloud Appliance,”](#) on page 21
- [“Register vRealize Business for Cloud with vRealize Automation,”](#) on page 22
- [“Access vRealize Business for Cloud by using vRealize Automation,”](#) on page 23
- [“Unregister vRealize Business for Cloud from vRealize Automation,”](#) on page 24
- [“Managing vRealize Business for Cloud Virtual Appliance,”](#) on page 25
- [“Configure Time Synchronization,”](#) on page 27
- [“Change or Replace the SSL Certificate of vRealize Business for Cloud,”](#) on page 27
- [“Enable or Disable SSH Settings,”](#) on page 28
- [“Join or Leave VMware Customer Experience Improvement Program for vRealize Business for Cloud,”](#) on page 28

vRealize Business for Cloud System Requirements

Before you install vRealize Business for Cloud, verify that minimum hardware and software requirements are met.

vRealize Business for Cloud Sizing and Server Specification Requirements

The vRealize Business for Cloud server requires a minimum of 50 GB of disk space, 8 GB memory, and 4 vCPU. If you are deploying only the remote data collector, without the vRealize Business for Cloud server, you can reduce the memory size to 2GB.

NOTE You can increase the number of vCPUs and memory of the vRealize Business for Cloud virtual appliance.

- 1 Shut down the vRealize Business for Cloud virtual appliance virtual machine.
- 2 Right click on the virtual machine and select **Properties**.
- 3 Select the **Hardware** tab and update the following parameters.
 - Number of virtual CPUs: 4
 - Cores per socket: 1
 - Total memory: 8 GB
 - Select the **Expose hardware-assisted CPU virtualization to guest OS** option, if the virtual machine is deployed on vCloud Director.
- 4 Click **OK**.
- 5 Start the vRealize Business for Cloud virtual appliance virtual machine.
- 6 Login to the virtual appliance and perform the following:
 - a Stop facts-repo by running the `monit stop facts-repo` command.
 - b Navigate to `/etc/systemd/system/facts-repo.service` and increase the memory parameter. For example, replace the `-Xmx900m` parameter to `-Xmx1024m` parameter.
 - c Run the `systemctl daemon-reload` command.
 - d Start facts-repo by running the `monit start facts-repo` command.
- 7 Run the `monit start itbm-server` command to start the vRealize Business for Cloud server.

Port Requirements

Following ports should be open for communication between different entities.

Source	Destination	Protocol	Port	Description
vRealize Automation	vRealize Business for Cloud	HTTPS	443	For user interface connections
vRealize Business for Cloud	vRealize Automation, vCenter Server, vCloud Director, vRealize Operations Manager, EMC SRM, vCloud Air, Amazon	HTTPS	443	For the vRealize Business for Cloud data collection from multiple systems.
vRealize Automation	vRealize Business for Cloud	SSH	22	For an external SSH connection

Source	Destination	Protocol	Port	Description
vRealize Business for Cloud Web console (browser)	vRealize Business for Cloud	HTTPS	5480	For the web management interface
vRealize Automation	vRealize Business for Cloud	HTTPS	5050	For pricing services
vRealize Business for Cloud	vCenter Server Inventory Service	HTTPS	10443	For a successful data collection NOTE The default port for inventory service is 10433. However, if it is configured with a different port, that port must be opened between vRealize Business for Cloud and vCenter Inventory service.
Data collection manager	vRealize Business for Cloud	HTTPS	9443	For logging into a remote data collection manager to register with vRealize Business for Cloud server, add data sources and manage data collectors.

Virtualization Software Requirements

Before you install the vRealize Business for Cloud virtual appliance, your environment must meet certain requirements.

- VMware ESXi 5.1 and later. See vSphere documentation at <https://www.vmware.com/support/pubs/vsphere-esxi-vcenter-server-pubs.html>.
- vCenter Server 5.x, 6.x and later. See vSphere documentation at <https://www.vmware.com/support/pubs/vsphere-esxi-vcenter-server-6-pubs.html>.
- vCloud Director 5.5 and later and 8.0. See vCloud Director documentation at https://www.vmware.com/support/pubs/vcd_pubs.html.
- vRealize Automation 6.2.3 and later 6.2.x, 7.0 and 7.0.1. See vRealize Automation documentation at <https://www.vmware.com/support/pubs/vcac-pubs.html>.

Web Interface Support

Because vRealize Business for Cloud is integrated with vRealize Automation, you can use all of the browsers that vRealize Automation supports.

- Microsoft Internet Explorer 10 and later and its compatibility modes. In Internet Explorer, select **Tools > Compatibility View Settings** and disable the **Display intranet sites in Compatibility View** check box.
- Google Chrome 36.x and later.
- Mozilla Firefox 31.x and later.

You must have the VMRC plug-in for vCloud Director installed to work with your browser.

NOTE The screen resolution must be above 1024x768 to view the complete vRealize Business for Cloud user interface. If you set the resolution to 1024x768 or lower, you might not see all the options such as **Status** and **Help** on the user interface. To view the complete vRealize Business for Cloud user interface, zoom out the browser or increase the screen resolution.

vRealize Business for Cloud Deployment Scenarios and Best Practices

vRealize Business for Cloud 7.0.1 is compatible with vRealize Automation 6.2.3 and later 6.2.x versions, and with vRealize Automation 7.0 and 7.0.1 versions.

Deployment Scenarios

You can deploy the vRealize Business for Cloud appliance either with vRealize Automation standalone (use this approach if you do not own vRealize Automation) or with vRealize Automation with the Infrastructure as a Service (IaaS) component integrated.

Following are the scenarios to deploy the vRealize Business for Cloud virtual appliance:

- Deploy vRealize Business for Cloud with vRealize Automation that is integrated with the IaaS component.
- Deploy vRealize Business for Cloud with vRealize Automation that does not have IaaS integration.

Table 2-1. Deployment Scenarios

Scenario	Steps to perform
To deploy with vRealize Automation 6.2.x	<ol style="list-style-type: none"> 1 Deploy and configure VMware identity virtual appliance (SSO). 2 Deploy the vRealize Automation virtual appliance and configure to point to identity virtual appliance. 3 Deploy the vRealize Business for Cloud virtual appliance and then register vRealize Business for Cloud with vRealize Automation. <p>NOTE If you are using vRealize Business for Cloud standalone version, apply the vRealize Automation license key provided on the vRealize Automation tab of the vRealize Business for Cloud virtual appliance.</p>
To deploy with vRealize Automation 7.x.x	<ol style="list-style-type: none"> 1 Deploy the vRealize Automation virtual appliance. 2 Deploy the vRealize Business for Cloud virtual appliance and then register vRealize Business for Cloud with vRealize Automation. <p>NOTE If you are using vRealize Business for Cloud standalone version, apply the vRealize Business for Cloud license key in the vRealize Automation virtual appliance.</p>

Best Practices

- For deploying remote data collectors, ensure that the data collector is in the same LAN where your vCenter Server setups are deployed. In case of embedded data collectors, deploy vRealize Business for Cloud in the same LAN where your vCenter Server setups are deployed.
- Configure Network Time Protocol (NTP) server in vRealize Business for Cloud, vCenter Server, VMware identity virtual appliance, and vRealize Automation, which ensures consistent reference time.

Deploy vRealize Business for Cloud Virtual Appliance on vSphere

You can deploy the vRealize Business for Cloud virtual appliance by using a vSphere client on the vCenter Server. The vRealize Business for Cloud virtual appliance will be in the OVA format.

Prerequisites



Download and Install vRealize Business for Cloud on vSphere.
(http://link.brightcove.com/services/player/bcpid2296383276001?bctid=ref:video_download_install_vrbs_on_vsphere)

- Log in to the vSphere server by using a vSphere client or web client as a user with administrator privileges.
- Verify that your system meets all the requirements as described in “vRealize Business for Cloud System Requirements,” on page 14.
- Verify that you have deployed and configured the VMware identity virtual appliance in your cloud environment. See *vRealize Automation Installation Guide*.
- Verify that you have deployed and configured the vRealize Automation virtual appliance in your cloud environment. See *vRealize Automation Installation Guide*.

Procedure

- 1 In the vSphere Client, select **File > Deploy OVF Template**.
- 2 Browse to the OVA file, select it, and click **Next**.
- 3 On the OVF Template Details pane, click **Next**.
- 4 Accept the End User License Agreement and click **Next**.
- 5 On the Name and Location pane, type a unique virtual appliance name according to the IT naming convention of your organization and click **Next**.
If more than one data center is present, select the data center on which to deploy the virtual appliance.
- 6 On the Host/Cluster pane, select the host or cluster on which to deploy the virtual appliance, and click **Next**.
- 7 On the Storage pane, select the storage location on which to store the virtual appliance, and click **Next**.
- 8 On the Disk Format pane, select **Thick Provision Lazy Zeroed** as the disk format and click **Next**.
- 9 In the Network Mapping pane, select the destination network and click **Next**.
- 10 On the Properties pane,
 - Set the root user password for your appliance.
 - Select the currency of your choice.

Currency Name	Abbreviation
Australian Dollar	AUD
Brazilian Real	BRL
Canadian Dollar	CAD
China Yuan Renminbi	CNY
Danish Krone	DKK
Euro	EUR
British Pound	GBP

Currency Name	Abbreviation
Hong Kong Dollar	HKD
Indonesia Rupiah	IDR
Israeli Shekel	ILS
Indian Rupee	INR
Japanese Yen	JPY
Korean (South) Won	KRW
Mexican Peso	MXN
Malaysia Ringgit	MYR
Norway Krone	NOK
New Zealand Dollar	NZD
Russia Ruble	RUB
Saudi Arabian Riyal	SAR
Sweden Krona	SEK
Swiss Franc	CHF
Singapore Dollar	SGD
Taiwan New Dollar	TWD
Thai Baht	THB
Turkey Lira	TRY
US Dollar	USD
South Africa Rand	ZAR

NOTE You cannot change the currency configuration after deploying vRealize Business for Cloud. If you do not select a currency, US Dollar (USD) is selected, by default.

- To deploy the vRealize Business for Cloud server, select the **Enable Server** option. If you are deploying only a data collector for remote access, deselect this option.
- Select the **Enable SSH Service** option for remote access to virtual machine Linux console. It is recommended to enable this option only if debugging of the appliance is required. You can also enable SSL from the vRealize Business for Cloud web console. See [“Enable or Disable SSH Settings,”](#) on page 28.
- Select the **Join the VMware Customer Experience Improvement Program** option to allow VMware to collect technical details about vRealize Business for Cloud usage. This information is automatically collected every seven days.
- Configure the default gateway, DNS, static IP address, and netmask values. It is recommended to configure the default gateway, DNS, IP address, and netmask values manually.

Click **Next**.

- 11 Select **Power on after deployment**, and click **Finish** to confirm the settings and begin the deployment.

The process of deploying the vRealize Business for Cloud virtual appliance might take a few minutes.

What to do next

Start your appliance. See [“Start the vRealize Business for Cloud Appliance,”](#) on page 21.

Deploy vRealize Business for Cloud Virtual Appliance on vCloud Director

To install vRealize Business for Cloud on vCloud Director, you must download the appliance. For information about adding vApps, see the *vCloud Director* documentation.

Prerequisites

- Deploy vCloud Director 5.1 or later.
- Log in to the vCloud Director as a user with administrator privileges.
- Verify that the system meets all the requirements as described in “vRealize Business for Cloud System Requirements,” on page 14.
- Verify that you have deployed and configured the VMware identity virtual appliance in your cloud environment. See *vRealize Automation Installation Guide*.
- Verify that you have deployed and configured the vRealize Automation virtual appliance in your cloud environment. See *vRealize Automation Installation Guide*.
- Convert OVA format to OVF format. See <https://www.vmware.com/support/developer/ovf/>. Verify that the .ovf and .vmdk files are in the same folder.

Procedure

- 1 Log in to vCloud Director and select the organization in which to deploy vRealize Business for Cloud.
- 2 Select the Catalog and click the **vApp Templates** tab.
- 3 Click the **Upload** icon.
- 4 In the Upload OVF as a Template window, provide the requested information.
Configure the IP allocation from the static pool.
- 5 If a certificate warning appears, click **OK** to continue uploading the appliance.
- 6 Right-click the uploaded template, select **Add to My Cloud**, and follow the prompts to add a vApp.
In the Custom Properties pane, set the root user password for the appliance.

- Define networking properties for the appliance.
 - Select the currency of your choice.

Currency Name	Abbreviation
Australian Dollar	AUD
Brazilian Real	BRL
Canadian Dollar	CAD
China Yuan Renminbi	CNY
Danish Krone	DKK
Euro	EUR
British Pound	GBP
Hong Kong Dollar	HKD
Indonesia Rupiah	IDR
Israeli Shekel	ILS
Indian Rupee	INR

Currency Name	Abbreviation
Japanese Yen	JPY
Korean (South) Won	KRW
Mexican Peso	MXN
Malaysia Ringgit	MYR
Norway Krone	NOK
New Zealand Dollar	NZD
Russia Ruble	RUB
Saudi Arabian Riyal	SAR
Sweden Krona	SEK
Swiss Franc	CHF
Singapore Dollar	SGD
Taiwan New Dollar	TWD
Thai Baht	THB
Turkey Lira	TRY
US Dollar	USD
South Africa Rand	ZAR

NOTE You cannot change the currency configuration after deploying vRealize Business for Cloud. If you do not select a currency, US Dollar (USD) is selected, by default.

