

vRealize Business Standard User's Guide

vRealize Business Standard 6.1.0

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vRealize Business Standard User's Guide

The VMware® *vRealize Business™ Standard User's Guide* provides information about the vRealize Business Standard 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 Standard for using the vRealize Business Standard 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>.

Introduction to vRealize Business Standard

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

This chapter includes the following topics:

- [“Challenges Faced by the Manager of Cloud Operations,”](#) on page 7
- [“vRealize Business Standard Goals,”](#) on page 7
- [“Access vRealize Business Standard by using vRealize Automation,”](#) on page 8
- [“vRealize Business for vSphere,”](#) on page 9
- [“vRealize Business Standard Feature Overview,”](#) on page 9
- [“Differences Between UI Options Available with vCloud Suite and vRealize Business Licenses,”](#) on page 10
- [“The vRealize Business Standard Dashboard,”](#) on page 12

Challenges Faced by the Manager of Cloud Operations

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

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

vRealize Business Standard Goals

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

- Determine pricing of vRealize Automation blueprints by using the current cost and utilization levels of virtual machines as a reference.

- Make decisions related to placement of workloads, either in the private or public clouds, based on the cost and the services available in your cloud environment.
- Provide consumption cost of virtual machine and blueprints based on business unit across the cloud environment.
- Let infrastructure stakeholders to manage costs based on capital expenditure and operating expenditure.
- Get accurate cost of virtual machines without performing any financial configuration.
- Provide cost visibility of storage and public cloud accounts.
- Support costing of non-ESXi physical servers managed by vRealize Automation.

Access vRealize Business Standard by using vRealize Automation

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

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

Prerequisites

Verify that you have created a vRealize Business Standard tenant. For more information, 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 Click the **Administration** tab.
 - 3 Click **Users & Groups** and select **Identify Store Users & Groups**.
 - 4 Search and select the user to which you want to add a role.
 - 5 From the Add Roles to this User box, assign the following privileges based on the requirement.
 - If the user has to perform all administration tasks such as managing connections, managing public cloud account, updating reference database, assign the **Business Management Administrator** role to a user who has the **Tenant Administration** role.
-
- NOTE** To assign the **Tenant Administration** role to the user, you have to log in as a default tenant administrator in vRealize Automation.
-
- If the user has to view and update the cost information only, assign **Business Management Administrator** role.
 - If the user has to view the details but not update the information, assign **Business Management Read only** role.
 - If the user has to view the assigned tenant details, but not perform other administration cost, assign the **Business Management Controller** role.
 - 6 Click **Update**.
 - 7 Refresh the browser.

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

- 8 Click the **Business Management** tab.

A dialog prompts you to enter the license key.

- 9 Enter a valid license key and click **Save**.

vRealize Business for vSphere

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

vRealize Business for vSphere 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.
- Simple reporting.

vRealize Business Standard Feature Overview

vRealize Business Standard provides the cost of a virtual machine and utilization of shared resources to help you better manage demand, budget, CapEx/OpEx; driving accountability over cloud resources to lower TCO. It helps you to optimize your costs and sourcing across internal virtual infrastructure and private cloud or public cloud.

vRealize Business Standard supports the following capabilities.

- Public cloud comparison, cost and usage visibility, including integrations with AWS, Azure and VMware vCloud Air .
- Third party integrations such as EMC SRM for storage.
- Advanced pricing of services and integration with vRealize Automation.
- Role based access controls for consumption analysis.
- Budget configuration and visibility
- Integration with vRealize Business Advanced and Enterprise.
- 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.
- Generate reports.

Differences Between UI Options Available with vCloud Suite and vRealize Business Licenses

The vRealize Business Standard user interface options vary based on the license key. Certain vRealize Business Standard may not be available as part of vCloud Suite license.

Table 1-1. Comparison of vRealize Business Standard user interface for vCloud Suite Advanced and Enterprise license and vRealize Business Standard and vRealize Business Advanced and Enterprise license.

Tasks that you can perform	Available for vCloud Suite Advanced or Enterprise	Available for vRealize Business Standard or vRealize Business Advanced and Enterprise	Navigation on the vRealize Business Standard user interface
Managing Connections	Yes	Yes	Administration > Business Management > Manage Connections
Managing Public Cloud Accounts	No	Yes	Administration > Business Management > Manage Public Cloud Account
Updating Reference Database	Yes	Yes	Administration > Business Management > Update Reference Database
Generating and downloading the log files to analyze the issues	Yes	Yes	Administration > Business Management > Support File
Updating License	Yes	Yes	Administration > Business Management > Update License
Generating a token for vRealize Business Advanced and Enterprise integration	No	Yes	Administration > Business Management > vRealize Business Integration
Calculating depreciation	Yes	Yes	Administration > Business Management > Calculation Preference
Adding and modifying vCenter Server instances	Yes	Yes	Administration > Business Management > Manage Connections > Manage vCenter Server Connections
Adding and modifying EMC SRM servers	No	Yes	Administration > Business Management > Manage Connections > Manage Storage Servers
Adding and modifying vCloud vCloud Director instances	Yes	Yes	Administration > Business Management > Manage Connections > Manage vCloud Director Connections
Adding and modifying vRealize Operations Manager instances	Yes	Yes	Administration > Business Management > Manage Connections > Manage vRealize Operations Connections

Table 1-1. Comparison of vRealize Business Standard user interface for vCloud Suite Advanced and Enterprise license and vRealize Business Standard and vRealize Business Advanced and Enterprise license. (Continued)

Tasks that you can perform	Available for vCloud Suite Advanced or Enterprise	Available for vRealize Business Standard or vRealize Business Advanced and Enterprise	Navigation on the vRealize Business Standard user interface
Adding or modifying public cloud accounts such as vCloud Air, AWS, Azure and adding the public cloud account for comparison	No	Yes	Administration > Business Management > Manage Public Cloud Accounts
Viewing the vRealize Business Standard Dashboard	Yes	Yes	Business Management > Overview
Computing the cloud cost	No	Yes	Business Management > Cloud Cost
Operational analysis	Yes	Yes	Business Management > Operational Analysis
Consumption analysis	Yes	Yes	Business Management > Consumption Analysis
Comparison of cloud cost	No	Yes	Business Management > Cloud Comparison
Collecting public cloud information	No	Yes	Business Management > Public Cloud
Generating reports	Yes	Yes	Business Management > Reports
Editing Consumer Hierarchy	Yes	Yes	Business Management > Consumption Analysis > Consumption Overview > Edit > Edit Consumer Hierarchy or Business Management > Consumption Analysis > Consumers List > Edit > Edit Consumer Hierarchy
Editing the price	Yes - Basic mode only	Yes - Both Basic and Advanced modes	Business Management > Consumption Analysis > Edit Pricing
Editing the budget value	No	Yes	Business Management > Consumption Analysis > Edit Budget
View and analyze public cloud cost details	No	Yes	Business Management > Public Cloud
Generating reports for vCenter Server	Yes	Yes	Business Management > Reports > vCenter Server
Generating reports for vCloud Director	Yes	Yes	Business Management > Reports > vCloud Director
Generating reports for vRealize Automation	Yes	Yes	Business Management > Reports > vRealize Automation
Generating storage reports	No	Yes	Business Management > Reports > Storage

