vRealize Business for Cloud Install Guide

vRealize Business for Cloud Standard 7.6

vRealize Business 7.6
vRealize Business for Cloud 7.6

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Contents

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.

About vRealize Business for Cloud

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VMware vRealize Business for Cloud automates cloud costing, consumption analysis and comparison, delivering the insight you need to efficiently deploy and manage cloud environments.

You can use vRealize Business for Cloud to manage the following VMware products and services:

- vCenter Server
- vCloud Director
- vRealize Automation
- vRealize Operations Manager

To see the versions of these products that are compatible with vRealize Business for Cloud, see the Interoperability Matrix.

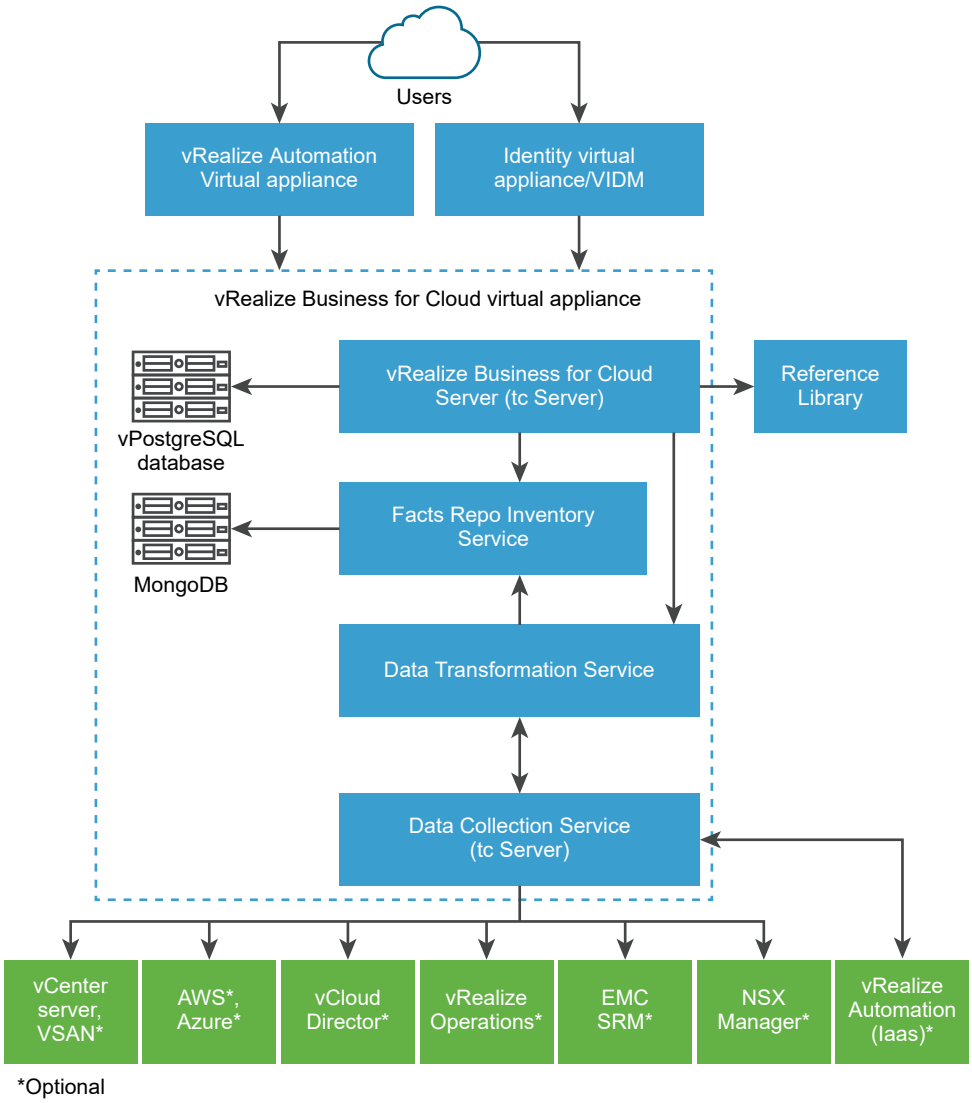
This chapter includes the following topics:

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



Data Collection Services

Data collection services include a set of services for each private and public cloud endpoint such as vCenter Server, vCloud Director, and AWS 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 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.

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 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	Calls vRealize Business for Cloud to get the cost profiles

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 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 and Microsoft Azure

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.

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.

VMware NSX Manager

vRealize Business for Cloud can integrate with VMware NSX Manager, which is the centralized management component of NSX, and runs as a virtual appliance on an ESX host. You can define price for network components discovered by vRealize Business for Cloud from VMware NSX Manager through vCloud Director.

The Customer Experience Improvement Program

vRealize Business for Cloud participates in VMware's Customer Experience Improvement Program (CEIP). The CEIP provides VMware with information that enables VMware to improve its products and services, to fix problems, and to advise you on how best to deploy and use our products. You can choose to join or leave the CEIP for vRealize Business for Cloud at any time.

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

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

vRealize Business for Cloud gives you the opportunity to join the Customer Experience Improvement Program (CEIP) when you initially install the product. After installation, you can join or leave the CEIP at any time.

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**.

Results

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.

About vRealize Business for Cloud 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 (HA) 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.

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.

Currencies Supported in vRealize Business for Cloud

vRealize Business for Cloud supports several currencies for cost calculation. You can select a currency during vRealize Business for Cloud deployment.

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.

Currency Name	Abbreviation
UAE Dirham	AED
Albanian Lek	ALL
Argentina Peso	ARS
Australian Dollar	AUD
Aruban Florin	AWG
Barbadian Dollar	BBD
Bangladeshi Taka	BDT
Bulgarian Lev	BGN
Bahraini Dinar	BHD
Burundi Franc	BIF
Bermudian Dollar	BMD
Brunei Dollar	BND
Bolivian Boliviano	BOB
Brazilian Real	BRL
Bahamian Dollar	BSD
Botswana Pula	BWP
Belize Dollar	BZD
Canadian Dollar	CAD
Congolese Franc	CDF
Swiss Franc	CHF

Currency Name	Abbreviation
Chilean Peso	CLP
China Yuan Renminbi	CNY
Colombian Peso	COP
Costa Rican Colon	CRC
Cuban Peso	CUP
Cape Verdean Escudo	CVE
Czech Koruna	CZK
Djiboutian Franc	DJF
Danish Krone	DKK
Dominican Peso	DOp
Algerian Dinar	DZD
Egyptian Pound	EGP
Ethiopian Birr	ETB
Euro	EUR
Fijian Dollar	FJD
British Pound	GBP
Ghanaian Cedi	GHS
Gambian Dalasi	GMD
Guinean Franc	GNF
Guatemalan Quetzal	GTQ
Hong Kong Dollar	HKD
Honduran Lempira	HNL
Croatian Kuna	HRK
Haitian Gourde	HTG
Hungarian Forint	HUF
Indonesia Rupiah	IDR
Israeli Shekel	ILS
Indian Rupee	INR
Iraqi Dinar	IQD
Icelandic Krona	ISK
Jamaican Dollar	JMD
Jordanian Dinar	JOD
Japanese Yen	JPY
Kenyan Shilling	KES
Cambodian Riel	KHR

Currency Name	Abbreviation
Comorian Franc	KMF
Korean (South) Won	KRW
Kuwait Dinar	KWD
Cayman Island Dollar	KYD
Kazakhstani Tenge	KZT
Lao Kip	LAK
Lebanese Pound	LBP
Sri Lankan Rupee	LKR
Liberian Dollar	LRD
Lesotho Loti	LSL
Lithuanian Litas	LTL
Libyan Dinar	LYD
Moroccan Dirham	MAD
Moldovan Leu	MDL
Malagasy Ariary	MGA
Macedonian Denar	MKD
Myanmar Kyat	MMK
Macanese Pataca	MOP
Mauritanian Ouguiya	MRO
Mauritian Rupee	MUR
Maldivian Rufiyaa	MVR
Malawian Kwacha	MWK
Mexican Peso	MXN
Malaysia Ringgit	MYR
Mozambican Metical	MZN
Namibian Dollar	NAD
Nigerian Naira	NGN
Nicaraguan Cordoba	NIO
Norway Krone	NOK
Nepalese Rupee	NPR
New Zealand Dollar	NZD
Omani Rial	OMR
Panamanian Balboa	PAB
Peruvian Sol	PEN
Papua New Guinean Kina	PGK

Currency Name	Abbreviation
Philippine Peso	PHP
Pakistani Rupee	PKR
Polish Zloty	PLN
Paraguayan Guarani	PYG
Qatari Riyal	QAR
Romanian Leu	RON
Serbian Dinar	RSD
Russia Ruble	RUB
Rwandan Franc	RWF
Saudi Arabian Riyal	SAR
Seychellois Rupee	SCR
Sudanese Pound	SDG
Sweden Krona	SEK
Singapore Dollar	SGD
Saint Helena Pound	SHP
Sierra Leonean Leone	SLL
Somali Shilling	SOS
Sao Tome and Principe Dobra	STD
Salvadoran Colon	SVC
Swazi Lilangeni	SZL
Thai Baht	THB
Turkmen Manat	TMT
Tunisian Dinar	TND
Turkey Lira	TRY
Trinidad and Tobago Dollar	TTD
Taiwan New Dollar	TWD
Tanzanian Shilling	TZS
Ukrainian Hryvnia	UAH
Ugandan Shilling	UGX
US Dollar	USD
Uruguayan Peso	UYU
Uzbekistan Som	UZS
Venezuelan Bolivar	VEF
Vietnamese Dong	VND

Currency Name	Abbreviation
Central African Franc	XAF
East Caribbean Dollar	XCD
West African Franc	XOF
CFP Franc	XPF
Yemeni Rial	YER
South Africa Rand	ZAR

Support for Costing of non-ESXi Physical Servers in vRealize Business for Cloud

vRealize Business for Cloud supports the costing of physical servers managed in vRealize Automation 6.x. vRealize Business for Cloud manages each physical server as one huge virtual machine.