- To deploy the vRealize Business for Cloud server, select the **Enable Server** option. If you are deploying only a data collector for remote access, deselect this option.
 - Select the **Enable SSH Service** option for remote access to virtual machine Linux console. It is recommended to enable this option only if debugging of the appliance is required. You can also enable SSL from the vRealize Business for Cloud web console. See [“Enable or Disable SSH Settings,”](#) on page 28.
 - Select the **Join the VMware Customer Experience Improvement Program** option to allow VMware to collect technical details about vRealize Business for Cloud usage. This information is automatically collected every seven days.
- 7 In the Custom Hardware pane, click **Next**.
 - 8 In the Ready to Complete pane, click **Finish**.
 - 9 Navigate to **My Cloud**.
 - 10 Right-click the vRealize Business for Cloud virtual machine and select **Properties**.
 - 11 On the **Guest OS Customization** tab, select **Enable guest customization**, deselect **Allow local administrator password**, and click **OK**.
 - 12 Right-click the newly added vApp and select **Start**.

What to do next

Start your appliance. See [“Start the vRealize Business for Cloud Appliance,”](#) on page 21.

Deploying a Remote Data Collector

You can deploy a remote data collector to enable remote data collection from geographically distributed endpoints.

NOTE To deploy the remote data collector, deselect the **Enable Server** option while deploying vRealize Business for Cloud . By default, the vRealize Business for Cloud deployment process embeds a data collector.

The data collector interacts with vCenter Server, vCloud Director, EMC Storage Resource Manager (SRM), and public cloud instances (AWS, vCloud Air), and pushes the data to the vRealize Business for Cloud server.

NOTE Azure is not a part of remote data collection, so you cannot add an Azure account from the remote data collector.

Register a Remote Data Collector with vRealize Business for Cloud Server

After you deploy a remote data collector, you must register it with a vRealize Business for Cloud server to process inventory information (servers, virtual machines, clusters, storage devices, and associations between them) and usage (CPU and memory) statistics from the data sources.

Prerequisites

- Verify that you have deployed a vRealize Business for Cloud server.
- Verify that you have generated a one-time key on vRealize Business for Cloud server. See [“Generate One Time Key for Remote Data Collection,”](#) on page 55.

Procedure

- 1 Log in to the data collection manager on the 9443 port as a root user in following URL format - *https://Remote_Data_Collector_IP_address:9443/dc-ui/*.
- 2 Expand the **Register with vRealize Business Server** option.
- 3 Enter the IP address or the host name of the vRealize Business for Cloud server.
- 4 Enter or paste the one-time key that you have generated on vRealize Business for Cloud.
- 5 Click **Update**.

What to do next

Add data sources to the remote data collector, see [“Manage Private Cloud Connections,”](#) on page 38 or add public cloud accounts, see [“Manage Public Cloud Accounts,”](#) on page 41.

Start the vRealize Business for Cloud Appliance

You must start the vRealize Business for Cloud virtual appliance to verify that your installation was successful.

Prerequisites

Verify that you have the VMRC plug-in for vCloud Director installed to work with your browser. See [“Web Interface Support,”](#) on page 15.

Procedure

- 1 Open the vRealize Business for Cloud appliance.
 - From the vSphere Client, locate the powered on virtual machine and click the **Console** tab.
 - From vCloud Director, double-click the vApp and select **Popout Console**.
- 2 Wait for few minutes for appliance to start completely and then press **Enter**.
This confirms that your appliance has started successfully.
- 3 Perform the following steps to verify whether the vRealize Business for Cloud web console is accessible on a browser.
 - a Navigate to the appliance URL by using a supported browser.
The appliance URL format is `https://vRealize_Business_for_Cloud_IP_address:5480`.
 - b Login to the appliance by using the **root** user name and password that you have defined at the time of deployment.
 - c Click **Login**.
The vRealize Business for Cloud Web console opens in the browser.

What to do next

For the first time deployment users, register your virtual appliance, see “[Register vRealize Business for Cloud with vRealize Automation](#),” on page 22. If you have deployed the vRealize Business for Cloud 7.0 version, “[Migrate Your vRealize Business Standard 6.2.3 to 7.x.x](#),” on page 33.

Register vRealize Business for Cloud with vRealize Automation

You can use the vRealize Business for Cloud Web console to configure vRealize Business for Cloud appliance with vRealize Automation.

Prerequisites

Register vRealize Business for Cloud with vRealize Automation
(http://link.brightcove.com/services/player/bcpid2296383276001?bctid=ref:video_register_vrealize_business_standard_assign_roles)

- Verify that you have deployed and configured the vRealize Automation virtual appliance in your cloud environment.
- Configure Network Time Protocol (NTP) server in vRealize Business for Cloud and vRealize Automation, which ensures consistent reference time.

Procedure

- 1 Log in to the vRealize Business for Cloud Web console at `https://vRealize_Business_for_Cloud_IP_address:5480`.
- 2 Type the user name and password of the virtual appliance and click **Login**.
- 3 On the **vRealize Automation** tab, type the credentials to register with vRealize Automation server.

Option	Description
Hostname	Type the host name or IP address of the vRealize Automation virtual appliance.
SSO Default Tenant	Type the SSO default tenant name that you have defined while configuring your vRealize Automation virtual appliance.

Option	Description
SSO Admin User	Type the administrator user name that you have defined while configuring your vRealize Automation virtual appliance. NOTE Enter only the user name without the domain name such as @vSphere.com .
SSO Admin Password	Type the administrator password that you have defined while configuring your vRealize Automation virtual appliance.

- 4 Register vRealize Business for Cloud with vRealize Automation.

Option	Action
If you are registering for the first time or if vRealize Automation certificate has changed	<ol style="list-style-type: none"> Click Register. Registration fails and Failed to register with vRealize Automation message appears. (Optional) To view the vRealize Automation certificate, click View vRealize Automation certificate link. Click Accept vRealize Automation certificate check box. Click Register.
If you had already registered with vRealize Automation	<ol style="list-style-type: none"> Click Register.

If all the parameters are correct, a Registered with vRealize Automation server message appears.

NOTE If you change the certificate of vRealize Automation, you need to again register vRealize Business for Cloud with vRealize Automation.

Access vRealize Business for Cloud by using vRealize Automation

You can access the vRealize Business for Cloud user interface after logging in to the vRealize Automation user interface.

The vRealize Business for Cloud user interface appears as a tab in the vRealize Automation user interface.

Prerequisites

Verify that you have created a vRealize Business for Cloud tenant. For more information, see *vRealize Automation documentation*.

Procedure

- Log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
 - Click the **Administration** tab.
 - Click **Users & Groups** and select **Directory Users and Groups**.
 - Search and select the user to which you want to add a role.
 - From the Add Roles to this User box, assign the following privileges based on the requirement.
 - If the user has to perform all administration tasks such as managing connections, managing public cloud account, updating reference database, assign the **Business Management Administrator** role to a user who has the **Tenant Administration** role.
- NOTE** To assign the **Tenant Administration** role to the user, you must log in as the system administrator in vRealize Automation.
- If the user has to view and update the cost information only, assign **Business Management Administrator** role.

- If the user has to view the details but not update the information, assign **Business Management Read only** role.
- If the user has to view the assigned tenant details, but not perform other administration, assign the **Business Management Controller** role.

NOTE It is recommended not to assign multiple roles to a single user.

- 6 Click **Update**.
- 7 Refresh the browser.

The **Business Management** tab is available in the vRealize Automation user interface.

- 8 Click the **Business Management** tab.
A dialog prompts you to enter the license key.
- 9 Enter a valid license key and click **Save**.

Unregister vRealize Business for Cloud from vRealize Automation

If you want to deploy a new version of vRealize Business for Cloud appliance, you need to first unregister the earlier instance of vRealize Business for Cloud appliance from vRealize Automation.

Procedure

- 1 Log in to the vRealize Business for Cloud Web console, https://vRealize_Business_for_Cloud_IP_address:5480.
- 2 Type the user name and password of the virtual appliance and click **Login**.
- 3 On the **vRealize Automation** tab, type the credentials of already registered vRealize Automation server.

Component	Description
Hostname	The host name or IP address of the vRealize Automation virtual appliance.
SSO Default Tenant	The name of the SSO default tenant that you have defined while configuring your vRealize Automation virtual appliance.
SSO Admin User	The administrator user name that you have defined while configuring your vRealize Automation virtual appliance.
SSO Admin Password	The administrator password that you have defined while configuring your vRealize Automation virtual appliance.

- 4 Click **Unregister**.

If all the parameters are correct, an **Unregistered with vRealize Automation server** message is displayed.

Managing vRealize Business for Cloud Virtual Appliance

To provide business continuity during system downtime, vRealize Business for Cloud supports you with number of features.

Backup and Restore the vRealize Business for Cloud Virtual Appliance

To minimize system downtime and data loss in the event of failures, administrators can back up the vRealize Business for Cloud installation on a regular basis. If your system fails, you can recover by restoring the last known working backup. The system administrator backs up the vRealize Business for Cloud by exporting or cloning the virtual appliance and uses backups to restore the virtual appliance.

Back up appliances by exporting or cloning them. You can use the following methods to create backups:

- The vSphere Export function
- Cloning
- Tools like VMware vSphere Data Protection and Symantec NetBackup, to create backups of the VMs
- Back up virtual appliances

You can use snapshots to back up virtual appliances only if you store or replicate them to a location other than the appliance location. If the snapshot image is accessible after a failure, using it is the most direct way to restore the appliance.

If a failure occurs, a system administrator must restore vRealize Business for Cloud to a functional state.

High Availability, Fault Tolerance and Disaster Recovery

You can achieve the higher levels of availability, fault tolerance and disaster recovery in vRealize Business for Cloud through vCenter Server and Site Recovery Manager.

vRealize Business for Cloud does not have an in-built high availability or fault tolerance capabilities. However, you can deploy vRealize Business for Cloud appliances on the HA clusters managed by a vCenter Server and can enable fault tolerance for the appliance to provide additional protection.

In case of any site level failures, you can migrate the vRealize Business for Cloud appliance (as any other virtual machine) and power-on the appliance on a secondary site using Site Recovery Manager.

For more information, see vCenter Server and Site Recovery Manager documentation.

Export the vRealize Business for Cloud Log Files

You can configure the vRealize Business for Cloud log files to send the details to the system log servers such as vRealize Log Insight for analyzing the operational visibility and provide faster troubleshooting procedure.

Prerequisites

- You must be an vRealize Business for Cloud administrator.
- For TCP Syslog Appender, download the certificate of the system log server, create a TrustStore and add the certificate to the newly created TrustStore. For more information, see <https://docs.oracle.com/cd/E19509-01/820-3503/6nf1il6er/index.html>.

Procedure

- 1 Log into vRealize Business for Cloud by using the system administrator credentials.
- 2 Open the log4j2.xml file from the /usr/local/tcserver/vfabric-tc-server-standard/itbm-server/webapps/itfm-cloud/WEB-INF/classes/ location.

- 3 Select the relevant data delivery format.
 - Non-Secured Syslog Appender - BSD Format
 - Non-Secured Syslog Appender - RFC5424 Format
 - Secured TCP Syslog Appender
- 4 Add or update the following lines in the <Appenders> tag.

Option	Description
For BSD Format	<code><Syslog name="BSDSyslogAppender" host="SYSLOG_SERVER_HOST" port="SYSLOG_SERVER_PORT" protocol="TCP"/></code>
For RFC5424 format	<code><Syslog name="RFC5424SyslogAppender" format="RFC5424" host="10.23.216.36" port="SYSLOG_SERVER_PORT" protocol="UDP" appName="vRB" mdcId="mdc" includeMDC="true" facility="LOCAL0" enterpriseNumber="12345" newLine="true" messageId="Audit" id="vRBApp"/></code>
For TCP Syslog Appender	<ol style="list-style-type: none"> a Copy the TrustStore with the system log server certificate to the vRealize Business for Cloud virtual appliance. b Add or update the following lines in the <Appenders> tag. <pre><Syslog name="securedSyslogAppender" host="SYSLOG_SERVER_HOST" port="SYSLOG_SERVER_PORT" protocol="UDP" appName="vRB" mdcId="mdc" includeMDC="true" facility="LOCAL0" enterpriseNumber="12345" newLine="true" messageId="Audit" id="vRBApp"> <SSL> <TrustStore location="TRUSTSTORE_PATH" password="TRUSTSTORE_PASSWORD"/> </SSL> </Syslog></pre>

NOTE The port number for vRealize Log Insight is 6514. You can change the port number based on the log server that you want to use.

- 5 Update the following line in the <Root> tag.

NOTE In some of the log files, the AppenderRef tag is Appender-Ref. Do not change the parameter name.

- For BSD format - `<AppenderRef ref="BSDSyslogAppender"/>`
 - For RFC5424 format - `AppenderRef ref="RFC5424SyslogAppender"/>`
 - For TCP Syslog Appender - `<AppenderRef ref="securedSyslogAppender"/>`
- 6 Perform the same changes to the log4j2.xml file in the following locations.
 - `/usr/local/tcserver/vfabric-tc-server-standard/itbm-server/webapps/itfm-cloud-dc-transformer/WEB-INF/classes/log4j2.xml`
 - `/usr/local/tcserver/vfabric-tc-server-standard/itbm-data-collector/webapps/itfm-cloud-vca-dc/WEB-INF/classes/log4j2.xml`
 - `/usr/local/tcserver/vfabric-tc-server-standard/itbm-data-collector/webapps/itfm-cloud-vc-dc/WEB-INF/classes/log4j2.xml`
 - `/usr/local/tcserver/vfabric-tc-server-standard/itbm-data-collector/webapps/itfm-cloud-srm-dc/WEB-INF/classes/log4j2.xml`
 - `/usr/local/tcserver/vfabric-tc-server-standard/itbm-data-collector/webapps/itfm-cloud-vcd-dc/WEB-INF/classes/log4j2.xml`

- `/usr/local/tcserver/vfabric-tc-server-standard/itbm-data-collector/webapps/itfm-cloud-aws-dc/WEB-INF/classes/log4j2.xml`
 - `/usr/local/tcserver/vfabric-tc-server-standard/itbm-data-collector/webapps/itfm-cloud-vra-dc/WEB-INF/classes/log4j2.xml`
- 7 Restart your vRealize Business for Cloud server.