Table 1-1. Comparison of vRealize Business Standard user interface for vCloud Suite Advanced and Enterprise license and vRealize Business Standard and vRealize Business Advanced and Enterprise license. (Continued)

Tasks that you can perform	Available for vCloud Suite Advanced or Enterprise	Available for vRealize Business Standard or vRealize Business Advanced and Enterprise	Navigation on the vRealize Business Standard user interface
Generating public cloud reports	No	Yes	Business Management > Reports > Public Cloud
Generating metrics reports	Yes	Yes	Business Management > Reports > Metrics

The vRealize Business Standard Dashboard

The dashboard provides information about total cloud cost, operational analysis, consumption analysis, cost drivers, cloud resources, demand allocation, CAPEX/OPEX, allocation, and demand largest changes.

Table 1-2. vRealize Business Standard Dashboard

Category	Description
Total Cloud Cost	Displays the total cost of running a cloud per month.
Operational Analysis	Displays the projected average cost of the virtual machines for the current month based on its utilization for last 30 days.
Consumption Analysis	Displays the number of virtual machines that are used over a period of time. This analysis is useful for tracking the demand for virtual machines for planning.
Cost Drivers	Displays the distribution of cost breakdown for your cloud environment in terms of cost drivers. The cost drivers are Server Hardware, Storage, OS Licensing, Maintenance, Labor, Network, Facilities, and Additional Costs. For more information about viewing and editing cost drivers, see Chapter 2, "Computing the Cost of Your Cloud," on page 15.
Cloud Resources	Displays the projected cost breakdown for a virtual machine in terms of CPU, memory, storage, and operating system license and labor cost based on last 30 days.
Consumption Allocation	Displays how the allocated costs are spread across different consumer groups of virtual machines. This widget displays only the top consumers of virtual machines in terms of cost.
CAPEX/OPEX	Displays the total capital expenditure and operating expenditure incurred for your private cloud.

Table 1-2. vRealize Business Standard Dashboard (Continued)

Category	Description
Allocation	Displays the projected costs for allocated and unallocated resource types (CPU, memory, and storage) over the month.
Consumption Largest Changes	Displays the category where the largest change in the cost has occurred on monthly basis. The list is ordered by descending order of change in cost. The widget also provides an idea as to which top level consumer has the highest monthly increase or decrease in IT cost consumption.

NOTE In vRealize Business Standard, **Overview** displays the cost or the projected cost of the virtual machine until the end of the current month.

Computing the Cost of Your Cloud

Cost drivers are the costs that are incurred in managing a data center. You can input the cost drivers manually. If you do not input the cost drivers, the cost driver values are obtained from the reference database of the vRealize Business Standard.

This chapter includes the following topics:

- [“Overview of Cost Drivers,”](#) on page 15
- [“View Information about Cost Drivers,”](#) on page 15
- [“Editing Cost Drivers,”](#) on page 16

Overview of Cost Drivers

vRealize Business Standard categorizes the cost drivers into Server Hardware, Storage, Licensing, Maintenance, Labor, Network, Facilities, and Additional Costs. The cost driver data that you provide is the monthly cost except for the server hardware cost and storage array hardware cost.

You can modify the cost drivers 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 cost drivers is calculated. If you do not provide inputs regarding cost drivers, the default values are taken from the reference database, which is part of the vRealize Business Standard product.

View Information about Cost Drivers

You can view all the factors that affect the cost of your environment. vRealize Business Standard categorizes cost drivers into Server Hardware, Storage, Licensing, Maintenance, Labor, Network, Facilities, and Additional Costs.

Procedure

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

The information related to cost drivers is displayed. For all the cost drivers, vRealize Business Standard displays the monthly trend of the cost variations, the actual cost of the cost driver, and a chart that represents the actual cost and reference cost of the cost driver. You can also see the cost distribution based on datacenters.

- 4 (Optional) Select the data center for which you want to view the information.

The information of all the cost drivers is updated for the data center that you have selected.


- 5 Click the cost driver for more information about the cost.


Option	Description
Server Hardware	Displays the server cost information by CPU age. For complete cost information related to server hardware, click the Server Hardware list with full cost information link.
Storage	<p>Displays total cost of data store (for each storage type or storage profile) and the storage arrays. You can select Datastores and Storage Hardware to view its respective storage cost details.</p> <p>For a complete list of data stores and its cost information related to storage, click the Storage list with the complete cost information link.</p> <p>NOTE The data store cost is the cost of the data stores that are not considered in the SRM EMC storage array cost.</p> <p>NOTE</p> <ul style="list-style-type: none"> ■ If you have performed a fresh installation of vCenter Server 6.0, vRealize Business Standard displays storage profile for data stores as uncategorized. ■ If you are using earlier versions of vCenter Server like 5.1.x or 5.5, vRealize Business Standard displays the storage profiles for data stores.
Licensing	<p>Displays the operating system cost and VMware license cost distribution of your cloud environment. For complete cost information related to OS licensing, click the Licensing list with the complete cost information link.</p> <p>NOTE For Non-ESX physical servers, VMware license is not applicable.</p>
Maintenance	Displays the maintenance cost distribution for the server hardware and operating system maintenance. For complete cost information related to maintenance, click the Maintenance list with the complete cost information link.
Labor	<p>Displays the labor cost distribution for the servers, virtual infrastructure, and operating system. For complete cost information related to labor, click the Labor list with the complete cost information link.</p> <p>NOTE For physical servers, operating system labor cost and servers labor costs are applicable, virtual infrastructure cost is not considered.</p>
Network	<p>Displays the networks costs by NIC type. For complete cost information related to network, click the Network list with the complete cost information link.</p> <p>NOTE For physical servers, the network details are not captured. So, the network cost is considered as zero.</p>
Facilities	Displays the facilities costs distribution according to rent, real estate, power, and cooling. For complete cost information related to facilities, click the Facilities list with the complete cost information link.
Additional Costs	Displays the additional costs details such as backup and restore, high availability, management licensing, VMware software licensing.





Editing Cost Drivers

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

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

- If the costs are based on the industry benchmark values, a vertical band of orange color  is displayed


next to the Edit monthly cost icon .

- If the costs are calculated according to the hardware configuration, a vertical band of green color  is displayed next to the Edit monthly cost icon .
- If the costs have been manually entered, a vertical band of blue color  is displayed next to the Edit monthly cost icon .

