

vRealize Business for Cloud User Guide

vRealize Business for Cloud Standard 7.1 and vRealize Business for Cloud Advanced 7.1

vRealize Business 7.1

vRealize Business for Cloud 7.1

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vRealize Business for Cloud User's Guide

The VMware® *vRealize Business™ Standard User's Guide* provides information about the vRealize Business for Cloud user interface, explains key terms and concepts, and describes various tasks that you can perform to gain better visibility of your infrastructure.

Intended Audience

This information is intended for users or administrators of vRealize Business for Cloud for using the vRealize Business for Cloud user interface.

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>.

vRealize Business for Cloud Feature Overview

1

vRealize Business for Cloud is a cloud planning, budgeting and cost visibility tool, helps to make decision in an enterprise IT data centers. It provides a single pane of management for both private cloud or public cloud infrastructure.

vRealize Business for Cloud supports the following capabilities.

- Public cloud comparison, cost and usage visibility, including integrations with AWS, Azure and VMware vCloud Air .
- Advanced pricing of services and integration with vRealize Automation.
- Role based access controls for consumption analysis.
- Budget configuration and visibility
- Cost analysis of data center storage systems, such as EMC SRM.
- Cost and usage visibility of vCloud Suite components such as vSphere, VMware vCloud Director, vRealize Automation and vRealize Operations Manager.
- Generate reports.

This chapter includes the following topics:

- [“The vRealize Business for Cloud Standard Edition Features,”](#) on page 7
- [“UI Options Available with vRealize Business for Cloud Standard and vRealize Business for Cloud Advanced Editions,”](#) on page 8
- [“The vRealize Business for Cloud Dashboard,”](#) on page 10
- [“View and Update System Status,”](#) on page 11
- [“The Overview Page,”](#) on page 13

The vRealize Business for Cloud Standard Edition Features

You can access the vRealize Business for Cloud Standard edition by using the vCloud Suite license and vRealize Suite license keys. However, you must consider the limitations and feature options that are available in the vRealize Business for Cloud Standard edition. Certain vRealize Business for Cloud options may not be available as part of the Standard edition.

For more information about the available UI options, see [“UI Options Available with vRealize Business for Cloud Standard and vRealize Business for Cloud Advanced Editions,”](#) on page 8.

The vRealize Business for Cloud Standard edition supports the following capabilities.

- Cost and usage visibility of vCloud Suite components such as vSphere, VMware vCloud Director, vRealize Automation and vRealize Operations Manager.

- Basic pricing integration with vRealize Automation.
- Cloud comparison except data center optimization.
- Simple reporting.

UI Options Available with vRealize Business for Cloud Standard and vRealize Business for Cloud Advanced Editions

The vRealize Business for Cloud user interface options vary based on the license key. You can see all the available options by using the vRealize Business for Cloud, vCloud Suite Advanced or Enterprise and vRealize Suite Advanced or Enterprise licenses. Certain vRealize Business for Cloud options might not be available as part of vCloud Suite Standard and vRealize Suite Standard licenses.

Table 1-1. User Interfaces comparison of vRealize Business for Cloud Standard edition and vRealize Business for Cloud Advanced edition.

Tasks that you can perform	Options available in the vRealize Business for Cloud Standard edition	Options available in the vRealize Business for Cloud Advanced edition	Navigation on the vRealize Business for Cloud user interface in the vRealize Automation integrated setup and the standalone setup
Managing Private Cloud Accounts such as vCenter Server, EMC SRM servers, vCloud Director	Yes	Yes	<ul style="list-style-type: none"> ■ For the integrated setup: Administration > Business Management > Manage Private Cloud Connections ■ For the standalone setup: Administration > Manage Private Cloud Connections
Managing Public Cloud Accounts such as vCloud Air, AWS, Azure and cloud providers for comparison	No	Yes	<ul style="list-style-type: none"> ■ For the integrated setup: Administration > Business Management > Manage Hybrid & Public Cloud Accounts ■ For the standalone setup: Administration > Manage Hybrid & Public Cloud Accounts
Updating Reference Database	Yes	Yes	<ul style="list-style-type: none"> ■ For the integrated setup: Administration > Business Management > Update Reference Database ■ For the standalone setup: Administration > Update Reference Database
Generating and downloading the log files to analyze the issues	Yes	Yes	<ul style="list-style-type: none"> ■ For the integrated setup: Administration > Business Management > Support File ■ For the standalone setup: Administration > Support File
Updating License	Yes	Yes	<ul style="list-style-type: none"> ■ For the integrated setup: Administration > Business Management > Update License ■ For the standalone setup: Administration > Update License
Generating a token for vRealize Business Enterprise integration	No	Yes	<ul style="list-style-type: none"> ■ For the integrated setup: Administration > Business Management > vRealize Business Integration ■ For the standalone setup: Administration > vRealize Business Integration
Managing data collectors	Yes	Yes	<ul style="list-style-type: none"> ■ For the integrated setup: Administration > Business Management > Manage Data Collector ■ For the standalone setup: Administration > Manage Data Collector

Table 1-1. User Interfaces comparison of vRealize Business for Cloud Standard edition and vRealize Business for Cloud Advanced edition. (Continued)

Tasks that you can perform	Options available in the vRealize Business for Cloud Standard edition	Options available in the vRealize Business for Cloud Advanced edition	Navigation on the vRealize Business for Cloud user interface in the vRealize Automation integrated setup and the standalone setup
Calculating depreciation	Yes	Yes	<ul style="list-style-type: none"> ■ For the integrated setup: Administration > Business Management > Calculation Preference ■ For the standalone setup: Administration > Calculation Preference
Viewing the vRealize Business for Cloud overview	Yes	Yes	Business Management > Overview
View private cloud cost, expenses, and charge information	Yes	Yes	Business Management > Private Cloud (vSphere)
View hybrid cloud cost information	No	Yes	Business Management > Hybrid Cloud (vCloud Air)
View public Cloud (AWS)	No	Yes	Business Management > Public Cloud (AWS)
View public Cloud (Azure)	No	Yes	Business Management > Public Cloud (Azure)
View the private cloud operational analysis information	Yes	Yes	Business Management > Operational Analysis > Private Cloud (vSphere)
View price values and policies, charges, business unit list and business unit map	Yes	Yes	Business Management > Pricing and Charges
Editing the price	Yes	Yes	Business Management > Pricing and Charges > Pricing > Edit > Edit Pricing
Editing the budget value	No	Yes	Business Management > Pricing and Charges > Pricing > Edit > Edit Budget
Editing business hierarchy	Yes	Yes	Business Management > Pricing and Charges > Business Units List > Edit > Edit Business Hierarchy
View the showback statement and reclamation opportunities	No	Yes	Business Management > Showback
Comparison of cloud cost	Yes	Yes	Business Management > Cloud Comparison
View data center optimization information	No	Yes	Business Management > Data Center Optimization
Generating reports for vCenter Server	Yes	Yes	Business Management > Data Sets > vCenter Server
Generating reports for vCloud Director	Yes	Yes	Business Management > Data Sets > vCloud Director
Generating reports for vRealize Automation virtual machines	Yes	Yes	Business Management > Data Sets > vRealize Automation VMs NOTE This option is not available for the vRealize Business for Cloud standalone setup.

Table 1-1. User Interfaces comparison of vRealize Business for Cloud Standard edition and vRealize Business for Cloud Advanced edition. (Continued)

Tasks that you can perform	Options available in the vRealize Business for Cloud Standard edition	Options available in the vRealize Business for Cloud Advanced edition	Navigation on the vRealize Business for Cloud user interface in the vRealize Automation integrated setup and the standalone setup
Generating storage reports	No	Yes	Business Management > Data Sets > Storage
Generating public cloud reports	No	Yes	Business Management > Data Sets > Public Cloud

The vRealize Business for Cloud Dashboard

The vRealize Business for Cloud dashboard is designed to support unified cloud business management data model. To support better coherent and unified data model, the dashboard is categorized into main categories such as Overview, Expenses, Operational Analysis, Consumption, Planning and Reports.

Table 1-2. vRealize Business for Cloud Dashboard

Sections	Description
Overview	Provides information about total expense, cost of operations, and the total consumption cost.
Expenses	Provides all infrastructure expenses, which includes private, public and hybrid cloud expense details.
Operational Analysis	Provides the cost breakdown information for the current month cost, trend, and total percentage value of CPU, RAM, storage, operating system (license and labor) consumption in your cloud environment.
Consumption	Provides cost and charge values associated with the resources and provides reclamation information. It allows you to set the budget values and helps to analyse about the usage of the cloud services based on cost and charge values. You can see the showback statement.
Planning	Provides the cost estimation of running a completely new instance or an existing instance of a virtual machine in the private cloud by using the cost drivers of your private cloud, and then provides you with a comparison of the cost of the same configuration in Amazon Web Services, Microsoft Azure, and vCloud Hybrid Service cloud models. It enables you for data center optimization.
Reports	Enables you to generate reports to get cost details of vCenter Server, vCloud Director, vRealize Automation, and the public cloud details. You can also create customized reports.

View and Update System Status

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

For information about how to modify the default job intervals, see [“Configuring Default Job Intervals for Updating the System Status,”](#) on page 12.


- Data collector connects to the vCenter Server instances and collects the inventory data and usage statistics. After collecting inventory data and usage statistics, vRealize Business for Cloud displays timestamp of the last executed job in local time. The vCenter Server data collection jobs are scheduled to run at default intervals.
- Storage collector connects to EMC SRM server instances and collects data and usage details. After completing the collection process, vRealize Business for Cloud server displays the details and timestamp of the process.
- Cost calculation involves the steps for computing base rates, allocated costs, cost for each virtual machine, and auto-generation of reports. Cost calculation occurs daily, but you can also trigger the process manually.
- vRealize Automation connector collects data about consumers of a virtual machine in terms of blueprints, provisioning groups and tenants from IaaS component of vRealize Automation, if IaaS is configured. vRealize Automation connection information appears only after you configure IaaS component of vRealize Automation.
- Public cloud connection connects to the configured vCloud Air and AWS accounts to collect inventory and usage data. Public cloud connection information appears only after you configure an account.
- vCloud Director connector connects to vCloud Director to collect data about consumers of the virtual machine according to organization and organization vDC. vCloud Director connection information appears only after you add vCloud Director to vRealize Business for Cloud.

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

Procedure

- 1 Log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Log in to vRealize Business for Cloud as an administrator at:
 - `https://vRealize_Automation_host_name/vcac/org/tenant_URL` (for the vRealize Automation integrated setup)
 - `https://vRealize_Business_for_Cloud_host_name/itfm-cloud`(for the vRealize Business for Cloud standalone setup)
- 3 Click **Business Management**.
- 4 Click **Status**.

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

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

- You see the Warning status  icon, if the non-mandatory jobs fail.

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

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

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

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

```
dc.job.critical.vc.tags = false
dc.job.critical.vc.storage = false
```

- To configure the vRealize Operations Manager synchronization job as mandatory, add the following line in the file.

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

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

Configuring Default Job Intervals for Updating the System Status

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

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

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

Table 1-3. Data Collection Jobs

Endpoint	Jobs	Default Intervals	Job Property
vCenter Server	Inventory	Immediately after an inventory update	Not applicable
	Tags	Every 6 hours (360 minutes)	<code>dc.job.interval.vc.tags</code>
	vRealize Operations Manager	Every 30 minutes	<code>dc.job.interval.vc.vcops</code>
	Storage	Every 12 hours (720 minutes)	<code>dc.job.interval.vc.storage</code>
	Usage Statistics	Every 24 hours (1440 minutes)	<code>dc.job.interval.vc.stats</code>
EMC SRM		Every 24 hours (1440 minutes)	<code>dc.job.interval.srm</code>
vRealize Automation		Every 2 hours (120 minutes)	<code>dc.job.interval.vra</code>
Public cloud	AWS	Every 24 hours (1440 minutes)	<code>dc.job.interval.aws</code>

Table 1-3. Data Collection Jobs (Continued)

Endpoint	Jobs	Default Intervals	Job Property
	vCloud Air	Every 24 hours (1440 minutes)	<code>dc.job.interval.vca</code>
	Azure	Every 24 hours (1440 minutes)	NOTE You cannot configure Azure interval. You can manually trigger the job when required.
vCloud Director		Every hour (60 minutes)	<code>dc.job.interval.vcd</code>

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

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

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

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

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

The Overview Page

The Overview page provides the information about your infrastructure expense and its utilization details for the current month.

- **Infrastructure Overview** - Displays the workload across cloud infrastructure. You can see the estimated total number of virtual machines for all cloud infrastructure types. Each color represents the virtual machine count for each account type (private, public and vCloud Air, if configured). You can hover the mouse on the each color to see a tool tip with the total virtual machine count for the specific account type.
- **Top Datacenters** - Displays the compute, memory and storage utilization for the top five datacenters that are based on CPU utilization. You can see the blue and grey colors that represents the used and remaining capacity of the data centers respectively. This helps you for data center optimization.
- **Infrastructure Utilization** - Displays the total number of virtual machines and the count of powered-on machines for the top five datacenters based on total VM count. If a vCenter Server is associated with vRealize Operations Manager, you can also see the count of reclaimable virtual machines for each datacenter.
- **Expenses across Clouds** - Displays the total projected expenses of your account types (private, public and vCloud Air, if configured). You can hover the mouse on the each color to see a tool tip with the total estimated expense of the specific account type. The estimated expense value is calculated based on cost utilization for the last six months.

NOTE The projected expense for public cloud and vCloud Air is calculated by using the following equation:

Projected cost = $A + ((B/24) * n)$, where, A is the total cost till date, B is the cost of previous day and n is the remaining number of hours for the current month.

- **Top Business Units** - Displays the top five business units based on total VM count. You can also see the amount charged for the consumption. You can hover the mouse on the colored icons to see the previous month's charge value. If your current month's charge is lower than previous month value, you see the green arrow. Similarly, If your current month's charge is higher than previous month value, you see the red arrow. If the charge remains same when compared with the previous month, you see a neutral black icon.
- **Cost Vs Price** - Displays the total projected charge value for the current month. You can also see the cost versus price graphs in different colors, that indicates your estimated expense (the cost value) for maintaining the datacenters and the amount you are charging consumers for the current month. This helps you to analyse whether you are under recovery or over recovery. You can hover the mouse on small circles to see a tool tip with the estimated cost and price values.

NOTE vRealize Business for Cloud considers the inventory date and data from the previous day of deployment for costing and pricing purposes. All values on the Overview page are estimated values that are calculated based on the values from past six months.

Compute Private and Public Infrastructure Information

2

You can view and modify private and public cloud information for your environment

Computing the Cost of Your Cloud

Expenses are the costs that are incurred in managing a data center. You can input the expenses manually. If you do not input the expense, the values are obtained from the reference database of the vRealize Business for Cloud. After you determine the total expense for your cloud infrastructure, you can allocate these costs to the underlying resources that constitute the services. These resources are CPU, RAM, storage, and operating system (license and labor).

Expenses Overview

Expenses Overview is a dashboard in which the expenses are categorized into Hardware, Storage on Demand, Licensing, Maintenance, Labor, Network, Facilities, and Additional Costs. You can see the total projected expense on your private cloud accounts for the current month and the trend of cost over time.

You can modify the expense of your data center. These costs can be in terms of percentage value or unit rate, and might not always be in terms of the overall cost. Based on your inputs, the final amount of expenses is calculated. If you do not provide inputs regarding expenses, the default values are taken from the reference database, which is part of the vRealize Business for Cloud product.