Configure Time Synchronization

You can configure the Network Time Protocol (NTP) server for periodic time synchronization. NTP is an industry standard and ensures accurate time in the servers.

Procedure

- 1 Log in to the vRealize Business for Cloud Web console, https://vRealize_Business_for_Cloud_IP_address:5480.
- 2 Type the user name and password of the virtual appliance and click **Login**.
- 3 On the **Administration** tab, select **Time Settings**.
- 4 Select an option from the **Time Sync Mode** menu.

Option	Action
Disable	Select this option to disable time synchronization. NOTE Server time must be synchronized to ensure the correct operation.
Use ESXi Host Time	Select this option to use your ESXi host server time. You must configure your ESXi server time before you use this option.
Use Time Server	Select this option to use time servers (NTP servers). For each time server that you are using, type the IP address or the host name in the Time Server text box. This is the recommended option.

- 5 Click **Save Settings**.
The configuration might take some time.
- 6 Verify that the value in Current Time is accurate.
- 7 Click **Refresh** to refresh the updated time settings and current time.

Change or Replace the SSL Certificate of vRealize Business for Cloud

After deployment, you can replace vRealize Business for Cloud SSL certificate. You can change from self-signed certificate to Certifying Authority (CA) signed certificate. You can import the certificate private key and the certificate issued by a CA.

Prerequisites

To restore the old key store, take a backup of existing key store from `/usr/local/tcserver/vfabric-tc-server-standard/sharedconf/ssl.keystore`.

Procedure

- 1 Log in to the vRealize Business for Cloud Web console, https://vRealize_Business_for_Cloud_IP_address:5480.
- 2 Unregister vRealize Business for Cloud from vRealize Automation.
- 3 On the **Administration** tab, select **SSL**.

- 4 Select the certificate type from the **Choose Mode** menu. If you are using a PEM encoded certificate, select **Import PEM encoded certificate**.

NOTE Using self-signed certificate is not recommended for production environments.

Option	Action
Generate a self-signed certificate	1 Type a common name for the certificate in the Common Name text box. You can use the fully qualified domain name of the virtual appliance (hostname.domain.name) or a wildcard, such as *.mycompany.com. Do not accept a default value, unless it matches the host name of the virtual appliance.
	2 Type your organization name, such as your company name, in the Organization text box.
	3 Type your organizational unit, such as your department name or location, in the Organizational Unit text box.
	4 Type a two-letter ISO 3166 country code, such as US, in the Country Code text box.
Import PEM encoded certificate	1 Copy the certificate values from BEGIN PRIVATE KEY to END PRIVATE KEY, including the header and footer, and paste them in the RSA Private Key text box.
	2 Copy the certificate values from BEGIN CERTIFICATE to END CERTIFICATE, including the header and footer, and paste them in the Certificate(s) (.pem) text box.
	3 (Optional) If your certificate has a private key pass phrase, copy and paste it in the respective text box, which encrypts the private key of the certificate that you are importing.

- 5 Click **Replace Certificate**.
- 6 Register vRealize Business for Cloud with vRealize Automation.

Enable or Disable SSH Settings

You might want to enable or disable the SSH settings for debugging purpose.

You must enable SSH before migrating to vRealize Business for Cloud 7.0 virtual appliance.

NOTE It is recommended to keep the SSH disabled, when not required.

Procedure

- 1 Log in to the vRealize Business for Cloud Web console, https://vRealize_Business_for_Cloud_IP_address:5480.
- 2 Type the user name and password of the virtual appliance and click **Login**.
- 3 On the **Administration** tab, select **Administration**.
- 4 Click **Toggle SSH setting** to enable or disable the SSH settings.

Join or Leave VMware Customer Experience Improvement Program for vRealize Business for Cloud

vRealize Business for Cloud participates in VMware's Customer Experience Improvement Program (CEIP). Details regarding the data collected through CEIP and the purposes for which it is used by VMware are set forth at the Trust & Assurance Center at <http://www.vmware.com/trustvmware/ceip.html>.

You can join or leave the CEIP for vRealize Business for Cloud.

Procedure

- 1 Log in to the web console at https://vRealize_Business_for_Cloud_IP_address:5480.
- 2 Click the **Telemetry** tab.

- 3 Perform one of the following based on your requirements.
 - Select **Join the VMware Customer Experience Improvement Program** to participate in the program.
 - Deselect **Join the VMware Customer Experience Improvement Program** to not participate in the program.
- 4 Click **Save Settings**.

When you join the program, the vRealize Business for Cloud appliance attempts to establish a connection to <https://vmware.com> and to automatically discover any proxy server that you might have configured for your vRealize Business for Cloud appliance.

Upgrading vRealize Business for Cloud

3

You can upgrade your virtual appliance from one version to the latest version of vRealize Business for Cloud without redeploying the virtual appliance.

Table 3-1. Upgrade Scenarios

Scenario	Tasks to perform
If you are using a 7.x.x version	Perform one of the following procedure to upgrade. <ul style="list-style-type: none">■ “Upgrade Your 7.x.x version by Using Web Console,” on page 31■ “Upgrade Your 7.x.x by Using the Downloadable ISO Image,” on page 32
If you are using a 6.x.x version	Perform the steps provided at “Migrate Your vRealize Business Standard 6.2.3 to 7.x.x,” on page 33. NOTE After you upgrade, the cost trend of demand analysis and its details are lost. Also, the Demand Analysis option is renamed to Consumption Analysis with additional features.

This chapter includes the following topics:

- [“Upgrade Your 7.x.x version by Using Web Console,”](#) on page 31
- [“Upgrade Your 7.x.x by Using the Downloadable ISO Image,”](#) on page 32
- [“Migrate Your vRealize Business Standard 6.2.3 to 7.x.x,”](#) on page 33
- [“Upgrade to an intermediate vRealize Business for Cloud version,”](#) on page 34

Upgrade Your 7.x.x version by Using Web Console

You can upgrade the vRealize Business for Cloud (earlier known as, vRealize Business Standard) virtual appliance by using the vRealize Business for Cloud web console.

Prerequisites

- Take a snapshot of the virtual appliance and back up the database.
- Verify that you have upgraded vRealize Automation to 6.x.x and 7.x.x.
- Download the `enable-va-updates.sh` file from the Product Downloads page.

Procedure

- 1 Log in to the web console at https://vRealize_Business_for_Cloud_IP_address:5480.
- 2 Unregister vRealize Business for Cloud with vRealize Automation.

- 3 Click the **Update** tab.
- 4 Click **Check Updates** to see the available updates and to enable the **Install Updates** option.
- 5 Click **Install Updates**.
- 6 After successful upgrade, perform one of the following steps to shutdown the virtual appliance manually.
 - Log into the vSphere client or vCloud Director client and power off the virtual appliance.

NOTE Do not use the **Shut Down Guest** option.

- Log into virtual appliance and run the shutdown command.
- 7 Change the hardware configuration of the virtual appliance to 8 GB RAM and 4 vCPUs.
 - 8 Power on the virtual appliance manually on the vSphere client or vCloud Director client.
The upgrade process is complete.
 - 9 Re-register vRealize Business for Cloud with vRealize Automation.
 - 10 For the first login after upgrade, you are prompted to enter the new license key.
The earlier license key does not work. Also, if you had configured an AWS account in the earlier version, you must reconfigure your AWS account. For more information, see [“Configuring Amazon Web Services,”](#) on page 42.

Upgrade Your 7.x.x by Using the Downloadable ISO Image

You can update your vRealize Business for Cloud 7.x.x virtual appliance from an ISO file that the appliance reads from the virtual CD-ROM drive.

Prerequisites

- Take a snapshot of the virtual appliance and back up the database.
- Verify that you have downloaded the updated ISO file from the VMware.com web site.
- Add a CD-ROM drive to a virtual machine in the vCenter Server client. For more information, see the [Configure a Datastore ISO File for the DVD/CD-ROM Drive](#) topic in the vSphere Client topic in the vSphere documentation.

NOTE Before updating the vRealize Automation appliances, enable all CD-ROM drives you use in your upgrade.

Procedure

- 1 Log in to the web console at https://vRealize_Business_for_Cloud_IP_address:5480.
- 2 Unregister vRealize Business for Cloud with vRealize Automation.
- 3 Click **Settings**.
- 4 Under Update Repository, select **Use CD-ROM Updates**.
- 5 Click **Save Settings**.
- 6 Click **Check Updates** to see the available updates and to enable the **Install Updates** option.
- 7 Click **Install Updates**.

- 8 After successful upgrade, perform one of the following steps to shutdown the virtual appliance manually.
 - Log into the vSphere client or vCloud Director client and power off the virtual appliance.

NOTE Do not use the **Shut Down Guest** option.

- Log into virtual appliance and run the shutdown command.
- 9 Change the hardware configuration of the virtual appliance to 8 GB RAM and 4 vCPUs.
 - 10 Power on the virtual appliance manually on the vSphere client or vCloud Director client.
The upgrade process is complete.

- 11 Re-register vRealize Business for Cloud with vRealize Automation.

- 12 For the first login after upgrade, you are prompted to enter the new license key.

The earlier license key does not work. Also, if you had configured an AWS account in the earlier version, you must reconfigure your AWS account. For more information, see [“Configuring Amazon Web Services,”](#) on page 42.

Migrate Your vRealize Business Standard 6.2.3 to 7.x.x

The earlier versions of vRealize Business Standard were based on 11 SLES, whereas, the 7.0 and later versions are based on SUSE Linux Enterprise Server (SLES) 12. So, the 6.2.3 upgrade process to 7.x.x involves deployment of the server and then migration of data.

NOTE After you upgrade, the cost trend of demand analysis and its details are lost. Also, the **Demand Analysis** option is renamed to **Consumption Analysis** with additional features.

Prerequisites

- Ensure that you have a vRealize Business Standard 6.2.3 setup.

NOTE If you are using earlier versions of vRealize Business Standard, you must first upgrade to 6.2.3 and then migrate to 7.x.x.

- Take a snapshot of the virtual appliance and back up the database.
- Enable the SSH settings on your earlier virtual appliance, see [“Enable or Disable SSH Settings,”](#) on page 28.

Procedure

- 1 Deploy the latest version on vSphere or vCloud Director. See [“Deploy vRealize Business for Cloud Virtual Appliance on vSphere,”](#) on page 17 and [“Deploy vRealize Business for Cloud Virtual Appliance on vCloud Director,”](#) on page 19.
- 2 Log in to the web console at `https://vRealize_Business_for_Cloud_IP_address:5480`.
- 3 Click the **Migrator** tab.
- 4 Enter the earlier virtual appliance details such as IP address, username and password.
- 5 Click **Migrate**.

The migration process takes some time. After the successful completion of the process, you see the confirmation message.

What to do next

Register your appliance. See “[Register vRealize Business for Cloud with vRealize Automation](#),” on page 22.

Upgrade to an intermediate vRealize Business for Cloud version

You can upgrade to an intermediate version of vRealize Business for Cloud. By default, the **Update** tab in the virtual appliance displays the latest vRealize Business for Cloud version.

Prerequisites

- Take a snapshot of the vRealize Business for Cloud virtual appliance and back up the database.
- Verify that you have upgraded vRealize Automation to the supported version of vRealize Business for Cloud.

Procedure

- 1 Log in to the web console at https://vRealize_Business_for_Cloud_IP_address:5480.
- 2 Unregister vRealize Business for Cloud with vRealize Automation.
- 3 Click **Settings**.
- 4 Under Update Repository, select **Use Specified Repository**.
- 5 Copy the default repository URL and paste it in the URL field.
For 1.0.1 version, the URL is <https://vapp-updates.vmware.com/vai-catalog/valm/vmw/a1ba78af-ec67-4333-8e25-a4be022f97c7/1.0.1.0.latest>.
- 6 Update the version number in URL to the version that you want to upgrade.
To upgrade to 1.1 version, replace `/1.0.1.0.latest` to `/1.1.0.0`. For example, <https://vapp-updates.vmware.com/vai-catalog/valm/vmw/a1ba78af-ec67-4333-8e25-a4be022f97c7/1.1.0.0>
- 7 Click **Save Settings**.
- 8 Click **Check Updates** to see the available updates and to enable the **Install Updates** option.
- 9 Click **Install Updates**.
- 10 (Optional) If you are upgrading from version 1.0 or 1.0.1 to version 1.1, perform the following steps to re-register vRealize Business Standard with vRealize Automation.
 - a Log into the virtual appliance with the root credentials.
 - b Open the `catalina.properties` file located at `/usr/local/tcserver/vfabric-tc-server-standard/itbm-server/conf/`.
 - c Copy the SSL keystore password specified in the `bio-ssl.ssl.keystore.password` parameter.
 - d Using the `vi` command, open the following files located at `/usr/sbin/` and replace the SSL keystore password set in the `-Djavax.net.ssl.trustStorePassword=keystore.password.to.be.replaced\` property for each file.


```
itfm-config
itfm-config-unregister
itfm-config-getinfo
```
- 11 After successful upgrade, perform one of the following steps to reboot the virtual appliance manually.
 - Log into the web console, navigate to the **System** tab, and click **Reboot**.
 - Log into virtual appliance and run the reboot command.