Edit Monthly Cost of Server 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 Standard updates the total monthly cost and average monthly cost for each server group.

Procedure




- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Cost**.
All cost drivers are displayed.
- 4 Click **Edit Cost**.
- 5 In the Server Hardware section, click  icon to edit the monthly cost.
vRealize Business Standard groups all server hardware in your inventory of all data centers according to 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.

- 6 (Optional) You can select the data center for which you want to view or edit the server hardware cost calculations by using the **All Data Centers** drop-down list.
vRealize Business Standard categorizes and displays the server hardware information for the data center that you have selected.
- 7 Create a batch or batches for the server group to change the average cost for each server from average cost that vRealize Business Standard derives from the reference database. Perform one of the following steps to edit the server hardware cost.
 - Upload the CSV containing your server purchase details by clicking **Upload a CSV file** link. The CSV must be in the following format.

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

NOTE The currency in the CSV file must match the currency you configured during deployment.

- Click the **Click to edit** icon  for server hardware entry for which you want to create the batch.
 - a Click the **Purchased Servers** or **Leased Servers** link to edit server batch according to their price or lease rent.
 - b To add server and leased purchase details, click the  icon. 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 reference cost and batch cost is updated.


- 8 Click **Save**.

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

Edit Monthly Cost of Storage

You can edit the monthly cost per storage GB based on data stores and storage type of your cloud environment. The storage hardware is categorized according to data store storage profile or storage type and EMC SRM.

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Cost**.
All the eight cost drivers are displayed.
- 4 Click **Edit Cost**.
- 5 In the Storage section, click the  icon to edit the monthly cost.
- 6 Select **Datstores** to edit cost for data stores.

vRealize Business Standard categorizes and displays the storage details according to storage profile and storage type for the data stores that are not part of EMC SRM managed storage arrays.

Category	Description
Storage Profile	Displays the storage profile name as configured in the vCenter Server if you view the storage cost based on storage profile. NOTE <ul style="list-style-type: none"> ■ If you have performed a fresh installation of vCenter Server 6.0, vRealize Business Standard displays storage profile for data stores data stores as uncategorized. ■ If you are using earlier versions of vCenter Server like 5.1.x or 5.5.x, vRealize Business Standard 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 Standard displays the data store as uncategorized. NOTE If you are using vCenter Server 6.0, vRealize Business Standard displays the storage profile data stores as uncategorized.
Datstores	Displays the total number of data stores for a specific profile or type.
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.

- 7 (Optional) You can select the data center for which you want to view or edit the storage cost calculations by using the **All Data Centers** drop-down list. vRealize Business Standard categorizes and displays the storage data stores according to storage profile and storage type for the data center that you have selected.

- 8 Edit the total monthly cost per GB for storage either based on storage profile or storage type.

- Edit the monthly cost per GB for the storage profile. This option is selected by default.
- Edit the monthly cost per GB for the storage type.

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

vRealize Business Standard 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** to save the storage hardware monthly cost changes.

According to your updated values, vRealize Business Standard 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 Standard. 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 the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Cost**.
All the eight cost drivers are displayed.
- 4 Click **Edit Cost**.
- 5 In the Storage section, click the  icon to edit monthly cost.
- 6 Select **Datastores**.
- 7 In the storage monthly cost table, click in the data stores count.

You see the list of data stores for the storage that belongs to that particular storage profile or storage type and data store details.

View Array Disk Details

You can see the details about EMC SRM array disk. The details includes array name, description with array model, array family, array type, the total number of disks for a particular storage array, and disk capacity. You can also see the disk types and its count in the storage array.

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Cost**.
All the eight cost drivers are displayed.
- 4 Click **Edit Cost**.
- 5 In the Storage section, click the **Edit monthly cost** icon .
- 6 Select **EMC SRM**.
- 7 In the storage array table, click on one of the disk count.

You see the list of array disks that belongs to that particular storage array and disk count.

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


- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.

- 2 Click **Business Management**.

- 3 Click **Cloud Cost**.

All the eight cost drivers are displayed.

- 4 Click **Edit Cost**.

- 5 In the Storage section, click the  icon to edit monthly the cost.

- 6 Select **EMC SRM** to edit cost for storage arrays.

- 7 Click the **Edit Service Level Weightage** link.

- 8 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.

- 9 Click **Save**.

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 the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.

- 2 Click **Business Management**.

- 3 Click **Cloud Cost**.

All the eight cost drivers are displayed.

- 4 Click **Edit Cost**.


- 5 In the Licensing section, click the  icon to edit the monthly cost.

vRealize Business Standard displays all the licenses in your cloud environment.

Category	Description
OS Name	Displays the category of the operating system, Windows or Linux. If the operating system is not Windows or Linux, vRealize Business Standard 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.
Total Cost	Displays the total cost of the specific operating system.
Reference Cost	Displays the reference cost as defined in the vRealize Business Standard reference database.

- 6 (Optional) You can use the **All Data Centers** drop-down list to select the data center for which you want to view or edit the OS licensing cost calculations. vRealize Business Standard categorizes and displays the OS licensing information for the data center that you have selected.

NOTE For physical servers, VMware license is not applicable.

- 7 Click the **Click to 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.
- 8 Edit the monthly cost of operating systems.
- Edit the monthly cost for all operating systems of a specific type by selecting CPUs per socket and entering the cost value accordingly.
 - Edit the monthly cost for all operating systems of a specific type by selecting the ELA charging policy and entering the cost value accordingly.

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

- 9 Click **Save**.


According to your inputs, vRealize Business Standard 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

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Cost**.
All cost drivers are displayed.
- 4 Click **Edit Cost**.


- 5 (Optional) You can select the data center for which you want to view or edit the maintenance cost calculations by using the **All Data Centers** drop-down list. vRealize Business Standard categorizes and displays the maintenance cost calculations information for the data center that you have selected.
- 6 In the Maintenance section, click  icon to edit monthly cost.
- 7 Edit the monthly maintenance cost.
 - Edit the percentage value of the hardware maintenance cost.
 - Edit the percentage value of the operating system maintenance cost.
- 8 Click **Save**.

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 the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Cost**.
All cost drivers are displayed.
- 4 Click **Edit Cost**.
- 5 In the Labor section, click  icon to edit the monthly cost.

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 Standard database

- 6 (Optional) You can select the data center for which you want to view or edit the labor cost calculations by using the **All Data Centers** drop-down list. vRealize Business Standard categorizes and displays the labor cost information for the data center that you have selected.

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

- 7 Click the **Click to edit** icon  beside the data center for which you want to change the monthly labor cost.
The total number of servers, virtual machines, and operating system installations are displayed.
- 8 Edit the monthly labor cost by either updating the hourly rates or modifying the total monthly labor cost.