Expenses Overview displays projected cost of private cloud for the current month and the trend of total cost over time. For all the expenses, vRealize Business for Cloud displays the monthly trend of the cost variations, the actual expense and a chart that represents the actual expense and the reference cost of the expense.

NOTE If the vCenter Server was added from more than six months, the trend displays the total cost for the last six months only. Otherwise, the trend displays the total cost from the month the vCenter Server was added into vRealize Business for Cloud.

Table 2-1. Expense Types

Cost Drivers	Description
Hardware	You see the server cost based on CPU age and server cost details. For the complete server cost information, click the Hardware list with the complete cost information link.
Storage on Demand	You see the storage total distribution based on category and the uncategorized cost details. For the complete list of data stores and its cost information related to storage, click the Storage On Demand list with the complete cost information link.
Licensing	You see the licenses cost distribution for the operating systems cost and VMware license of your cloud environment. You can hover the mouse over the chart to see the cost details for each license. For the complete licensing cost information, click the Licensing list with the complete cost information link. NOTE For Non-ESX physical servers, VMware license is not applicable.

Table 2-1. Expense Types (Continued)




Cost Drivers	Description
Maintenance	You see the maintenance cost distribution for the server hardware and operating system maintenance. You can hover the mouse over the chart to see the cost details for each maintenance type. For the complete cost information related to maintenance, click the Maintenance list with the complete cost information link.
Labor	You see the labor cost distribution for the servers, virtual infrastructure, and operating systems. You can hover the mouse over the chart to see the cost details for each labor type. For the complete cost information related to labor, click the Labor list with the complete cost information link. NOTE <ul style="list-style-type: none"> ■ Labor cost includes expense on backup appliance virtual machine (VDP virtual appliance). ■ For physical servers, operating system labor cost and servers labor costs are applicable, virtual infrastructure cost is not considered.
Network	You see the networks costs by NIC type. You can hover the mouse over the chart to see the cost details for each NIC type. For complete cost information related to network, click the Network list with the complete cost information link. NOTE For physical servers, the network details are not captured. So, the network cost is considered as zero.
Facilities	You see the cost distribution for the facilities such as rent or real estate and power or cooling. You can hover the mouse over the chart to see the cost details for each facility type. For the complete cost information related to facilities, click the Facilities list with the complete cost information link.
Additional Costs	You see the for additional expenses such as backup and restore, high availability, management licensing, VMware software licensing.

You can select a data center to view the information specific to the data center.

Editing Expenses

You can manually edit monthly cost of all the eight expense types from the current month onwards.

The configuration used for cost drivers determines how vRealize Business for Cloud calculates and displays the cost.

- If the costs are based on the industry benchmark values, a vertical Orange color band  is displayed.
- If the costs are calculated according to the hardware configuration, a vertical Green color band  is displayed.
- If the costs have been manually entered, a vertical Blue color band  is displayed.

Edit Monthly Cost of Hardware

You can view, add, edit, or delete the cost of each server group, based on their configuration and the purchase date of a batch server running in your cloud environment. After you update the server hardware cost, vRealize Business for Cloud updates the total monthly cost and average monthly cost for each server group. You can also see the details about the list of storage arrays that the EMC SRM identifies in the server.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Expenses, click **Private Cloud (vSphere)**.

- 4 Select **Expenses (vSphere)** and click **Edit Expenses**.
- 5 Select the **Hardware** tab.
- 6 Select the **Servers** tab.

vRealize Business for Cloud groups all server hardware from all data centers in your inventory based on their hardware configuration.

Category	Description
Name	Displays the name of the server in your inventory.
Number of Servers	Displays the total number of servers of any particular hardware configuration in your inventory.
Description	Displays the description of the server group.
Average Monthly Cost for Server	Displays the average monthly cost for server. This value is calculated as a weighted average of prices of purchased and leased batches.
Total Monthly Cost	Displays the total cost of servers in your inventory. This value is arrived by multiplying the cost value with number of servers.

- 7 (Optional) Select a data center from the **All Data Centers** drop-down list to view or edit the server hardware information of a specific the data center.
- 8 To edit the server hardware cost, create a batch or batches for the server group.




- Click the **Upload a CSV file** link and click **Browse** to upload the CSV file containing your server purchase details.

NOTE

- The CSV must be contain all the mentioned fields.

serverModelName,manufacturer,numCpus,cpuType,cpuGhz,memGb,numberOfServers,dateOfPurchase,pricePerServer,batchType,dataCenterName

- Use a Notepad to edit the CSV file. Editing in the Microsoft Excel might change the date format.
 - The currency in the CSV file must match the currency you have configured during deployment.
-

- Click the  icon.
 - a Click the **Purchased Servers** or **Leased Servers** link to edit server batch according to their price or lease rent.
 - b To add the details of the servers, click the  icon and update the date, number of servers and cost per server or rent cost per server values.
 - c (Optional) To delete a server details, click the  icon. The selected server group information is deleted.

The batch cost and the average cost of each server is updated.

- 9 Select the **SRM** tab to edit cost for storage arrays and modify the service level weightage.

vRealize Business for Cloud displays a list of storage arrays that exists in the linked EMC SRM. You can see the array name, description, array disk count and its details, array purchase date, reference cost and monthly cost of storage hardware.

Category	Description
Name	Displays the storage array name.
Description	Displays the storage array details such as array model (VMAX40K, VMAX10K), array family (VNX, VMAX) and array type (BLOCK, FILE).
Disk Count	Displays the total number of disks for each storage array.
Reference Cost	Displays the reference cost for a specific storage array and the cost of disks in the array.
Monthly Cost	Displays the monthly cost for a specific storage array and the cost of disks in the array.
Purchase Date	Displays the date of purchase of a specific storage array, which you can modify.
Total Cost	Displays the total cost for a specific storage array, which you can modify. NOTE The total cost is same as reference cost, by default. You can modify the total cost by considering both array cost and disk cost, if needed. The array total cost includes hardware, license, labor, maintenance, facilities and network costs.

NOTE You can edit the cost and purchase date of multiple arrays together. The monthly cost of array is automatically computed based on the modified total cost and purchase date.

10 Click **Save**.

According to your inputs, vRealize Business for Cloud updates the total monthly cost and average monthly cost for the server.

Edit Service Level Weightage

A Service level categorizes LUNs based on their storage disk efficiency and performance. You see a list of service level names, which indicates the disk quality comprising the LUNs in EMC SRM. Also, you can see the weightage value for a service level, which helps to calculate the base rate for the LUNs of that particular service level.

Procedure

- Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- Click **Business Management**.
- Under Expenses, click **Private Cloud (vSphere)**.
- Select **Expenses (vSphere)** and click **Edit Expenses**.
- Under the **Hardware** tab, select **SRM**.
- Click the **Edit Service Level Weightage** link.
- Modify the weightage value for a service level that you want to update.

You can set the weightage value range from **1** to **10**.

If a LUN is not assigned with a service level, the default service level weightage value is used to calculate the base rate.

- Click **Save**.

Edit Monthly Cost of Storage on Demand

You can edit the monthly cost per storage GB for the data stores based on their storage profile (tags) and storage type (NAS, SAN or Block). The storage hardware is categorized according to the data store storage profile or tags and storage type.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Expenses, click **Private Cloud (vSphere)**.
- 4 Select **Expenses (vSphere)** and click **Edit Expenses**.
- 5 Select the **Storage On Demand** tab.

vRealize Business for Cloud categorizes and displays the storage details according to storage category and storage type for the data stores of type Virtual SAN or part of EMC SRM managed storage arrays.

Category	Description
Storage Category or Storage Type	<ul style="list-style-type: none"> ■ Storage Category allows you select a tag category, which displays the storage profile for data stores and also the tags associated with the category. <p>NOTE</p> <ul style="list-style-type: none"> ■ If you have performed a fresh installation of vCenter Server 6.0, and not assigned tags to the data stores, vRealize Business for Cloud displays storage category for data stores as uncategorized. ■ If you are using earlier versions of vCenter Server like 5.1.x or 5.5.x, vRealize Business for Cloud displays the storage profile for data stores. ■ Storage Type displays the storage details in different types - Block Device, Fiber Channel, and SAN if you view the storage cost based on storage type. If the data store is not on any of the storage device type, vRealize Business for Cloud displays the data store as uncategorized.
Datstores	Displays the total number of data stores for a specific profile or type. You can click the datastore value to see list of datastores and its details such as monthly cost, total GB for each datastore.
Total GB	Displays the total storage for a specific profile or type.
Reference Cost	Displays the reference cost.
Monthly Cost Per GB	Displays the monthly cost per GB for a specific profile or type.
Monthly Cost	Displays the total monthly cost for a specific profile or type.

- 6 (Optional) Select a data center from the **All Data Centers** drop-down list to view or edit the storage information of a specific the data center.
- 7 To edit the storage cost, perform the following steps.
 - a Select the **Storage Category** or **Storage Type**.
 - b Click on the Monthly Cost Per GB field of an entry in the table for which you want to update the cost.
 - c Modify the cost value.
- 8 Click **Save** to save the storage monthly cost changes.

According to your updated values, vRealize Business for Cloud re-calculates and displays the monthly cost of your storage.

View Data Store Information

You can see the details about data stores added in vRealize Business for Cloud. The details includes, the storage profile name that the data store belongs to, data store count in that particular storage profile, monthly cost per GB, monthly cost of data stores, reference cost, list of data stores, data store URL.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Expenses, click **Private Cloud (vSphere)**.
- 4 Select **Expenses (vSphere)** and click **Edit Expenses**.
- 5 Select the **Storage On Demand** tab.
- 6 In the storage monthly cost table, click on the data stores count value.

You see the data stores details that belongs to the selected storage category or storage type.

Edit Monthly Cost of License

You can edit the total operating system licensing cost and VMware license cost of your cloud environment. You can edit the license cost by either selecting the ELA charging policy or selecting the per socket value.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Expenses, click **Private Cloud (vSphere)**.
- 4 Select **Expenses (vSphere)** and click **Edit Expenses**.
- 5 Select the **Licensing** tab.

vRealize Business for Cloud displays all the licenses in your cloud environment.

Category	Description
Name	Displays the category of the operating system. If the operating system is not Windows or Linux, vRealize Business for Cloud categorizes the operating system under Other Operating Systems .
VMs	Displays the number of virtual machines that are running on the specific operating system.
Sockets	Displays the number of sockets on which the specific operating system is running.
Charged by	Displays whether cost is charged by socket or ELA.

Category	Description
Total Cost	Displays the total cost of the specific operating system.
Reference Cost	Displays the reference cost as defined in the vRealize Business for Cloud reference database.

- (Optional) Select a data center from the **All Data Centers** drop-down list to view or edit the licensing cost calculations of a specific the data center.

NOTE For physical servers, VMware license is not applicable.

- Click the edit icon for which you want to change the monthly cost.
The license details page is displayed, which summarizes operating system and VMware license information running in your environment.

- Edit the monthly cost of operating systems.

- Select the monthly cost of a operating system per socket and modify the cost value.
- Select the monthly cost of a operating system ELA and modify the cost value.

NOTE For the Windows operating system group, an additional option lets you charge for Windows desktops according to the ELA policy.

- Click **Save**.

According to your inputs, vRealize Business for Cloud calculates and displays the total cost and updates the Charged by column with the option that you have selected.

Edit Monthly Cost of Maintenance

You can edit the monthly cost of maintaining your cloud environment. Maintenance cost is categorized into hardware maintenance cost and operating system maintenance cost. Hardware maintenance cost is calculated as a percentage of the purchase cost of servers. Operating system maintenance cost is calculated as a percentage of the Windows licensing costs.

Procedure

- Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- Click **Business Management**.
- Under Expenses, click **Private Cloud (vSphere)**.
- Select **Expenses (vSphere)** and click **Edit Expenses**.
- Select the **Maintenance** tab.
- (Optional) Select a data center from the **All Data Centers** drop-down list to view or edit the maintenance information of a specific the data center.
- Edit the monthly maintenance cost.
 - Edit the percentage value of the hardware maintenance cost.
 - Edit the percentage value of the operating system maintenance cost.
- Click **Save**.

- 9 (Optional) Click **Reset** to clear the updated values.

The monthly maintenance cost is updated.

Edit Monthly Cost of Labor

You can edit the monthly cost of labor for your cloud environment. The labor cost is combination of the total cost of the server administrator, virtual infrastructure administrator, and the operating system administrator.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)


- 2 Click **Business Management**.
- 3 Under Expenses, click **Private Cloud (vSphere)**.
- 4 Select **Expenses (vSphere)** and click **Edit Expenses**.
- 5 Select the **Labor** tab.

The monthly labor cost is displayed.

Category	Description
Category	Displays the categories of labor cost, servers, virtual infrastructure, and operating system
Calculated by	Displays whether the cost is calculated hourly or monthly
Total Monthly Cost	Displays the total monthly cost of the particular category
Reference Cost	Displays the reference cost for the category from the vRealize Business for Cloud database

- 6 (Optional) Select a data center from the **All Data Centers** drop-down list to view or edit the labor cost of a specific the data center.

NOTE For physical servers, operating system labor cost and servers labor costs are applicable, virtual infrastructure cost is not considered.

- 7 Click the  icon for which you want to change the monthly labor cost.

The total number of servers is displayed.

- 8 Select either the hourly rates or the total monthly labor cost and modify the values.
- 9 Click **Save**.

The total monthly cost is updated. The hourly rate option or the monthly cost option that you select is updated in the **Calculated by** column.

Edit Monthly Cost of the Network

You can edit the monthly cost for each Network Interface Controller (NIC) type or can edit the total cost of all the networking expenses associated with the cloud.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Expenses, click **Private Cloud (vSphere)**.
- 4 Select **Expenses (vSphere)** and click **Edit Expenses**.
- 5 Select the **Network** tab.
- 6 (Optional) Select a data center from the **All Data Centers** drop-down list to view or edit the network cost of a specific the data center.

NOTE For physical servers, the network details are not captured. So, the network cost is considered as zero.

- 7 Edit the monthly cost of network.
 - Modify the values for 1 Gigabit NIC and the 10 Gigabit NIC.
 - Modify the total monthly cost of all network expenses associated with the cloud.
- 8 Click **Save**.
- 9 Click **Reset** to set the earlier defined values.

The total monthly network expenses are updated.

Edit Monthly Cost of Facilities

For your cloud environment, you can specify the total monthly cost of facilities or edit the facilities cost for real estate, power, and cooling requirements.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Expenses, click **Private Cloud (vSphere)**.
- 4 Select **Expenses (vSphere)** and click **Edit Expenses**.
- 5 Select the **Facilities** tab.
- 6 (Optional) Select a data center from the **All Data Centers** drop-down list to view or edit the facilities information of a specific the data center.

- 7 Edit the monthly facilities cost.
 - Modify the cost of rent or real estate per rack unit and modify the monthly cost of power and cooling per kilowatt-hour.
 - Modify the total monthly cost of facilities.
- 8 Click **Save** to save to update the changes.
- 9 Click **Reset** to set the earlier defined values.

The monthly facilities cost is updated.

Edit Additional Costs

The additional cost lets you add any additional or extra expense that is not covered by other expenses categorized by vRealize Business for Cloud. No reference value is present for this expense.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Expenses, click **Private Cloud (vSphere)**.
- 4 Select **Expenses (vSphere)** and click **Edit Expenses**.
- 5 Select the **Additional Costs** tab and click the add icon.
- 6 Enter the monthly costs for the expenses that are not considered in any other expense types such as, the cost of management software, disaster recovery, and high availability.
- 7 Click **Save**.
- 8 (Optional) Click **Reset** to set the earlier defined values.