The upgrade process is complete.

- 12 Re-register vRealize Business for Cloud with vRealize Automation.
- 13 For the first login after upgrade, you are prompted to enter the new license key.

The earlier license key does not work. Also, if you had configured an AWS account in the earlier version, you must reconfigure your AWS account. For more information, see [“Configuring Amazon Web Services,”](#) on page 42.

Setting Up vRealize Business for Cloud

4

After you deploy vRealize Business for Cloud, you can add vCenter Server, vCloud Director and EMC SRM instances to vRealize Business for Cloud. You can also update the reference database, manage public cloud accounts, download a support file, add and update the license key for vRealize Business for Cloud. You also can generate a token for integration with vRealize Business Enterprise and also generate a key for registering a remote data collector. You can also calculate the depreciation of server hardware.

This chapter includes the following topics:

- [“vRealize Business for Cloud Administration,”](#) on page 37
- [“Manage Private Cloud Connections,”](#) on page 38
- [“Manage Public Cloud Accounts,”](#) on page 41
- [“Update the Reference Database for vRealize Business for Cloud,”](#) on page 53
- [“Generate and Download the Support File,”](#) on page 54
- [“Update Licenses for vRealize Business for Cloud,”](#) on page 54
- [“Generate Token for vRealize Business Enterprise Integration,”](#) on page 55
- [“Managing the Data Collectors,”](#) on page 55
- [“Calculating Depreciation of Server Hardware Cost,”](#) on page 56
- [“View and Update System Status,”](#) on page 57

vRealize Business for Cloud Administration

Before you start using vRealize Business for Cloud, you must set up the vRealize Business for Cloud appliance to work in your virtual environment.

You can perform several operations on the **Administration** tab.

- Add vCenter Server to vRealize Business for Cloud by entering vCenter Server details.
- Add vCloud Director to vRealize Business for Cloud by entering vCloud Director details.
- Add EMC SRM servers to vRealize Business for Cloud by entering SRM details.
- Add public cloud accounts such as Amazon Web Services (AWS), Microsoft Azure, and VMware vCloud Air by entering their account details.
- Manage cloud providers for comparison purposes. You can add or edit public cloud accounts for comparison.
- Update the reference database to reflect the most current data. You can either update the reference database manually or by using the automatic update feature.

- Download the support file containing critical runtime information for troubleshooting the system.
- Update the license key.
- Generate a token that you can use to define a connection between vRealize Business Enterprise and vRealize Business for Cloud.
- Manage the remote data collectors and enable connection to the remote data collectors.
- Set calculation preferences.

Manage Private Cloud Connections

You can manage private cloud connections such as vCenter Server, EMC Storage Resource Manager (SRM), and vCloud Director by adding, modifying and deleting them in your vRealize Business for Cloud setup.

Manage vCenter Server Connections

After you install vRealize Business for Cloud, you can add vCenter Server instances to vRealize Business for Cloud and retrieve the inventory information from your virtual environment. You can edit or delete vCenter Server instances from vRealize Business for Cloud. You can use the edit option to update the vCenter Server information when the vCenter Server certificate or the password changes.

Prerequisites

- Verify that you have vCenter Server details.
- Verify that you have additional vCenter Server user permissions, other than Read-only. To add additional permissions to the vCenter Server user, perform the following steps.
 - a Log in to vCenter Server as an administrator.
 - b Create a clone of the Read-only role in a vCenter Server.
 - c Include the **Storage views.View** and **Profile-driven storage.Profile-driven storage view** permissions to the clone.
 - d If you have integrated vCenter Server with VMware vRealize Operations Manager, include the **Global.vCenter Operations User** and **Global.vRealize Operations Read Only** permissions to the clone.
 - e Create a user in vCenter Server for vRealize Business for Cloud and assign this cloned role to the user.

Procedure

- 1 Log in to vRealize Automation or data collection manager:
 - To add a datasource to the vRealize Business for Cloud server directly, log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator, click **Administration** and **Business Management**.
 - To add a datasource to a data collector, log in to `https://Remote_Data_Collector_IP_address:9443/dc-ui/login.html` by using the root user credentials.
- 2 Click **Manage Private Cloud Connections**.
- 3 Select **vCenter Server**, and click the add option.
- 4 Enter the required details to add the instance.

- 5 Click **Save** and click **OK** in the Success dialog.

If the instance is not using SSL certificate from certificate authority, a dialog with untrusted SSL certificate is displayed.

NOTE vRealize Business for Cloud does not verify the revocation status of the SSL certificate. You must verify the status manually before accepting the certificate.

- 6 Click **Install**.

If the credentials are valid, the instance is added to the vRealize Business for Cloud.

NOTE If the SSL certificate changes after addition of instance into vRealize Business for Cloud, data collection might fail. This is because, the instance presents a new untrusted certificate. You can edit the instance and then accept the new certificate.

You can perform the same procedure to add multiple instances.

- 7 To edit the details, select the instance entry from the table, click the edit option, modify the details, click **Save** and click **OK** in the Success dialog.
- 8 To delete an instance, select the instance from the table, click the delete icon in the instance row and click **Delete** in the confirmation dialog box.

NOTE The changes in entities such as virtual machines, hosts and clusters due to addition or deletion of vCenter Server reflects on the vRealize Business for Cloud user interface only after a successful completion of cost calculation.

Manage EMC SRM servers in vRealize Business for Cloud

You can add, edit and delete EMC Storage Resource Management (SRM) servers to vRealize Business for Cloud.

Prerequisites

Verify that you have the EMC SRM server user credentials.

Procedure

- 1 Log in to vRealize Automation or data collection manager:
 - To add a datasource to the vRealize Business for Cloud server directly, log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator, click **Administration** and **Business Management**.
 - To add a datasource to a data collector, log in to `https://Remote_Data_Collector_IP_address:9443/dc-ui/login.html` by using the root user credentials.
- 2 Click **Manage Private Cloud Connections**.
- 3 Select **Storage Server**, and click the add icon.
- 4 Enter the required details to add the instance.
- 5 Click **Save** and click **OK** in the Success dialog.

If the instance is not using SSL certificate from certificate authority, a dialog with untrusted SSL certificate is displayed.

NOTE vRealize Business for Cloud does not verify the revocation status of the SSL certificate. You must verify the status manually before accepting the certificate.

6 Click **Install**.

If the credentials are valid, the instance is added to the vRealize Business for Cloud.

NOTE If the SSL certificate changes after addition of instance into vRealize Business for Cloud, data collection might fail. This is because, the instance presents a new untrusted certificate. You can edit the instance and then accept the new certificate.

You can perform the same procedure to add multiple instances.

7 To edit the details, select the instance entry from the table, click the edit option, modify the details, click **Save** and click **OK** in the Success dialog.

8 To delete an instance, select the instance from the table, click the delete icon in the instance row and click **Delete** in the confirmation dialog box.

Manage vCloud Director Connections

You can add vCloud Director instances to vRealize Business for Cloud to get vCloud Director based categorization. You can edit or delete vCloud Director instances from vRealize Business for Cloud. You can use the edit functionality to update the vCloud Director information after certificate of vCloud Director changes.

If you add vCloud Director to vRealize Business for Cloud, you can categorize the data according to the vCloud Director hierarchy.

Prerequisites

Add vCenter Server instances that are managed by vCloud Director to vRealize Business for Cloud.

Procedure

1 Log in to vRealize Automation or data collection manager:

- To add a datasource to the vRealize Business for Cloud server directly, log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator, click **Administration** and **Business Management**.
- To add a datasource to a data collector, log in to https://Remote_Data_Collector_IP_address:9443/dc-ui/login.html by using the root user credentials.

2 Click **Manage Private Cloud Connections**.

3 Select **vCloud Director**, and click the add icon.

4 Enter the IP address, user name, and password of the vCloud Director instance.

Enter the IP address or the host name only, not the complete URL. Also, enter the credentials of the admin user with access to the full hierarchy of vCloud Director.

5 Click **Save** and click **OK** in the Success dialog.

If the instance is not using SSL certificate from certificate authority, a dialog with untrusted SSL certificate is displayed.

NOTE vRealize Business for Cloud does not verify the revocation status of the SSL certificate. You must verify the status manually before accepting the certificate.

6 Click **Install**.

If the credentials are valid, the instance is added to the vRealize Business for Cloud.

NOTE If the SSL certificate changes after addition of instance into vRealize Business for Cloud, data collection might fail. This is because, the instance presents a new untrusted certificate. You can edit the instance and then accept the new certificate.

You can perform the same procedure to add multiple instances.

- 7 To edit the details, select the instance entry from the table, click the edit option, modify the details, click **Save** and click **OK** in the Success dialog.
- 8 To delete an instance, select the instance from the table, click the delete icon in the instance row and click **Delete** in the confirmation dialog box.

Manage Public Cloud Accounts

You can manage public cloud accounts such as Amazon Web Services (AWS), Microsoft Azure, VMware vCloud Air accounts in vRealize Business for Cloud. You can also compare these public cloud accounts.

Manage VMware vCloud Air Connections

You can add vCloud Air accounts to vRealize Business for Cloud.

Prerequisites

Verify that you have a vCloud Air user credentials.

Procedure

- 1 Log in to vRealize Automation or data collection manager:
 - To add a datasource to the vRealize Business for Cloud server directly, log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator, click **Administration** and **Business Management**.
 - To add a datasource to a data collector, log in to `https://Remote_Data_Collector_IP_address:9443/dc-ui/login.html` by using the root user credentials.
- 2 Click **Manage Hybrid & Public Cloud Connections**.
- 3 Select **vCloud Air** and click the add option.
- 4 Enter the required details to add the instance.
- 5 Click **Save** and click **OK** in the Success dialog.

If the instance is not using SSL certificate from certificate authority, a dialog with untrusted SSL certificate is displayed.

NOTE vRealize Business for Cloud does not verify the revocation status of the SSL certificate. You must verify the status manually before accepting the certificate.

6 Click **Install**.

If the credentials are valid, the instance is added to the vRealize Business for Cloud.

NOTE If the SSL certificate changes after addition of instance into vRealize Business for Cloud, data collection might fail. This is because, the instance presents a new untrusted certificate. You can edit the instance and then accept the new certificate.

You can perform the same procedure to add multiple instances.

7 To edit the details, select the instance entry from the table, click the edit option, modify the details, click **Save** and click **OK** in the Success dialog.

8 To delete an instance, select the instance from the table, click the delete icon in the instance row and click **Delete** in the confirmation dialog box.

Using Amazon Web Services Accounts in vRealize Business for Cloud

You can configure and add your AWS account in vRealize Business for Cloud to track your AWS cost.

Configuring Amazon Web Services

Before you add AWS to vRealize Business for Cloud, you need to configure an AWS account.

NOTE If you have upgraded vRealize Business for Cloud from a version prior to 6.1, you must reconfigure your AWS account.

- You must have an AWS account name and account ID. For more information, see <http://docs.aws.amazon.com/awsaccountbilling/latest/about/programaccess.html>.

IMPORTANT The account ID is a 12 digit number (for example 1234-1234-1234) that you can see after you log in to the Web portal of an AWS account <https://portal.aws.amazon.com/gp/aws/manageYourAccount>. Do not use hyphens when you attempt to add or update the AWS account in vRealize Business for Cloud.

- You must have an access key and secret key for your AWS account. For more information, see <http://docs.aws.amazon.com/general/latest/gr/managing-aws-access-keys.html>.
- For the paying accounts, you must create and configure the S3 bucket. For information about how to create and configure the S3 bucket, see <http://www.vmtocloud.com/how-to-add-aws-account-to-itbm-standard-1-1/>.
- For the paying accounts, you must follow the programmatic billing access process after getting an access key and secret key so that you can build applications that reference your billing data from a CSV file stored in an Amazon S3 bucket. For more information about getting programmatic billing access, see <http://docs.aws.amazon.com/awsaccountbilling/latest/about/programaccess.html>.
- For the paying accounts, you must enable detailed billing report with resources and tags. You can use the report to organize and track your AWS costs. To get the report, first sign up for programmatic billing access, and then opt for the report. AWS publishes the report as a ZIP file to the Amazon S3 bucket you specify for Programmatic Billing Access. AWS publishes the report several times each day. The files are stored in your designated bucket using the following naming convention. 123456789012-aws-billing-detailed-line-items-with-resources-and-tags-yyyy-mm.csv.zip, where 123456789012 is account ID, yyyy is year, mm is month.

NOTE During the current billing period (monthly), AWS generates an estimated report. The current month's file is overwritten throughout the billing period until a final report is generated at the end of the billing period, and then, a new file is created for the next billing period. The final reports for the previous months remain in the designated Amazon S3 bucket.

- For the paying accounts, ensure that the AWS user has permissions, like `s3:Get*`, `s3:List*`, `ec2:Describe*`.

You can add the inline policies and provide these required permissions. For example,

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "Stmt1418381123000",
      "Effect": "Allow",
      "Action": [
        "s3:Get*",
        "s3:List*"
      ],
      "Resource": [
        "arn:aws:s3:::*"
      ]
    }
  ]
}
```

- For the non-paying accounts, ensure that the AWS user has the `ec2:Describe*` permission.