If physical servers exist in the vRealize Automation 6.x environment, vRealize Business for Cloud considers cost of all physical servers during cost calculations. All physical servers are grouped under a data center called **Physical Servers DC**.

If the consumer categorization is not based on vRealize Automation categorization, then the physical servers are shown under Others category.

vRealize Business for Cloud does not collect the following properties of physical servers managed in vRealize Automation 6.x.

- CPU vendor and description
- Model description
- NIC count
- OS name
- CPU package count and number of CPUs
- CPU frequency

Note If vRealize Business for Cloud is integrated with vRealize Automation 7.x, costing of non-ESXi physical servers is not supported.

Default vRealize Business for Cloud Users Defined in vRealize Automation

vRealize Business for Cloud defines certain roles in vRealize Automation to edit or modify the consumer information.

The following vRealize Business for Cloud roles and their responsibilities are defined in vRealize Automation.

Role	Responsibilities
Business Management Administrator	The user has permissions to perform the updates in vRealize Business for Cloud. However, the user must have the **Tenant Administrator** role from vRealize Automation to add endpoints into vRealize Business for Cloud.
Business Management Controller	The user is responsible for a subset of IT consumers, and can see the price that is charged to them. The users with these roles can see only the showback statement. In addition, these users can see the charges and not costs for their subset of business units. You can map the business units to the **Business Management Controller** users. For information about how to map the business units, see the *Assign Business Units to the Users section in the User Guide*.

Preparing for vRealize Business for Cloud Installation

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You must prepare your environment with minimum requirements for vRealize Business for Cloud installation.

This chapter includes the following topics:

vRealize Business for Cloud System Requirements

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

Hardware Requirements

The vRealize Business for Cloud server requires a minimum of 80 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 2 GB (**Properties > Hardware** tab).

Sizing and Server Specification Requirements

By default, vRealize Business for Cloud can scale up to 10,000 virtual machines across 12 vCenter Server instances, which includes:

- Live and deleted virtual machines
- Daily change in CPU, memory, and storage for 4000 or 20% of the virtual machines
- Change in virtual machine configurations and count for up to 1000 virtual machines

Note If you use remote data collectors, vRealize Business for Cloud can scale up to 20,000 virtual machines across 17 vCenter Server instances.

The default server memory of the vRealize Business for Cloud virtual appliance is 8 GB (3 GB for the server and 1400 MB for FactsRepo).

To manage...	Increase the memory to...
Up to 20,000 live or deleted virtual machines with daily change in CPU, memory, and storage for 20,000 or more than 20% of the virtual machines and change in the count for up to 1000 virtual machines.	■ 12 GB for the vRealize Business for Cloud virtual appliance: ■ 5 GB for the vRealize Business for Cloud server. ■ 3 GB for the Facts Repo service.
Up to 30,000 live or deleted virtual machines with daily change in CPU, memory, and storage for 30,000 or more than 20% of the virtual machines and change in the count for up to 1000 virtual machines.	■ 16 GB for the vRealize Business for Cloud virtual appliance: ■ 7 GB for the vRealize Business for Cloud server. ■ 5 GB for the Facts Repo service.

To increase the memory based on your infrastructure, perform the following:

- Modify the server memory parameter from `–Xmx3g` to `–Xmx5g` or `–Xmx7g` in the `setenv.sh` at `/usr/local/tomcat/itbm–server/bin/`

  Note After you update the server memory, run the `monit restart itbm–server` command.

- Modify the FactsRepo parameter from `–Xmx1400m` to `–Xmx3g` or `–Xmx5g` in the `facts–repo.service` at `/etc/systemd/system/`

  Note After you update the FactsRepo memory, run the `systemctl daemon–reload` and `systemctl restart facts–repo.service` commands.

Software Requirements

- VMware ESXi
- VMware or vCloud Director for virtual appliance deployment
- vRealize Automation or VMware Identity Manager for user management

Web Browser Requirements

You can access vRealize Business for Cloud on latest three versions of Microsoft Internet Explorer, Google Chrome, Mozilla Firefox, and Microsoft Edge.

Note If you are using Internet Explorer, you must deselect the **Display intranet sites in Compatibility View** option under **Tools > Compatibility View Settings**.

You must install the VMRC plug-in for vCloud Director 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.

Port Requirements

Note All communications between the source and destination are one way.

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, AWS, Azure, VMware NSX Manager	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
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 service
vRealize Business for Cloud	vCenter Server Inventory Service	HTTPS	10443	For a successful data collection **Note** The default port for the 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 Web console (browser)	vRealize Business for Cloud	HTTPS	9443	For logging in to a remote data collection manager, add data sources, and manage data collectors through the web management interface.
Data collection manager	vRealize Business for Cloud	HTTPS	443	For the remote data collection manager to register with vRealize Business for Cloud server.
vRealize Business for Cloud	https://vrbc-services.vmware.com	HTTPS	8443	For automatic update of the reference database.
vRealize Business for Cloud	vRealize Log Insight	TCP	9543	For exporting logs to vRealize Log Insight server.

Planning YourvRealize Business for Cloud Deployment

vRealize Business for Cloud is compatible with multiple versions of vRealize Automation and VMware Identity Manager.

Table 2-1. Deployment Scenarios

Scenario	Steps to perform
To deploy with vRealize Automation 6.2.3 and later 6.2.x	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. 4 Register vRealize Business for Cloud with vRealize Automation. **Note** If you are using vRealize Automation standalone version, apply the vRealize Automation license key provided on the vRealize Automation tab of the vRealize Business for Cloud virtual appliance.
To deploy with vRealize Automation 7.x, and 7.0.x	1 Deploy the vRealize Automation virtual appliance. 2 Deploy the vRealize Business for Cloud virtual appliance. 3 Register vRealize Business for Cloud with vRealize Automation. **Note** If you are using vRealize Automation standalone version, apply the vRealize Business for Cloud license key in the vRealize Automation virtual appliance.
To deploy with VMware Identity Manager	1 Deploy the VMware Identity Manager virtual appliance. **Note** Installation of VMware Identity Manager does not require a license key. 2 Deploy the vRealize Business for Cloud virtual appliance. 3 Register vRealize Business for Cloud with VMware Identity Manager.

Deploying vRealize Business for Cloud

3

You can deploy vRealize Business for Cloud either on vSphere or vCloud Director.

This chapter includes the following topics:

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.

For information about the list of currencies that are supported in vRealize Business for Cloud, see Currencies Supported in vRealize Business for Cloud.

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.
- If you plan to use the vRealize Automation-integrated vRealize Business for Cloud setup, verify that you have deployed and configured the vRealize Automation virtual appliance in your cloud environment. See *vRealize Automation documentation*.
- If you plan to use the vRealize Business for Cloud standalone setup, verify that you have deployed and configured VMware Identity Manager in your cloud environment. See *VMware Identity Manager documentation*.

  Note Installation of VMware Identity Manager does not require a license key.

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, perform the following steps:

   - Set the root user password for your appliance.
   - Select the currency of your choice.

     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.

     Note For deploying remote data collectors, ensure that the data collector is on the same LAN where your vCenter Server setups are deployed. In case of embedded data collectors, deploy vRealize Business for Cloud on the same LAN where your vCenter Server setups are deployed.

   - 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 Secure Socket Shell (SSH) from the vRealize Business for Cloud web console. See Enable or Disable SSH Settings.
   - 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.

Results

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

What to do next

Start your appliance. See Chapter 5 Start the vRealize Business for Cloud Appliance.

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.

For information about the list of currencies that are supported in vRealize Business for Cloud, see Currencies Supported in vRealize Business for Cloud.

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.
- If you plan to use the vRealize Automation-integrated vRealize Business for Cloud setup, verify that you have deployed and configured the vRealize Automation virtual appliance in your cloud environment. See *vRealize Automation documentation*.
- If you plan to use the vRealize Business for Cloud standalone setup, verify that you have deployed and configured VMware Identity Manager in your cloud environment. See *VMware Identity Manager documentation*.

  Note Installation of VMware Identity Manager does not require a license key.

- 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.

  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.

  Note For deploying remote data collectors, ensure that the data collector is on the same LAN where your vCenter Server setups are deployed. In case of embedded data collectors, deploy vRealize Business for Cloud on the same LAN where your vCenter Server setups are deployed.