The monthly cost for additional costs is updated.

Overview of Operational Analysis

After you determine the total expense for your cloud infrastructure, you can allocate these costs to the underlying resources that constitute the services. These resources are CPU, RAM, storage, and operating system (license and labor). The operational analysis considers the CPU, RAM, and storage as first class components of the cloud infrastructure.

The operational analysis module accepts the total monthly operating cost in your cloud infrastructure as modeled by using the cost driver component as input, and arrives at base rate for CPU, storage base rates and RAM expressed in terms of dollar per gigahertz of CPU and dollar per gigabytes of storage base rates and RAM. The derived base rates for CPU, memory, and storage configured in the cost driver are then used to attribute the total cloud cost for the month to the virtual machines to arrive at the total cost of operating virtual machines for the month. Certain costs are directly attributed to the virtual machines, for example desktop operating system licenses and labor costs. These are not part of resource base rates, and are classified under the heading of OS (License and Labor).

The Resources table under **Operational Analysis** displays cost breakdown information in terms of the current month cost, trend, and total percentage value of CPU, RAM, storage, operating system (license and labor) consumption in your cloud environment. You can filter the resource information, its generation details and virtual machine cost based on each data center or view all data centers cost information together, by using the **All Data Centers** drop-down list.

Calculating the Base Rate and the Expected CPU Utilization Percentage

vRealize Business for Cloud calculates the base rates of CPU and memory so that they can be used for virtual machine cost computation. Base rates are determined for each cluster, which are homogeneous provisioning groups. Hence, base rates might change across clusters, but are the same within a cluster. Unclustered hosts in a vCenter Server are grouped according to their vendor, model, and configuration. If you have enabled the data center mode, unclustered hosts are grouped under data centers.

- 1 vRealize Business for Cloud first arrives at the fully loaded cost of the cluster from the cost drivers. After the cost of a cluster is determined, this cost is split into CPU and memory costs based on the industry standard cost ratios for the different models of the server.
- 2 The CPU base rate is first computed by dividing the CPU cost of the cluster by the CPU capacity of the cluster. CPU base rate is then prorated by dividing the CPU base rate by expected CPU utilization percentage to arrive at true base rate for charging the virtual machines.
- 3 The memory base rate is first computed by dividing the memory cost of the cluster by the memory capacity of the cluster. Memory base rate is then prorated by dividing the memory base rate by expected memory utilization percentage to arrive at true base rate for charging the virtual machines.
- 4 You can either provide the expected CPU and memory utilization or can derive the expected CPU and memory utilization based on 3-month utilization average of ESXi hosts.

Edit Cost Utilization

You can adjust how the cost allocation happens in your virtual infrastructure. The total loaded cloud cost involves hardware, operating systems, maintenance, network, labor, and facilities costs. You can control how these costs are allocated on to your virtual infrastructure.

Note that you can filter and view the cost information for each data center or view all data centers cost information together, by using the **All Data Centers** drop-down list.

View Information for Server Cluster

vRealize Business for Cloud categorizes all the ESXi hosts according to their cluster configuration. For ESXi hosts that are not clustered, categorization is based on five parameters, which are server model, CPU model, core count, CPU capacity, and memory size.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud (for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Operational Analysis, click **Private Cloud (vSphere)**.
- 4 Click **Edit Utilization**.

The Server Clusters table provides information on the basis of the cluster configuration.

Table 2-2. Server Clusters

Category	Description
Type	Displays the icon that identifies whether this is a group of clustered or unclustered hosts.
Description	Displays the name of the cluster. If the ESXi hosts are not clustered, vRealize Business for Cloud displays the server model, CPU model, core count, CPU capacity, and memory size.
Data Center Name	Displays the name of the data center in which the server cluster resides.
Servers	Displays the total number of servers belonging to a cluster. You can click on the total count to see the server IP address and its description.
Utilization % of Capacity	Displays the percentage of utilization of the cluster's CPU and RAM capacity in terms of gigahertz and gigabytes respectively for the current month. The utilization is represented in different colors: <ul style="list-style-type: none"> ■ Green represents the utilized capacity ■ White represents the allocated capacity ■ Grey represents the unreserved capacity
Total Cost	Displays the total cost of the cluster.
Expected CPU utilization %	Displays the percentage of expected CPU utilization. You can set the expected CPU utilization. For more information, see “Set the Expected CPU and Memory Utilization for the Host,” on page 26.
Expected memory utilization %	Displays the percentage of expected memory utilization. You can set the expected memory utilization. For more information, see “Set the Expected CPU and Memory Utilization for the Host,” on page 26.
Base rates	Depending on the expected CPU utilization value that you have defined, vRealize Business for Cloud calculates the base rate for the cluster and displays the information for CPU and RAM in terms of dollar per gigahertz and dollar per gigabytes respectively.
Unallocated Costs	Derived by multiplying the unused capacity of CPU and RAM by CPU and RAM base rates. Here, $\text{unused capacity} = \text{total capacity} - (\text{used} + \text{reserved capacity})$. NOTE The unused capacity is displayed as zero if total capacity is less than addition of used and reserved capacity.

Set the Expected CPU and Memory Utilization for the Host

You can set the expected CPU and memory utilization for the host by using the system defined value, which is computed by using historical averages, 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.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud (for the vRealize Business for Cloud standalone setup)

- 2 Click **Business Management**.
- 3 Under Operational Analysis, click **Private Cloud (vSphere)**.
- 4 Click **Edit Utilization**.
- 5 You can select the data center for which you want to view or edit base rates of CPU and RAM by using the **All Data Centers** drop-down list.
- 6 Set expected CPU and memory utilization.
 - You can select the system defined value, which computes the expected CPU and memory utilization by using historical averages. This option is selected by default.
 - You can set the fixed utilization percentages for the expected CPU and memory utilization percentages in terms of percentage value. If you select this option, the value that you type is applied to the all server clusters.
 - You can set the expected CPU and memory utilization percentages for each cluster by typing the value in the **Expected CPU Utilization %** and **Expected Memory Utilization %** text boxes. Select the option and then set the expected utilization by navigating to the Expected CPU Utilization % and Expected Memory Utilization % column.
- 7 Click **Save**.

vRealize Business for Cloud uses the value that you have provided to calculate and display the updated base rates of CPU and RAM in terms of cost per gigahertz and cost per gigabytes for the server cluster. vRealize Business for Cloud also updates the unallocated costs for the server cluster.

Virtual Machine Cost Allocation

vRealize Business for Cloud uses the utilization cost model to allocate the cost. The utilization cost model allocates the cost in proportion to the actual utilization of server CPU and memory resources of the virtual machines.

After the base rate is computed, vRealize Business for Cloud reads different attributes of the virtual machine, such as usage, additional services of virtual machine such as fault tolerance, and then prepares the costs by using each parameter. These costs are computed on a daily basis and are added to calculate the monthly costs.

The list of virtual machines in the Resource Cost page are categorized according to the server generation that the virtual machine belongs to. If a virtual machine is deleted, the cost of virtual machine is not considered for the current month. Generation refers to the release date of server in the market. For example, the virtual machines hosted on servers released in the year 2009 appear under a single group heading.

View Server and Virtual Machine Information

You can view the information related to total cost of virtual machines in your environment and the average cost of all the virtual machines. You can also view detailed information related to CPU, RAM, and storage cost related to a particular virtual machine.

NOTE The cost values are displayed as zero in the beginning of the month as there is no utilization on which cost can be computed.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud (for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Expenses, click **Private Cloud (vSphere)**.
- 4 Under Operational Analysis, click **Private Cloud (vSphere)**.
- 5 Select the **Compute** tab.

All the live virtual machines in your cloud environment are displayed according to the generation of server that they belong to.
- 6 Click the link where the number of live virtual machines is displayed.

vRealize Business for Cloud displays all the virtual machines belonging to a particular generation. The number of vCPUs, CPU cost, RAM cost, storage cost, direct virtual machine cost, and total cost of the virtual machine that you have selected is displayed.
- 7 To view the ESXi host details to which the virtual machine belongs to and to view the virtual machine resource cost history, click the ► icon.

The name or IP address, configuration, and the host cluster information of the virtual machine is displayed. The resource cost history of the virtual machine is displayed in a graphical manner where the X axis represents the month and the Y axis represents the cost in dollars for that month.
- 8 To view all the servers belonging to a particular generation, click the link where the number of servers is listed.

The ESXi host name and description is displayed.
- 9 Select the **Storage** tab, to see the list of all data stores and its details such as base rate, total capacity, used capacity, total cost and unallocated cost. You can also determine whether the data store is a part of EMC SRM managed storage array or not based on the value in the Source field (EMC SRM Managed Storage or Other).

Collecting Public Cloud Information

vRealize Business for Cloud integrates with vCloud Air, AWS and Microsoft Azure and provides detailed analysis of the bills. vRealize Business for Cloud provides the users an overview of how their investments are spread across vCloud Air, Amazon Web Services (AWS) and Microsoft Azure.

This chapter includes the following topics:

- [“vCloud Air Overview,”](#) on page 29
- [“Amazon Web Services Overview,”](#) on page 32
- [“View Cost of Microsoft Azure Accounts,”](#) on page 34

vCloud Air Overview

vCloud Air Overview is a dashboard that displays the expense summary such as account and service cost and distribution of cost across service IDs, cloud subscription types or service offerings. You can see the top expense changes in Service IDs, and virtual machine summary such as average virtual machine cost, virtual machine state and its count in each state.

vCloud Air Overview includes widgets to provide virtual machine expense information.

NOTE If the vCloud Air account was added from more than six months, the Total Expense trend displays the expense for the last six months only. Otherwise, the trend displays the total cost from the month the vCloud Air was added into vRealize Business for Cloud.

- **Total Expense** - The graph displays the current expense and projected expense of vCloud Air accounts for the current month. You can also see a graph that represents the projected vCloud Air monthly expense trend.
- **Features** - This graph displays the expense of storage and other service or resource expense such as CPU, memory, bandwidth, public IP. You can also see the allocated and unallocated cost for storage and service or resource.
- **Service IDs** - This graph displays the expense distribution across each service ID.
- **Service Offerings** - This graph displays the expense distribution for each vCloud Air service offering such as On Demand, Dedicated Cloud, Virtual Private Cloud, and Disaster Recovery.
- **Largest Changes in Service IDs** - This graph displays the top three expense changes in service IDs that are compared with cost of previous month.

- **VM at a Glance** - This graph displays the virtual machine count and average cost per month. It also displays the virtual machine count based on the power status such as on, off, suspended or others (when the status is unknown).

NOTE The projected expense for public cloud and vCloud Air is calculated by using the following equation:

Projected cost = $A + ((B/24) * n)$, where, A is the total cost till date, B is the cost of previous day and n is the remaining number of hours for the current month.

View and Edit vCloud Air Charges

You can view the total monthly cost grouped by month, service offering type and also account details such as service ID, service name and account name. By default, you can see the capacity (allocated and used) and unallocated cost for the current month. You can also modify or edit the view by hiding, sorting, freezing and grouping the columns. You can select a report type to display the values through charts and also define a filter to view the specific values.

Prerequisites

Verify that you have added a vCloud Air account in vRealize Business for Cloud. See *vRealize Business for Cloud Installation and Administration Guide*.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud (for the vRealize Business for Cloud standalone setup)

- 2 Click **Business Management**.
- 3 Under Expenses, click **Hybrid Cloud (vCloud Air)**.
- 4 Click **Charges**.

You see the service offering types, service count, total monthly cost. You can expand the view to see the service details such as the current month, account name, service ID and name, capacity and cost information.

- 5 To change the cost, click **Edit Cost** and perform the following steps.
 - a Click **Plans**.
You see a list of available plans, by default.
 - b Select one of the plans for which you want to edit the values, or duplicate a plan and select the new plan for modification.

NOTE You cannot delete the default available plans. However, you can delete the plans that you have duplicated.

- c Modify the values in the Unit Volume and Unit Price fields and click **Save**.
- d To consider the new values for cost calculations, click **SIDs**.
- e From the Plan drop-down list, select the new plan or the plan you have modified.
- f Click **Save**.

The new values are applied for cost calculations.

View Virtual Data Center Information

You can view the details of virtual data centers that are hosted on vCloud Air accounts. The information includes the name of the virtual data center, account name, service ID, datacenter configuration and cost details.

Prerequisites

Verify that you have added a vCloud Air account in vRealize Business for Cloud. See *vRealize Business for Cloud Installation and Administration Guide*.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Expenses, click **Hybrid Cloud (vCloud Air)**.
- 4 Click **Virtual Data Centers**.

You see the virtual data center configuration information and the cost information. The information includes data center name, account name, CPU, memory and storage utilized and configured capacity, unallocated, allocated and total monthly cost.

View vCloud Air Virtual Machine Information

You can view the details of virtual machines that are hosted on vCloud Air accounts. The report includes information such as virtual machine name, account name, service ID, name of the virtual data center to which the virtual machine belongs, the state of the virtual machine, configuration details and the cost details.

Prerequisites

Verify that you have added a vCloud Air account in vRealize Business for Cloud. See *vRealize Business for Cloud Installation and Administration Guide*.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Expenses, click **Hybrid Cloud (vCloud Air)**.
- 4 Click **Virtual Machines**.

You see the virtual machine details along with configuration and cost information.

Category	Field names
General information	<ul style="list-style-type: none"> ■ Virtual machine name ■ Account name ■ Service ID
Source information	<ul style="list-style-type: none"> ■ Virtual data center name to which the virtual machine belongs ■ Virtual application name ■ Organization name
Additional information	<ul style="list-style-type: none"> ■ The operating systems running on the virtual machine ■ The service offering type ■ Tag details ■ State of the virtual machine, whether powered on or off, suspended, or unknown state
Configuration information	Allocated CPU, memory size and storage size
Cost information	<ul style="list-style-type: none"> ■ Pricing policy name ■ The total price ■ The total monthly cost for the virtual machine

Amazon Web Services Overview

Amazon Web Services Overview lets you view estimated total monthly expense, expense per account, expense distribution per service and virtual machine summary.

Amazon Web Services Overview includes widgets to show the expense details.

NOTE The Total Expense trend displays the total expense for the last twelve months based on the cost in the bill, irrespective of when the account was added into vRealize Business for Cloud.

- **Total Expense** - The graph displays the total estimated monthly expense of all Amazon Web Services accounts configured in vRealize Business for Cloud. And also, you can see the monthly expense trend.
- **Services** - This graph displays the estimated expense distributed among different services across all accounts.
- **Accounts** - This graph displays the estimated expense percentage for each account.
- **EC2 Cost Breakdown** - This graph displays the expense distribution of Amazon Elastic Compute Cloud (EC2) service. EC2 service expense includes reserved model cost, demand model cost (PAYG), and other cost that is not perceived in the bill.
- **Largest Changes in Accounts** - This graph displays the top three expense changes compared to expense in the previous month.
- **VMs at a Glance** - This graph displays the total virtual machine count and average expense per month. It also displays the virtual machine count based on power status whether stopped, running or terminated, number of virtual machines in each state, and the cost of virtual machines in each state.

NOTE The projected expense for public cloud and vCloud Air is calculated by using the following equation:

Projected cost = $A + ((B/24) * n)$, where, A is the total cost till date, B is the cost of previous day and n is the remaining number of hours for the current month.

View AWS Charges

You can view the AWS total monthly cost grouped by service name and the resource count under each service. You can also see the service and account details and cost details. You can change or edit the view, by hiding, sorting, freezing and grouping the columns. You can select a report type to display the values through charts and also define a filter to view the specific values.