```
{
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "Stmt1418206217000",
      "Effect": "Allow",
      "Action": [
        "ec2:Describe*"
      ],
      "Resource": [
        "*"
      ]
    }
  ]
}
```

- (Optional) You can also tag your Amazon resources. Tags let you categorize your AWS resources in different ways, for example, by purpose, owner, or environment. When you apply tags to your AWS resources (for example, Amazon EC2 instances or Amazon S3 buckets), AWS generates the report as a comma-separated value (CSV) file with your usage and costs aggregated by your tags. You can apply tags that represent your business dimensions (such as cost centers, application names, or owners) to organize your costs across multiple services. Log into your account to activate the tags to appear in the report. When you select tag keys to include in your report, each key becomes an additional column and includes the value for each corresponding line item. You might use tags for more than just your report (for example, tags for security or operational reasons), and so, you can include or exclude individual tag keys for the report. After you apply tags, you can view the costs based on tags. For more information about tagging your Amazon resources, see http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/Using_Tags.html.

NOTE Verify that the bill is according to the format `123456789012-aws-billing-detailed-line-items-with-resources-and-tags-yyyy-mm.csv.zip` are being generated in the S3 bucket that you have configured, and added the exact bucket name while adding the account in vRealize Business for Cloud.

Manage Amazon Web Services Account

You can add or modify an AWS account that you want to track and analyze by using vRealize Business for Cloud.

Prerequisites

- Plan whether you want to add a paying account or a linked account.
- For a paying account - Verify that you have an account ID, access key, secret key and the S3 bucket name for the AWS account. Also, verify you have enabled detailed billing report with resources and tags in AWS.
- For a non-paying account - Verify that you have an account ID, access key, and secret key for the AWS account. Before you add a linked account, verify that you have added the paying account into vRealize Business for Cloud.

For more information, see *vRealize Business for Cloud User Guide*.

Procedure

- 1 Log in to vRealize Automation or data collection manager:
 - To add a datasource to the vRealize Business for Cloud server directly, log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator, click **Administration** and **Business Management**.
 - To add a datasource to a data collector, log in to `https://Remote_Data_Collector_IP_address:9443/dc-uilogin.html` by using the root user credentials.
- 2 Click **Manage Hybrid & Public Cloud Connections**.
- 3 Select **Amazon Web Services** and click the add option.
- 4 Type the name, description, account ID, access key, secret key, and S3 bucket name (for paying account).
- 5 To set an account to be a paying account in vRealize Business for Cloud, select the **Is Paying account** option.

NOTE You must enable detailed billing report with resources and tags in AWS for the paying accounts.

- 6 Click **Save** and click **OK** in the Success dialog.
- 7 To edit the details, select the instance entry from the table, click the edit option, modify the details, click **Save** and click **OK** in the Success dialog.
- 8 To delete an instance, select the instance from the table, click the delete icon in the instance row and click **Delete** in the confirmation dialog box.

Using Microsoft Azure Accounts in vRealize Business for Cloud

You can configure and add Microsoft Azure accounts in vRealize Business for Cloud to track your Azure cost.

Configure Azure Non-EA Accounts

Before you add a non-EA account to vRealize Business for Cloud, you need to configure the account.

Prerequisites

You must have a Microsoft Azure non-EA account with one of the following credits offers.

- Pay-as-you-go

- MSDN
- Monetary commitment
- Monetary credit

Procedure

- 1 Log in to Azure portal at <https://manage.windowsazure.com> by using your Microsoft account credentials.
- 2 On the left navigation panel, click **Active Directory** and then select **Default Directory**. Create a user in Azure active directory.
- 3 Click **New User** to create an user in the Default Directory.
- 4 Enter a name for the user and assign a Service or Global Administrator permissions.
- 5 Log in to Azure portal by using the new user name and reset the password.
- 6 Navigate to **Active Directory > Default Directory**, select **Applications** and click **Add**.
- 7 Enter the application details.
 - a Select **Add an application my organization is developing**.
 - b Enter a name for the application.
 - c Select **Native Client Application**.
- 8 Enter a sign-on URL and application URI (example, <https://vmware.com>).
- 9 Select the application and click **Configure** on the default directory page.
- 10 Click **Add Application** and assign the **Windows Azure Service Management API** permission to the application.

You see the Client ID and user name details, which you can use while adding the account to vRealize Business for Cloud.

What to do next

[“Manage Microsoft Azure Accounts in vRealize Business for Cloud,”](#) on page 45

Manage Microsoft Azure Accounts in vRealize Business for Cloud

You can create, modify, delete and configure a Microsoft Azure account through vRealize Business for Cloud. vRealize Business for Cloud analyzes and displays the cost information for your Microsoft Azure account.

Prerequisites

- You must have a Microsoft Azure Enterprise Agreement (EA) or non-EA account. A non-EA account can be a pay-as-you-go, MSDN, Monetary commitment or Monetary credit offer accounts.
- To add an EA account, note your 8-digit enrollment number by logging into Azure EA portal (<https://ea.azure.com>) as an EA administrator. Also, you must generate your primary API access key on the EA portal in the Manage Access section.
- To add a non-EA account, obtain the Client ID, see <https://msdn.microsoft.com/en-us/library/dn877542.aspx>. You must also know the Azure purchased location for the account. To get the location of purchase, login to Azure portal at <https://account.windowsazure.com/Profile>, and note the country code mentioned in the address such as IN, US, AU, CN, DE.

Procedure

- 1 Log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click the **Administration** tab.
- 3 Click **Business Management**.
- 4 Click **Manage Hybrid & Public Cloud Connections**.
- 5 Select **Microsoft Azure**.
- 6 Expand the Azure account type that you want to add.
 - **Enterprise Agreement (EA)**
 - **Non-Enterprise Agreement**
- 7 Click the add option icon to add an account and enter the required details.
 - For an EA account, provide the following details.
 - Name/Description - Enter a name of your choice.
 - Enrollment Number - Enter your Azure enrollment number.
 - Usage API Access Key - Enter the API Access Key.
 - For a non-Enterprise Agreement (EA) account, provide the following details.
 - Name/Description - Enter a name of your choice.
 - Username - Enter the user name that you have registered with Azure to use the application.

NOTE The user name is not the name that you have as an Azure account.

 - Password - Enter the password for the username.
 - Client ID - Enter the client ID that you have obtained from Microsoft Azure.
 - Location of Purchase - Enter the country code of the Azure purchase location such as IN, US, AU, CN, DE.
- 8 Click **Save** and click **OK** in the Success dialog.
- 9 To edit the details, select the instance entry from the table, click the edit option, modify the details, click **Save** and click **OK** in the Success dialog.
- 10 To delete an instance, select the instance from the table, click the delete icon in the instance row and click **Delete** in the confirmation dialog box.

Manage Public Cloud Providers Accounts for Comparison

By default, you can see Amazon Web Services (AWS), Microsoft Azure and VMware vCloud Air are added in vRealize Business for Cloud. You can also add your own public cloud account to vRealize Business for Cloud and then compare the cost of virtual machine groups against the private cloud and with other public clouds like AWS, Azure, or vCloud Air.


Prerequisites

Verify that you have a DRL file or an XLS file with all the requisite information in the specified format to add your public cloud.

Procedure

- 1 Log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click the **Administration** tab.
- 3 Click **Business Management**.
- 4 Click **Manage Hybrid & Public Cloud Connections**.
- 5 Select **Cloud Providers for Comparison**, and click the add option icon.
- 6 In the **Add Cloud Provider** dialog box, update the cloud provider details.

Component	Description
Cloud Provider Name	(Optional) Type the cloud provider name.
URL	(Optional) Type the URL of the cloud provider.
Logo	(Optional) Upload the logo of your cloud provider.
Click to download the cloud provider comparison template	To download the template of the DRL or XLS file for updating the configuration of your cloud according to the specified format. For more information, the following topics: <ul style="list-style-type: none"> ■ Update the DRL file for Cloud Comparison ■ Update the XLS file for Cloud Comparison
Upload settings file	Click the Browse to locate the file link and select your configuration file.

- 7 Click **Save** and click **OK** in the Success dialog.
- 8 To modify the pricing of the existing cloud provider, perform the following steps.
 - a Click the edit option.
 - b Click the download current settings  option.
 - c Open the DRL or XLS file, make the required changes and save the file.
 - d Click the **Browse to locate the file** link and select your configuration file.
 - e Click **Save** to save your cloud provider details.
- 9 To delete an instance, select the instance from the table, click the delete icon in the instance row and click **Delete** in the confirmation dialog box.

If the DRL file or the XLS file is valid, the public cloud account is added to vRealize Business for Cloud.

What to do next

You can use this account in the **Cloud Comparison** tab to compare the cost of your cloud provider with other public cloud providers such as AWS, Azure, or vCloud Air.

Update the DRL file for Cloud Comparison

vRealize Business for Cloud provides you a template in the DRL and XLS format to enter the configuration of your cloud provider in a specific format. Based on your preference, you can download the template file to enter your cloud provider pricing information for comparison in vRealize Business for Cloud. The DRL template file provides more flexibility.

Prerequisites

Verify that you have the required details of your cloud provider to update the DRL template.

Procedure



- 1 Log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click the **Administration** tab.
- 3 Click **Business Management**.
- 4 Click **Manage Hybrid & Public Cloud Connections**.
- 5 Select **Cloud Providers for Comparison**, and click the add option icon.
- 6 To download the DRL template, in the **Add Cloud Provider** dialog box, click on the **Click to download the cloud provider comparison template** link.

- 7 Extract the downloaded ZIP file and open the DRL file (`ComparisonProviderTemplate.drl`) using an editor (for example, Notepad).

Each section in a DRL file is called as a rule. Each rule has a unique name. A DRL file can have two types of rules.

Option	Description
Matching Rule	<p>Defines which configuration is mapped to a specific instance from the cloud provider.</p> <p>For example, the following Azure DRL specifies the instance that must be mapped to an instance.</p> <pre>rule "Azure_matching_A0" dialect "mvel" no-loop true when config : MatchingDetails(ramGb <= 0.75 && (cpuGhz * numOfCpu) <= 1.0) then config.addMatchingInstance("A0"); End</pre> <p>Where,</p> <ul style="list-style-type: none"> ■ <code>Azure_matching_A0</code> is the rule name. ■ <code>when config : MatchingDetails(ramGb <= 0.75 && (cpuGhz * numOfCpu) <= 1.0)</code> is the condition to map the workload to the instance type.. ■ <code>ramGb <= 0.75 and cpuGhz*numOfCpu <=1.0</code> is the condition to map to the instance type. ■ <code>config.addMatchingInstance("A0")</code> is the name to represent instance type. ■ <code>MatchingDetails</code> is the object with multiple fields that match the user configuration per virtual machine. <p>The <code>MatchingDetails</code> supports the following fields:</p> <ul style="list-style-type: none"> ■ <code>private Double ramGb;</code> ■ <code>private Integer numOfCpu;</code> ■ <code>private Double cpuGhz;</code> ■ <code>private Boolean enforcePhysicalIsolation;</code> ■ <code>private String instance;</code> ■ <code>private Integer reservation;</code> ■ <code>private String osGenericType;</code> ■ <code>private Long configId;</code> ■ <code>private List<String> possibleInstances;</code> ■ <code>private StoragePriceSummaryDetails storage;</code> ■ <code>private Double upTimePct;</code> ■ <code>private Double cpuUtilization;</code> ■ <code>private Double ramUtilization;</code> ■ <code>public void addMatchingInstance(String instanceName);</code>
Pricing Rule	<p>Determines the price for the matched instance type.</p> <p>For example, the following Azure DRL specifies how to price a matching instance.</p> <pre>rule "Azure_pricing_A0_WINDOWS" dialect "mvel" no-loop true when compute : ComputePriceDetails(instanceName == "A0" && osGenericType == "WINDOWS") then</pre>

Option	Description
	<pre data-bbox="710 212 1214 317"> compute.setPrice(0.02,"PER_HOUR"); compute.addAdditionalDetail("Price Plan",compute.getPricePlanLabel(),""); end </pre> <p data-bbox="710 323 780 350">Where,</p> <ul data-bbox="710 357 1426 758" style="list-style-type: none"> ■ Azure_pricing_A0_WINDOWS specifies how to price the Windows Azure Instance. ■ when compute : ComputePriceDetails(instanceName == "A0" && osGenericType == "WINDOWS") is the condition of when to map the workload to this rule. ■ instanceName == "A0" is the name of the instance, which is A0 and the operating system, Windows or LINUX. ■ compute.setPrice(0.02, "PER_HOUR"); is defining the price per hour or month, which is 0.02 per each hour. ■ compute.addAdditionalDetail("Price Plan",compute.getPricePlanLabel(),""); is the tool-tip or additional details. ■ ComputePricingDetails is the object with multiple fields that match the user configuration per virtual machine. <p data-bbox="710 764 1289 791">The ComputePricingDetails supports the following fields:</p> <ul data-bbox="710 798 1426 1346" style="list-style-type: none"> ■ private String instance; ■ private Integer pricePlan; ■ private String osGenericType; ■ private String region; ■ private StoragePriceSummaryDetails storage; ■ private Double reservationDiscount; ■ private Map<String, AdditionalDetails> additionalDetails; ■ private Double osLaborCost; ■ private Map<String, AdditionalPriceDetails> additionalPrices; ■ private boolean computeIncludesStorage; ■ private boolean ignoreInTotalSum; ■ private String providerRegion; ■ public void setPrice(Double price, String unit, String providerRegion); ■ public void addAdditionalDetail(String name, String value);

- 8 Update the matching rule or the pricing rule in the DRL template to define the rule for calculating the price of the cloud provider.
- 9 Save the updated DRL template file.
- 10 Click the **Browse to locate the file** link and select your configuration file.
- 11 Click **Save** to save your cloud provider details.
- 12 To modify the pricing of the existing cloud provider, perform the following steps.
 - a Click the edit  icon.
 - b Click the download current settings  icon.
 - c Open the DRL file, make the required changes and save the file.
 - d Click the **Browse to locate the file** link and select your configuration file.
 - e Click **Save** to save your cloud provider details.

Now, your cloud provider is added to vRealize Business for Cloud to compare the price against other cloud providers.

Update the XLS file for Cloud Comparison