- 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 Secure Socket Shell (SSH) from the vRealize Business for Cloud web console. See Enable or Disable SSH Settings.
- 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 Chapter 5 Start the vRealize Business for Cloud Appliance.

Registering vRealize Business for Cloud

4

After you deploy vRealize Business for Cloud on vSphere or vCloud Director, you must register it with vRealize Automation or VMware Identity Manager.

This chapter includes the following topics:

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.

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

Prerequisites

- Verify that you have deployed vRealize Business for Cloud and started the virtual appliance.
- 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.
- Ensure that the vCenter endpoint which exists in vRealize Automation is added in vRealize Business for Cloud as well.

Procedure

1. Log in to the vRealize Business for Cloud Web console at https://*vRealize_Business_for_Cloud_IP_address*:5480.
2. On the **Registration** tab, select **vRA**.

3 Enter the credentials to register with vRealize Automation server.

Option	Description
Hostname	Type the host name or IP address of the vRealize Automation virtual appliance. **Note** If your vRealize Automation deployment uses load balancer, you must enter the IP address of the load balancer. vRealize Business for Cloud supports NSX and F5 load balancers.
SSO Default Tenant	Type the SSO default tenant name that you have defined while configuring your vRealize Automation virtual appliance.
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	a Click **Register**. Registration fails and `displays the Failed to register with vRealize Automation` message. b (Optional) Click the **View "**vRealize Automation**" certificate** link. c Click **Accept vRealize Automation certificate** check box. d Click **Register**.
If you had already registered with vRealize Automation	a Click **Register**.

If all the parameters are correct, the `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.

Register vRealize Business for Cloud with VMware Identity Manager

You can register vRealize Business for Cloud with VMware Identity Manager for authenticating and authorizing the users to access vRealize Business for Cloud in the stand-alone mode, without vRealize Automation integration.

Prerequisites

- Verify that you have deployed vRealize Business for Cloud and started the virtual appliance.

  Verify that you have deployed VMware Identity Manager virtual appliance and have the administrator access.

- If you have already registered vRealize Business for Cloud with vRealize Automation, you must first unregister from vRealize Automation.

Procedure

1. Log in to the vRealize Business for Cloud Web console at https://*vRealize_Business_for_Cloud_IP_address*:5480.
2. On the **Registration** tab, select **vIDM**.
3. Enter the credentials to register with the VMware Identity Manager virtual appliance.

Option	Description
vIDM Hostname	Enter the host name or IP address of the VMware Identity Manager virtual appliance.
vIDM User	Enter the administrator user name that you have defined while configuring your VMware Identity Manager.
vIDM Password	Enter the administrator password that you have defined while configuring your VMware Identity Manager.

   Note Installation of VMware Identity Manager does not require a license key.

4. (Optional) Click the **View vIDM Certificate** link.
5. Click **Register**.

   If all the parameters are correct, the `Registration with VIDM successful` message appears.

Results

VMware Identity Manager authenticates and authorizes the registered user to access vRealize Business for Cloud.

Register vRealize Business for Cloud with vRealize Operations Manager

You can register vRealize Business for Cloud with vRealize Operations Manager 6.6 and earlier to get the cost and operational details of the vRealize Operations Manager or of the vRealize Automation-integrated vRealize Business for Cloud setup.

Note You cannot register vRealize Business for Cloud with vRealize Operations Manager 6.7 and later.

Prerequisites

- You must deploy vRealize Business for Cloud.
- You must have the administrator login credentials of vRealize Operations Manager.
- If you are registering a vRealize Automation-integrated vRealize Business for Cloud setup, you must have the vRealize Automation login credentials.

Procedure

1 Log in to vRealize Operations Manager.

2 In the left pane, click **Administration > Solutions**.

3 Select VMwarevRealize Business for Cloud and click the **Configure** icon.

4 Enter a name for the adapter instance.

5 Enter the IP address of the vRealize Business for Cloud server to which you want to connect.

6 To verify that the connection is successful, click **Test Connection**.

7 Click **Advanced Settings**, and in the **Collectors/Groups** option, select which vRealize Operations Manager collector is used to manage the adapter process.

   If you have one adapter instance, select **Default collector group**.

   If you have multiple collectors in your environment, and you want to distribute the workload to optimize performance, select the collector to manage the adapter processes for this instance.

8 To complete the configuration of the adapter and close the Manage Solution dialog box, click **Save Settings**.

9 Click **Home > Business Management** on the vRealize Operations Manager user interface.

   You see the **Business Management** option in the left navigation panel.

10 To see confirm the security, click the certificate link on the footer of the user interface and accept the certificate.

11 Log in to vRealize Business for Cloud.

   - If you have added vRealize Business for Cloud stand-alone setup, enter the vRealize Business for Cloud credentials.
   - If you have added vRealize Automation-integrated vRealize Business for Cloud setup, enter vRealize Automation credentials and the tenant name.

     Note The session is valid for eight hours only. You must log in again when the session expires.

   - If you have added VMware Identity Manager-integrated vRealize Business for Cloud setup, enter the VMware Identity Manager credentials.

Results

You see the vRealize Business for Cloud Overview page.

Start the vRealize Business for Cloud Appliance

5

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.

Note Do not change the time zone of vRealize Business for Cloud virtual appliance from UTC. If you change the time zone, vRealize Business for Cloud virtual appliance may not function as expected.

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 the 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. Log in 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 vRealize Business for Cloud virtual appliance.

Assigning vRealize Business for Cloud Roles

6

After you deploy and register vRealize Business for Cloud, you must assign vRealize Business for Cloud roles to the users.

This chapter includes the following topics:

Assign vRealize Business for Cloud Roles 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

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 **Users & Groups** and select **Directory Users and Groups**.
4. Search and select the user to which you want to add a role.

5 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**.

Note You must have the **Business Management Administrator** role to access vRealize Business for Cloud.

Assign vRealize Business for Cloud Roles by Using VMware Identity Manager

You must assign the vRealize Business for Cloud roles to the users in the VMware Identity Manager to access vRealize Business for Cloud standalone user interface.

Prerequisites

Verify that you have deployed VMware Identity Manager and have the administrator access. For more information, see *VMware Identity Manager documentation*.

Procedure

1 Log in to the VMware Identity Manager virtual appliance at https://*VMware_Identity_Manager_hostname* as an administrator.

2 Click **Users & Groups**.

You can see the following vRealize Business for Cloud roles in the list.

- **vRBC_Administrator**, which has the administrator privileges.
- **vRBC_Controller**, which has view access to specific business units.
- **vRBC_ViewOnly**, which has the read-only privileges.

3 Click the vRealize Business for Cloud role that you want to assign to a user.

4 Perform the steps applicable to your VMware Identity Manager version.

Option	Steps
For VMware Identity Manager 2.7 and earlier	a Select **Users in This Group** and click **Modify Users in This Group**. b Enter the user name to search a user name to which you want to add a role and select the user name.
For VMware Identity Manager 2.8 and later	a Click **Edit Group Rules**. b In **Add Users to Group**, enter the user name to search a user name to which you want to add a role and select the user name. c Click the green **+** icon. d Click **Next**.

5 Click **Next**.

You see the name of the user under the Users Being Added section.

6 Click **Save**.

You can see that the user name is added to the Users in this Group table.

7 Log in to vRealize Business for Cloud at https://*vRealize_Business_for_Cloud_host_name/itfm-cloud* as an administrator.

8 Enter a valid license key and click **Save**.

Note You must have the **vRBC_Administrator**, role for the first vRealize Business for Cloud login.

Assign vRealize Business for Cloud Roles to the Local Users

You can enable the local users to access vRealize Business for Cloud and assign the required roles.

Note VMware recommends you to use vRealize Business for Cloud that is integrated with either vRealize Automation or VMware Identity Manager.

Prerequisites

- Verify that you have deployed vSphere or vCloud Director.

- Verify that you have deployed vRealize Business for Cloud on vSphere or vCloud Director. See, Deploy vRealize Business for Cloud Virtual Appliance on vSphere or Deploy vRealize Business for Cloud Virtual Appliance on vCloud Director.
- Verify that you have started the virtual appliance. See, Chapter 5 Start the vRealize Business for Cloud Appliance.
- Verify that you have enabled the Secure Socket Shell (SSH) service. See, Enable or Disable SSH Settings.

Procedure

1 Log in to SSH with the root user credentials.

  If you are using the Windows platform, log in to SSH using a Windows SSH tool. For example, Putty.

2 Navigate to the `/usr/ITFM-Cloud/va-tools/bin` folder.

  For example, `cd /usr/ITFM-Cloud/va-tools/bin`

3 Run the following command:

  ```
  sh manage-local-user.sh
  ```

4 Press **5** to select the `Enable local authentication` option.

  Now, all services will restart, which might take few minutes.

5 Log in to vRealize Business for Cloud instance as root user at https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*/login.html.

6 To allow the local operating system user to access vRealize Business for Cloud, perform the following steps on the SSH console.

  a Run the `sh manage-local-user.sh` command.

  b Press **1** to add the user.

  c Enter the user name and password.

  d Enter the role name to assign appropriate vRealize Business for Cloud roles.

    - **vRBC_Administrator**, which has the administrator privileges.
    - **vRBC_ViewOnly**, which has the read-only privileges.