Prerequisites

Verify that you have added a AWS account in vRealize Business for Cloud. See *vRealize Business for Cloud Installation and Administration Guide*.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Expenses, click **Public Cloud (AWS)**.
- 4 Click **Charges**.

You see the service names, resource count, and total monthly cost. You can expand the view to see the service details such as the account, service ID, name, availability zone, tags, last seen information, resource existence and cost information.

NOTE Each AWS service will have an entry with the name *Service Cost*, by default. This is the fixed cost of the service which is not associated with any resources.

View Amazon Web Services Instances Information

You can view the details of virtual machines that are hosted on AWS account including service, account cost, price and availability information.

Prerequisites

Verify that you have added AWS account details in vRealize Business for Cloud.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Expenses, click **Public Cloud (AWS)**.

4 Click **Instances**.

You see all the details of virtual machines that are configured to the AWS accounts. The information includes account ID and name, instance type, the state of the virtual machine, availability zone of the virtual machine, tags, last seen as information, the pricing policy name and total price, the direct and other cost incurred on the virtual machine and also the existence of the virtual machine.

View Cost of Microsoft Azure Accounts

After you add a Windows Azure account, vRealize Business for Cloud displays the total cloud cost incurred on the account.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Infrastructure, click **Public Cloud (Azure)**.

The cloud cost information is categorized into several widgets.

NOTE The total cost trend displays the total cost for the last twelve months based on the cost in the bill, irrespective of when the account was added into vRealize Business for Cloud.

Widget	Description
Cloud Cost	Displays the total cost incurred on the added Azure accounts.
Average VM Cost	Displays the average cost incurred per virtual machine, which is calculated by equally dividing the total cloud cost among the number of virtual machines in all the added accounts.
Accounts	Displays the total cloud cost distribution among the added accounts.
Service Type	Displays the total cloud cost among all the services in the added accounts.

- 4 To view detailed information about the service type, click a service type from Cost details pane.

The usage details of the service type are displayed. They are categorized according to Usage Type, Start Time - End Time, Usage, and Total cost.

Consumption Analysis

Consumption analysis attempts to determine who consumes the resources, the purpose for which they are being consumed, and the costs associated with the resources.

vRealize Business for Cloud classifies the consumers based on the business units.

This chapter includes the following topics:

- [“About Pricing Policies,”](#) on page 35
- [“View Consumption Charges,”](#) on page 45
- [“View Business Unit List,”](#) on page 48
- [“View Business Unit Heat Map,”](#) on page 49
- [“View the Showback Statement,”](#) on page 50
- [“View Virtual Machine Information,”](#) on page 51
- [“View the Additional Services,”](#) on page 51
- [“Support for Costing of non-ESXi Physical Servers in vRealize Business for Cloud,”](#) on page 53
- [“Default vRealize Business for Cloud Users Defined in vRealize Automation,”](#) on page 53

About Pricing Policies

vRealize Business for Cloud can auto-generate pricing policies based on cost calculations. By default, these policies provide pricing recommendations for private, public, and hybrid cloud, which you can modify.

NOTE The Azure cost is not considered in Pricing policies.

Pricing policy provides integration with vRealize Automation and replaces the vRealize Automation cost profiles. vRealize Business for Cloud calculates price of virtual machines provisioned by vRealize Automation including the virtual machines that vRealize Business for Cloud does not monitor (for example, KVM, Openstack and HyperV). You can see the price on the vRealize Automation catalog UI based on vRealize Business for Cloud policies.

When vRealize Automation is configured with vRealize Business for Cloud, the pricing for all infrastructures in vRealize Automation must be configured in vRealize Business for Cloud.

vRealize Business for Cloud pricing policy handles Virtual Storage Area Network (Virtual SAN) cost separately from storage expenses, by excluding datastores that the Virtual SAN identifies and grouping them under Virtual SAN category.

The virtual machines in vRealize Business for Cloud are assessed or evaluated based on the its endpoint policy like vRealize Automation, vCenter Server or vCloud Director or grouped under the Catch All policy.

Each virtual machine flows through an hierarchy of policies and maps to a single policy.

NOTE When more than 1 NIC exists in the vRealize Business for Cloud virtual appliance, you must edit the `security.properties` file to update the `vcbm.host` parameter with the correct hostname (the common name of the certificate) and restart pricing-api service.

Pricing Integration with vRealize Automation

When vRealize Automation is configured with vRealize Business for Cloud, the pricing for all infrastructures in vRealize Automation must be configured in vRealize Business for Cloud.

vRealize Business for Cloud provides pricing information to vRealize Automation 6.x and 7.x versions differently.

If vRealize Business for Cloud integrated with vRealize Automation 6.x, vRealize Business for Cloud provides the pricing information for memory (GB) and virtual CPU at each host or cluster level. vRealize Business for Cloud computes the price based on the pricing policies configured in vRealize Business for Cloud and provides to vRealize Automation. The price computation is based on the average daily prices of all the virtual machines under a specific host or cluster. vRealize Automation uses these price values to fill the cost profiles. If the blueprint price is not updated automatically in the cost profiles, you can manually update the value for the blueprint in the **Cost** field on the Edit Blueprint page. For more information, see the vRealize Automation documentation. When integrated with the 6.x version, vRealize Business for Cloud supports only vSphere reservations for Compute Grouping Strategy and vRealize Business for Cloud does not support the Storage Path categorization for Storage Grouping Strategy.

vRealize Business for Cloud is tightly integrated with vRealize Automation 7.x. If you provision a new machine in vRealize Automation 7.x, vRealize Automation communicates with vRealize Business for Cloud to obtain the upfront price of the machines. vRealize Business for Cloud calculates these upfront price based on the pricing policies defined in vRealize Business for Cloud. Pricing policies are based on reservations, reservation policies and blueprints. In addition, vRealize Business for Cloud also allows to model any operational cost, one time cost and cost on custom properties.

Edit Pricing for Virtual Machines

You can modify or define price of the virtual machines existing the your private, public and hybrid cloud environments.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Consumption, click **Pricing and Charges**.
- 4 Select **Pricing**, click **Edit** and select **Edit Pricing**.
- 5 Select the infrastructure tab for which you want to modify.

Based on your selection, the policy options varies.

- 6 Expand the policy type to see the policy options.

Tab	Options
Private Cloud (vSphere)	<ul style="list-style-type: none"> ■ Custom Policies ■ vRealize Automation ■ Custom Policies ■ vCloud Director ■ Custom Policies ■ vCenter Server ■ Catch All Policies
Public Cloud (AWS)	<ul style="list-style-type: none"> ■ Custom Policies ■ vRealize Automation ■ Custom Policies ■ Amazon EC2 ■ Catch All Policies
Hybrid Cloud (vCloud Air)	<ul style="list-style-type: none"> ■ Custom Policies ■ vRealize Automation ■ Custom Policies ■ vCloud Air ■ Catch All Policies
Other Cloud Providers	<ul style="list-style-type: none"> ■ Custom Policies ■ vRealize Automation ■ Catch All Policies

NOTE

NOTE If you are using vRealize Business for Cloud in the standalone mode, you do not see the options related to **vRealize Automation**.

7 Modify the auto-generated policy.

Action	Procedure
Create or Modify a custom policy	<p>To price accurate values for the specific virtual machines, you can create the custom policies.</p> <ol style="list-style-type: none"> To add a custom policy, expand Custom Policies, click Add, enter the price values for compute or storage policies and click Save. For more information, see the <i>Add or Modify Compute and Storage</i> section in the guide. To modify a custom policy, expand Custom Policies of the categorization type that you want to modify, select the policy from the list to make required changes and click Save. For more information, see the <i>Add or Modify Compute and Storage</i> section in the guide. To edit the identification infrastructure, click Edit next to the Infrastructure option and make the necessary changes. For more information, see the <i>Edit Identification Infrastructure</i> section in the guide. Modify the rates inline on the respective fields. To add a calculation method and rate for additional services, click Edit next to the Additional Services option. For more information see, <i>Add or Edit Additional Service Cost</i> section in the guide. Select Active or Inactivate to activate or deactivate the custom policy or click the respective options next to the policy entries in the list. You can also suspend, clone or delete a policy from the list. Drag and drop the policies in the list to change the rank of the policies. <p>NOTE You cannot activate, delete or modify the auto-generated policies. NOTE Each source such as vRealize Automation, vCenter Server, vCloud Director, Amazon EC2, and vCloud Air has an individual custom policy section.</p>
Modify a cloud provider policy (Private, Public or Hybrid and others)	<ol style="list-style-type: none"> To modify the infrastructure grouping strategy, click Edit on the title bar and make the necessary changes. For more information, see the <i>Edit Group Configuration</i> section. To modify the rates, expand the list, select Compute or Storage tabs, modify the rates and click Save. For more information, see the <i>Add or Modify Compute and Storage</i> section in the guide. To add calculation method and rate for additional services, click Edit next to the Additional Services. For more information see, <i>Add or Edit Additional Service Cost</i> section in the guide.

Add or Modify Compute and Storage Policies

You can add or edit a pricing policy and use the policy to determine the cost of virtual machines.

Procedure

- Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud (for the vRealize Business for Cloud standalone setup)
- Click **Business Management**.
- Under Consumption, click **Pricing and Charges**.
- Select **Pricing**, click **Edit** and select **Edit Pricing**.
- Select **Private Cloud (vSphere)** tab.
- Expand a policy, custom policy or any private cloud provider.

- 7 Select the **Compute** or **Storage** tabs.
- 8 Perform the following on the Add Custom Policy page.
 - a Enter the policy name.
 - b To select an infrastructure, click **Edit** next to the Infrastructure option. For more information, see the *Edit Identification Infrastructure* section in the guide.
 - c Enter the compute rate and storage rate for the policy. You can use the storage policy to determine the storage price.
 - d To add a calculation method and rate for additional services, click **Edit** next to the Additional Services. For more information see, *Add or Edit Additional Service Cost* section in the guide.

NOTE You see the running cost based on which the pricing is decided. Running cost is the current average daily cost based on virtual machine utilization.

- e Click **Save**.
The pricing policy is created. By default, the policy is deactivated, which means inactive. The inactivate policies are not charged during pricing.
- f Select **Active** to activate the policy.
You can deactivate the policy by selecting **Inactivate**.

Edit a Group Configuration

You can define or edit the group strategy for each datasource.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Consumption, click **Pricing and Charges**.
- 4 Select **Pricing**, click **Edit** and select **Edit Pricing**.
- 5 Select the infrastructure tab for which you want to modify.
Based on your selection, the policy options varies.
- 6 Click **Edit** on the datasource bar.
The Group Configuration window opens.

- 7 Perform the following steps on the Group Configuration window.
 - a Enable or disable the group status.
 - b Select the grouping strategy from the drop-down list.

Based on the datasource you have selected, the options for the grouping strategy are populated.

Datasource	Grouping Strategy Options
vCenter Server	Compute Grouping Strategy <ul style="list-style-type: none"> ■ Cluster ■ Resource Pool Storage Grouping Strategy <ul style="list-style-type: none"> ■ Storage Profile ■ Storage Type ■ Datastore ■ Datastores Cluster ■ Storage Policy
vCloud Director	Compute Grouping Strategy <ul style="list-style-type: none"> ■ Organization
vRealize Automation NOTE You do not see this option in the vRealize Business for Cloud standalone mode.	Compute Grouping Strategy <ul style="list-style-type: none"> ■ vRealize Automation Reservation ■ vRealize Automation Reservation Policy ■ vRealize Automation Blueprint <p>NOTE When integrated with the vRealize Automation 6.x version, vRealize Business for Cloud supports only vSphere reservations.</p> Storage Grouping Strategy <ul style="list-style-type: none"> ■ vRA Storage Reservation Policy ■ Storage Path <p>NOTE When integrated with the vRealize Automation 6.x version, vRealize Business for Cloud does not support the Storage Path categorization.</p>
Amazon EC2	Compute Grouping Strategy <ul style="list-style-type: none"> ■ Amazon Account ■ Amazon Instance Type
AWS	Service Grouping Strategy <ul style="list-style-type: none"> ■ Amazon Service Name
vCloud Air	Compute Grouping Strategy <ul style="list-style-type: none"> ■ vCloud Air Account ■ vCloud Air Virtual Data Center

Edit Identification Infrastructure

You can select the infrastructure type for a pricing policy. Based on the infrastructure you select, the policy sets the price for the virtual machines with the current infrastructure.

Procedure

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

- 3 Select **Pricing**, click **Edit** and select **Edit Pricing**.
- 4 Select the infrastructure tab for which you want to modify.
Based on your selection, the policy options varies.
- 5 Select a policy category and select an existing policy or click **Add** to create a policy. Select an infrastructure.
vRealize Business for Cloud lists the Infrastructure types that are available for your selected infrastructure.
- 6 To select an infrastructure, click **Edit** next to the Infrastructure option and click the infrastructure source, infrastructure type and infrastructure selection.

Infrastructure	Options
Compute Pricing Policy	<p>For vCenter Server, the policy is based on:</p> <ul style="list-style-type: none"> ■ Cluster ■ Resource Pool <p>For vCloud Director, the policy is based on:</p> <ul style="list-style-type: none"> ■ Organization <p>For vRealize Automation, the policy is based on:</p> <ul style="list-style-type: none"> ■ Reservation ■ Reservation Policy ■ Blueprint ■ Any If you have multiple reservations, during provisioning of virtual machines in vRealize Automation, the upfront cost displays the range of values, instead of single value in vRealize Business for Cloud. <p>NOTE If you are using vRealize Business for Cloud in the standalone mode, you do not see the options related to vRealize Automation.</p> <p>For Amazon EC2, the policy is based on:</p> <ul style="list-style-type: none"> ■ Amazon Account ■ Amazon Instance Type <p>vCloud Air</p> <ul style="list-style-type: none"> ■ vCloud Air Account ■ vCloud Air Virtual Data Center <p>For AWS, the policy is based on Amazon Service Name</p>
Storage Pricing policy	<p>For vCenter Server, the policy is based on:</p> <ul style="list-style-type: none"> ■ Datastore ■ Profile ■ Storage Type ■ Datastores Cluster ■ Storage Policy <p>For vRealize Automation, the policy is based on:</p> <ul style="list-style-type: none"> ■ Storage Reservation Policy ■ Storage Path <p>NOTE Storage Pricing Policy is not available for vCloud Director.</p>
Infrastructure Selection	Select a name from the list.

- 7 Click **Save**.

Add Additional Services

You can add additional cost for customizing the pricing policies.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Select **Pricing**, click **Edit** and select **Edit Pricing**.
- 4 Select the infrastructure tab for which you want to modify.
Based on your selection, the policy options varies.
- 5 Select an existing policy or click **Add** to create a custom policy.
- 6 Click **Edit** next to the Additional Services option.
- 7 Click the add option in the Additional Services window.
- 8 Select an inventory item from the Identification list.
Based on your selection, the tag value field is filled.

NOTE By default, rate for Virtual Infrastructure Labor and Operating System Labor are added with the Fixed calculation method. These values are taken from the respective expense types in the Expenses section.

- 9 Select a tag value from the list.
- 10 Select one of the calculation method.

Option	Description
Fixed	Sets a defined rate for the particular virtual machine that is associated with this policy or tag, remains same everyday.
% Over Compute	Adds defined percentage value in addition to the compute cost.
% Over Storage	Adds defined percentage value in addition to the storage cost.
% Total Cost	Adds defined cost percentage value in addition to the compute cost and storage cost.
Fixed One Time Fee	Adds the defined rate to the virtual machine in the first month after first deployment. So this is the cost for the one time setup.