- 9 Click **Done**.

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 networking expenses of your cloud environment. You can edit the monthly cost for each Network Interface Controller (NIC) type either 1 Gigabit or 10 Gigabit, or can edit the total cost of all the networking expenses associated with the cloud.

Procedure

- 1 Log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Cost**.
All cost drivers are displayed.
- 4 Click **Edit Cost**.
- 5 In Network, click  icon to edit the monthly cost.
- 6 (Optional) You can select the data center for which you want to view or edit the network cost calculations by using the **All Data Centers** drop-down list. vRealize Business Standard categorizes and displays the network cost information for the data center that you have selected.

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.
 - Edit the total monthly cost for each NIC card by typing values for the 1 Gigabit NIC and the 10 Gigabit NIC.
 - Edit the total monthly cost of all network expenses associated with the cloud.
- 8 Click **Save**.


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 the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Cost**.
All cost drivers are displayed.
- 4 Click **Edit Cost**.


- 5 In Facilities, click the  icon to edit monthly cost.
- 6 (Optional) You can select the data center for which you want to view or edit the facilities cost calculations by using the **All Data Centers** drop-down list. vRealize Business Standard categorizes and displays the facilities information for the data center that you have selected.
- 7 Edit the monthly facilities cost.
 - Edit the detailed cost of facilities by updating the monthly cost of rent or real estate per rack unit and the monthly cost of power and cooling per kilowatt-hour.
 - Edit the total monthly cost of facilities.
- 8 Click **Save**.

The monthly facilities cost is updated.

Edit Additional Costs

The Additional Costs cost driver lets you add any additional or extra cost that is not covered by other cost drivers categorized by vRealize Business Standard. No reference value is present for this cost driver.

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Cost**.
All cost drivers are displayed.
- 4 Click **Edit Cost**.
- 5 In Additional Costs, click  icon to edit the monthly cost.
- 6 Select a datacenter if the cost is related to a specific data center, otherwise select **Global**.
- 7 Edit the total monthly costs for cost drivers other than the cost drivers categorized by vRealize Business Standard.
For example, the cost of management software, disaster recovery, and high availability.
- 8 Click **Save**.

The monthly cost for additional costs is updated.

Operational Analysis

After you determine the total spend for running 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).

This chapter includes the following topics:

- [“Understanding Operational Analysis,”](#) on page 27
- [“Edit Cost Utilization,”](#) on page 28
- [“Virtual Machine Cost Allocation,”](#) on page 30

Understanding Operational Analysis

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 the **Operational Analysis** tab 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 cost 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 Standard 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 Standard 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 Standard 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 the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Operational Analysis**.
- 4 Click **Edit Utilization**.

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

Table 3-1. 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 Standard displays the server model, CPU model, core count, CPU capacity, and memory size.
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.
Total Cost	Displays the total cost of the cluster.

Table 3-1. Server Clusters (Continued)

Category	Description
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 29.
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 29.
Base rates	Depending on the expected CPU utilization value that you have defined, vRealize Business Standard 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 the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Operational Analysis**.
- 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 Standard 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 Standard also updates the unallocated costs for the server cluster.

Virtual Machine Cost Allocation

vRealize Business Standard 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 Standard 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.

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Operational Analysis** and 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.
- 4 Click the link where the number of live virtual machines is displayed.

vRealize Business Standard 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.
- 5 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.
- 6 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.
- 7 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).

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 Standard classifies the consumers based on the business units.

This chapter includes the following topics:

- [“Viewing Monthly cost, Charge and Budget,”](#) on page 31
- [“View Information about Consumers,”](#) on page 32
- [“Editing the Consumer Hierarchy,”](#) on page 33
- [“Edit the Price Value,”](#) on page 34
- [“Editing Budget to Estimate Your Cost,”](#) on page 37
- [“View Virtual Machine Information,”](#) on page 38
- [“Support for Costing of non-ESXi Physical Servers in vRealize Business Standard,”](#) on page 38
- [“vRealize Business Standard Users Defined in vRealize Automation,”](#) on page 39

Viewing Monthly cost, Charge and Budget

Consumption overview is a dashboard that shows the monthly cost, charge, and budget trends of virtual machines. You can compare budget, actual cost and allocated charge at monthly and yearly intervals. You can also see the top consumers of virtual machines in terms of cost.

Consumption overview includes with several widgets.

Table 4-1. Consumption Overview Dashboard Widgets

Widget	Description
Monthly Cost	The graph shows the total monthly cost of all virtual machines, which includes cost of RAM, CPU, storage and operating system.
Monthly Budget	The graph shows the total monthly budget allocated to the consumers. Budget is the expected limit on charge consumption that is allocated to each consumer.
Monthly Charge	The graph shows the total monthly charge of all virtual machines. Charge is computed based on the capacity allocated to the virtual machines.

Table 4-1. Consumption Overview Dashboard Widgets (Continued)

Widget	Description
Consumed Capacity	The graph shows the total charge split into RAM, CPU and storage charges. It also displays trend of total number of running virtual machines per month. This analysis is useful for comparing the variance of charges per resource and correlating it with number of virtual machines.
Over/Under Budget by Consumer	<p>This graph compares budget and charge per consumer at monthly and yearly intervals. The graph displays the top three consumers whose charge has deviated from budget. The deviation can be the charge either exceeding or close to the budget.</p> <p>In the yearly comparison report, charges accumulated in the current calendar year is compared with the annual budget in the current calendar year .</p> <p>The bars in the graph represent charge, and the line marker represent the budget.</p>
Cost/Charge by Consumer	<p>This graph compares cost and charge for each consumer at monthly and yearly interval. The graph displays the top three consumers having the highest charges.</p> <p>In the yearly comparison report, charges accumulated in the current calendar year is compared with the cost accumulated in the current calendar year.</p> <p>The bars in the graph represent cost, and the line marker represent the charge.</p>
Top Consumers	This graph displays how the allocated costs are spread across different consumer groups of virtual machines. This also displays the top three consumers of virtual machines in terms of cost and remaining consumers are grouped under Others.
Over/Under Budget over time	<p>This graph compares the total charge and total budget.</p> <p>In the widget, the bars graph represent charge, the line graph represent the budget.</p>
Cost/Charge over time	<p>This graph compares the total cost and total charge.</p> <p>In the widget, the bars in the graph represent cost, the line graph represent the charge.</p>

View Information about Consumers

You can view and sort the list of consumers on the basis of the business unit and see the line of business if your setup is based on vRealize Automation categorization with multiple tenants. You can view the virtual machines count for each consumer, cost of CPU, RAM, storage, and operating system. It also displays the total cost, budget, and charge values for all consumers. You can also filter consumer cost information specific to each data center.

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Business Management**, click **Consumption Analysis** and select **Consumers List**.