vRealize Business for Cloud provides you a template in the DRL and XLS format to enter the configuration of your cloud provider in a specific format. Based on your preference, you can download the template file to enter your cloud provider pricing information for comparison in vRealize Business for Cloud. The XLS template file is simple and easy to update.

Prerequisites

Verify that you have the required details of your cloud provider to update the XLS template.



Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click the **Administration** tab.
- 3 Click **Business Management**.
- 4 Click **Manage Hybrid & Public Cloud Connections**.
- 5 Select **Cloud Providers for Comparison**, and click the add option icon.
- 6 To download the XLS template, in the **Add Cloud Provider** dialog box, click on the **Click to download the cloud provider comparison template** link.
- 7 Extract the downloaded ZIP file and open the ComparisonProviderTemplate XLS file.
The XLS file contains three worksheets.

- 8 Enter the required details on each worksheet for calculating price of the cloud provider.

Worksheet Name	Description
instance	<p>Use this worksheet to specify the matching configuration details for each instance type.</p> <ul style="list-style-type: none"> ■ Instance name ■ CPU speed ■ Number of processors or cores ■ RAM memory ■ Operating System - Windows or LINUX ■ Term plan ■ Region - North America, ASIA, South America or Europe ■ Total storage size ■ Network Area Storage (NAS) size ■ Storage Area Network (SAN) size <p>NOTE Update the storage values in the instance worksheet Only when the storage is packaged with compute from a pricing standpoint.</p> <ul style="list-style-type: none"> ■ Instance price per unit time. ■ Monthly operating system labor cost ■ Any additional price information or additional details for the instance <p>NOTE The additional details are also displayed on the UI during comparison.</p>
storage	<p>Use this worksheet to specify storage configurations.</p> <ul style="list-style-type: none"> ■ Storage type - NSA, SAN or total storage ■ Region - North America, ASIA, South America or Europe ■ Storage pricing values for each configuration, up to five levels
discount	<p>Use this worksheet to specify the pricing range for availing discount and percentage of discount for a specific pricing range.</p>

You can add multiple entries in each worksheet for different instances, storage configurations and discounts.

- 9 Save the updated XLS template file.
- 10 Click the **Browse to locate the file** link and select your configuration file.
- 11 Click **Save** to save your cloud provider details.
- 12 To modify the pricing of the existing cloud provider, perform the following steps.
- a Click the edit  icon.
 - b Click the download current settings  icon.
 - c Open the XLS file, make the required changes and save the file.
 - d Click the **Browse to locate the file** link and select your configuration file.
 - e Click **Save** to save your cloud provider details.

Now, your cloud provider is added to vRealize Business for Cloud to compare the price against other cloud providers.

Update the Reference Database for vRealize Business for Cloud

You can update the reference database to have the most updated version of the reference library. You can either update the references database manually or by running an auto-update feature. This reference database supplies values for cost calculations.

Prerequisites

For the auto update process, verify that either of the following ports are open for vRealize Business for Cloud to start the auto update process.

- Port 443, which connects to <https://vrb-hub.vmware.com/manualupdate/welcome/>
- Port 22, which connects to SaasFTP.digitalfuel.com

NOTE If the auto update process fails to run on port 22 (FTP), the process starts on port 443 (HTTPS).

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click the **Administration** tab.
- 3 Click **Business Management**.
- 4 Click **Update Reference Database**.

The current version of reference library appears.

- 5 Perform one of the following to update the reference database.
 - If an auto update is available, run the auto update process.
 - a Click **Run Automatic Update** link.
 - b Accept the legal agreement.
 - To manually update the reference database, click **manual update process** link.
 - a Click **Generate and download file** link. An encrypted zip file with the required data is downloaded to your default download folder.
 - b Contact VMware customer support and provide them with the zip file that you have generated. Depending on the information that you have provided, an updated reference costs file will be generated for you.
 - c Click **Browse** and select the file.
 - d Click **Done**.

The reference database is updated.

NOTE Updating the reference database is not a one time process. The reference database will be updated periodically and VMware sends the update. Every time you see an update, you must perform the automatic or manual update process to update the reference database.

Generate and Download the Support File

You can download the support file, which contains critical runtime information about the system.

Procedure

- 1 Log in to vRealize Automation or data collection manager.
 - To get support for the vRealize Business for Cloud server, log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator, click **Administration** and **Business Management**.
 - To get support for the remote data collection manager, log in to `https://Remote_Data_Collector_IP_address:9443/dc-ui/login.html` by using the root user credentials.
- 2 Click **Support File**, and then click **Generate and download file**.

- 3 Save the file.

The support zip file is saved as an archive file. You can share the file with the support team to fix the issues.

- 4 Select the **Enable debug logging** to collect the debug level information in the log files, which helps during support and debugging the issue.

Update Licenses for vRealize Business for Cloud

You can update the license of vRealize Business for Cloud by using the **Update License** option.

Procedure

- 1 Log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click the **Administration** tab.
- 3 Click **Business Management**.
- 4 Expand **Update License** to see the following license details.
 - vRealize Business current license key
 - License type - PERMANENT, EVALUATION or FIXED_EXPIRATION
 - Maximum number of virtual machines or maximum number of CPU package (socket) that the license key can support
 - Existing number of CPU package (socket) and number of virtual machines from private and public cloud accounts
 - Expiry date, if you are using the temporary license
 - The license edition - vRealize Business for Cloud, vRealize Business Enterprise, vCloud Suite.

NOTE If you have upgraded your vRealize Business for Cloud setup from a version prior to 6.1, you have to use the new license key. The earlier license key does not work after upgrade.

- 5 Enter the license key in the **New license key** text box.

NOTE You can also use the vRealize Business for Cloud, vRealize Business Enterprise, and vCloud Suite license key to access vRealize Business for Cloud.

- 6 Click **Update**.

If the new license key is valid, the license is updated.

Generate Token for vRealize Business Enterprise Integration

You can generate a token and vRealize Business for Cloud host URL from vRealize Business for Cloud. You can also download the certificate file that you can import in vRealize Business Enterprise.

Procedure

- 1 Log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click the **Administration** tab.
- 3 Click **Business Management**.
- 4 Expand **vRealize Business Integration**, and click **Generate a new vRealize Business token**.
vRealize Business for Cloud generates a token and vRealize Business for Cloud host URL.
- 5 Click **Download Certificate file** and select the location where you want to save the certificate file.
- 6 (Optional) Click **Download all reports** to download all the reports of vRealize Business for Cloud.

You can use this information to define a connection between vRealize Business Enterprise and vRealize Business for Cloud.

What to do next

For detailed process of integration between vRealize Business Enterprise and vRealize Business for Cloud, see *vRealize Business Enterprise Installation Guide*.

Managing the Data Collectors

You can manage remote data collectors by generating one time key to register with a vRealize Business for Cloud server and also view or delete registered data collectors.

Generate One Time Key for Remote Data Collection

To register your data collector with vRealize Business for Cloud, you must generate a one-time key in the vRealize Business for Cloud server.

Prerequisites

Verify that you have deployed and configured the data collector and a vRealize Business for Cloud server. See [“Deploying a Remote Data Collector,”](#) on page 21

Procedure

- 1 Log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click the **Administration** tab.
- 3 Click **Business Management**.
- 4 Click **Manage Data Collection**, and select **Remote Data Collection**.

- 5 Click the **Generate a new one time use key** link.

You see a key on the Success dialog box.

NOTE The key is active for 20 minutes only.

- 6 Copy or note down the key.
- 7 Click **OK**.

What to do next

Log into the data collection manager of the remote data collector on the 9443 port and use the one-time key to register your collector. See [“Register a Remote Data Collector with vRealize Business for Cloud Server,”](#) on page 21.

View the Registered Data Collectors

You can register your remote data collectors with vRealize Business for Cloud and view the list of collectors registered on the vRealize Business for Cloud server.

Prerequisites

See [“Register a Remote Data Collector with vRealize Business for Cloud Server,”](#) on page 21.

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click the **Administration** tab.
- 3 Click **Business Management**.
- 4 Click **Manage Data Collection**, and select **Manage Virtual Appliances**.

You see a list of IP addresses of the virtual appliances that are registered with the vRealize Business for Cloud server.

- 5 (Optional) To unregister the virtual appliance from collecting data, click the **Untrust** link next to its IP address.

NOTE Even after you untrust the data collector from the vRealize Business for Cloud server, the data collector continues to collect the data and sends data to the server. However, the server discards the data from the data collector. To stop the data collection, you must shut down the data collector virtual appliance or stop the data collection service manually.

Calculating Depreciation of Server Hardware Cost

vRealize Business for Cloud calculates the yearly depreciation values of server hardware cost and then divides the value by 12 to arrive at the monthly depreciation.

vRealize Business for Cloud uses the salvage value of zero dollars.

$\text{depreciable cost} = \text{original cost}$

$\text{Depreciation rate} = 2 / \text{number of depreciation years}$

For example, $2/5 = 0.4$

This is the yearly depreciation of double declining balance method and yearly depreciation of straight line method.

Table 4-1. Depreciation Methods

Method	Calculation
Double declining balance	<p>yearly double declining depreciation = (original cost - accumulated depreciation) * depreciation rate</p> <p>NOTE Double declining depreciation for the last year = original cost - accumulated depreciation</p>
Straight line	Yearly straight line depreciation = (original cost - accumulated depreciation) / number of remaining depreciation years

You can set the depreciation period to two or seven years.

vRealize Business for Cloud uses the maximum value between yearly depreciation of declining balance with multiplied depreciation rate and yearly depreciation of straight line over five years.

Yearly depreciation = Max(yearly depreciation of double declining balance method, yearly depreciation of straight line method)

Below is an example of depreciation cost for an original cost of \$2000 with a depreciation period of five years.

- Depreciation cost for the first year: $\text{Max}[(2000-0) * 0.4, ((2000-0)/5)] = \text{Max}(800, 400) \Rightarrow 800$ (per_month= 66.67)
- Depreciation cost for the second year: $\text{Max}[(2000-800) * 0.4, ((2000-800)/4)] = \text{Max}(480, 300) \Rightarrow 480$ (per_month= 40)
- Depreciation cost for the third year: $\text{Max}[(2000-1280) * 0.4, ((2000-1280)/3)] = \text{Max}(288, 240) \Rightarrow 288$ (per_month= 24)
- Depreciation cost for the fourth year: $\text{Max}[(2000-1568) * 0.4, ((2000-1568)/2)] = \text{Max}(172.8, 216) \Rightarrow 216$ (per_month= 18)
- Depreciation cost for the fifth year: $\text{Max}[(2000-1784) * 0.4, ((2000-1784)/1)] = \text{Max}(86.4, 216) \Rightarrow 216$ (per_month= 18)

View and Update System Status

You can view and update the status of critical internal business processes to understand the overall system health. The system processes run at default defined intervals to ensure that your inventory and cost data are always up-to-date. You can modify these intervals by updating the respective job property in the `itfm.properties` file.

For information about how to modify the default job intervals, see [“Configuring Default Job Intervals for Updating the System Status,”](#) on page 59.

- Data collector connects to the vCenter Server instances and collects the inventory data and usage statistics. After collecting inventory data and usage statistics, vRealize Business for Cloud displays timestamp of the last executed job in local time. The vCenter Server data collection jobs are scheduled to run at default intervals.
- Storage collector connects to EMC SRM server instances and collects data and usage details. After completing the collection process, vRealize Business for Cloud server displays the details and timestamp of the process.
- Cost calculation involves the steps for computing base rates, allocated costs, cost for each virtual machine, and auto-generation of reports. Cost calculation occurs daily, but you can also trigger the process manually.




- vRealize Automation connector collects data about consumers of a virtual machine in terms of blueprints, provisioning groups and tenants from IaaS component of vRealize Automation, if IaaS is configured. vRealize Automation connection information appears only after you configure IaaS component of vRealize Automation.
- Public cloud connection connects to the configured vCloud Air and AWS accounts to collect inventory and usage data. Public cloud connection information appears only after you configure an account.
- vCloud Director connector connects to vCloud Director to collect data about consumers of the virtual machine according to organization and organization vDC. vCloud Director connection information appears only after you add vCloud Director to vRealize Business for Cloud.

You can also view and update cost calculation, vRealize Automation, vCloud Director, and public cloud connection information.

Procedure

- 1 Log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Status**.

vRealize Business for Cloud displays the system status information. Information related to data collectors, cost calculation, vRealize Automation, public cloud connection, and vCloud Director connection is displayed.

- You see the Green successful status  icon, if all the processes are running correctly.
- You see the Red unsuccessful status  icon, if the mandatory jobs fail.
- You see the Warning status  icon, if the non-mandatory jobs fail.

NOTE By default, the vCenter Server data collection jobs like Inventory, Storage, Tags, and Usage statistics are set as critical jobs as these are mandatory for cost calculation and the vRealize Operations Manager synchronization job is set as non-mandatory.

If there is a problem with any of the mandatory job processes, the system displays the Red status and if there is a problem with the non-mandatory jobs, the system displays warning status.

However, you can change the set values for the job criticality by updating the following lines in the `itfm.properties` file.

- To configure the Tags and Storage jobs as non-mandatory, add the following lines in the file.