- 11 Enter the rate of percentage or the rate for updating the pricing policy for the virtual machines.
- 12 Click **Save** to save the additional service cost to the virtual machines.

Create a Cross-Infrastructure Policy

vRealize Business for Cloud supports cross-infrastructure policy by not limiting the additional services to a policy.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Select **Pricing**, click **Edit** and select **Edit Pricing**.
- 4 Select the infrastructure tab for which you want to modify.
Based on your selection, the policy options varies.
- 5 Click **Cross-Infrastructure Policy**.
- 6 Click the add option in the Additional Services window.
- 7 Select an inventory item from the Identification list.
Based on your selection, the tag value field is filled.

NOTE By default, rate for Virtual Infrastructure Labor and Operating System Labor are added with the Fixed calculation method. These values are taken from the respective expense types in the Expenses section.

- 8 Select a tag value from the list.
- 9 Select one of the calculation method.

Option	Description
Fixed	Sets a defined rate for the particular virtual machine that is associated with this policy or tag, remains same everyday.
% Over Compute	Adds defined percentage value in addition to the compute cost.
% Over Storage	Adds defined percentage value in addition to the storage cost.
% Total Cost	Adds defined cost percentage value in addition to the compute cost and storage cost.
Fixed One Time Fee	Adds the defined rate to the virtual machine in the first month after first deployment. So this is the cost for the one time setup.

- 10 Enter the rate of percentage or the rate for updating the pricing policy for the virtual machines.
- 11 Click **Save** to save the additional service cost to the virtual machines.

The cross-infrastructure value appears in the additional services section of each policy, which is greyed. You can edit or delete this value from the **Cross-Infrastructure Policy** link.

Editing Budget to Estimate Your Cost

You can set a budget for the consumers added to vRealize Business for Cloud. The consumer budgeting is disabled, by default.

Prerequisites

Verify that you have defined the consumer categorization in **Business Unit List**. See [“Edit the Business Hierarchy,”](#) on page 46.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud (for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Consumption, click **Pricing and Charges**.
- 4 Click **Business Unit List > Edit**.
- 5 Select **Edit Budget**.
- 6 Select the **Enable consumer budgeting** option.
- 7 Select the budget type.

You can update the budget for a particular month, for a quarter, or for a year.

If you update the budget for a year, the amount is distributed for each month equally. If you update the quarterly budget, the amount is distributed for three months in the selected quarter.

- 8 Enter the budget value in the table for the required consumer.
- 9 (Optional) Click **Export** to export a budget data in XLS format.
The data is exported on monthly basis.
- 10 (Optional) Click **Import** and select the XLS budget file to import the updated budget values.

NOTE The XLS file must be in monthly format only.

- 11 (Optional) Click **Get Template** to get a template file for updating the budget values, which you can import later.
- 12 Click **Save** to save the updated budget values.

View Consumption Charges

Consumption charges is a dashboard that shows the monthly charge trends of business units. You can compare charge with cost, and see the list of top consumers in terms of charge values and the identify the top three consumers.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Consumption, click **Pricing and Charges**.
- 4 Select **Charges**.

NOTE If you have data for more than six months, the trend considers the values of last twelve months, otherwise the trend displays last six months data or from the month the data is available.

Table 4-1. You see different widgets with the cost information.

Widget	Description
Monthly Charge	You can see the total charge value for all business units. The graph shows the monthly charge trend of all business units. Charge is computed based on the virtual machine configuration and the pricing policy defined for the virtual machines.
Cost/Charge by Consumer	You can see the charge and cost difference amount for the current month, which determines the recovery status (over recovery or under recovery). NOTE If the charge is more than the cost, then the value is termed as over recovery. And if the charge is less than the cost, then the value is termed as under recovery. The first graph in the widget represents the recovery trend for a year (based on the data points). The second graph in the widget represents the charge cost comparison over time in a graphical format.
Top Business Units	This graph displays the top three consumer business units having the highest charges and the remaining consumers are grouped under Other Consumers.
Recovery Margins	This graph displays the top consumers in terms of charge and its cost values.

NOTE The Azure cost is not considered in consumption charges.

Edit the Business Hierarchy

You can view details of how the cost of your virtual infrastructure is spread across different consumers. This helps you in budgeting and comparison across different consumer groups within the enterprise. You can define or map the virtual machines based on business units in vRealize Business for Cloud. You can categorize your consumer lists according to your vCenter Server, vRealize Automation, and vCloud Director hierarchies.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud (for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Consumption, click **Pricing and Charges**.
- 4 Select **Business Unit List**.
- 5 From the **Edit** menu, click **Edit Business Hierarchy**.
- 6 Click **Edit** on the datasource bar to define or edit the group strategy for each hierarchy.
The Group Configuration window opens.

- 7 Perform the following to configure each group strategy.
 - a Enable or disable the group status.
 - b Select a group strategy for the business units or business services.

Datasource	Grouping Strategy
vRealize Automation	<ul style="list-style-type: none"> ■ For the business units, select Business Group. Grouping or categorization is done according to the business groups present in vRealize Automation. Each tenant is considered as a line of business and each business group is listed as a business unit. ■ For the business services, select Blueprint.
vCloud Director	<ul style="list-style-type: none"> ■ For the business units, select Organization or Virtual Data Center. ■ For the business services, select vApp.
vCenter Server	<p>For business units and business services, define the strategy by setting rules or uploading a CSV file.</p> <ul style="list-style-type: none"> ■ If you are setting rules, define the business units according to one of the following options: <ul style="list-style-type: none"> ■ Categorize by folder. For example, folders whose name or labels begin with BU_. ■ Select all folders at vCenter Server hierarchy level NOTE The selected folder level corresponds to folders in the VMs and Templates view of vCenter Server. When you select this option, vRealize Business for Cloud identifies virtual machines that are within the folders and ignores the virtual machines that are at same level as folders. To see all virtual machines regardless of folder structure mentioned in the VMs and Templates view of vCenter Server, you must use the categorize by tags or by virtual machine name options. ■ Categorize by tags - select the VMs with tag family ■ Categorize by virtual machine name NOTE Enter the group pattern within parenthesis. For example, to list the virtual machine names having VRB in the beginning or at the end of the name, enter ((VRB)(.*)) or ((.*)(VRB)) respectively. To list all virtual machines with VRB anywhere in the name, enter ((.*)(VRB)(.*)). ■ If you are uploading a CSV file, click Upload and select a valid CSV file. The CSV file that you are uploading must contain the information under the headings vmMoid, vcServerUUID, and businessUnitName.
Amazon Web Services	Select Account Name as the grouping strategy.
vCloud Air	Select Service ID as the grouping strategy.

- c Click **Save**.
- 8 To change the logical name of a business unit, perform the following steps.
 - a Expand a datasource section or group.
 - b Click on the logical name that you want change.
 - c Rename the business unit.
 - d Click **Save**.

vRealize Business for Cloud refreshes its data if the business unit definition has changed.

Assign Business Units to the Users

You can assign one or more business units to the user by using the **Role Assignment** option.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Consumption, click **Pricing and Charges**.
- 4 Select **Business Unit List**.
- 5 From the **Edit** menu, click **Edit Business Hierarchy**.
- 6 Under the **Business Units** tab, click **Role Assignment**.
- 7 In the Users section, select a user to whom you want to assign a business unit.
- 8 In the Business Units section, click on the business unit names to assign it to the selected user.
You can perform the same action to delete a business unit that is assigned to the user.
- 9 Click **Save**.

View Business Unit List

You can see the information about business units from different data sources. The information includes virtual machine count for each business unit, cost distribution for the resources (CPU, RAM, storage, and operating system). You can hover the mouse on the bar chart to see each resource cost value. You can also see the total cost, total budget and charge values for all business units. The business units can be from private or public cloud or from both.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Consumption, click **Pricing and Charges**.
- 4 Select **Business Unit List**.

You see the list of business units (logical names) and its cost information. By default, logical names is same as the names of the business units.

NOTE The information includes both private cloud and public cloud details.

- 5 Click on a business unit name to see more details such as virtual machine and its storage details, additional services and cost, charge and budget information.

- 6 Click the drop-down arrow next to the column name to edit the business unit list view.
 - Select **Sort Ascending** or **Sort Descending** to sort the columns entries.
 - Click **Columns** to select the columns that you want to display in the business unit list view.

View Business Unit Details

The business unit details page provides you the specific information related to a particular business unit. The information includes cost, budget and charge values of an individual business unit, the charge distribution for CPU, RAM, storage and operating system and the cost versus charge trend for a specific business unit. It also provides information about the virtual machines and additional services of a business unit.

NOTE The cost values are displayed as zero in the beginning of the month as there is no utilization on which cost can be computed.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Consumption, click **Pricing and Charges**.
- 4 Select **Business Unit List**, and click on a business unit name.

All the cost, charge and budget information related to the selected business unit appears. You can see the charge distribution and cost versus charge trend for the business unit.
- 5 Click the **Virtual Machines** tab to see the list of virtual machines and its details present in the business unit.
- 6 Click the **Additional Services** tab to see the charge values that are not attributed to any virtual machine.

NOTE The additional services includes information related to the AWS only.

View Business Unit Heat Map

The business unit heat map enables you to easily identify whether the business units are over or under budget or over or under recovery. You can also see a number of blocks that represents the business unit and a tooltip on each block displays the values.

Prerequisites

Verify that you have set the budget values.

Procedure

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

- 3 Under Consumption, click **Pricing and Charges**.
- 4 Select **Business Unit Map**.

Several widgets appear with business unit information.

Widget	Description
Over Budget	Displays the total number of business units that have exceeded the set budget value. (charge is greater than budget)
Under Budget	Displays the total number of business units that are below the budget value.
Over Recovery	Displays the total number of business units in which the charge value has exceeded the cost value.
Under Recovery	Displays the total number of business units in which the charge value is below the cost value.

- 5 Select a widget to see different blocks that represents different business units.

The size of each business unit block represents the absolute amount of recovery and the color shade or the thickness represents the percentage value of the recovery. You can hover the mouse on each block to see the values on the tooltip.

View the Showback Statement

The showback Statement provides information about the business units and services, the projected monthly charge and budget values of your environment for the current month. The charge values of virtual machines and services are based on the pricing policies.

The showback statement is available for use to the administrators and also to the tenant controllers.

Procedure

- 1 Log in to the vRealize Business for Cloud as a tenant administrator or a tenant controller.
- 2 Click **Business Management**.
- 3 Under Consumption, click **Showback**.
- 4 Click **Showback Statement**.

The showback statement includes several information.

NOTE If you have data for more than six months, the trend considers the values of last twelve months, otherwise the trend displays last six months data or from the month the data is available.

Widget	Description
Business Units	Displays all business units having the charge values. You can click on each business unit to see the charge values related to that business unit.
Monthly Budget	Displays the total budget for the current month, If the budget is not enabled, you see N/A.
Month to Date Charge	Displays the total charge value for the current month.
Projected Monthly Charge	Displays the projected charge for the current month.
Charge Projection	Displays charge to date and the charge trend for the current month. Also displays the budget value trend for comparison.
Charge vs Budget	Displays the comparison of charge and budget for the last six months or last twelve months (if data is available) and values for the current month.
Top Business Services	Displays the top six business services in terms of charge, including Other Business Services.

Widget	Description
Over / Under Budget	Displays the top business units that are compared with the budget values.
Private Cloud Reclamation	Displays the charge on oversized, powered off and idle virtual machines. This information helps to identify the amount of resources that can be reclaimed and provisioned to other objects in your environment or amount of potential savings that can be done in each month. You can click on each value to see information about which virtual machines are related to the specific charge and know the recommendations to make the best use of the resources.

You also see the **User Selection** and **Business Unit** drop-down option. By default, you see the showback statement for all the users. However, when you select a value in these drop-down options, the page gets refreshed with the specific data for the selected value. If your infrastructure data do not contain any business unit information, you do not see the **User Selection** option. The **Business Unit** drop-down list gets populated based on the value you select in the **User Selection** list.

NOTE The Business Unit drop-down is not available for tenant controllers.

View Virtual Machine Information

vRealize Business for Cloud categorizes and displays the list of virtual machines names and its details.

Prerequisites

Define and categorize vCenter Server, vCloud Director, or vRealize Automation hierarchy by which you want to view the information.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Consumption, click **Showback**.
- 4 Under Data Sets, click **Virtual Machines**.

By default, you see the values for the current month. If you want to see the data for the other months, you must clear the filter.

vRealize Business for Cloud displays the virtual machine names and its total price for the current month, including the business unit and business service associated with the virtual machines, count of virtual CPUs, configured RAM and storage. You can view the price information related to CPU, RAM, storage, and additional price. Using the Deleted field, you can identify whether the virtual machine exists or deleted.

View the Additional Services

You can see the information about all additional services that you have added to the pricing policies.

Prerequisites

Add additional services to the pricing policies. See [“Add Additional Services,”](#) on page 42.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud (for the vRealize Business for Cloud standalone setup)

- 2 Click **Business Management**.
- 3 Under Consumption, click **Showback**.

- 4 Under Data Sets, click **Additional Services**.

By default, you see the information for the current month. To see the data for the other months, you must clear the filter.

You see the list of additional service names that you have added to the virtual machines with the total monthly price for each service. You can also see the month, the business unit name, account ID to which the service belongs.

- 5 Click **Edit** and perform the following actions to edit.

Option	Description
Columns	<ul style="list-style-type: none"> ■ Under the View column, select the reports field names to display or hide in the view. ■ Lock or unlock the field to freeze the positions in the view. ■ Sort the field values in ascending or descending order.
Grouping and Charts	<ul style="list-style-type: none"> ■ Select a report field name from Group by column drop-down list to group the report based on the selected column name. ■ Select a report field name from the Function Column drop-down list and an operation such as Max, Min, Average or Sum from the Functions drop-down list to display the group summary. ■ Select the Report Chart option and click on a report type to create a chart based on the values.
Filters	<ul style="list-style-type: none"> ■ Enter a search string or value in the Cross Column Filter search box and click OK. You can also select the values from the auto-fill list. ■ Click Add to create a filter and in the Add Filter window, select a field name and provide the filter criteria based on which you want to filter the values. Click Add. ■ To modify a filter, select the filter from the table and click the edit option. Enter the new filter criteria and click Set. ■ To delete a filter, select the filter from the table and click the delete option.

- 6 Click **OK** to save the changes.
- 7 Click **Clear Filters** to clear the filter criteria you have defined.
- 8 Click **Save** to save the report with the defined filters and view them with updated values later.
- 9 To filter for specific information, enter the string in the search field or enter few characters of the string and select the values from the auto-fill list.

vRealize Business for Cloud filters and displays the result based on the search string.

- 10 Click **Export** to save the values in a Microsoft Excel file.

An .xls file is downloaded with the values that appear on the screen.

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

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

If physical servers exist in the vRealize Automation 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.

The current version of vRealize Business for Cloud does not collect the following properties of physical servers managed in vRealize Automation.

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

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 “Edit the Business Hierarchy,” on page 46.

Comparing Clouds models in vRealize Business for Cloud

5

The Cloud Comparison option lets you add virtual machine groups or import virtual machine groups from your private cloud to vRealize Business for Cloud for cost comparison purpose.

vRealize Business for Cloud compares the cost of the virtual machine groups in the private cloud with that of similar groups in the public cloud models. The costs are updated in all the service models if you change the virtual machine configuration. vRealize Business for Cloud calculates the virtual machine cost for the private cloud on the basis of CPU cores, CPU speed, RAM, price plan, up time, operating system for a single virtual machine, and Network Attached Storage (NAS) and Storage Area Networks (SAN) for group storage. vRealize Business for Cloud searches the instance type to get the configuration requirements with the smallest CPU and memory, and have available prices for the requested operating system, region, and policy.