Managing vRealize Business for Cloud Virtual Appliance

7

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

- 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), and Microsoft Azure 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.

This chapter includes the following topics:

Managing 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 Business for Cloud or data collection manager:
   - If you are using a vRealize Automation-integrated vRealize Business for Cloud setup, log in at https://*vRealize_Automation_host_name/vcac/org/tenant_URL* by using credentials of a tenant administrator, click **Administration** and **Business Management**.
   - If you are using a vRealize Business for Cloud standalone setup, log in at https://*vRealize_Business_for_Cloud_host_name/itfm-cloud* as an administrator and click **Business Management**.

- If you are using a remote 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 box.

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

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.

Results

Note

- When you add a vCenter Server, vRealize Business for Cloud manages all the virtual machines that are part of the vCenter Server.
- 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.

Add a Partial Inventory from a vCenter Server

vRealize Business for Cloud 7.3 allows you to ignore a partial inventory at the cluster level to avoid use of license and perform cost analysis for unwanted virtual machines.

Note Partial inventory is support at cluster level and not at data center level or virtual machine level.

Prerequisites

Ensure that you add the cluster that you want to deny or block in the configuration service.

Procedure

1. Log in to SSH with the root credentials.
2. Run the GET command to verify if there are any denied or blocked clusters.

   `python /usr/ITFM-Cloud/va-tools/bin/partialVC.py GET` *`vcenter-url`*
3. Add a cluster that you want to deny or block.

   `python /usr/ITFM-Cloud/va-tools/bin/partialVC.py SET` *`vcenter-url cluster-name1 cluster-name2`*
4. Run the `monit restart vrbc-xenon-services` command to update the changes.
5. Perform one of the following to delete the virtual machines under the clusters under the denylist:
   - Go to the **Administration** tab on the vRealize Business for Cloud user interface, delete the vCenter Server and again add the vCenter Server.
   - Run the `monit restart itbm-data-collector` command and trigger the cost calculation manually on the vRealize Business for Cloud user interface.

     Note Even if you restart the data collector, you see the deleted virtual machines listed in the Virtual Machine report that are marked as deleted. However, when the cost calculation happens in the next month, these virtual machines will not appear in the report.
6. To remove the denied or blocked cluster or to allow a cluster for cost calculation, perform the following steps:
   a. Run the GET command to see the clusters under the denylist.
   b. Run the Set command by removing the cluster that you want to allow.

      For example, if you have two denied clusters and you want to allow one of those, run the following command:

      `python /usr/ITFM-Cloud/va-tools/bin/partialVC.py SET` *`vcenter-url cluster-name1`*

      Note If you run the SET command without specifying the cluster name, all the blocked clusters in the vCenter Server will be allowed.

Add Selected Inventory Items from a vCenter Server

You can selectively add a cluster or host from the vCenter Server inventory to vRealize Business for Cloud and perform cost analysis for the virtual machines in that cluster or host.

Procedure

1 Log in to vCenter Server as an administrator.

2 Create a clone of the Read-only role in a vCenter Server.

3 Include the **Storage views.View** and **Profile-driven storage.Profile-driven storage view** permissions to the clone.

4 If you have integrated vCenter Server with vRealize Operations Manager, include the **Global.vCenter Operations User** and **Global.vRealize Operations Read Only** permissions to the clone.

5 Create a user in vCenter Server for vRealize Business for Cloud and assign this cloned role to the user.

6 Assign the permissions at the vCenter Server level without propagating to child objects.

   a Select the vCenter Server that contains the required cluster or host.

   b Click **Manage > Permissions > Add Permission > Add**.

   c Select the vRealize Business for Cloud user and select the Read-only role.

   d Deselect the **Propagate to Child Objects** check box and click **OK**.

7 Assign the permissions, including propagating to child objects, to the clusters or hosts that you want to be included in the cost analysis.

   a Select the cluster or host that you want to be included in the cost analysis.

   b Click **Manage > Permissions > Add Permission > Add**.

   c Select the vRealize Business for Cloud user and select the Read-only role.

   d Select the **Propagate to Child Objects** check box and click **OK**.

Results

The clusters and hosts that are not given the permissions are excluded from vRealize Business for Cloud cost analysis.

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 Business for Cloud or data collection manager:

- If you are using a vRealize Automation-integrated vRealize Business for Cloud setup, log in at https://*vRealize_Automation_host_name/vcac/org/tenant_URL* by using credentials of a tenant administrator, click **Administration** and **Business Management**.
- If you are using a vRealize Business for Cloud standalone setup, log in at https://*vRealize_Business_for_Cloud_host_name/itfm-cloud* as an administrator and click **Business Management**.
- If you are using a remote 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 box.

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

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 the 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 the vCenter Server instances that are managed by the vCloud Director instance to vRealize Business for Cloud and make sure that the data collection and cost calculation for the vCenter Server instances are completed.

Procedure

1. Log in to vRealize Business for Cloud or data collection manager:
   - If you are using a vRealize Automation-integrated vRealize Business for Cloud setup, log in at https://*vRealize_Automation_host_name/vcac/org/tenant_URL* by using credentials of a tenant administrator, click **Administration** and **Business Management**.
   - If you are using a vRealize Business for Cloud standalone setup, log in at https://*vRealize_Business_for_Cloud_host_name/itfm-cloud* as an administrator and click **Business Management**.
   - If you are using a remote 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 box.

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

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 VMware NSX Manager Connections

You can add, edit, and delete VMware NSX Manager to vRealize Business for Cloud.

Prerequisites

Verify that you have the NSX Manager Enterprise Administrator user credentials.

Procedure

1 Log in to vRealize Business for Cloud or data collection manager:

- If you are using a vRealize Automation-integrated vRealize Business for Cloud setup, log in at https://*vRealize_Automation_host_name/vcac/org/tenant_URL* by using credentials of a tenant administrator, click **Administration** and **Business Management**.
- If you are using a vRealize Business for Cloud standalone setup, log in at https://*vRealize_Business_for_Cloud_host_name/itfm-cloud* as an administrator and click **Business Management**.
- If you are using a remote 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 **NSX Manager**, and click the add icon.

4 To add the instance, enter the required details.

Note You must use the NSX Manager Enterprise Administrator user credentials. The length of the password must not exceed 20 characters.

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

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

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.

Managing Public Cloud Accounts

You can manage public cloud accounts such as Amazon Web Services (AWS) and Microsoft Azure accounts in vRealize Business for Cloud. You can also compare cost of these public cloud accounts.

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 https://docs.aws.amazon.com/IAM/latest/UserGuide/console_account-alias.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.
- You must add a paying account to vRealize Business for Cloud to view the cost analysis details of both paying and non-paying accounts.
- 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://docs.aws.amazon.com/awsaccountbilling/latest/aboutv2/billing-reports-gettingstarted-s3.html.
- 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 https://docs.aws.amazon.com/IAM/latest/UserGuide/console_account-alias.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. Ensure that the bill is present in the root folder of the bucket.

- For the paying accounts, ensure that the AWS user has `s3:Get*`, `s3:List*`, `ec2:Describe*`, and cloudwatch:* permissions. You can add the inline policies and provide the required permissions. For example,

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

- For paying and non-paying accounts, ensure that the AWS user has the `ec2:Describe*` and `cloudwatch:*` permissions. You can add the inline policies and provide the required permissions. For example,

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

- 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 that you have enabled the detailed billing report with resources and tags in AWS.
- For a non-paying account, if you want to view the resource-level information, verify that you have an account ID, access key, and secret key for the AWS account.

For more information, see *vRealize Business for CloudUser Guide*.

Procedure

1 Log in to vRealize Business for Cloud or data collection manager:

   - If you are using a vRealize Automation-integrated vRealize Business for Cloud setup, log in at https://*vRealize_Automation_host_name/vcac/org/tenant_URL* by using credentials of a tenant administrator, click **Administration** and **Business Management**.

- If you are using a vRealize Business for Cloud standalone setup, log in at https://*vRealize_Business_for_Cloud_host_name/itfm-cloud* as an administrator and click **Business Management**.
- If you are using a remote 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 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 box.

The linked accounts associated with the paying account are discovered and the cost and usage information for these accounts are visible in vRealize Business for Cloud. To view the resource level information of a linked account, you must edit the account instance and enter the access key and secret key for that account.

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 box.

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://azure.microsoft.com/en-in/account/ 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

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, configure the account by performing the steps provided at Configure Azure Non-EA Accounts. Also, get the location of your account purchase from the Azure portal (ttps://account.windowsazure.com/Profile). For example, IN, US, AU, CN, DE.
- If the non-EA account is already configured and you want to know the client ID, you can get that information from the Azure portal.

  Note The Application ID in the Azure portal corresponds to the Client ID in vRealize Business for Cloud.

Procedure

1 Log in to vRealize Business for Cloud as an administrator.
   - https://*vRealize_Automation_host_name/vcac/org/tenant_URL* (for the vRealize Automation-integrated vRealize Business for Cloud setup)
   - https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*(for the vRealize Business for Cloud standalone setup)
2 Click the **Administration** tab.
3 Click **Business Management**.