```
dc.job.critical.vc.tags = false
dc.job.critical.vc.storage = false
```
 - To configure the vRealize Operations Manager synchronization job as mandatory, add the following line in the file.


```
dc.job.critical.vc.vcops=true
```
-

- 4 (Optional) To run a process and update the cost data and connections, click **Update now** next to the respective process.

Configuring Default Job Intervals for Updating the System Status

The data collection from all endpoints is scheduled to run at default intervals. However you can modify the intervals by updating the respective job properties in the `itfm.properties` file.

Following table lists the jobs from all endpoints, its default intervals for data collection and the job property that you can use to modify the interval.

NOTE You can modify these intervals by updating the respective job property in the `itfm.properties` file present at the `/usr/local/tcserver/vfabric-tc-server-standard/sharedconf` location. For example, to run the storage data collection every one hour, update the storage job property to `dc.job.interval.vc.storage = 60`.

Table 4-2. Data Collection Jobs

Endpoint	Jobs	Default Intervals	Job Property
vCenter Server	Inventory	Immediately after an inventory update	Not applicable
	Tags	Every 6 hours (360 minutes)	<code>dc.job.interval.vc.tags</code>
	vRealize Operations Manager	Every 30 minutes	<code>dc.job.interval.vc.vcops</code>
	Storage	Every 12 hours (720 minutes)	<code>dc.job.interval.vc.storage</code>
	Usage Statistics	Every 24 hours (1440 minutes)	<code>dc.job.interval.vc.stats</code>
EMC SRM		Every 24 hours (1440 minutes)	<code>dc.job.interval.srm</code>
vRealize Automation		Every 2 hours (120 minutes)	<code>dc.job.interval.vra</code>
Public cloud	AWS	Every 24 hours (1440 minutes)	<code>dc.job.interval.aws</code>
	vCloud Air	Every 24 hours (1440 minutes)	<code>dc.job.interval.vca</code>
	Azure	Every 24 hours (1440 minutes)	NOTE You cannot configure Azure interval. You can manually trigger the job when required.
vCloud Director		Every hour (60 minutes)	<code>dc.job.interval.vcd</code>

NOTE To run a data collection process immediately, click **Status** and click the **Update Now** option next to the respective process.

If a failure occurs during the data collection process, vRealize Business for Cloud retries to run the process maximum of five times, by default. You can modify the retry value by updating the `dc.failed.job.max.retry.count` parameter in the `itfm.properties` file.

For example, `dc.failed.job.max.retry.count = 3`.

And by default, vRealize Business for Cloud takes two minutes interval to retry the process. You can modify this value by updating the `dc.failed.job.retry.period` parameter in the `itfm.properties` file.

For example, `dc.failed.job.retry.period = 1`.

Troubleshooting vRealize Business for Cloud

5

You can troubleshoot vRealize Business for Cloud for some of the common problems that might occur when installing or using vRealize Business for Cloud.

This chapter includes the following topics:

- [“vRealize Business for Cloud is Disconnected,”](#) on page 62
- [“Error While Accessing Business Management Tab,”](#) on page 62
- [“Business Management Tab Does not Appear,”](#) on page 62
- [“HTTP Error 500 on Business Management Tab,”](#) on page 63
- [“HTTP Error 401 Unauthorized Occurs While Accessing the Business Management Tab,”](#) on page 63
- [“All the Provisioned Virtual Machines Do Not Appear for an Azure Account,”](#) on page 64
- [“vRealize Business for Cloud and vRealize Automation Connection Failure,”](#) on page 64
- [“vRealize Automation Data Collection Failure,”](#) on page 64
- [“An Untrusted Certificate Error,”](#) on page 65
- [“The Host Name Does Not Match the IP Address,”](#) on page 65
- [“vCenter Server Data Collection Failure,”](#) on page 66
- [“vCenter Server Status Shows Red,”](#) on page 66
- [“vCenter Server Storage Synchronization Failure,”](#) on page 67
- [“Data Collection Fails After vCenter Server Upgrade,”](#) on page 67
- [“The ESXi Server Cost is Doubled in vRealize Business for Cloud,”](#) on page 68
- [“vCloud Director-Based Categorization Issues,”](#) on page 68
- [“Virtual Machine Details Present in vCloud Director Are Not Displayed,”](#) on page 68
- [“Blueprint costs Displays Zero for vCloud Director Based Blueprints in vRealize Automation,”](#) on page 69
- [“The Blueprints Appear in the Other Cloud Providers Tab,”](#) on page 69
- [“AWS Account Addition Failure,”](#) on page 69
- [“All the Provisioned Virtual Machines Do Not Appear for an Azure Account,”](#) on page 70
- [“Data Collection Failure for Azure Non-EA Accounts,”](#) on page 70
- [“Unable to Add EMC SRM Storage Servers,”](#) on page 71
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- [“The Computed LUN Rate Does Not Match the Actual Rate,”](#) on page 72
- [“Unable to Connect to vSphere or vApp Provisioned Resource With Internet Explorer,”](#) on page 73
- [“Issue with Filtering Reports,”](#) on page 73
- [“Issue with monit restart all Command,”](#) on page 73

vRealize Business for Cloud is Disconnected

You are unable to connect to vRealize Business for Cloud connection.

Problem

After the vRealize Automation SSL certificate is updated, the connection to vRealize Business for Cloud is lost.

Cause

An administrator has replaced the self-signed certificate of vRealize Automation.

Solution

- ◆ Register your vRealize Business for Cloud server with vRealize Automation. For more information, see the *Register vRealize Business for Cloud with vRealize Automation* section.

Error While Accessing Business Management Tab

An error message is displayed when you attempt to access the **Business Management** tab after registering with vRealize Automation.

Problem

After registering vRealize Business for Cloud with vRealize Automation, if you click the **Business Management** tab in vRealize Automation user interface, an Error 404 message is displayed.

Solution

- 1 Log in to the vRealize Business for Cloud virtual machine.
- 2 Run the `monit restart itbm-server` command.

The server restarts in 20 to 30 seconds. You can find the log file at `/var/log/vrb/itfm-server/itfm-server.log`.

Business Management Tab Does not Appear

After registering vRealize Business for Cloud with vRealize Automation, **Business Management** tab does not appear in the vRealize Automation user interface.

Problem

After registering vRealize Business for Cloud with vRealize Automation and adding **Business Management** or **Tenant Controller** role to the user, **Business Management** tab does not appear in the vRealize Automation user interface. No error is reported in the log file.

Cause

This issue might occur because of one of the following scenarios.

- When IaaS component of vRealize Automation is not available.
- When vRealize Automation data is cached on server.

Solution

- ◆ Perform one of the following steps.

Option	Description
vRealize Automation IaaS component issue	<ul style="list-style-type: none"> a Log in to vRealize Automation virtual appliance by using the root credentials. b Create extension.properties file under /etc/vcac and hide the home page tab.shell.disabledExtensions=csp.home. You can hide other tabs by using shell.disabledExtensions=<extension-id>[, <extension-id>] c Restart the vRealize Automation virtual appliance. d Log in to the vRealize Automation interface. Business Management tab should appear.
vRealize Automation cache issue	<ul style="list-style-type: none"> a Log in to vRealize Automation through administrator@vsphere.local credentials. b Edit user tenant and click Update. c Log out and log in again as a tenant by using the tenant URL.

HTTP Error 500 on Business Management Tab

When you click the **Business Management** tab, an error message occurs.

Problem

When you click the **Business Management** tab, an HTTP Error 500 is displayed.

Cause

vCenter Server virtual appliance SSO is not compatible with independent SSO virtual appliance.

Solution

- ◆ To fix the issue, see the [KB2075011](#) knowledge base article.

HTTP Error 401 Unauthorized Occurs While Accessing the Business Management Tab

After registering vRealize Business for Cloud with vRealize Automation, when you click the **Business Management** tab, an error message occurs.

Problem

After registering vRealize Business for Cloud with vRealize Automation, if you click the Business Management tab in vRealize Automation user interface, an HTTP Error 401 Unauthorized message is displayed.

Cause

This problem occurs if the time is not synchronized between vRealize Automation Virtual Appliance and the vRealize Business for Cloud Virtual Appliance. The time difference between the vRealize Automation and vRealize Business for Cloud virtual appliances must not be more than 60 seconds.

Solution

- 1 Configure the same NTP servers on both vRealize Automation and vRealize Business for Cloud virtual appliances. For more information, see the *Configure Time Synchronization* section.
- 2 Restart the virtual appliances.

All the Provisioned Virtual Machines Do Not Appear for an Azure Account

For an Azure Account, you do not see all the virtual machines that you have provisioned.

Problem

You do not see all the provisioned virtual machines provisioned for an Azure account.

Cause

When you have multiple virtual machines in one or more of your cloud services. The number of VMs that you see in vRealize Business for Cloud is the number of cloud services that you have in your Azure account.

vRealize Business for Cloud and vRealize Automation Connection Failure

An error message is displayed after registering vRealize Business for Cloud with vRealize Automation.

Problem

After you register vRealize Business for Cloud with vRealize Automation and then if you navigate to **Administration > Business Management** `java.net.NoRouteToHostException: No route to host` error message is displayed.

Cause

This problem can occur if the IP address of vRealize Business for Cloud virtual appliance changed after vRealize Business for Cloud is registered with vRealize Automation.

Solution

- 1 Log in to the vRealize Business for Cloud Web console, `https://vRealize_Business_for_Cloud_IP_address:5480`.
- 2 Unregister vRealize Business for Cloud from vRealize Automation. For more information, see the *Unregister vRealize Business for Cloud from vRealize Automation* section.
- 3 Perform one of the following steps.
 - Remove vRealize Business for Cloud virtual appliance from your environment and deploy a new instance of vRealize Business for Cloud with static IP and fully-qualified domain name.
 - Re-create the SSL key store file (`ssl.keystore`) by performing the steps given in the *Change or Replace SSL Certificate* section.
- 4 Register vRealize Business for Cloud with vRealize Automation. For more information, see the *Register vRealize Business for Cloud with vRealize Automation* section.

vRealize Automation Data Collection Failure

vRealize Business for Cloud and vRealize Automation connection fails, which results in data collection failure.

Problem

After you register vRealize Business for Cloud with vRealize Automation, the vRealize Automation data collection displays IaaS host unknown error and then the IaaS machine is not reachable from vRealize Business for Cloud.

Cause

The IaaS entry does not exist in the `/etc/hosts` file of vRealize Business for Cloud.

Solution

- 1 Navigate to the `/etc/hosts` file.
- 2 Enter the IaaS entry in the file.

An Untrusted Certificate Error

After you add an endpoint, you see an untrusted certificate error message in the system status.

Problem

After you add an endpoint such as a vCenter Server into vRealize Business for Cloud, you see the yellow warning symbol for the data collection status with the following error message:

An untrusted certificate was presented by the server.

Cause

The SSL certificate of the endpoint might have changed and a trusted authority might not have signed the certificate.

Solution

- 1 Go to the **Administration** tab.
- 2 Select an endpoint. For example, **Manage Private Cloud Connections > vCenter Server**.
- 3 Select the instance and click the edit option.
- 4 View and accept the certificate.
- 5 Log in to the vRealize Business for Cloud virtual appliance as a root user and run the following commands.
 - a `monit stop data-collector`
 - b `monit start data-collector`

The Host Name Does Not Match the IP Address

The identity of the endpoint does not match with its SSL certificate.

Problem

After you add an endpoint such as a vCenter Server into vRealize Business for Cloud, you might see the following error:

The certificate presented by the server has issues.

Rectify the certificate and edit the connection to accept the new certificate.

Cause

When you add an endpoint, you might have provided the IP address. The SSL certificate presents the endpoint's host name, instead of the IP address. This identity mismatch results in the certificate issue of the endpoint.

Solution

- 1 Go to the **Administration** tab.
- 2 Select an endpoint. For example, **Manage Private Cloud Connections > vCenter Server**.

- 3 Select the instance and click the edit option.
- 4 Enter the host name of the endpoint and save.

vCenter Server Data Collection Failure

vRealize Business for Cloud is unable to collect data from vCenter Server.

Problem

- You see a synchronization failure message for vCenter Server in the **Status** menu.
- You see the following error message for vCenter Server in the **Status** menu:

```
Unable to retrieve data from vROps <vrops_server_address>
```

Cause

- The vCenter Server, web services and profile driven services are not running under the same LocalSystem or domain account.
- The vRealize Operations Manager server is not reachable
- The vRealize Operations Manager API service is failing
- The vRealize Operations Manager server is on an HA clustered, multi-node environment and the node registered with vCenter Server is not reachable.


Solution

- ◆ To resolve this problem, perform the applicable step out of the following solutions.
 - Verify that all vCenter Server services such as, inventory, stats, and storage profiles run under the same user account.
 - If the vCenter Server has been added to vRealize Operations Manager within the 24-hours, wait for vRealize Operations Manager to compute all data and then try data collection again.
 - Check for any issues with the vRealize Operations Manager API service and resolve them.
 - If the vRealize Operations Manager instance is a multi-node setup and if a new node has been deployed to replace the failed node, update the plugin on vRealize Operations Manager to register the new node with vCenter Server.

vCenter Server Status Shows Red

You see the Red  icon for the vCenter Server status in vRealize Business for Cloud.

Problem

When you click the **Status** menu and expand the status for vCenter Server, the Red  icon is displayed without any error details.

Cause

The time zone of the vRealize Business for Cloud virtual appliance is not in the UTC format.

Solution

- 1 Log in to the vRealize Business for Cloud virtual machine.
- 2 Change the time zone to a UTC format.
- 3 Run the `monit restart itbm-server` command.

vCenter Server Storage Synchronization Failure

vRealize Business for Cloud does not collect data because of failure in the vCenter Server cost calculation process.

Problem

- You see the storage cost calculation failure message in the **Status** menu for vCenter Server.
- The vCenter Server storage service might fail and cause storage profiles not to appear in vRealize Business for Cloud.

Cause

This issue might occur because of one of the following scenarios.

- The Management Web services are not running on the vCenter Server.
- The vCenter Server user does not have all the following permissions.
 - Storage views.View and Profile-driven storage.Profile-driven storage view permissions
 - Global.vCenter Operations User permission, if vCenter Server is integrated with vRealize Operations Manager
- The Profile-driven Storage service is not running in vCenter Server.
- The vCenter Server web services and profile driven services are not running under the same LocalSystem or domain account.
- For vCenter Server virtual appliance, the OpenSSL heart-bleed patch is applied, but the vCenter Storage Monitoring Service certificates are not upgraded.
- The DB2 database issue.

Solution

- ◆ To fix the issue, see the [KB2060967](#), [KB2076692](#), [KB2015180](#) knowledge base articles.

Data Collection Fails After vCenter Server Upgrade

After upgrading vCenter Server, data collection fails.

Problem

After you upgrade your vCenter Server on Windows or vCenter Server virtual appliance to the 6.0 version, the vCenter Server data collection.

Cause

The earlier vCenter Server trusted certificate has changed, which has become obsolete.

Solution

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click the **Administration** tab.
- 3 Click **Business Management**.
- 4 Click **Manage Private Cloud Connections**.
- 5 Select **vCenter Server** and click the edit option icon next to the server that you want to modify.

- 6 Accept the new vCenter Server certificate.

The ESXi Server Cost is Doubled in vRealize Business for Cloud

Duplication of cost for ESXi hosts in vRealize Business for Cloud

Problem

vRealize Business for Cloud considers the cost of certain ESXi servers twice during cost calculation.

Cause

If you migrate ESXi hosts from one vCenter Server to another, without deleting the ESXi hosts from the first vCenter Server, the cost of the host is considered once from the source vCenter Server and once from the target vCenter Server.

Solution

- ◆ To avoid duplication of costs, delete the ESXi hosts from the vCenter Server after migration.

vCloud Director -Based Categorization Issues

After upgrade, vCloud Director - based categorization information is not displayed.

Problem

After upgrade, you might not see the organization constructs and the organization virtual data center constructs from vCloud Director instance.

Cause

This problem occurs if the vCloud Director server is down after upgrade, which does not run the cost calculation process.

Solution

- 1 Synchronize the vCloud Director process.
 - Click the **Status** menu, click **Update Now** next to vCloud Director.
 - Wait for the next automatic cost calculation process to complete. By default, the process runs every one hour.
- 2 Trigger the cost calculation.
 - Click **Status** and click the **Update Now** option to run the cost calculation process manually.
 - Wait for the next automatic cost calculation process to complete. By default, the process runs once in a day.
- 3 Under the Consumption section on the UI, verify for organization-based information.

The information is displayed after successful cost calculation process.

Virtual Machine Details Present in vCloud Director Are Not Displayed

After you add vCloud Director to vRealize Business for Cloud, the virtual machine details that vCloud Director manages are not displayed.

Problem

Even after you add vCloud Director to vRealize Business for Cloud, the virtual machine details that vCloud Director manages are not displayed in vRealize Business for Cloud.

Cause

This problem occurs if you have not explicitly added the vCenter Server that are managed by vCloud Director to vRealize Business for Cloud.

Solution

- ◆ vCenter Server is the source of information and you must add it to vRealize Business for Cloud directly. For more information, see the *Manage vCenter Server Connections* section.

Blueprint costs Displays Zero for vCloud Director Based Blueprints in vRealize Automation

When you provision the virtual machine from vCloud Director based blueprint in vRealize Automation, the cost value is displayed as zero.

Problem

When you provision the machine from vCloud Director based blueprint in vRealize Automation, the cost value is displayed as zero and the value does not update even when you update the cost in vRealize Automation.

Cause

This issue might occur because the vCloud Director endpoint that exists in vRealize Automation is not added in vRealize Business for Cloud.

Solution

- ◆ Perform one of the following:
 - Add the vCloud Director endpoint in vRealize Business for Cloud.
 - Configure the pricing values in the **Other Cloud Providers** section (**Pricing and Charges > Pricing > Edit > Edit Pricing > Other Cloud Providers**).

The Blueprints Appear in the Other Cloud Providers Tab

The blueprints associated to the endpoints appear under **Other Cloud Providers** tab in vRealize Business for Cloud.

Problem

When you have added an endpoint in vRealize Automation, the blueprints associated to the endpoints appear under the **Other Cloud Providers** tab in the **Edit Pricing** window.

Cause

You have added the endpoint in vRealize Automation only and not in vRealize Business for Cloud.

Solution

- ◆ Add the endpoint in vRealize Business for Cloud also.

AWS Account Addition Failure

You are unable to add AWS account that you want to track and analyze by using vRealize Business for Cloud.

Problem

When you attempt to add an AWS account in the **Administration** tab, an AWS collection job error appears in the system status. Review the `itfm-server.log` file for more details about the error.

Cause

This issue might occur because of one of the following reasons.

- When adding an account, the paying accounts are not marked as primary accounts.
- The AWS CSV file might be huge and exceeds the available storage on vRealize Business for Cloud virtual appliance.
- For paying accounts, you have not enabled the detailed billing report.
- You have used special characters in the account ID.
- The billing report is unavailable in the S3 bucket.
- You do not have permissions to add the account.

Solution

- ◆ To resolve this problem, perform the applicable step out of the following solutions.
 - Verify that the paying account is selected as a primary account while adding an account.
 - Enable the detailed bill option for the paying accounts.
 - Verify that the account ID does not contain any special characters.
 - Ensure that at least one billing report present in the S3 bucket follows the following naming convention `123456789012-aws-billing-detailed-line-items-with-resources-and-tags-yyyy-mm.csv.zip`, where 123456789012 is account ID, yyyy is year, mm is month.
 - For a paying account, ensure that the AWS user has required permissions like `s3:Get*`, `s3:List*`, and `ec2:Describe*`.

For a non-paying account, verify that the AWS user has the `ec2:Describe*` permission.

All the Provisioned Virtual Machines Do Not Appear for an Azure Account

For an Azure Account, you do not see all the virtual machines that you have provisioned.

Problem

You do not see all the provisioned virtual machines provisioned for an Azure account.

Cause

When you have multiple virtual machines in one or more of your cloud services. The number of VMs that you see in vRealize Business for Cloud is the number of cloud services that you have in your Azure account.

Data Collection Failure for Azure Non-EA Accounts

vRealize Business for Cloud data collection fails for Azure non-EA accounts.

Problem

The data collection process fails in vRealize Business for Cloud for Azure non-EA accounts.

Solution

- 1 Log in to Azure portal at <https://account.windowsazure.com/Subscriptions>.
- 2 Note the offer IDs of each of your subscriptions. For example, if the offer ID is `MS-AZR-0003P`, note `0003P` and ignore `MS-AZR-`.
- 3 Log into vRealize Business for Cloud by using the system administrator credentials.

- 4 Open the `azure.properties` file from the `/usr/local/tcserver/vfabric-tc-server-standard/itbm-server/conf/` location.
- 5 Enter your subscription display name in the following format: `subscription_display_name=<code>`
To add an entry for Pay-As-You-Go offer type, update `Pay-As-You-Go=0003P`.
- 6 Run the `monit restart itbm-server` command.

Unable to Add EMC SRM Storage Servers

You are unable to add an EMC SRM storage server to vRealize Business for Cloud.

Problem

You are unable to add an EMC SRM storage server by using the **Administration** tab in vRealize Business for Cloud.

Cause

vRealize Business for Cloud is unable to communicate with EMC SRM server.

Solution

- 1 Ensure the SRM server URL is in the valid format as follows:
[protocol://]server[:port], where protocol and port are optional.
 - Protocol can be HTTP or HTTPS. The default protocol to run SRM is HTTPS protocol.
 - Port is the port number on which you want to run the SRM server. The default port number is 58443.
- 2 Verify that the SRM user has the permissions to access to SRM reports and ReportManagerService.

Storage Array Details Do Not Appear

After you add the SRM servers to vRealize Business for Cloud, the storage array details do not appear.

Problem

- You see a synchronization failure message for EMC SRM servers in the **Status** option.
- After adding the EMC SRM servers, vRealize Business for Cloud does not display the storage array and its related details. No error is reported in the log file.

Cause

- vRealize Business for Cloud SRM storage data collection process is not complete.
- ReportManagerService might not be returning data.

Solution

- 1 To resolve the issue, perform the applicable step out of the following solutions.
 - Verify that the storage arrays are added to SRM.
 - Ensure that the vRealize Business for Cloud storage data collection is complete.
By default, SRM storage data collection happens on daily basis.

- 2 Perform the following steps to verify the issue.
 - After adding the SRM server to vRealize Business for Cloud, wait for a few hours to complete data collection. For more information about error details, see the `/var/log/vrb/data-collector/itfm-srm-dc.log` file.
 - Verify whether SRM ReportManagerService is returning data by performing following steps.
 - a Download and install SOAP user interface from <http://www.soapui.org>.
 - b Configure ReportManagerService endpoint with a user ID and password at `http://<SRM-server>/APG`.
 - c Invoke requests to verify the payload.


```
<?xml version="1.0" encoding="UTF-8"?> <node xmlns="http://www.watch4net.com/APG/Web/XmlTree1" name="List of arrays" order="2" singleNodeId="3820e72f" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"> <property xsi:type="PropertyNodeColumn" name="System Name" property="device"/> <property xsi:type="PropertyNodeColumn" name="Serial #" sortMode="asc#1" property="serialnb"/> <property xsi:type="PropertyNodeColumn" name="IPs" property="ip"/> <property xsi:type="PropertyNodeColumn" name="Model" property="model"/> <property xsi:type="PropertyNodeColumn" name="Array Type" property="arraytyp"/> <property xsi:type="ValueNodeColumn" name="Array Usable Capacity" filterExpression="(name=='ConfiguredUsableCapacity' | name== 'NASFSCapacity')& ! (parttype)" period="3600" forcePeriod="never" timeThreshold="2"/> <property xsi:type="NodePropertyNodeColumn" name="System Type" sortMode="asc" nodeProperty="expandedNames[1]"/> <formula formulaId="util.ChildCount"> <result name="Count" default="false" graphable="false"/> </formula> <node name="array" singleNodeId="f9dc2ffc"> <property xsi:type="NodeExpansion" expandOn="device,datatype"/> <property xsi:type="NodeFilter" filterExpression="name=='Availability' & vstatus='active'"/> <property xsi:type="ReportPreferences" defaultMode="mix" displayedProperties="model[Model] serialnb[Serial number] partvrs[Operating Environment]"/> <property xsi:type="NodePropertyNodeColumn" name="Component" nodeProperty="name"/> <property xsi:type="NodePropertyNodeColumn" name="Description" nodeProperty="reportPreferences.description"/> <property xsi:type="ValueNodeColumn" name="Count" resultName="Count" forcePeriod="true" timeThreshold="600" roundingAccuracy="0"/> </node> </node>
```

The Computed LUN Rate Does Not Match the Actual Rate

The computed LUN rates are the same for all the LUNs and do not match the actual rate in vRealize Business for Cloud.

Problem

The computed LUN rates are the same for all the LUNs and do not match the actual rate in vRealize Business for Cloud.

Cause

The service level policies are not applied on LUNs.

Solution

- 1 Verify that the service level policies are defined in SRM.
- 2 Verify that the service level weightage is defined. For more information, see Edit Service Level Weightage in the *vRealize Business for Cloud User' Guide*.

Unable to Connect to vSphere or vApp Provisioned Resource With Internet Explorer

An error message appears indicating that the virtual machine is not powered on or is not available on the network.

Problem

When you attempt to connect to a vSphere or vApp provisioned resource with Internet Explorer, you see an error message indicating that the virtual machine is not powered on or is not available on the network.

Solution

- 1 To define the virtual machine mode, log in to the Internet Information Services (IIS) machine as an administrator and navigate to C:\Program Files (x86)\VMware\VCAC\Server\Website\VMRC folder, and open `vmrc.js` with a file editor.
- 2 Search for `var startup = function (modes, msgMode, advancedConfig) {`
- 3 Add two lines to define `modes` and `msgMode` so that the content of the file appears as


```
var startup = function (modes, msgMode, advancedConfig) {
  modes = 2;
  msgMode = 2;
```
- 4 Save and close the file.
- 5 Restart the IIS machine.

Issue with Filtering Reports

An error appears when you filter reports in vRealize Business for Cloud.

Problem

When you attempt to filter reports by using a long string as a filter criterion, an error appears.

Solution

- ◆ Change the HTTP connector size to **64000** or greater at `/usr/local/tcserver/vfabric-tc-server-standard/itbm-server/conf /server.xml`

```
maxHTTPHeaderSize="65536"
```

Issue with `monit restart all` Command

When you change the vRealize Business for Cloud host name, you cannot use the `monit restart all` command to restart the services on the host.

Problem

If you have changed the host name of vRealize Business for Cloud, when you run the `monit restart all` command, the system will not restart all the monitored services.

Cause

The `monit` command cannot identify the host with the new name.

Solution

- ◆ Run the following the command to restart Monit:

```
systemctl restart monit
```

Monit registers the host name with the new hostname and allows you to use the monit commands.

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