- 4 (Optional) Select a data center for which you want to filter consumer cost information specific to the data center.

You can view the cost of all data centers together, by using the **All Data Centers** drop-down menu.

- 5 (Optional) Click on a column head to sort the information.

vRealize Business Standard displays the list of consumers according to the selected option. If the consumer categorization is not vRealize Automation categorization, then physical servers (if exists) are showed in the Others field.

Editing the Consumer 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 Standard. You can categorize your consumer lists according to your vCenter Server, vRealize Automation, and vCloud Director hierarchies.

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 Select **Consumption Analysis** and select one of the following options. click or.
 - **Consumption Overview**
 - **Consumers List**
- 4 From the **Edit** menu, click **Edit Consumer Hierarchy**.
- 5 Select a business model.
 - If your business organization has a tenant representing a line of business and a business group for each business unit, select **vRealize Automation**.
 - If your business organization has an organization created for each business unit, select vCloud Director.
 - If you want to represent your business units by using vCenter constructs such as folders, tags, or virtual machine names, select vCenter.

- 6 Define the business units based on your business model selection.

Business model	Actions
vRealize Automation	<ol style="list-style-type: none"> 1 Click Save. <p>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.</p>
vCloud Director	<ol style="list-style-type: none"> 1 Click Next. 2 Review the list of defined business units. Each organization in vCloud Director is listed as business unit. 3 Click Next. 4 Select a user in the list and click Edit. 5 Add or remove the business units to the users. 6 Click Apply. 7 Click Save.
vCenter Server	<ol style="list-style-type: none"> 1 Click Next. 2 Define a consumer list by setting rules or uploading a CSV file. <ul style="list-style-type: none"> ■ If you are setting rules, define the business units according to the 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 ■ Categorize by tags - select the VMs with tag family ■ Categorize by virtual machine name ■ 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, businessUnitId, and businessUnitName. 3 Review the list of defined business units. 4 Click Next. 5 Select a user in the list and click Edit. 6 Assign or remove the business units to the users. 7 Click Apply. 8 Click Save.

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

Edit the Price Value

You can set and edit the virtual machine price. You can define price manually or by creating policies based on vRealize Automation, vCloud Director, and vCenter Server categorization.

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 Select **Consumption Analysis** and click **Consumption Overview**.
- 4 From the **Edit** menu, click **Edit Pricing**.
By default, pricing mode is set to Basic.

- 5 Define or edit the price values.
 - Under **Compute Pricing**, update the daily price for RAM and virtual CPU.
 - Under **Storage Pricing**, update the daily price for storage.
- 6 Click **Edit** to change the pricing mode.

By default, the compute pricing and storage pricing for clusters and datastores is displayed in the Basic mode. The Basic mode is compatible with earlier releases.

- 7 Click **Save**.

Select a Pricing Mode

You can select pricing mode whether you want define price manually or create policies to define the price, which enables to calculate virtual machine cost. You can define the price in two modes - Basic and Advanced. In Basic mode, you enter the price manually and in Advanced mode, you set the price by creating policies based on vRealize Automation, vCloud Director, and vCenter Server.

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 Select **Consumption Analysis** and click **Consumption Overview**.
- 4 From the **Edit** menu, select **Edit Pricing**.
- 5 Click **Edit** to change the pricing mode.

Option	Description
Basic	This allows you to set the price manually. The Basic mode is compatible with earlier releases.
Advanced	This allows you to set the price based how you price your virtual machine, whether based on vRealize Automation, vCloud Director, or vCenter Server categorization. The Advanced mode displays the most accurate prices for virtual machines.

You can switch between the modes. However, you might see a slight different in price for each mode.

Add or Edit a Pricing Policy in vRealize Business Standard

You can add or edit a pricing policy and use the policy to determine the cost of virtual machines. You can select the infrastructure type for the policy and update additional options.

Procedure

- 1 From the **Edit** menu on **Consumption Overview**, select **Edit Pricing**.
- 2 Select the **Advanced** mode and select a base setting from the drop-down list and then, Click **Save** on the Edit Policy Mode dialog box.
- 3 Select **Compute pricing policy** or **Storage pricing policy**.
- 4 Click **Add** to add a policy or **Edit** to modify the defined policy.
- 5 Enter the policy name and select an infrastructure to which you want to apply the policy, such as cluster, resource pool, profile, type or a data store.

- 6 Enter the compute rate and storage rate for the policy.
For the storage rate, you can use the storage policy to determine the storage price.
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.
- 7 Enter additional options such as virtual machine attributes and custom services.
This option is available for adding a compute policy only.
- 8 Click **Add**.
- 9 Select the new policy in the policy list, and click **Activate** to activate the policy, click **Suspend** to deactivate the policy and click **Delete** to delete the policy.
- 10 Click **Add Default Policies** to add system defined default policies.

Edit Identification Infrastructure

You can select the infrastructure type for a pricing policy.

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 Select **Consumption Analysis** and click **Consumption Overview**.
- 4 From the **Edit** menu, select **Edit Pricing**.
- 5 Select the **Advanced** mode and select a base setting.
- 6 Click **Save** on the **Edit Policy Mode** page.
- 7 Click **Add** to add a policy.
- 8 Click **Edit** in the Infrastructure section.
- 9 Select an infrastructure.

Policy type	Options
Compute Pricing policy	<p>For vCenter Server, the policy is based on clusters and resource pools.</p> <ul style="list-style-type: none"> ■ vCenter Cluster ■ vCenter Resource Pool <p>For vRealize Automation, the policy is based on reservations and reservation policies.</p> <ul style="list-style-type: none"> ■ vRealize Automation Reservation ■ vRealize Automation Reservation Policy <p>For vCloud Director, the policy is based on organization virtual datacenters.</p> <ul style="list-style-type: none"> ■ Organization vDC
Storage Pricing policy	<p>For vCenter Server, the policy is based on storage profiles, type and datastores.</p> <ul style="list-style-type: none"> ■ Profile ■ Type ■ Datastore <p>NOTE Storage Pricing Policy is not available for vRealize Automation and vCloud Director.</p>

vRealize Business Standard lists the Infrastructure types that are available for your selected infrastructure.

- 10 Select a value for a infrastructure type.
- 11 Click **Save**.

Edit Additional Options for Calculating price

You can add several additional attributes to calculate the price for the virtual machine such as the backup virtual machine price, operating price, and custom services price.

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 Select **Consumption Analysis** and click **Consumption Overview**.
- 4 From the **Edit** menu, click **Edit Pricing**.
- 5 If you are adding a new policy, select the **Advanced** mode and select a base setting.
- 6 Select an existing policy from the table and click **Edit**.
- 7 In the Additional Options section, click **Edit**.

Editing Budget to Estimate Your Cost

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

Prerequisites

Verify that you have defined the consumer categorization in **Consumers List**. See [“Editing the Consumer Hierarchy,”](#) on page 33.