This chapter includes the following topics:

- [“Comparison of Cloud Costs,”](#) on page 55
- [“View Cloud Comparison Information,”](#) on page 56
- [“Comparing Private Cloud Providers with Public Cloud Providers,”](#) on page 56
- [“Compare Cost of Cloud by Adding New Virtual Machines to Your Cloud,”](#) on page 57
- [“Compare Cost of Cloud by Using Virtual Machines from Your Private Cloud,”](#) on page 59
- [“Compare Data centers,”](#) on page 59
- [“Manage Data Centers,”](#) on page 60
- [“View or Edit Virtual Machine Group,”](#) on page 60
- [“Delete Virtual Machine Group,”](#) on page 61
- [“Reset the Cloud Comparison Information,”](#) on page 61
- [“View the Data Center Optimization Information,”](#) on page 62

Comparison of Cloud Costs

You can view the cost of virtual machines in your private cloud and then compare it with the pricing models for Amazon Web Services, Microsoft Azure, and vCloud Hybrid Service public cloud.

vRealize Business for Cloud estimates the costs of running a completely new instance or an existing instance of a virtual machine in the private cloud by using the expenses of your private cloud, and then provides you with a comparison of the cost of the same configuration in Amazon Web Services, Microsoft Azure, and vCloud Hybrid Service cloud models.

View Cloud Comparison Information

vRealize Business for Cloud lets you compare the cost of running a virtual machine group in your private cloud environment with that of running the group in other public clouds that you have added to vRealize Business for Cloud.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Planning, click **Cloud Comparison**.
- 4 (Optional) Select the data center for which you want to view cloud comparison information.

The cost comparison information for your private cloud and other public clouds is displayed according to the data center that you have selected.

By default, the information related to the **Compare new VMs across clouds** is displayed. vRealize Business for Cloud displays a sample group with the configuration of 2 cores, 1.6GHz CPU, and 3.5GB RAM. vRealize Business for Cloud displays a suitable cluster and storage with the minimum price for the configuration.

Comparing Private Cloud Providers with Public Cloud Providers

You can compare cost of private cloud providers with public cloud providers in vRealize Business for Cloud to plan the cost of virtual machines.

Prerequisites

If you want to compare with your own public cloud, add a public cloud. For more information, see *vRealize Business Installation and Administration Guide*.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Click **Cloud Comparison**.
- 4 Select **Compare new VMs across Clouds** or **Compare existing VMs across Clouds**.
- 5 Click **Manage Cloud Providers**.
- 6 Drag and drop the cloud providers that you want to compare with the private cloud.

If you have added your own public cloud, scroll down to drag and drop.
- 7 Click **Done**.

The account that you have selected is added to vRealize Business for Cloud **Cloud Comparison** tab for both the **Compare new VMs to Cloud** and **Compare existing VMs to Cloud** links, and accordingly, the cost calculation for the selected virtual machines is updated.

Compare Cost of Cloud by Adding New Virtual Machines to Your Cloud

You can compare the cloud cost by adding new virtual machines to your private cloud or by using the existing virtual machines as a template. vRealize Business for Cloud calculates and displays the cost of running virtual machines with similar configurations in your private cloud, Amazon Web Services, Microsoft Azure, vCloud Hybrid Service, or any other public cloud provider that is added and imported in vRealize Business for Cloud.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Planning, click **Cloud Comparison**.
- 4 Select **Compare new VMs across clouds**.
- 5 (Optional) Select the data center that contains the virtual machines for which you want to compare and analyze costs.
- 6 Click the **Add VM Group** link to add new virtual machines group.
- 7 Modify the virtual machine settings according to your requirements and click **Save**.

The new virtual machine group is added. The corresponding cost details are updated for your private cloud and for other public cloud providers that you have imported in vRealize Business for Cloud.

NOTE The location you select applies to all group configurations. For the existing group configurations from the earlier vRealize Business for Cloud, the top used location is assigned to all configurations. You cannot assign different location for each group configuration.

- 8 Click the **Use current VMs as template** link to use the virtual machines from your private cloud as templates.
 - Browse and select the virtual machine that you want to import.
 - Search and select the virtual machine that you want to import. You can search the virtual machines according to name, tag, or folder.

The selected virtual machine is added. The corresponding cost details are updated for your private cloud and other public cloud providers. If you select more than one virtual machine, vRealize Business for Cloud groups the virtual machines together according to their CPU, RAM, and operating system configurations, and shows the number of virtual machines in this group. vRealize Business for Cloud names the group according to the search phrase or the category selected in the browse option.

Select a Cluster and Data store

For all the configurations that you plan to run in your private cloud, multiple clusters or unclustered ESXi hosts and data stores might have the required capabilities. You can change the cluster or data stores on which the configuration runs.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud (for the vRealize Business for Cloud standalone setup)

- 2 Click **Business Management**.
- 3 Under Planning, click **Cloud Comparison**.
- 4 Change the cluster configuration.

You can change the cluster configuration only for the virtual machines that are either added or imported by using **Compare new VMs across clouds** link.

- a To change the cluster for the virtual machine group, click the link where the cluster name or host name is displayed.
 - By default, vRealize Business for Cloud selects the cluster with the least price.
 - b Click the **Select Cluster** option.
 - c Select the cluster that you want to assign to the virtual machine group.
 - d Click **Save**.
- 5 Change the data store configuration.
 - a To change the data store configuration for the virtual machine group, click the link where the data store name is displayed.
 - By default, vRealize Business for Cloud selects the data store with the least price.
 - b Select the **Select datastore** option.
 - c Select the data store that you want to assign to the virtual machine group.
 - d Click **Save**.

vRealize Business for Cloud assigns the selected cluster or data store to the virtual machine group. After changing the cluster or data store, if the group configuration, cluster capabilities, or data store capabilities change, the selected cluster or data store is no longer suitable for this configuration, and the price is returned to be the default least price.

Compare Cost of Cloud by Using Virtual Machines from Your Private Cloud

You can compare the cloud cost by importing virtual machines from your private cloud. vRealize Business for Cloud calculates and displays the cost of running virtual machines with similar configurations in your private cloud, Amazon Web Services, and Microsoft Azure, vCloud Hybrid Service, or any other public cloud provider that you had already added and imported in vRealize Business for Cloud.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Planning, click **Cloud Comparison**.
- 4 Select **Compare existing VMs across clouds**.
- 5 Click the **Import VMs** link to browse or search the virtual machine that you want to import. You can search for virtual machines based on the name, tag, or folder.

Each virtual machines gets its own group after import. The selected virtual machine is added. The corresponding cost details are updated for your private cloud and other public cloud providers.

Compare Data centers

You can compare the cost of data centers that you have configured and plan on which data center you can deploy your virtual machine. You can create the virtual machine groups and compare cost across data centers.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Planning, click **Cloud Comparison**.
- 4 Select **Compare data centers**.

vRealize Business for Cloud calculates and displays the cost of running virtual machines with similar configuration in each data centers.

- 5 Click the **Import VMs** link to browse or search the virtual machine that you want to import. You can search for virtual machines based on the name, tag, or folder.

Each virtual machines gets its own group after import. The selected virtual machine is added. The corresponding cost details are updated in the data center.

Manage Data Centers

You can compare cost of each data centers added in vRealize Business for Cloud to plan the cost of virtual machines.

Prerequisites

Add the data centers in vRealize Business for Cloud that you want to compare.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 4 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 5 Click **Business Management**.
- 6 Under Planning, click **Cloud Comparison**.
- 7 Select **Compare data centers**.
- 8 Click **Manage data centers**.
- 9 Drag and drop the data centers that you want to compare in vRealize Business for Cloud.
- 10 Click **Done**.

The data center that you have selected is added to vRealize Business for Cloud in the **Compare data centers** option, and accordingly, the cost calculation for the selected virtual machines is updated.

View or Edit Virtual Machine Group

You can view or edit the virtual machine settings for the group that you have added or imported from your private cloud environment. The corresponding cost details are updated in the public clouds that you have added to vRealize Business for Cloud.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)

- 2 Click **Business Management**.
- 3 Under Planning, click **Cloud Comparison**.
- 4 Click one of the compare options from where you want to view or edit virtual machines.
- 5 Click the Edit Group icon ► beside the group name for which you want to view or edit the settings. The cost of virtual machine in your private cloud and other public clouds is displayed.

You can change general settings such as location, VMs, CPU cores, CPU speed, RAM and group storage information directly on the screen. For additional settings, click **More...** to open the **Edit VM Group** dialog box.

- 6 Edit the virtual machine settings as required and click **Save**.

The cost related to the virtual machine is updated in your private cloud and other public clouds.

Delete Virtual Machine Group

You can delete the virtual machine group that you have added or imported from your private cloud environment.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Planning, click **Cloud Comparison**.
- 4 Select an compare option from where you want to delete the virtual machine group.
- 5 Click the **✗Delete Group** icon.

The virtual machine group along with its cost details is deleted from your environment.

Reset the Cloud Comparison Information

You can restore the default configurations by using the reset feature. After a reset operation is completed, vRealize Business for Cloud displays the default configuration.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Planning, click **Cloud Comparison**.
- 4 Click **Reset**.

In the **Compare new VMs across clouds** link, the default configuration of the sample virtual machine group of 2 cores, 1.6GHz CPU, 3.5GB RAM is restored. In the **Compare existing VMs across clouds** link, vRealize Business for Cloud deletes all the added virtual machine groups.

View the Data Center Optimization Information

vRealize Business for Cloud provides visibility into each of the data centers to visualize the cost of used and remaining capacity of the data centers. The cost is calculated based on the percentage values collected from vRealize Operations Manager. The cost is classified into compute cost and storage cost.

Prerequisites

Ensure that the vCenter Server is integrated with vRealize Operations Manager.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under the **Planning** section, click **Data Center Optimization**.

You see the total compute cost, storage cost and the labor cost for all data centers and the data centers total monthly cost. You can see the total costs per data center and compute, storage and labor costs of each data center.

vRealize Business for Cloud Reports

vRealize Business for Cloud provides several reports to view information related to your private and public cloud environment.

This chapter includes the following topics:

- [“View vCenter Server Reports,”](#) on page 63
- [“View a vCloud Director Report,”](#) on page 74
- [“View the vRealize Automation Virtual Machine Report,”](#) on page 74
- [“View Storage Reports,”](#) on page 75
- [“View Public Cloud Reports,”](#) on page 76
- [“View Historical Reports,”](#) on page 79
- [“Edit a Report,”](#) on page 80
- [“View a Custom Report,”](#) on page 81
- [“Use Public API for Generating vRealize Business for Cloud Reports,”](#) on page 81

View vCenter Server Reports

You can view all vCenter Server reports, which are categorized as Servers, Datastores, Virtual SAN datastores, VMs, and Clusters.

View Report for vCenter Server

You view the information related to vCenter Server categorized according to server hardware, OS licensing, maintenance, physical server labor, network, facilities, and additional costs.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud (for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Reports, click **Data Sets**.

4 Click **vCenter Server** and select **Servers**.

vRealize Business for Cloud displays server details such as server names and total monthly cost, infrastructure type, vCenter Server alias and the data center name for the server. Using the Deleted field, you can identify whether a server exists or deleted.

NOTE The Infrastructure Type field helps you to identify the physical servers and ESXi servers.

Option	Description
Sever Hardware costs	Along with server details, vRealize Business for Cloud displays the server hardware details according to processor type, manufacturer, model name, speed of CPU in gigahertz, RAM in gigabyte, number of CPUs, CPU cores, cluster description, and launch date. vRealize Business for Cloud calculates and displays the total monthly cost of server hardware. vRealize Business for Cloud also displays the total loaded costs of servers that are running in your environment.
Licensing costs	Along with server details, vRealize Business for Cloud displays the operating system licensing details according to operating systems that are running on the virtual machines for a specific server and Windows desktop operating system. Operating system details for a specific server include sockets, cost for each socket, operating systems, Windows server cost, Red Hat cost, SUSE cost, and other operating system cost for the virtual machines that are running on this server. Windows desktop operating system details include desktop cost and total cost of Windows desktop. vRealize Business for Cloud calculates and displays the total license cost.
Maintenance costs	Along with server details, vRealize Business for Cloud displays the maintenance costs details according to hardware and software maintenance cost. vRealize Business for Cloud calculates and displays the total maintenance cost.
Physical server labor Costs	Along with server details, vRealize Business for Cloud displays the physical server labor costs details according to physical server labor hours and hourly cost. vRealize Business for Cloud calculates and displays the total labor cost.
Network costs	Along with server details, vRealize Business for Cloud displays the network cost details according to ports, cost for each port, and total network cost for 1 gigabit and 10 gigabit networks. vRealize Business for Cloud calculates and displays total network cost by adding the total networking cost for 1 gigabit and 10 gigabit networks.
Facilities costs	Along with server details, vRealize Business for Cloud displays details of rent, power, and cooling. vRealize Business for Cloud calculates and displays the total facilities cost.
Additional Costs	Along with server details, vRealize Business for Cloud displays the details of additional costs.

vCenter Server Report Column Details

This section describes each column in the vCenter Server report.

Table 6-1. vCenter Server Report Fields

Field Name	Description	Origin	Derived From
vCenter Server Alias	The name of the vCenter Server connection record	vRealize Business for Cloud	The name that you provided to the vCenter Server on the Administration > Business Management > Manage Connections page.
Server Name	Name of the ESXi host	vCenter Server	Not applicable
Data Center Name	The name of the virtual datacenter to which the vCenter Server resides in	vCenter Server	The name of the virtual datacenter
Processor Type	Type of the CPU in the ESXi server	vCenter Server	Not applicable

Table 6-1. vCenter Server Report Fields (Continued)

Field Name	Description	Origin	Derived From
Manufacturer	Manufacturer name of the ESXi server such as, DELL, HP	vCenter Server	Not applicable
Model Name	ESXi server model name	vCenter Server	Not applicable
CPU (GHz)	Total CPU capacity available on the ESXi server	vCenter Server	Not applicable
RAM (GB)	Total RAM capacity available on the ESXi	vCenter Server	Not applicable
CPUs	Number of processor sockets in the ESXi server	vCenter Server	Not applicable
CPU Cores	Number of cores per CPU Socket on the server	vCenter Server	Not applicable
Cluster Name	Name of the vCenter Server cluster. If the server is not clustered, then this displays the hardware server configuration.	vCenter Server and vRealize Business for Cloud	Actual configuration of the ESXi server.
Launch Date	Date of launch of this ESXi server model	Reference database	Not applicable
Total Hardware Cost	Depreciated hardware cost of the server for the current month	vRealize Business for Cloud	Based on purchase cost of the hardware and the date of purchase. For more information, see the Calculating Depreciation of Server Hardware Cost section in the <i>vRealize Business for Cloud Installation and Administration Guide</i> .
Total Monthly Cost	Fully loaded cost contributed by all cost drivers to run these ESXi servers.	vRealize Business for Cloud	Computed by attributing the cost drivers to the ESXi server.
Infrastructure Type	Identifies whether the server is an ESXi server or the physical server added from vRealize Automation	vRealize Automation	Not applicable
Deleted	Identifies whether the server exists or not	vRealize Business for Cloud	Not applicable

View Report for Data stores

You can view a report about all the data stores that are running in your environment. vRealize Business for Cloud displays the data store details along with their total monthly cost.