   Ignore this step for the vRealize Business for Cloud standalone setup.
4 Click **Manage 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.
     - Enter a name of your choice.
     - Enter your Azure enrollment number.
     - Enter the API Access Key.
   - For a non-Enterprise Agreement (EA) account, provide the following details.
     - Enter a name of your choice.
     - Location of Purchase - Enter the country code of the Azure purchase location such as IN, US, AU, CN, DE.
     - Enter the client ID, tenant ID and the client secret that you have obtained from Microsoft Azure.
8 Click **Save** and click **OK** in the Success dialog box.

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 box.

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 that Amazon Web Services (AWS) and Microsoft Azure 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 or Azure.

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 vRealize Business for Cloud as an administrator.

- https://*vRealize_Automation_host_name/vcac/org/tenant_URL* (for the vRealize Automation-integrated vRealize Business for Cloud setup)
- https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*(for the vRealize Business for Cloud standalone setup)

2 Click the **Administration** tab.

3 Click **Business Management**.

Ignore this step for the vRealize Business for Cloud standalone setup.

4 Click **Manage Public Cloud Connections**.

5 Select **Other Cloud Providers**, 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: ■ 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 box.

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.

Results

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 or Azure.

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 vRealize Business for Cloud as an administrator.

   - https://*vRealize_Automation_host_name/vcac/org/tenant_URL* (for the vRealize Automation-integrated vRealize Business for Cloud setup)
   - https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*(for the vRealize Business for Cloud standalone setup)

2 Click the **Administration** tab.

3 Click **Business Management**.

   Ignore this step for the vRealize Business for Cloud standalone setup.

4 Click **Manage Public Cloud Connections**.

5 Select **Other Cloud Providers**, and click the add option icon.

6 To download the DRL template, in the **Add Cloud Provider** dialog box, select 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	Defines which configuration is mapped to a specific instance from the cloud provider.
	For example, the following Azure DRL specifies the instance that must be mapped to an instance.
	`rule “Azure_matching_A0”`
	`dialect “mvel"`
	`no-loop true`
	`When`
	`config : MatchingDetails( ramGb <= 0.75 && (cpuGhz * numOfCpu) <= 1.0)`
	`then`
	`config.addMatchingInstance("A0”);`
	`End`
	Where,
	■ `Azure_matching_A0` is the rule name.
	■ `when config : MatchingDetails( ramGb <= 0.75 && (cpuGhz * numOfCpu) <= 1.0)` is the condition to map the workload to the instance type..
	■ `ramGb <= 0.75 and cpuGhz*numOfCpu <=1.0` is the condition to map to the instance type.
	■ `config.addMatchingInstance("A0”)` is the name to represent instance type.
	■ `MatchingDetails` is the object with multiple columns that match the user configuration per virtual machine.
	The `MatchingDetails` supports the following columns:
	■ `private Double ramGb;`
	■ `private Integer numOfCpu;`
	■ `private Double cpuGhz;`
	■ `private Boolean enforcePhysicalIsolation;`
	■ `private String instance;`
	■ `private Integer reservation;`
	■ `private String osGenericType;`
	■ `private Long configId;`
	■ `private List<String> possibleInstances;`
	■ `private StoragePriceSummaryDetails storage;`
	■ `private Double upTimePct;`
	■ `private Double cpuUtilization;`
	■ `private Double ramUtilization;`
	■ `public void addMatchingInstance(String instanceName);`

Pricing Rule	Determines the price for the matched instance type.

Option	Description

	For example, the following Azure DRL specifies how to price a matching instance.
	`rule “Azure_pricing_A0_WINDOWS”`
	`dialect "mvel"`
	`no-loop true`
	`when`
	`compute : ComputePriceDetails(instanceName == "A0" && osGenericType == "WINDOWS”)`
	`then`
	`compute.setPrice(0.02,"PER_HOUR”);`
	`compute.addAdditionalDetail("Price Plan",compute.getPricePlanLabel(),"");`
	`end`
	Where,
	■ `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 columns that match the user configuration per virtual machine.
	The `ComputePricingDetails` supports the following columns:
	■ `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.

Results

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 vRealize Business for Cloud as an administrator.

- https://*vRealize_Automation_host_name/vcac/org/tenant_URL* (for the vRealize Automation-integrated vRealize Business for Cloud setup)
- https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*(for the vRealize Business for Cloud standalone setup)

2 Click the **Administration** tab.

3 Click **Business Management**.

Ignore this step for the vRealize Business for Cloud standalone setup.

4 Click **Manage Public Cloud Connections**.

5 Select **Other Cloud Providers**, and click the add option icon.

6 To download the XLS template, in the **Add Cloud Provider** dialog box, select 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	Use this worksheet to specify the matching configuration details for each instance type. ■ 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 **Note** Update the storage values in the instance worksheet Only when the storage is packaged with compute from a pricing standpoint. ■ Instance price per unit time. ■ Monthly operating system labor cost ■ Any additional price information or additional details for the instance **Note** The additional details are also displayed on the UI during comparison.
storage	Use this worksheet to specify storage configurations. ■ 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	Use this worksheet to specify the pricing range for availing discount and percentage of discount for a specific pricing range.

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.

Results

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

When you update the reference database, VMware collects aggregated technical data of your vRealize Business for Cloud setup anonymously, which includes:

- Financial data - Cost values of IT cost drivers that are manually inserted by the user through the user interface.
- vCenter Server-centric infrastructure data - For each server in the vCenter Server inventory, VMware collects the following details:
  - Manufacturer
  - CPU type
  - CPU vendor
  - CPU description
  - CPU core count
  - CPU pkg count
  - CPU GHz
  - Number of CPUs
  - Memory
  - Server model name
  - Number of 1 gigabyte NICs
  - Number of 10 gigabytes NICs
  - Average daily energy joule consumption

- Core per CPU

Note Personal information is not collected from the environment. The collected data is encrypted by using the Pretty Good Privacy (PGP) encryption and 2048-bit RSA token. The private key is kept in a secured server, which is accessible only by the authorized users.

Note If you plan not to share your data, you need not update your reference library and so you can ignore the updating reference database procedure.

Prerequisites

Verify that the port 8443, which connects to https://vrbc-services.vmware.com:8443 is open for vRealize Business for Cloud.

Procedure

1 Log in to vRealize Business for Cloud as an administrator.
   - https://*vRealize_Automation_host_name/vcac/org/tenant_URL* (for the vRealize Automation-integrated vRealize Business for Cloud setup)
   - https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*(for the vRealize Business for Cloud standalone setup)
2 Click the **Administration** tab.
3 Click **Business Management**.

   Ignore this step for the vRealize Business for Cloud standalone setup.
4 Click **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 agree to share your data with VMware to populate the reference database.
   - To manually update the reference database, when you have the Internet connection.
     a Click **manual update process** link.
     b Click **Generate and Download DB Dump File** link. An encrypted *.zip file with the required data is downloaded to your default download folder.
     c Click **Browse** and select the DB dump file and click **Upload** to generate the reference data file.
     d Click **Browse** and upload the downloaded reference data file.
     e Click **Done**.

- To manually update the reference database, when you do not have the Internet connection.
  a Click **manual update process** link.
  b Click **Generate and Download DB Dump File** link. An encrypted ZIP file with the required data is downloaded to your default download folder.
  c Open a text editor and construct a URL based on serial and version. For example, https://vrbc-services.vmware.com:8443/vrb-hub/license/manualUpdate?serial=xxxxx-xxxxx-xxxxx-xxxxx-xxxxx&version=x.x.x .
  d On a computer that is connected to the Internet, open a new browser window and navigate to https://www.getpostman.com/docs/ignoring_ssl.
  e Perform the following steps to get the reference database from the vrb-hub
    1 Create the POST request, and enter the URL mentioned constructed in the required format.
    2 Click **Body** and enter **`dbDumpFile`** as a key.
    3 Select **File** from the drop-down menu.
    4 Browse and select the downloaded encrypted DB dump file that you generated.
    5 Click **Send and Download**.
    6 Save the downloaded file with the name `reflib.enc`.
    7 Navigate back to the vRealize Business for Cloud browser window.
    8 Upload the `reflib.enc` file and click **Done**.

Results

The reference database is updated.

Note Updating the reference database is not a one time process. The reference database is 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 install or upgrade information or the critical runtime information about the system.

Procedure

1 Perform one of the following to generate the install or upgrade log files and the application log files.

Option	Description
To generate a log file for install or upgrade information	Log in to the *https://vRealize_Business_for_Cloud_IP_address*`:5480/service/administration/get-system-logs.py` URL using the administrator credentials.
To generate the log file for application information	a Log in to vRealize Business for Cloud or data collection manager: ■ If you are using a vRealize Automation-integrated vRealize Business for Cloud setup, log in at https://*vRealize_Automation_host_name/vcac/org/tenant_URL* by using credentials of a tenant administrator, click **Administration** and **Business Management**. ■ If you are using a vRealize Business for Cloud standalone setup, log in at https://*vRealize_Business_for_Cloud_host_name/itfm-cloud* as an administrator and click **Business Management**. ■ If you are using a remote data collector, log in to *https://Remote_Data_Collector_IP_address:9443/dc-ui/login.html* by using the root user credentials. b 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. c Click **Support File**, and then click **Generate and download file**. d Select the **Enable debug logging** to collect the debug level information in the log files, which helps during support and debugging the issue.