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 Select **Consumption Analysis > Consumption Overview**.
- 4 Click **Edit > Edit Budget**
- 5 Select the **Enable consumer budgeting** option.
- 6 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.

- 7 Enter the budget value in the table for the required consumer.
- 8 (Optional) Click **Export** to export a budget data in XLS format.

The data is exported on monthly basis.

- 9 (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.

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

View Virtual Machine Information

vRealize Business Standard categorizes and displays the virtual machines according to the hierarchy that you defined. You can view the detailed information related to CPU, RAM, storage, and operating system costs of all the live virtual machines.

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 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 Select **Consumption Analysis** and click **Consumers List**.

Depending on the hierarchy that you have defined, all the consumers are listed.

- 4 Click the link where the number of live virtual machines is displayed.

vRealize Business Standard displays the attributes such as, the number of virtual CPUs that belong to the virtual machine, the total cost, CPU cost, RAM cost, storage cost, and direct virtual machine cost of the virtual machine that you have selected is displayed. You also see CPU usage, CPU price, memory usage, memory price, storage usage, storage price, and total price.

- 5 To view the details of the ESXi host to which the virtual machine belongs, and to view the virtual machine cost history, click the ► icon.

The name or IP address, the configuration, and the host cluster information for the virtual machine is displayed. The cost history of the virtual machine is displayed in a graph where the X axis represents the month and the Y axis represents the cost for that month.

- 6 (Optional) Select the data center for which you want to view the virtual machine information.

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

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

If physical servers exist in the vRealize Automation environment, vRealize Business Standard 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 Standard 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

vRealize Business Standard Users Defined in vRealize Automation

Business Management Controller is a role that enables users to see consumption details. A business management controller user cannot edit or modify any information. To selectively assign such permissions, vRealize Business Standard has defined two roles to add in vRealize Automation.

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

Role	Responsibilities
Tenant Administrator	The user has can perform the actions that are defined in vRealize Automation and additional vRealize Business Standard responsibilities.
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 **Consumption Analysis** tab with **Consumption Overview** and **Consumption List** options. In addition, these users can see the charges and not costs for their subset of business units.

NOTE A business management controller can see only budget and charge details, and not the consumers' cost information such as RAM, storage, CPU costs, virtual machine cost, and total cost that are in **Consumption List**.

A tenant controller user can see only the following widgets in **Consumption Overview**.

- Monthly Budget
- Monthly Charge
- Consumed Capacity
- Over/Under Budget by Consumer
- Top Consumers
- Over/Under Budget over time

NOTE A tenant controller can see only budget and charge details but not the consumers' cost information on Consumption Overview.

If vRealize Business Standard is categorized based on vRealize Automation categorization, you need not map the business units. All the vRealize Business Standard tenant administrators automatically get **Business Management Controller** privileges and can see consumption analysis of business groups to which they belong.

If vRealize Business Standard is categorized based on vCloud Director or vCenter Server categorization, you must map the business units to **Tenant Administrator** and **Business Management Controller** users. For information about how to map the business units, see [“Editing the Consumer Hierarchy,”](#) on page 33.

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, Windows Azure, and vCloud Hybrid Service public cloud.

vRealize Business Standard estimates the costs 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, Windows Azure, and vCloud Hybrid Service cloud models.

Comparing Clouds models in vRealize Business Standard

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

vRealize Business Standard 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 Standard 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 Standard 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.

Comparing Private Cloud Providers with Public Cloud Providers

You can compare cost of private cloud providers with public cloud providers in vRealize Business Standard 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 the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Comparison**.
- 4 Click **Manage Cloud Providers**.
- 5 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.

- 6 Click **Done**.

The account that you have selected is added to vRealize Business Standard **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.

View Cloud Comparison Information

vRealize Business Standard 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 Standard.

Procedure

- 1 Log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Comparison**.
By default the information related to the **Compare new VMs to Cloud** link is displayed. vRealize Business Standard displays a sample group with the configuration of 2 cores, 1.6GHz CPU, and 3.5GB RAM. vRealize Business Standard displays a suitable cluster and storage with the minimum price for the configuration.
- 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.

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 Standard calculates and displays the cost of running virtual machines with similar configurations in your private cloud, Amazon Web Services, Windows Azure, vCloud Hybrid Service, or any other public cloud provider that is added and imported in vRealize Business Standard.

Procedure

- 1 Log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Comparison**.
- 4 Click the **Compare new VMs to Cloud** link.
- 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 Standard.

- 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 Standard 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 Standard names the group according to the search phrase or the category selected in the browse option.

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 Standard calculates and displays the cost of running virtual machines with similar configurations in your private cloud, Amazon Web Services, and Windows Azure, vCloud Hybrid Service, or any other public cloud provider that you had already added and imported in vRealize Business Standard.

Procedure

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

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

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

- 4 Change the cluster configuration.
 - 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 Standard selects the cluster with the least price.
 - b Select 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 Standard 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 Standard 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.

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 Standard.

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Comparison**.
- 4 Click the link 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 the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Comparison**.
- 4 Select the link from where you want to delete the virtual machine group.
- 5 To delete the virtual machine group, 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 Standard displays the default configuration.

Procedure

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

In the **Compare new VMs to Cloud** 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 to Cloud** link, vRealize Business Standard deletes all the added virtual machine groups.

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 the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Comparison**.
- 4 Select **Compare data centers**.

vRealize Business Standard 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 Standard to plan the cost of virtual machines.

Prerequisites

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

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Cloud Comparison**.
- 4 Select **Compare data centers**.
- 5 Click **Manage data centers**.
- 6 Drag and drop the data centers that you want to compare in vRealize Business Standard.
- 7 Click **Done**.

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

Collecting Public Cloud Information

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

This chapter includes the following topics:

- [“vCloud Air Overview,”](#) on page 47
- [“View vCloud Air Service ID Details,”](#) on page 48
- [“Amazon Web Services Overview,”](#) on page 48
- [“View Amazon Web Services Details,”](#) on page 49
- [“View Cost of Windows Azure Accounts,”](#) on page 49

vCloud Air Overview

vCloud Air Overview is a dashboard that displays the cost summary such as account cost and service cost (storage and compute) and distribution of cost across service IDs, cloud subscription types. You can see the top cost changes in SIDs, 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 cost information.

- **Total Cost** - The graph displays the total monthly cost of vCloud Air accounts configured in vRealize Business Standard with the cost trend for last 12 months.
- **Services** - This graph displays the cost of storage and other service or resource cost 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 cost distribution across each service ID.
- **Cloud Types** - This graph displays the cost subscription type such as Dedicated Cloud and Virtual Private Cloud.

NOTE Pay As You Go (PAYG) model is not supported.