Procedure

- Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- Click **Business Management**.
- Under Reports, click **Data Sets**.

4 Click **vCenter Server** and select **Datastores**.

vRealize Business for Cloud displays the data store details such as the data store name, data store path, storage type, storage profile, monthly cost per GB, reference cost per GB, total capacity in GB, and the total monthly cost. vRealize Business for Cloud also displays vCenter Server alias, data center name to which the data store belongs. Using the Deleted field, you can identify whether the datastore exists or deleted.

vCenter Server Datastore Report Column Details

This section describes each column in the vCenter Server datastore report.

Table 6-2. vCenter Server Datastore Report Fields

Field Name	Description	Origin	Derived From
Datastore Name	Name of the datastore	vCenter Server	Not applicable
vCenter Server Alias	The name of the vCenter Server connection record	vRealize Business for Cloud	The name that you provided to the vCenter Server on the Administration > Business Management > Manage Connections page.
Data Center Name	The name of the virtual datacenter that a virtual machine resides in	vCenter Server	The name of the virtual datacenter in vCenter Server
Datastore Path	Path to the datastore as in vCenter Server	vCenter Server	Not applicable
Storage Type	Type of the physical storage on which the datastore resides	vCenter Server	Not applicable
Storage Profile	The vCenter Server profile to which the datastore belongs	vCenter Server	Not applicable
Monthly Cost Per GB	Unit rate of storage on the datastore	vRealize Business for Cloud	Not applicable
Reference Cost Per GB	Reference cost per storage on the datastore	Reference database	Not applicable
Total GB	Total capacity of the datastore	vCenter Server	Not applicable
Total Monthly Cost	Total cost of the datastore per month	vRealize Business for Cloud	The calculation is Monthly Cost Per GB * Total GB
vCenter Server UUID	A unique ID of the vCenter Server	vCenter Server	vRealize Business for Cloud uniquely identifies the vCenter Server in the customer environment.

View Virtual SAN Datastores Report

You can view details of Virtual SAN data stores that are running in your environment.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Reports, click **Data Sets**.
- 4 Click **vCenter Server** and select **VSAN Datastores**.

vRealize Business for Cloud displays the Virtual SAN data store details such as the data store name, vCenter Server alias, data center name to which the data store belongs and the cluster name. Using the Deleted field, you can identify whether a Virtual SAN exists or deleted. The report also provides additional information data store path, SSD and HDD disk count, monthly cost per GB, cache monthly cost per GB, cache capacity, total capacity in GB, and the total monthly cost.

View Report for Virtual Machines

You can view the details of all the virtual machines that are running in your environment such as the number of CPUs, CPU and RAM configured and reserved size, the vCenter Server information, size and cost of storage, virtual machine backup cost. Using the Deleted field, you can identify whether the virtual machine exists or deleted. The Infrastructure Type field helps you to identify the physical servers and vCenter Server virtual machines.

vRealize Business for Cloud displays the virtual machine details in a grid or in a vCenter Server folder.

NOTE The cost values are displayed as zero in the beginning of the month as there is no utilization on which cost can be computed.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Reports, click **Data Sets**.
- 4 Click **vCenter Server** and select **Virtual Machines**.
- 5 Select the way that you want to view the virtual machines report.

Option	Description
Shows VMs in a grid display	Displays the virtual machines report in a tabular form
Show VMs in vCenter Server folder structure	Displays the virtual machines according to folder structure of vCenter Server where all the ESXi hosts are listed.

Along with total monthly cost, vRealize Business for Cloud displays the details of the virtual machines, vCenter Server alias, and the name of the data center to which the virtual machine belongs. vRealize Business for Cloud considers the cost of each vSphere Data Protection (VDP) virtual machine that is used for backup service and the cost is uniformly distributed among other virtual machines that reside in the same vCenter Server.

NOTE The  icon helps you to differentiate non-ESXi physical servers from ESXi servers.

vCenter Server Virtual Machine Report Column Details

vRealize Business for Cloud provides rich reporting on the cost and usage of the virtual infrastructure. This section describes each column in the virtual machine report.

Table 6-3. vCenter Server Virtual Machine Report fields

Field Name	Description	Origin	Derived From
VM Name	The name given to the virtual machine in vCenter Server	vCenter Server	The name given to the virtual machine in the vCenter Server
vCenter Server Name	The name of the vCenter Server connection record	The Manage Connections Administration Page on vRealize Business for Cloud	The name given to the vCenter Server connection when configuring connections in vRealize Business
Data Center Name	The name of the virtual datacenter that a virtual machine resides in	vCenter Server	The name of the virtual datacenter in vCenter Server
Number of Configured vCPUs	The number of vCPUs configured for the virtual machine	vCenter Server	The number of vCPUs configured for the virtual machine in vCenter Server
Number of Configured GHz	The amount of CPU GHz configured for the virtual machine	vCenter Server	The amount of CPU GHz configured for the virtual machine in vCenter Server
Size of configured RAM GB	The amount of RAM in GB configured for the virtual machine	vCenter Server	The amount of RAM in GB configured for the virtual machine in vCenter Server
Number of reserved GHz	The CPU reservation in GHz for the virtual machine	vCenter Server	The CPU reservation in GHz configured for the virtual machine in vCenter Server
Size of reserved RAM	The RAM reservation in GB for the virtual machine	vCenter Server	The RAM reservation in GB configured for the virtual machine in vCenter Server
Server Name	The name of the physical host that the virtual machine is provisioned on	vCenter Server	The name of the physical host in vCenter Server that the virtual machine is provisioned on
Datastore Name	The name of the datastore that the virtual machine is using	vCenter Server	The name of the datastore in vCenter Server that the virtual machine is using
OS Type	The type of OS running on the virtual machine	vRealize Business	Analysis of the OS Name
OS Name	The name of the OS running on the virtual machine	vCenter Server	The name of the OS running on the virtual machine, collected by vCenter Server
Is Fault Tolerant	Identifies the virtual machines using vSphere fault tolerance	vCenter Server	Whether virtual machine has fault tolerance configured in vCenter Server

Table 6-3. vCenter Server Virtual Machine Report fields (Continued)

Field Name	Description	Origin	Derived From
Line of Business	A level in the chosen hierarchy	vCenter Server or vRealize Automation or vCloud Director	Configuring the data source for the hierarchy in vRealize Business for consumer reporting
Business Unit	A level in the chosen hierarchy	vCenter Server or vRealize Automation or vCloud Director or upload	Configuring the data source for the hierarchy in vRealize Business for consumer reporting
Cluster Name	The name of the cluster where the virtual machine resides	vCenter Server	The clusters configured in vCenter Server and the related virtual machines
vCenter Folder Path	The name of the vCenter folder where the virtual machine resides	vCenter Server	The folders configured in vCenter Server and the related virtual machines
Storage Used (GB)	The amount in GB of storage used by the virtual machine	vCenter Server	The total storage for the virtual machine, including RDMs, as used by the virtual machine. If storage is thin provisioned then the amount reflects the amount of storage used. If storage is thick provisioned then amount reflects the allocated amount. The amount is prorated based on the day of the month that the report is being viewed.
Storage Cost per GB	The rate per GB of storage per month	vRealize Business for Cloud	The storage monthly costs per GB configured in vRealize Business. Storage monthly costs can be configured by Storage Profile or Storage Type
Storage Total Cost	The total cost of storage for the virtual machine for the month	vRealize Business	The calculation is Storage Used * Storage Cost per GB, which is rounded to the nearest cent
Compute RAM Utilization (GB)	The average RAM utilization for the month	vCenter Server	The virtual machine utilization information collected from vCenter Server. vRealize Business takes the average of all RAM utilization metrics for the current month
Compute RAM Rate	The per GB per month rate for RAM	vRealize Business	Refer to the Technical White Paper, "VMware IT Business Management Suite Standard edition – How It Works"
Compute RAM Cost	The total RAM cost for the virtual machine for the month	vRealize Business	Refer to the Technical White Paper, "VMware IT Business Management Suite Standard edition – How It Works"
Compute CPU Utilization (GHz)	The average CPU GHz utilization for the month	vCenter Server	The virtual machine utilization information collected from vCenter Server. vRealize Business takes the average of all CPU GHz utilization metrics for the current month
Compute CPU Rate	The per GHz rate per month for CPU	vCenter Server	Refer to the Technical White Paper, "VMware IT Business Management Suite Standard edition – How It Works"

Table 6-3. vCenter Server Virtual Machine Report fields (Continued)

Field Name	Description	Origin	Derived From
Compute CPU Cost	The total CPU cost for the virtual machine for the month	vRealize Business	Refer to the Technical White Paper, "VMware IT Business Management Suite Standard edition – How It Works"
Compute Total Cost	The total cost of compute resources for the virtual machine	vRealize Business	The calculation: RAM Cost + CPU GHz Cost
OS Labor (Hours)	The monthly hours of labor for an OS instance	vRealize Business for Cloud	The value is configured in vRealize Business for Cloud. The value can be configured as a monthly number of hours per OS type. Alternately a total monthly OS labor cost per OS type can be configured.
OS Labor Cost Per Hour	The hourly rate for virtual machine operating system related labor	vRealize Business for Cloud – Cloud Cost	The Operating System Labor settings configured under Cloud Cost in vRealize Business for Cloud
OS Labor Total Cost	The total cost of OS Labor for the virtual machine for the month	vRealize Business for Cloud	The calculation is Hours * Hourly Rate Rounded to the nearest cent
OS Licensing Cost	The cost of a Windows Desktop license if the virtual machine is using a Windows Desktop OS	vRealize Business for Cloud	The cost of a Windows Desktop license configured in vRealize Business for Cloud
Maintenance Cost	The cost of Windows Desktop maintenance if the virtual machine is using a Windows Desktop OS	vRealize Business for Cloud	The OS license maintenance percentage configured in vRealize Business for Cloud
VI Labor (Hours)	Monthly hours of labor per virtual machine	vRealize Business for Cloud – Cloud Cost settings	The Monthly hours of labor per virtual machine setting in the Labor Cost of Virtual Infrastructure in vRealize Business for Cloud
VI Labor Cost Per Hour	Labor hourly rate	vRealize Business for Cloud – Cloud Cost settings	The Labor hourly rate setting in the Labor Cost of Virtual Infrastructure in vRealize Business for Cloud
VI Labor Total Cost	The total VI labor cost for the virtual machine	vRealize Business for Cloud	The calculation is VI Labor Hours * VI Labor Hourly Rate Rounded to the nearest cent
VM Backup Cost	The backup cost for the virtual machine	vRealize Business for Cloud	Detection of VMware Data Protection used to protect virtual machines. The cost of VMware Data Protection is allocated to protected virtual machines based on virtual machine size. The cost of VMware Data Protection is automatically calculated.
Direct Cost	The total of the direct costs applied to the virtual machine	vRealize Business for Cloud	The calculation is Total OS Labor + Windows Desktop License Total + virtual machine Backup Total + VI Labor Total Rounded to the nearest cent
VM Tags	Tags recorded against the virtual machine	vCenter Server	The tags recorded against a virtual machine in vCenter Server

Table 6-3. vCenter Server Virtual Machine Report fields (Continued)

Field Name	Description	Origin	Derived From
Monthly Up Time (Hours)	The number of hours that the virtual machine was powered on during the month	vCenter Server	Regular collection of virtual machine metrics from vCenter Server
Monthly Up Time (%)	The percentage of time during the month that the virtual machine was powered on	vRealize Business	Percentage of time within the month that virtual machine was powered on
Total Monthly Cost	The total monthly cost for the virtual machine	vRealize Business for Cloud	The calculation is Storage Total Cost + Compute Cost Total + Direct Cost
Infrastructure Type	Identifies whether the server is an ESXi server or the physical server added from vRealize Automation	vRealize Automation	Not applicable
Actual Compute CPU Utilization (GHz)	Average monthly CPU utilization of the virtual machine	vCenter Server	Not applicable
Actual Compute RAM Utilization (GB)	Average monthly RAM utilization of the virtual machine	vCenter Server	Not applicable
Actual Storage Used (GB)	Average storage used through the month for this virtual machine	vCenter Server	Not applicable
Number Of CPU Utilization Samples	Number of the utilization samples used for CPU cost calculations	vCenter Server	Not applicable
Number Of Memory Utilization Samples	Number of the utilization samples used for RAM cost calculations	vCenter Server	Not applicable
Number Of Utilization Samples Per Datastore	A comma separated list of number of samples per datastore used for cost calculations	vCenter Server	Not applicable
All Datastores Storage Provisioned (GB)	Total provisioned storage GB for this virtual machine	vCenter Server	Not applicable
VM MOID	MOID of the virtual machine	vCenter Server	Not applicable

View a Report for Clusters

You can view the report of all the clusters of your virtual environment. vRealize Business for Cloud displays the total monthly cost of running a cluster in your environment.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud (for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Reports, click **Data Sets**.
- 4 Click **vCenter Server** and select **Clusters**.

Along with vCenter Server alias, and data center name to which the virtual machine belongs, vRealize Business for Cloud displays all the cluster details, whether clustered or unclustered, and information about cluster cost allocation. Using the Deleted field, you can identify whether the cluster exists or deleted. vRealize Business for Cloud also displays the weighted average cost of the virtual machines in the cluster along with the total monthly cost of the cluster.

vCenter Server Cluster Report Column Details

This section describes each column in the vCenter Server cluster report.

Table 6-4. vCenter Server Cluster Report Fields

Field Name	Description	Origin	Derived From
Cluster Name	The name of the cluster where the virtual machine resides	vCenter Server	The clusters configured in vCenter Server and the related virtual machines
vCenter Server Alias	The name of the vCenter Server connection record	vRealize Business for Cloud	The name that you provided to the vCenter Server on the Administration > Business Management > Manage Connections page.
Data Center Name	The name of the virtual datacenter that a virtual machine resides in	vCenter Server	The name of the virtual datacenter in vCenter Server
Description	A small description for a cluster	vRealize Business for Cloud	Not applicable
Number Servers	Number of servers under the vCenter Server cluster or the number of servers matching the configuration	vCenter Server and vRealize Business for Cloud	Not applicable
Number VMs	Number of virtual machines under all matching servers. It also includes the templates and excludes the vSphere Data Protection (VDP) virtual appliance.	vCenter Server and vRealize Business for Cloud	Not applicable
CPU Capacity (GHz)	Total CPU capacity of all matching servers	vCenter Server	Not applicable

Table 6-4. vCenter Server Cluster Report Fields (Continued)

Field Name	Description	Origin	Derived From
CPU Utilization (GHz)	Total CPU utilization of all matching servers	vCenter Server	Not applicable
CPU Utilization (%)	Utilization percentage compared to CPU capacity	vCenter Server	Not applicable
CPU Expected Utilization (%)	The expected CPU utilization level that the cluster is expected to operate	vRealize Business for Cloud	Not applicable
CPU Base Rate	The unit rate of CPU per GHz per month for the cluster	vRealize Business for Cloud	Not applicable
CPU Unallocated Costs	The amount of unallocated CPU cost on the cluster.	vCenter Server	The unallocated cost is computed as: (Percentage of CPU expected utilization divided by 100 * CPU capacity - (minus) CPU utilization Ghz) * CPU Base rate
RAM Capacity (GB)	Total RAM capacity of all matching servers	vCenter Server	Not applicable
RAM Utilization (GB)	Total RAM utilization of all matching servers	vCenter Server	Not applicable
RAM Utilization (%)	Total RAM utilization of all matching servers	vCenter Server	Not applicable
RAM Expected Utilization (%)	The RAM expected level that the cluster is expected to operate	vCenter Server	Not applicable
RAM Unallocated Costs	The amount of unallocated RAM cost on the cluster.	vCenter Server	The unallocated cost is computed as: (Percentage of RAM expected utilization divided by 100 * RAM capacity - (minus) RAM utilization GB) * RAM Base rate
RAM Base Rate	The unit rate of RAM per GB per month for the cluster	vCenter Server	Not applicable
Total Monthly Cost	Total monthly cost of the cluster	vRealize Business for Cloud	The calculation is sum of total monthly cost of all matching servers in the cluster
Allocated cost	Total allocated cost on the cluster	vRealize Business for Cloud	The calculation is Total monthly cost - (minus) Unallocated cost
Unallocated cost	Total unallocated cost of both CPU and RAM	vRealize Business for Cloud	The calculation is sum of RAM Unallocated cost + sum of CPU Unallocated cost
Allocated cost (%)	Percentage of allocated cost compared with total monthly cost	vRealize Business for Cloud	Not applicable

Table 6-4. vCenter Server Cluster Report Fields (Continued)

Field Name	Description	Origin	Derived From
Cluster Cost By VMs	Sum of all virtual machines cost under this cluster, which includes directly attributed cost to the virtual machines also (operating System license, virtual machine labor, operating system labor)	vRealize Business for Cloud	Not applicable
vCenter Server UUID	A unique ID of the vCenter Server	vCenter Server	vRealize Business for Cloud uniquely identifies the vCenter Server in the customer environment.