2 Save the ZIP file on your machine, which you can share with the support team to investigate the log files.

Update Licenses for vRealize Business for Cloud

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

Procedure

1 Log in to vRealize Business for Cloud as an administrator.

- https://*vRealize_Automation_host_name/vcac/org/tenant_URL* (for the vRealize Automation-integrated vRealize Business for Cloud setup)
- https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*(for the vRealize Business for Cloud standalone setup)

2 Click the **Administration** tab.

3 Click **Business Management**.

Ignore this step for the vRealize Business for Cloud standalone setup.

4 Expand **License Information**.

You see the list of license keys and its details:

- The license key.
- License edition such as the standard and advanced editions of vRealize Business for Cloud, vRealize Suite, or vCloud Suite licenses.
- License type - PERMANENT, EVALUATION, or FIXED_EXPIRATION
- Expiry date, if you are using the temporary license

Note You can see the maximum number of virtual machines or the maximum number of CPU packages (socket) that all licenses can support. Also you see the existing count of CPU packages (socket) and the existing count of virtual machines from private and public cloud accounts.

5 To add a license key, click the **Add** icon on the License Information table.

6 Enter the license key.

Note vRealize Business for Cloud supports multiple license keys and you can enter the license keys of vRealize Business for Cloud, vRealize Suite, or vCloud Suite to access vRealize Business for Cloud.

7 Click **Save**.

Results

If the new license key is valid, the license is added to the table.

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 vRealize Business for Cloud as an administrator.

- https://*vRealize_Automation_host_name/vcac/org/tenant_URL* (for the vRealize Automation-integrated vRealize Business for Cloud setup)
- https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*(for the vRealize Business for Cloud standalone setup)

2 Click the **Administration** tab.

3 Click **Business Management**.

Ignore this step for the vRealize Business for Cloud standalone setup.

4 Select **Integration**, expand **Digital Fuel Integrations**, and click **Generate a new token for Digital Fuel Integration**.

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.

This certificate is imported into Digital Fuel.

6 (Optional) To download all the reports of vRealize Business for Cloud, click **Download all reports**.

Results

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

What to do next

For the 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. For more information see,

- Deploy vRealize Business for Cloud Virtual Appliance on vSphere
- Deploy vRealize Business for Cloud Virtual Appliance on vCloud Director

Procedure

1 Log in to vRealize Business for Cloud as an administrator.

   - https://*vRealize_Automation_host_name/vcac/org/tenant_URL* (for the vRealize Automation-integrated vRealize Business for Cloud setup)

- https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*(for the vRealize Business for Cloud standalone setup)

2 Click the **Administration** tab.

3 Click **Business Management**.

Ignore this step for the vRealize Business for Cloud standalone setup.

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.

Register a Remote Data Collector with vRealize Business for Cloud Server

If you have deployed 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.

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

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.

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

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 Managing Private Cloud Connections or add public cloud accounts, see Managing Public Cloud Accounts.

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.

Procedure

1 Log in to vRealize Business for Cloud as an administrator.

- https://*vRealize_Automation_host_name/vcac/org/tenant_URL* (for the vRealize Automation-integrated vRealize Business for Cloud setup)
- https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*(for the vRealize Business for Cloud standalone setup)

2 Click the **Administration** tab.

3 Click **Business Management**.

Ignore this step for the vRealize Business for Cloud standalone setup.

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.

Configuring the Calculation Preferences

You can configure the depreciation method for server hardware, configure the pricing method to either utilization or allocation at the resource (CPU, memory, or storage) level and also set manual or automatic mode to assign compute rate for the resources.

Configure a Depreciation Method for Calculating Cost of Server Hardware

You can configure vRealize Business for Cloud to use a depreciation method to compute amortized monthly cost of hardware component (for example, server, disks). You can set the depreciation period to two or seven years.

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

```
depreciable cost == original cost
```

```
Depreciation rate = 2 / 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.

Procedure

1. Log in to vRealize Business for Cloud as an administrator.
   - https://*vRealize_Automation_host_name/vcac/org/tenant_URL* (for the vRealize Automation-integrated vRealize Business for Cloud setup)
   - https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*(for the vRealize Business for Cloud standalone setup)
2. Click the **Administration** tab.
3. Click **Business Management**.

   Ignore this step for the vRealize Business for Cloud standalone setup.
4. Expand **Calculation Preferences** and click **Depreciation Method for Hardware Costing**.

   vRealize Business for Cloud supports double declining balance and straight line yearly depreciation methods. By default, vRealize Business for Cloud uses the double declining balance method over the period of five years.

5 Select the required depreciation method.

Menu Item	Description
Straight line	`Yearly straight line depreciation = (original cost – accumulated depreciation) / number of remaining depreciation years`
Double declining balance	`yearly double declining depreciation = (original cost – accumulated depreciation) * depreciation rate` **Note** `Double declining depreciation for the last year = original cost – accumulated depreciation`

6 Select the depreciation period.

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

7 Click **Save**.

Results

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.

Example: An Example of Double Declining Depreciation Cost for an Original Cost of $2000 with a Depreciation Period of Five 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)
```

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

Configure the Pricing Method at Resource Level

You can configure the pricing method as **Allocation** and **Utilization** for resources such as CPU, Memory, and Storage. The values in the vRealize Business for Cloud reports are calculated based on the pricing method calculation.

- If you set the allocation based pricing for the resources (CPU, memory and storage), the virtual machine price is calculated based on the daily allocation price of resources.

  ```
  Daily Allocation Price of CPU = Allocated CPU * uptime * CPU rate
  ```

  ```
  Daily Allocation Price of memory = Allocated memory * uptime * memory rate
  ```

  ```
  Daily Allocation Price of Storage = Allocated storage * resource rate
  ```

  Note If there is a change in the resource allocation on a particular day, vRealize Business for Cloud considers the change in the allocation to calculate the accurate virtual machine price.

- If you set the utilization based pricing for the resources (CPU, memory and storage), the virtual machine price is calculated based on its resource utilization.

  ```
  Daily Utilization Price of a resource = resource utilization value * resource rate
  ```

Note By default, all the resources are set to the allocation pricing method. However, the resources need not be configured with the same pricing method. For example, you can configure utilization method for two resources and allocation method for any one resource. The daily price of a virtual machine is the sum of daily price of all resources.

```
Daily Price of a VM = Daily Price of RAM (allocation or utilization) + Daily Price of Memory (allocation or utilization) + Daily Price of Storage (allocation or utilization)
```

Procedure

1. Log in to vRealize Business for Cloud as an administrator.
   - https://*vRealize_Automation_host_name/vcac/org/tenant_URL* (for the vRealize Automation-integrated vRealize Business for Cloud setup)
   - https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*(for the vRealize Business for Cloud standalone setup)
2. Click the **Administration** tab.
3. Click **Business Management**.

   Ignore this step for the vRealize Business for Cloud standalone setup.
4. Expand **Calculation Preferences** and click **Pricing Methodology at Resource Level**.
5. Configure the pricing method for CPU, Memory, and Storage.

   By default, the pricing method is set to **Allocation**.
6. Click **Save**.

   The change to the pricing method takes effect after the cost calculation is complete.

Configure the Pricing Method for Additional Charges

You can configure the pricing method for operating system that runs on your VMs. The values in the vRealize Business for Cloud reports are calculated based on the pricing method calculation.

Procedure

1 Log in to vRealize Business for Cloud as an administrator.

- https://*vRealize_Automation_host_name/vcac/org/tenant_URL* (for the vRealize Automation-integrated vRealize Business for Cloud setup)
- https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*(for the vRealize Business for Cloud standalone setup)

2 Click the **Administration** tab.

3 Click **Business Management**.

Ignore this step for the vRealize Business for Cloud standalone setup.

4 Expand **Calculation Preferences** and click **Pricing Methodology for Additional Charges**.

5 Configure the pricing method for operating system license by selecting one of the following from the list.

List Item	Description
Regardless of VM Power State	OS license charge is applicable for the VMs based on the daily or monthly pricing irrespective of the power-on state of the VMs.
If VM is powered-on at least once a day	OS license charge is applicable for the days that the VMs are powered on. License charges are applied for the whole day even if a VM is powered for a few minutes.
Based on VM Uptime	OS license is charged at one-minute intervals for the amount of time the VM is powered on.

By default, the pricing method is set to **Based on VM Uptime**.

6 Click **Save**.

The change to the pricing method takes effect after the cost calculation is complete.

Configure Pricing Update Strategy

You can select either to set the compute rate of resources (CPU, memory, and storage) automatically based on the running cost or to edit manually during vCenter Server pricing policy creation.

Procedure

1 Log in to vRealize Business for Cloud as an administrator.

- https://*vRealize_Automation_host_name/vcac/org/tenant_URL* (for the vRealize Automation-integrated vRealize Business for Cloud setup)

- https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*(for the vRealize Business for Cloud standalone setup)

2 Click the **Administration** tab.

3 Click **Business Management**.

Ignore this step for the vRealize Business for Cloud standalone setup.