- **Largest Changes in Service IDs** - This graph displays the top three cost changes 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).

View vCloud Air Service ID Details

You can see the details about vCloud Air service IDs such as account name to which it belongs, name of the virtual data center that belongs to the account, virtual data centers count, service count, virtual machine count, compute and storage cost, total cost for 12 months.

Prerequisites

Verify that you have added vCloud Air account into vRealize Business Standard.

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 Select **Public Cloud** and click **vCloud Air > Details**.
You can see the service ID information in detail.
- 4 Expand the count values to see the cost allocation for virtual data centers, services and virtual machines.
- 5 Click on Service ID to see the allocated and unallocated cost percentage. Also you can see the percentage of compute and storage cost.

Amazon Web Services Overview

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

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

- **Total Cost** - The graph displays the total estimated monthly cost of all Amazon Web Services accounts configured in vRealize Business Standard. And also, you can see the monthly cost trend for the current month and past 11 months.
- **Services** - This graph displays the estimated cost distributed among different services across all accounts.
- **Accounts** - This graph displays the estimated cost percentage for each account.
- **Amazon Elastic Compute Cloud (EC2) Cost Breakup** - This graph displays the cost distribution of EC2 service. EC2 service cost 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 cost changes compared to cost in the previous month.
- **VM at a Glance** - This graph displays the total virtual machine count and average cost 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.

View Amazon Web Services Details

After you add an AWS account, vRealize Business Standard displays the information related to the AWS cloud along with account specific information.

Prerequisites

- Verify that you have added the AWS account to vRealize Business Standard. For more information, see *vRealize Business Installation and Administration Guide*.
- Ensure that the following Identity and Access Management (IAM) policy is set for the AWS users added in vRealize Business Standard.

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

Procedure

- 1 Log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Public Cloud**.
- 4 (Optional) Categorize and view the information of service types.
 - Select **Accounts** option to filter the information based on account name.
 - Select **AWS Tags** option and select a tag from the list to see the virtual machine details for the selected AWS tag that you have defined for the account. The untagged account details are shown as Others.
- 5 Select **Amazon Web Services** and click **Details**.

You can see the list of all the accounts that are added, and displays the total monthly cost for each account, the cost trend for the last 12 months since the account was added (if the bills are available in specified bucket), service count, the total number of virtual machines, and other cost details.
- 6 Click on the services count and virtual machine count to see more details about services and virtual machines.

View Cost of Windows Azure Accounts

After you add a Windows Azure account, vRealize Business Standard displays the total cloud cost information of Windows Azure.

Procedure

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

5 Click **Azure**.

vRealize Business Standard displays the cost information for the Windows Azure cloud. The cloud cost information is categorized into Cloud Cost, Average VM Cost, Accounts, Service Type, and Cost details of all the service types in Windows Azure.

6 To view detailed information about the service type, click the 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.

Generating Reports

You can generate reports from vRealize Business Standard to get cost details of vCenter Server, vCloud Director, vRealize Automation, and virtual machines of the public cloud.

You can export the reports in a CSV format.

This chapter includes the following topics:

- [“View vCenter Server Reports,”](#) on page 51
- [“View a vCloud Director Report,”](#) on page 54
- [“View a vRealize Automation Report,”](#) on page 55
- [“View Storage Reports,”](#) on page 55
- [“View Public Cloud Reports,”](#) on page 56
- [“View Metrics Report,”](#) on page 58
- [“Export Reports,”](#) on page 59
- [“Filter and Search Reports,”](#) on page 60

View vCenter Server Reports

You can view the cost details report of vCenter Server. Reports are categorized into Servers, 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 the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Reports**.

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

Information related to servers is displayed. Along with total loaded costs of the servers, vRealize Business Standard displays the infrastructure type, server name, vCenter Server alias and the data center name for the server.

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

- 5 Click  and select the specific cost aspect that you want to view in the server details cost. Note that the selected aspects are highlighted in different colors and the report scrolls you to the selected specific section in the report.

By default, server hardware check box is selected.

Option	Description
Server Hardware costs	Along with server details, vRealize Business Standard 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 Standard calculates and displays the total monthly cost of server hardware. vRealize Business Standard also displays the total loaded costs of servers that are running in your environment.
Licensing costs	Along with server details, vRealize Business Standard 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 Standard calculates and displays the total license cost.
Maintenance costs	Along with server details, vRealize Business Standard displays the maintenance costs details according to hardware and software maintenance cost. vRealize Business Standard calculates and displays the total maintenance cost.
Physical server labor Costs	Along with server details, vRealize Business Standard displays the physical server labor costs details according to physical server labor hours and hourly cost. vRealize Business Standard calculates and displays the total labor cost.
Network costs	Along with server details, vRealize Business Standard 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 Standard 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 Standard displays details of rent, power, and cooling. vRealize Business Standard calculates and displays the total facilities cost.
Additional Costs	Along with server details, vRealize Business Standard displays the details of additional costs.

View Report for Data stores

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

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Reports**.
- 4 Click **vCenter Server** and select **Datastores**.

vRealize Business Standard 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 Standard also displays vCenter Server alias, data center name to which the data store belongs.

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. The Infrastructure Type field helps you to identify the physical servers and vCenter server virtual machines.


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

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Reports**.
- 4 Click **vCenter Server** and select **VMs**.
- 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 Standard 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 Standard 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.

- 6 Click **Exports** to generate and export virtual machine details and its cost for the current report or a specific month or year in CSV format.

View a Report for Clusters

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

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Reports**.
- 4 Click **vCenter Server** and select **Clusters**.

Along with vCenter Server alias, and data center name to which the virtual machine belongs, vRealize Business Standard displays all the cluster details, whether clustered or unclustered, and information about cluster cost allocation. vRealize Business Standard also displays the weighted average cost of the virtual machines in the cluster along with the total monthly cost of the cluster.

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 the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Reports**.
- 4 From the **vCloud Director** drop-down menu, 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 Standard 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 Standard 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 Standard 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 Standard displays the vApp name, and the vCloud Director server name to which the vApp belongs.

View a vRealize Automation Report

You can view the report of cost details of vRealize Automation entities. You view the information categorized according to tenants, business groups, blueprints, and virtual machines of vRealize Automation.

Prerequisites

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

NOTE The recent cost updates might not appear in vRealize Business Standard. You must click **Cost Calculation** from **System Status** to view the latest cost values.

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Reports**.
- 4 From the **vRealize Automation** drop-down menu, select the entity for which you want to view the report.

Option	Description
Tenants	vRealize Business Standard displays the tenant details that are categorized according to tenant URL and tenant name. vRealize Business Standard also displays the total monthly cost of the tenant.
Business Groups	vRealize Business Standard displays the business group details, categorized according to business group name and tenant name. vRealize Business Standard also displays the total monthly cost of the business group. NOTE If the business group contains a physical server, the business group cost includes the physical server cost also.
Blueprints	vRealize Business Standard displays the blueprint details and total monthly cost of the blueprints. NOTE If the business group contains a physical server, the business group cost includes the physical server cost also.
VMs	vRealize Business Standard displays the details of all virtual machines and total monthly cost of virtual machines.