View a vCloud Director Report

You can view the cost details of vCloud Director constructs that are categorized according to organization, organization virtual data center, virtual machines, and vApps.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud (for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Reports, click **Data Sets**.
- 4 Click **vCloud Director** and select the construct for which you want to view the report.

Option	Description
Organizations	Along with total monthly cost of the organization construct, vRealize Business for Cloud displays the vCloud Director server name to which the organization belongs.
Organization VDCs	Along with total monthly cost of organization virtual data center construct, vRealize Business for Cloud displays the organization virtual data center name, and the vCloud Director server name that the organization virtual data center belongs to.
VMs	Along with total monthly cost of virtual machines, vRealize Business for Cloud displays the virtual machine name and the vCloud Director server name to which the virtual machine belongs.
vApps	Along with total monthly cost of vApps, vRealize Business for Cloud displays the vApp name, and the vCloud Director server name to which the vApp belongs.

View the vRealize Automation Virtual Machine Report

You can view the list of vRealize Automation virtual machines and its details.

Prerequisites

Verify that vRealize Business for Cloud is configured with the IaaS component of vRealize Automation and all the services are running.

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Under Reports, click **Data Sets**.
- 4 Click **vRealize Automation VMs**.

You see the list of vRealize Automation virtual machine names and other virtual machine details such as, endpoint, is monitored, business group name, blueprint name, requestor, tenant name, owner, virtual CPU count, and configured RAM and Storage data. You can also see the price details for CPU, RAM and storage, including additional price, pricing policy name, and total month price.

View Storage Reports

Storage reports are categorized into storage array reports and LUN reports.

View Storage Array Report

vRealize Business for Cloud displays a list of datastores that exists in the configured EMC SRM servers.

Prerequisites

Add and configure EMC SRM storage servers.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Reports, click **Data Sets**.
- 4 Select **Storage**, and click **Arrays**.

You can see the list of datastore names, its IP address, serial number, manufacturer details, array model, array type, usable capacity, actual cost and monthly cost.

View Storage LUNs Report

vRealize Business for Cloud displays a list of storage logical unit number (LUNs) that exists in the configured EMC SRM servers.

Prerequisites

Add and configure EMC SRM storage servers.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Reports, click **Data Sets**.
- 4 Select **Storage**, and click **LUNs**.

Information related to storage LUNs is displayed. The array details includes LUN name, LUN ID, serial number, storage consumable type, total LUN capacity (in GB), utilized capacity (in GB), and base rate of each LUN.

View Public Cloud Reports

You can view the public cloud account details such as vCloud Air and AWS accounts that you have configured in vRealize Business for Cloud.

View vCloud Air reports

You can view the details of virtual machines and virtual data center to which the virtual machine belongs and vCloud Air Services.

View vCloud Air Virtual Machine Report

You can view the details of virtual machines that are hosted on vCloud Air accounts. The report includes information such as VM name, current month name, account name, service ID, name of the virtual data center to which the virtual machine belongs, the state of the virtual machine, the total amount of virtual CPU, RAM (in GB) and storage (in GB) allocated to the virtual machine and total monthly cost incurred on the virtual machine.

Prerequisites

Verify that you have configured vCloud Air account in vRealize Business for Cloud.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Reports, click **Data Sets**.
- 4 Select **Public Cloud**, and click **vCloud Air**.
- 5 Select **Virtual Machines**.

You see all the details of virtual machines hosted on configured vCloud Air account.

View vCloud Air Virtual Data Center Report

You can view the details of virtual data centers that are hosted on vCloud Air accounts. The report includes information such as the name of the virtual data center, current month name, account name, service ID, the total amount of virtual CPU, RAM (in GB), and storage (in GB) allocated to the virtual data center, and the total monthly cost incurred on the virtual data center.

Prerequisites

Verify that you have added a vCloud Air account in vRealize Business for Cloud. See *vRealize Business Standard Installation and Administration Guide*.

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 Log in to vRealize Business for Cloud as an administrator at:
 - `https://vRealize_Automation_host_name/vcac/org/tenant_URL` (for the vRealize Automation integrated setup)
 - `https://vRealize_Business_for_Cloud_host_name/itfm-cloud`(for the vRealize Business for Cloud standalone setup)
- 3 Click **Business Management**.
- 4 Under Reports, click **Data Sets**.
- 5 Select **Public Cloud**, and click **vCloud Air**.
- 6 Select **Virtual Data Centers**.

You see the details of the virtual data centers hosted on the configured vCloud Air account.

View vCloud Air Services Report

You can view the current month details, which includes the total monthly cost grouped by service offering type and also account details such as service ID, capacity (allocated and used) and unallocated cost. You can change or edit the view, by hiding, sorting, freezing and grouping the columns. You can select a report type to display the values through charts and also define a filter to view the specific values.

Prerequisites

Verify that you have added a vCloud Air account in vRealize Business for Cloud. See *vRealize Business for Cloud Installation and Administration Guide*.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - `https://vRealize_Automation_host_name/vcac/org/tenant_URL` (for the vRealize Automation integrated setup)
 - `https://vRealize_Business_for_Cloud_host_name/itfm-cloud`(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Reports, click **Data Sets**.
- 4 Select **Public Cloud**, and click **vCloud Air**.

5 Select **Services**.

You see the service offering types, service count, total monthly cost. You can expand the view to see the service details such as the account name, service ID and name, capacity and cost information.

View the Amazon Web Services Report

The Amazon Web Services report provides information about AWS resources and AWS instances.

AWS Resources Report

You can see the list of Amazon Web Services and its details including account and cost details.

Prerequisites

Verify that you have added a AWS account in vRealize Business for Cloud. See *vRealize Business for Cloud Installation and Administration Guide*.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Reports, click **Data Sets**.
- 4 Select **Public Cloud**, and click **Amazon Web Services**.
- 5 Click **Resources**.

You see the list of names and its total monthly cost for each AWS resource. You can also see details such as the account and service details, the availability zone, tags, last seen information, virtual machine existence and cost information.

NOTE Each AWS service will have an entry with the name **Service Cost**, by default. This is the fixed cost of the service which is not associated with any resources.

AWS Instances Report

You can view the details of virtual machines that are hosted on AWS account including service, account cost, price and availability information.

Prerequisites

Verify that you have added AWS account details in vRealize Business for Cloud.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Reports, click **Data Sets**.

- 4 Select **Public Cloud**, and click **Amazon Web Services**.
- 5 Click **Instances**.

You see all the details of virtual machines that are configured to the AWS accounts. The information includes account ID and name, instance type, the state of the virtual machine, availability zone of the virtual machine, tags, last seen as information, the pricing policy name and total price, the direct and other cost incurred on the virtual machine and also the existence of the virtual machine.

View Historical Reports

You can view historical data for vCenter Server virtual machines and public cloud account details such as vCloud Air and AWS accounts that you have configured in vRealize Business for Cloud.

You can see historical data in the following reports:

- vCenter Server Virtual Machines reports
- vCloud Air Virtual Machines reports
- vCloud Air Virtual Data Centers reports
- vCloud Air Services reports
- AWS Resources reports
- AWS Instances reports

NOTE The historical data is not available for the vRealize Automation reports.

Prerequisites

You must have uploaded data for more than a month.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud (for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Reports, click **Data Sets**.
- 4 Navigate to vCenter Server Virtual Machines report or a public cloud report for which you want to view the historical data.
- 5 Click the small arrow on the Month field to open a menu.
- 6 Select **Filters**.
- 7 Select the month and the year for which you want to view the data.
- 8 Click **OK**.

You see the details for the specific period that you have selected.

Edit a Report

You can edit a report to change the view, export, filter or group based on fields.

Prerequisites

Verify that you have a valid report.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - https://vRealize_Automation_host_name/vcac/org/tenant_URL (for the vRealize Automation integrated setup)
 - https://vRealize_Business_for_Cloud_host_name/itfm-cloud(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 Under Reports, click **Data Sets**.
- 4 Select a report or view that you want to edit.
- 5 Click **Edit** and perform the following actions to edit.

Option	Description
Columns	<ul style="list-style-type: none"> ■ Under the View column, select the reports field names to display or hide in the view. ■ Lock or unlock the field to freeze the positions in the view. ■ Sort the field values in ascending or descending order.
Grouping and Charts	<ul style="list-style-type: none"> ■ Select a report field name from Group by column drop-down list to group the report based on the selected column name. ■ Select a report field name from the Function Column drop-down list and an operation such as Max, Min, Average or Sum from the Functions drop-down list to display the group summary. ■ Select the Report Chart option and click on a report type to create a chart based on the values.
Filters	<ul style="list-style-type: none"> ■ Enter a search string or value in the Cross Column Filter search box and click OK. You can also select the values from the auto-fill list. ■ Click Add to create a filter and in the Add Filter window, select a field name and provide the filter criteria based on which you want to filter the values. Click Add. ■ To modify a filter, select the filter from the table and click the edit option. Enter the new filter criteria and click Set. ■ To delete a filter, select the filter from the table and click the delete option.

- 6 Click **OK** to save the changes.
- 7 Click **Clear Filters** to clear the filter criteria you have defined.
- 8 Click **Save** to save the report with the defined filters and view them with updated values later.
- 9 To filter for specific information, enter the string in the search field or enter few characters of the string and select the values from the auto-fill list.

vRealize Business for Cloud filters and displays the result based on the search string.

- 10 Click **Export** to save the values in a Microsoft Excel file.

An .xls file is downloaded with the values that appear on the screen.

You can view these reports in Custom Reports.

View a Custom Report

You can edit a report and save the report as Custom Report for later use.

Prerequisites

You must edit and save a report as a custom report.

Procedure

- 1 Log in to vRealize Business for Cloud as an administrator at:
 - `https://vRealize_Automation_host_name/vcac/org/tenant_URL` (for the vRealize Automation integrated setup)
 - `https://vRealize_Business_for_Cloud_host_name/itfm-cloud`(for the vRealize Business for Cloud standalone setup)
- 2 Click **Business Management**.
- 3 In **Reports**, click **Custom Reports**.

You can see a list of custom reports that you have created.
- 4 Click the report for which you want to view the details.

Use Public API for Generating vRealize Business for Cloud Reports

You can generate vRealize Business for Cloud reports by using public APIs.

The API is supported with vRealize Automation 6.x and 7.x versions.

Prerequisites

Install the Wget utility.

Procedure

- 1 Run the command to generate the token for vRealize Automation and vRealize Business for Cloud authentication.


```
wget --no-check-certificate -S -q --header "Accept: application/json" --header='Content-Type: application/json' --post-data '{"username":"<USER_NAME>","password":"<PASSWORD>","tenant":"<TENANT>"}' -O - <CAFE_SERVER>/identity/api/tokens, where
```

 - `<USER_NAME>` - The user name with administrator permissions to access vRealize Business for Cloud.
 - `<PASSWORD>` - The password for the administrator account.
 - `<TENANT>` - The vRealize Business for Cloud registered tenant.
 - `<CAFE_SERVER>` - The IP address or FQDN of the vRealize Automation server.
 - `<vRB_SERVER>` - The IP address or FQDN of the vRealize Business for Cloud server.

You see the following output.

```
HTTP/1.1 200 OK
Server: Apache-Coyote/1.1
Cache-Control: no-cache, no-store
Pragma: no-cache
Expires: Wed, 31 Dec 1969 23:59:59 GMT
Content-Type: application/json; charset=UTF-8
```

```

Content-Length: 383
Date: Wed, 25 Nov 2015 17:25:11 GMT
{"expires":"2015-11-22T01:25:11.000Z","id":
"MTQ0ODQ3MjMxMTQzMDo2Mj1hMWU4MTdhOTEwNTM5Y2MyNzpoZW5hbnQ6aXRibXN1c2VybmFtZTphZG1pbk8pdGJtcy5j
b21AdnNwaGVyZS5sb2NhbGV4cGlyYXRpb246MTQ00
DUwMTEwMTAwMDpjNTQzNjE3YjM3NDMyZTEwMTI4MzViZDNLZyEyNDA4MGQwMjI5NTVhMTU4OTUxNjM0ZDIzZj1h0Tk4OT
Q0ZDM5YmY2Y2UwZjUxNDVjYjRhNGUzZWZjMjNmYjM1
NGRjZDdkYTdLOGJjMzA1MjBhM2ZHZDg0NTdhYmNiMDEwZTA3OA==","tenant":"itbms"}

```

The ID value is the token to authenticate.

NOTE The token has an expiry date.

2 Run the command to get a custom report or an out-of-the-box report.

- For a custom report, run the following command:

```

wget --no-check-certificate -S -q --header "Accept: application/json" --header='Content-
Type: application/json' --header="Authorization: Bearer <TOKEN>" -O -
https://<VRB_SERVER>/itfm-cloud/rest/reports-api/export-csv?name=<REPORT_NAME>,

```

where <Report_Name> is the name you provide for a custom report.

- For an out-of-the report, run the following command:

```

wget --no-check-certificate -S -q --header "Accept: text/plain" --header='Content-Type:
text/plain' --header "accept-encoding: gzip" --header="Authorization: Bearer <TOKEN>" -O
- https://<VRB_SERVER>/itfm-cloud/rest/reports/export-filters/<OOB_REPORT_NAME>>out.xls,

```

where <OOB_Report_Name> can be one of the following values.

Report Type	Report Name
vCenter Server reports	<ul style="list-style-type: none"> ■ servers ■ datastores ■ vsan-datastores ■ vms ■ clusters
vCloud Director reports	<ul style="list-style-type: none"> ■ vcd-orgs ■ vcd-org-vdcs ■ vcd-vms ■ vcd-vapps
vRealize Automation virtual machine reports	vcac-vms
Storage reports	<ul style="list-style-type: none"> ■ storage-arrays ■ storage-luns
vCloud Air reports	<ul style="list-style-type: none"> ■ vca-vms ■ vca-vdcs ■ vca-services
AWS reports	<ul style="list-style-type: none"> ■ aws-resources ■ aws-vms
Showback reports	<ul style="list-style-type: none"> ■ showback-vms ■ showback-add-svcs
Budget reports	rest/budget/export

The out-of-the report is generated in an XLS file.

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