4 Expand **Calculation Preferences** and click **Pricing Update Strategy**.

5 Set the mode to **Manual** or **Auto**.

By default, manual mode is selected. After the first-time deployment, vRealize Business for Cloud populates the running cost, which you can edit when editing the vCenter Server pricing policy.

If you select the auto mode, vRealize Business for Cloud assigns the running cost of each resource to its corresponding compute rate, which you can modify.

6 Click **Business Management > Status > Cost Calculation > Update now**.

Configure Virtual Machine Instance Sizes

You can define the sizes of virtual machine instances and set the compute resources (CPU and memory) for each size. The defined VM instance sizes can then be used to set the VM instance-based pricing for the pay-as-you-go allocation models of organization vDC.

Procedure

1 Log in to vRealize Business for Cloud as an administrator.

- https://*vRealize_Automation_host_name/vcac/org/tenant_URL* (for the vRealize Automation-integrated vRealize Business for Cloud setup)
- https://*vRealize_Business_for_Cloud_host_name/itfm-cloud*(for the vRealize Business for Cloud standalone setup)

2 Click the **Administration** tab.

3 Click **Business Management**.

Ignore this step for the vRealize Business for Cloud standalone setup.

4 Expand **Calculation Preferences > Sizing for VM Instance Based Pricing**.

By default, the following sizes are defined.

VM Instance Size	vCPU Count	RAM (GB)
Tiny	1	1
Small	2	2
Medium	2	4
Large	4	8

You can define new VM instance sizes and delete the default VM instance sizes.

5 (Optional) To define a new VM instance size, perform the following steps.

a Click the add option.

b Enter the VM instance size, vCPU count and RAM values, and click **Save**.

Configuring vRealize Business for Cloud

8

Based on your requirements, you can modify the vRealize Business for Cloud configurations at any point of time.

This chapter includes the following topics:

Configure Time Synchronization

You must 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.

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, enter the IP address or the host name in the Time Server text box. This is the recommended option.

Note Ensure that the time zone of the vRealize Business for Cloud virtual appliance is in the UTC format.

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.

Configure a Proxy Server

If you are using a proxy server in your network, you must configure the proxy server in vRealize Business for Cloud.

Prerequisites

You must have installed and configured a proxy server in your network before using it in vRealize Business for Cloud.

Procedure

1 Log in to the vRealize Business for Cloud Web console, https://*vRealize_Business_for_Cloud_IP_address*:5480 as an administrator.

2 On the **Network** tab, select **Proxy**.

3 Select the **Use a proxy server** check box.

4 Enter the following information:

- **`HTTP Proxy Server`** – IP address or host name of the proxy server.
- **`Proxy Port`** – port number
- (Optional) **`Proxy Username`**
- (Optional) **`Proxy Password`**

If you are using a proxy that does not require authentication, you need not enter any information in the **Proxy Username** and **Proxy Password** text boxes.

5 Click **Save settings**.

What to do next

You must trigger the data collection process for the private or public cloud that you have integrated with vRealize Business for Cloud.

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, backup the 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 or VMware Identity Manager.

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	To import the certificate, verify that your certificate matches the following requirements: ■ Keysize: 2048 ■ Algorithm: RSA ■ The distinguished name provided in the certificate must be reachable over network. 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 Re-register vRealize Business for Cloud with vRealize Automation or VMware Identity Manager.

Note If you are using VMware Identity Manager, you must restart the data collection services manually by running the `monit start itbm-data-collector` command.

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 as an administrator.

2 On the **Administration** tab, select **Administration**.

3 Click **Toggle SSH setting** to enable or disable the SSH settings.

Enable or Disable TLS

You can add or remove a version of Transport Layer Security (TLS) to access vRealize Business for Cloud.

Prerequisites

Deploy vRealize Business for Cloud and have administrator access.

Procedure

1. Log into vRealize Business for Cloud by using the system administrator credentials.
2. Run the `monit stop itbm-server` command.
3. Run the `monit stop pricing-api` command.
4. To disable TLS 1.0 version, run the following commands:
   a. `sed -i 's/sslEnabledProtocols=.*/sslEnabledProtocols="TLSv1.1, TLSv1.2"/g' /usr/local/tomcat/itbm-server/conf/server.xml`
   b. `sed -i 's/sslEnabledProtocols=.*/sslEnabledProtocols=TLSv1.1, TLSv1.2/g' /usr/local/pricing-api/conf/application.properties`
5. If you are using vRealize Business for Cloud 7.1 or earlier versions that is integrated with vRealize Automation, add the following line to disable TLS 1.0:

Action	File Location
**-Djdk.tls.client.protocols=TLSv1.1,TLSv1.2 **	■ `/usr/sbin/itfm-config` (Below `-Dsecurity.properties=$CATALINA_BASE/conf/security.properties \`) ■ `/usr/sbin/itfm-config-unregister` (Below `-Dsecurity.properties=$CATALINA_BASE/conf/security.properties \`)
-Djdk.tls.client.protocols=TLSv1.1,TLSv1.2	■ `/usr/local/tomcat/itbm-server/bin/setenv.sh` (Below `-Dsecurity.properties=$CATALINA_BASE/conf/security.properties`) ■ `/usr/local/tomcat/itbm-data-collector/bin/setenv.sh` (Below `-Dsecurity.properties=$CATALINA_BASE/conf/security.properties`)

6. To enable TLS 1.0 version, run the following commands:
   a. `sed -i 's/sslEnabledProtocols=.*/sslEnabledProtocols=" TLSv1, TLSv1.1, TLSv1.2"/g' /usr/local/tomcat/itbm-server/conf/server.xml`
   b. `sed -i 's/sslEnabledProtocols=.*/sslEnabledProtocols= TLSv1, TLSv1.1, TLSv1.2/g' /usr/local/pricing-api/conf/application.properties`

7 If you are using vRealize Business for Cloud 7.1 or earlier versions that is integrated with vRealize Automation, remove the following line to enable TLS 1.0:

Action	File Location
**-Djdk.tls.client.protocols=TLSv1.1,TLSv1.2 **	■ `/usr/sbin/itfm-config` (Below `-Dsecurity.properties=$CATALINA_BASE/conf/security.properties \`) ■ `/usr/sbin/itfm-config-unregister` (Below `-Dsecurity.properties=$CATALINA_BASE/conf/security.properties \`)
-Djdk.tls.client.protocols=TLSv1.1,TLSv1.2	■ `/usr/local/tomcat/itbm-server/bin/setenv.sh` (Below `-Dsecurity.properties=$CATALINA_BASE/conf/security.properties`) ■ `/usr/local/tomcat/itbm-data-collector/bin/setenv.sh` (Below `-Dsecurity.properties=$CATALINA_BASE/conf/security.properties`)

8 Run the `monit start itbm-server` command.

9 Run the `monit start pricing-api` command.

Exporting the vRealize Business for Cloud Log Files

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

You can export the vRealize Business for Cloud log files to Syslog and vRealize Log Insight servers.

Export the vRealize Business for Cloud Log Files to Syslog Server

You can configure vRealize Business for Cloud to send the log details to your Syslog server for analyzing the operational visibility and providing a faster troubleshooting procedure.

Prerequisites

- You must be a 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/tomcat/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	`<Syslog name="BSDSyslogAppender" host="SYSLOG_SERVER_HOST" port="SYSLOG_SERVER_PORT" protocol="TCP"/>`
For RFC5424 format	`<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"/>`

For TCP Syslog Appender	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.
	`<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>`

5 Add or 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/tomcat/itbm-server/webapps/itfm-cloud-dc-transformer/WEB-INF/classes/log4j2.xml
- /usr/local/tomcat/itbm-data-collector/webapps/itfm-cloud-vca-dc/WEB-INF/classes/log4j2.xml
- /usr/local/tomcat/itbm-data-collector/webapps/itfm-cloud-vc-dc/WEB-INF/classes/log4j2.xml
- /usr/local/tomcat/itbm-data-collector/webapps/itfm-cloud-srm-dc/WEB-INF/classes/log4j2.xml
- /usr/local/tomcat/itbm-data-collector/webapps/itfm-cloud-vcd-dc/WEB-INF/classes/log4j2.xml

- `/usr/local/tomcat/itbm-data-collector/webapps/itfm-cloud-aws-dc/WEB-INF/classes/log4j2.xml`
- `/usr/local/tomcat/itbm-data-collector/webapps/itfm-cloud-vra-dc/WEB-INF/classes/log4j2.xml`

7 Restart your vRealize Business for Cloud server.

Export the vRealize Business for Cloud Log Files to vRealize Log Insight

You can configure vRealize Business for Cloud to send the log details to vRealize Log Insight for analyzing the operational visibility and providing a faster troubleshooting procedure.

Prerequisites

- You must be a vRealize Business for Cloud administrator.
- You must update the `Common|Global` agent name with the following details:

```
[common|global]
tags = {"product":"vrb", "agent_name":"FQDN_localhost_need_update"}
```

Procedure

1 Log in to vRealize Business for Cloud by using the system administrator credentials.

2 Ensure that your vRealize Log Insight server is accessible by pinging the host name or IP address of the server.

3 Open the `liagent.ini` file available at `/var/lib/loginsight-agent/`.

4 Modify the `server` section as following:

```
[server]
; Hostname or IP address of your Log Insight server
hostname= Log_Insight_server_name
ssl_accept_any = 1
```

5 Run the `systemctl restart liagentd` command, to restart liagent.

Modifying the Default Data Retention Period

By default, the number of days for data purge is configured as 180 days for MongoDB and 365 days for PostgreSQL databases. You can modify the default number of days.