View Storage Reports

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

View Storage Array Report

vRealize Business Standard displays a list of storage arrays that exists in the configured EMC SRM servers.

Prerequisites

Add and configure EMC SRM storage servers.

Procedure

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

Information related to storage arrays is displayed. The array details includes array name, IP address, serial number, manufacturer details, array model, array type, usable capacity, actual cost and monthly cost.

View Storage LUNs Report

vRealize Business Standard 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 the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Reports**.
- 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 Standard.

View vCloud Air reports (VMs & VDCs)

You can view the details of virtual machines and the details of virtual data center to which the virtual machine belongs

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, 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 Standard.

Procedure

- 1 Log in to the vRealize Automation interface at `https://vRealize_Automation_host_name/vcac/org/tenant_URL` by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Reports**.
- 4 Select **Public Cloud**, and click **vCloud Air**.
- 5 Select **vCloud Air VMs**.

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, 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 Standard. 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 Click **Business Management**.
- 3 Click **Reports**.
- 4 Select **Public Cloud**, and click **vCloud Air**.
- 5 Select **vCloud Air VCDs**.

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

View Amazon Web Services Report

You can view the details of virtual machines that are hosted on AWS account. The report includes information such as VM name, ID, account name, instance type, the state of the virtual machine, availability of the virtual machine, the pricing plan of the virtual machine when the data related to that virtual machine was last collected, the direct, other and monthly cost incurred on the virtual machine.

Prerequisites

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

Procedure

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

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

You see all the details of virtual machines that are configured to the AWS accounts.

View Metrics Report

You can view metrics reports such as allocation efficiency report and private cloud metrics.

NOTE You cannot export or filter metric reports.

View Allocation Efficiency Metrics

Using allocation efficiency metrics, you can find how allocation costs affect your overall cloud cost. Also you can compare your total cloud allocation with industry benchmarks. The benchmarking data is based on the number of virtual machines in your vRealize Business Standard environment.

Prerequisites

Import or update your cost data into vRealize Business Standard.

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Reports > Metrics**.
- 4 Select **Allocation Efficiency**.

Allocation	Description
Average Server Allocation	Displays the average server allocated cost and unallocated cost based on data uploaded in vRealize Business Standard.
CPU Cost Allocation	Displays the CPU cost allocation percentage based on the industry benchmark and private cloud. You can hover over the graph to see the allocated cost and unallocated cost in the defined currency.
Memory Cost Allocation	Displays the memory cost allocation percentage based on the industry benchmark and private cloud. You can hover over the graph to see the allocated cost and unallocated cost in the defined currency.
Storage Cost Allocation	Displays the storage cost allocation percentage based on the industry benchmark and private cloud. You can hover over the graph to see the allocated cost and unallocated cost in the defined currency.
Cloud Allocation	Displays the cloud cost allocation percentage based on the industry benchmark and private cloud. The total gap displays the difference between the industry benchmark values and allocation costs data uploaded in vRealize Business Standard. You can see the difference values in the defined currency and also in percentage. It also breaks down difference values for each resource such as CPU, RAM and storage.
Resources Cost Distribution	Displays the organization expenditure on resources such as CPU, RAM and storage. You can hover over the graph to see the base rate for each resource.

Private Cloud Metrics

Using private cloud metrics, you can view the expenses of operating a virtual datacenter compared with industry benchmark. The average expense cost is segregated into different cost driver domains. You can also see the cost driver ratio and analyse the allocation cost ratios over various resources and server hardware groups.

Prerequisites

Import or update your cost data into vRealize Business Standard.

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Reports > Metrics**.
- 4 Select **Private Cloud Metrics**.

The cost is displayed for various cost drivers and also compared with industry benchmark values.

- 5 Hover over each cost driver on the graph to see the cost breakdown for cost drivers. You can compare your cloud environment values with industry benchmark values and private cloud values.

Cost Driver	Cost Breakdown Categories
Server Hardware	Displays the server hardware breakdown percentage for different server models such as 2010 and older, 2011-12, 2013 and 2014. The tool tip shows the total server hardware cost.
Storage	Displays the total storage cost for your cloud environment.
Licensing	Displays the breakdown percentage for the operating systems in your cloud environment such as Windows, Red Hat, SUSE and other operating systems. The tool tip shows the total operating system licensing cost of your cloud environment.
Maintenance	Displays the maintenance breakdown percentage for your server hardware and operating systems. The tool tip shows the break down maintenance cost for each server hardware and operating system on your cloud environment.
Labor	Displays the labor breakdown percentage for physical servers, virtual infrastructure and operating systems. The tool tip shows the break down labor cost for each physical server, virtual infrastructure and operating system on your cloud environment.
Network	Displays the network breakdown percentage for 1 gigabit and 10 gigabit networks. The tool tip shows the break down network cost for each network type on your cloud environment.
Facilities	Displays the network breakdown percentage for rent, power, and cooling. The tool tip shows the total facilities cost of your cloud environment.
Additional Costs	Displays the additional or extra cost that is not covered by other cost drivers categorized by vRealize Business Standard.

Export Reports

You can export the reports from vRealize Business Standard in a CSV format for further analysis. The export functionality transfers the reports related to entities that you have selected.

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.

- 2 Click **Business Management**.
- 3 Click **Reports**.
- 4 Click the entity such as vCenter Server, vCloud Director for which you want to export the reports, and click **Export**.

The **Export** option is not available for Metrics reports.

- 5 Select the location where you want to save the CSV file and click **OK**.

A report related to link that you have selected is exported in a CSV format.

NOTE If you have defined filter criteria when exporting the report, entries specific to the filter condition are exported to the CSV file.

Filter and Search Reports

You can filter and search specific entries according to criteria that you define. If you define any filter criteria, entries specific to filter condition are displayed.

Procedure

- 1 Log in to the vRealize Automation interface at https://vRealize_Automation_host_name/vcac/org/tenant_URL by using credentials of a tenant administrator.
- 2 Click **Business Management**.
- 3 Click **Reports**.
- 4 To filter the reports, perform on of the following:
 - Enter a search value in the search field or enter few characters of the search value and select the values from the auto-fill list.
 - Click on the arrow next to the field name based on which you want to filter, select **Filters** from the drop down list and enter the search value.

You can also define multiple filtering criteria.

vRealize Business Standard filters and displays the report according to criteria specified.

NOTE The filter or search option is not available for **Metrics** reports.

- 5 To clear all the filters that you have defined, click **Clear Filters**.

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