By default, vRealize Business for Cloud includes two scripts that are scheduled every Sunday. The scripts purge certain database tables from the MongoDB and PostgreSQL databases. The number of days is used to specify the age of the data in the tables. Any data that is older than the specified time duration is purged by the scripts.

Prerequisites

- Verify that you have deployed vRealize Business for Cloud on vSphere or vCloud Director. See, Deploy vRealize Business for Cloud Virtual Appliance on vSphere or Deploy vRealize Business for Cloud Virtual Appliance on vCloud Director.
- Verify that you have started the virtual appliance. See, Chapter 5 Start the vRealize Business for Cloud Appliance.
- Verify that you have enabled the Secure Socket Shell (SSH) service. See, Enable or Disable SSH Settings.

Procedure

1. Log in to SSH with the root user credentials.

   If you are using the Windows platform, log in to SSH using a Windows SSH tool. For example, Putty.

2. Navigate to the `/usr/ITFM-Cloud/va-tools/bin` folder.

   For example, `cd /usr/ITFM-Cloud/va-tools/bin`

3. Edit the`services-maintenance.sh` script.

   a. Open the script:

   ```
   #!/bin/bash
   exec &> /var/log/vrb/serviceMainteneace.log
   # Script to purge data before specified number of days; Default considered for Mongo is 6
   months and for Postgres it is 1 year.
   . /usr/ITFM-Cloud/va-tools/bin/mongopurge.sh 180
   . /usr/ITFM-Cloud/va-tools/bin/postgrespurge.sh 365
   #restart mongo db
   monit restart mongo
   #restart itbm-server
   monit restart itbm-server
   ```

   The default number of days specified in the script for:

   - `mongopurge.sh` is 180.
   - `postgrespurge.sh` is 365.

   b. Change the number of days for `mongopurge.sh` and `postgrespurge.sh`, as required.

Upgrading vRealize Business for Cloud

9

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

Table 9-1. Upgrade Scenarios

Scenario	Tasks to perform
If you are using a 7.x.x version	Perform one of the following procedures to upgrade. ■ Upgrade Your 7.x.x Version by Using Web Console ■ Upgrade Your 7.x.x by Using the Downloadable ISO Image
If you are using a 6.x.x version	A direct upgrade from 6.x.x version is not supported. Perform the following steps. 1 Migrate from 6.2.3 to an Intermediate Version of vRealize Business for Cloud 2 To upgrade to the latest version, perform one of the following procedures. ■ Upgrade Your 7.x.x Version by Using Web Console ■ Upgrade Your 7.x.x by Using the Downloadable ISO Image **Note** 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
- Upgrade Your 7.x.x by Using the Downloadable ISO Image
- Migrate from 6.2.3 to an Intermediate Version of vRealize Business for Cloud

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

You can upgrade the vRealize Business for Cloud virtual appliance by using the vRealize Business for Cloud web console.

Prerequisites

- Take a snapshot of the virtual appliance.
- Verify that all Azure endpoints have completed the data collection process, at least once:
  a Open the **System Status** page on vRealize Business for Cloud.
  b Expand **Microsoft Azure data collection**.
  c Look for the endpoint that contains no value in the **Last successful run** column.
  d Delete this account from vRealize Business for Cloud using the following steps.
    1 Go to the **Administration** tab.
    2 Expand **Manage Public Cloud Accounts > Microsoft Azure**.
    3 Expand the account type.
    4 Delete the endpoint for which data collection is not completed.

    After the upgrade, you must add the endpoint back.

Procedure

1 Log in to the web console at https://*vRealize_Business_for_Cloud_IP_address*:5480.
2 If you have registered with vRealize Automation, you must unregister vRealize Business for Cloud.
  a Download all the vRealize Automation reports.

    For more information, see https://kb.vmware.com/s/article/2151835.
  b On the **Registration** tab, click **vRealize Automation**.
  c Enter the details of the already registered vRealize Automation server.
  d Click **Unregister**.

  If you have registered with VMware Identity Manager, ignore this step.

  If all the parameters are correct, you see the `Unregistered with vRealize Automation server` message.
3 Click the **Update** tab.
4 Click **Check Updates** to see the available updates and to enable the **Install Updates** option.
5 (Optional) Click **Install Updates**.
6 After successful upgrade, the reboot of the virtual appliance happens automatically.
7 Click the **System** tab, and verify the updated version number of the appliance.
8 If you had registered with vRealize Automation, re-register vRealize Business for Cloud with vRealize Automation.

  If you have registered with VMware Identity Manager, ignore this step.

What to do next

- If you had added an Azure non-EA account in the earlier version, you must edit your account. For more information, see Manage Microsoft Azure Accounts in vRealize Business for Cloud.
- If you have registered with VMware NSX Manager, edit the endpoints and run the `monit restart vrbc-xenon-services` command.

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.
- Verify that you have downloaded the updated ISO file from the VMware.com website.
- 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.

- Verify that all Azure endpoints have completed the data collection process, at least once:
  a Open the **System Status** page on vRealize Business for Cloud.
  b Expand **Microsoft Azure data collection**.
  c Look for the endpoint that contains no value in the **Last successful run** column.
  d Delete this account from vRealize Business for Cloud using the following steps.
    1 Go to the **Administration** tab.
    2 Expand **Manage Public Cloud Accounts > Microsoft Azure**.
    3 Expand the account type.
    4 Delete the endpoint for which data collection is not completed.

    After the upgrade, you must add the endpoint back.

Procedure

1 Log in to the web console at https://*vRealize_Business_for_Cloud_IP_address*:5480.

2 If you have registered with vRealize Automation, you must unregister vRealize Business for Cloud.

   a Download all the vRealize Automation reports.

     For more information, see https://kb.vmware.com/s/article/2151835.

   b On the **Registration** tab, click **vRealize Automation**.

   c Enter the details of the already registered vRealize Automation server.

   d Click **Unregister**.

   If you have registered with VMware Identity Manager, ignore this step.

   If all the parameters are correct, you see the `Unregistered with vRealize Automation server` message.

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 After successful upgrade, the reboot of the virtual appliance happens automatically.

8 Click the **System** tab, and verify the updated version number of the appliance.

9 If you had registered with vRealize Automation, re-register vRealize Business for Cloud with vRealize Automation.

   If you have registered with VMware Identity Manager, ignore this step.

What to do next

- If you had added an Azure non-EA account in the earlier version, you must edit your account. For more information, see Manage Microsoft Azure Accounts in vRealize Business for Cloud.
- If you have registered with VMware NSX Manager, edit the endpoints and run the `monit restart vrbc-xenon-services` command.

Migrate from 6.2.3 to an Intermediate Version of vRealize Business for Cloud

The vRealize Business for Cloud supports SUSE Linux Enterprise Server (SLES) 12,Service Pack 3. The upgrade process from 6.2.3 version (which was supported SLES11) 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.

For information about vRealize Business for Cloud deployment procedures, see Deploy vRealize Business for Cloud Virtual Appliance on vSphere and Deploy vRealize Business for Cloud Virtual Appliance on vCloud Director

Prerequisites

- Ensure that you have the 6.2.3 setup for upgrading to the latest versionvRealize Business for Cloud.

  Note If you are using earlier versions, you must first upgrade to 6.2.3 and then migrate to vRealize Business for Cloud 7.1. After you migrate to vRealize Business for Cloud 7.1 you can upgrade to the latest version of vRealize Business for Cloud.

- Enable the SSH settings on your earlier virtual appliance, see Enable or Disable SSH Settings.
- Take a snapshot of the virtual appliance.
- Verify that the cost calculation has completed and the system status is green.
- Verify that all Azure endpoints have completed the data collection process, at least once:
  a Open the **System Status** page on vRealize Business for Cloud.
  b Expand **Microsoft Azure data collection**.
  c Look for the endpoint that contains no value in the **Last successful run** column.
  d Delete this account from vRealize Business for Cloud using the following steps.
    1 Go to the **Administration** tab.
    2 Expand **Manage Public Cloud Accounts > Microsoft Azure**.
    3 Expand the account type.
    4 Delete the endpoint for which data collection is not completed.

    After the upgrade, you must add the endpoint back.

Procedure

1 Deploy the 7.1 version of vRealize Business for Cloud on vSphere or vCloud Director.
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, user name, and password.
5 Click **Migrate**.

  The migration process takes some time. After the successful completion of the process, you see the confirmation message.
6 Upgrade to the latest version of vRealize Business for Cloud.

7 (Optional) Register vRealize Business for Cloud with vRealize Automation.

If you want to register with the instance of vRealize Automation that was registered with vRealize Business for Cloud 6.x, make sure to unregister from the vRealize Business for Cloud 6.x before registering with the latest vRealize Business for Cloud version.

What to do next

If you had added an Azure non-EA account in the earlier version, you must edit your account. For more information, see Manage Microsoft Azure Accounts in vRealize Business for Cloud.