

# Embotics® vCommander® Release Notes

**Release 6.0.2**

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## What's New in This Release

This release brings a brand-new Service Portal user interface, plus cloud governance and cost optimization features. We've extended our Azure Service Manager (ASM) support to include Azure Resource Manager (ARM), with full support for ARM templates. And because even that wasn't enough to keep our passionate development team busy, we've also included several customer-requested enhancements.

If you're upgrading, see also [Upgrade Notes](#) and [Issues Resolved in This Release](#).

### In this topic

[Support for Azure Resource Manager and ARM templates](#)

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[Cloud cost optimization and governance](#)

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[Lifecycle and policy management](#)

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[New supported platforms](#)

[Preview of all-new REST API](#)

[REST API enhancements](#)

## Azure Resource Manager support

### Support for Azure Resource Manager (ARM) as a virtualization platform

vCommander now manages Azure Resource Manager (ARM), adding to our previous support for Azure Service Manager (ASM). This release provides full service request automation, costing, reporting and our self-service portal capabilities for ARM. You can add ARM templates to the service catalog, with the option to deploy into a new resource group, or an existing one.

vCommander also provides a configurable set of common public images that can be manually deployed or added to the service catalog.

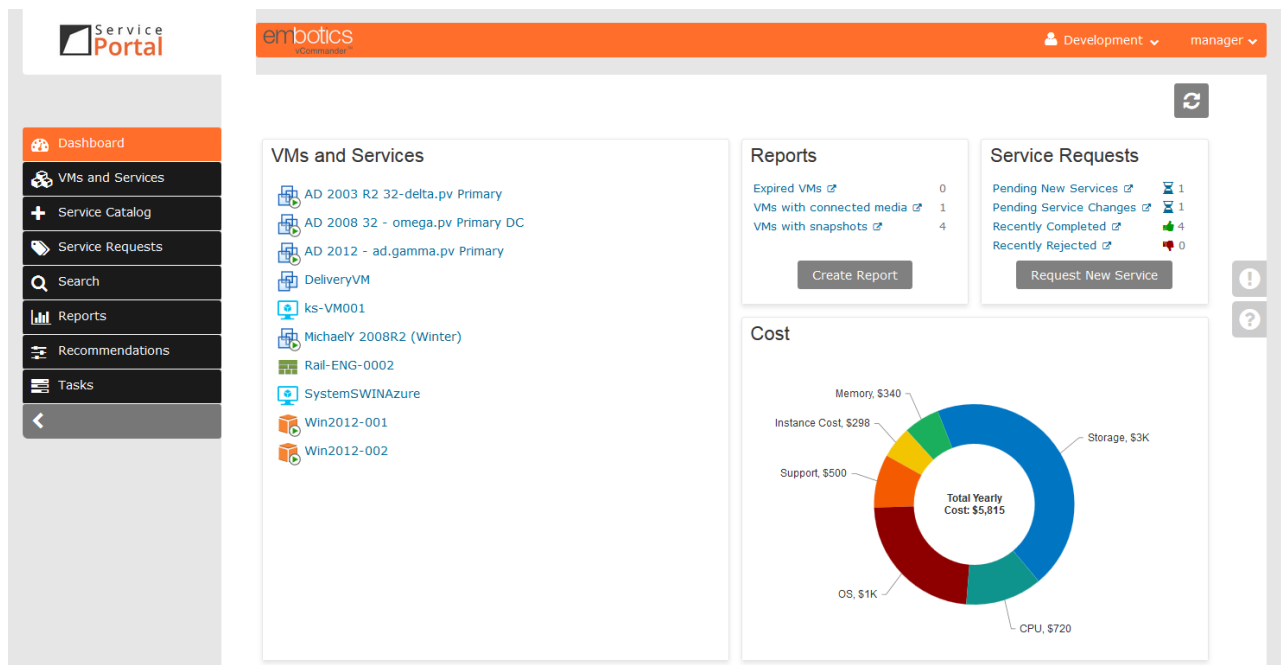
To learn more, see "Managing Microsoft® Azure with Embotics® vCommander®" in the vCommander User Guide.

## All-new Service Portal user interface

Our Service Portal for end users and delegated admins has a brand-new UI. Our goal was to create a more modern look and feel, remove the need for legacy technology (such as Flash) and provide a richer self-service experience. Here are just a few highlights:

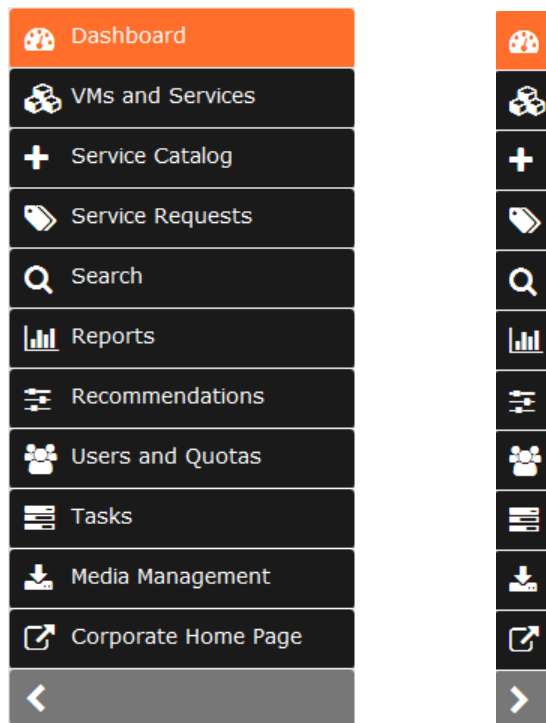
### Intuitive design

Our new UI is elegant, clean and effective.



## Enhanced navigation

Our new collapsible left-side menu provides a faster and more intuitive user experience for navigating all aspects of the Service Portal. You can collapse the menu to increase screen real estate.



We use split-menu buttons for easy access to commands, rather than right-mouse-click menus. Here's the new VM Details page, showing the context-sensitive command menus.


Reset OS


Open Console




Actions



Refresh

Close

 2012R2w/SQL2016

Resources: 2 CPU, 4 GB Memory  
Guest Tool Status:  Running  
IP Address: 10.10.10.73 [Details](#)  
DNS Name: WIN-NSJJ1AUN6GN  
Service Request: [View All](#)

 Microsoft Windows Server 2012 (64-bit)  
 Running: Since 2017/06/12  
 Expiry Date: 2018/02/03

Details  

Annual Cost: \$7750


Primary Owner Login: manager


Date Created: 2017/06/12 04:09:52

Uptime: 8 hours, 7 minutes



Virtual Disk Size (GB): 50.0

Approval State: Approved





Guest OS Details 



Cost 



Total Yearly Cost: \$7,750

Recommendations  

This VM has recommendations

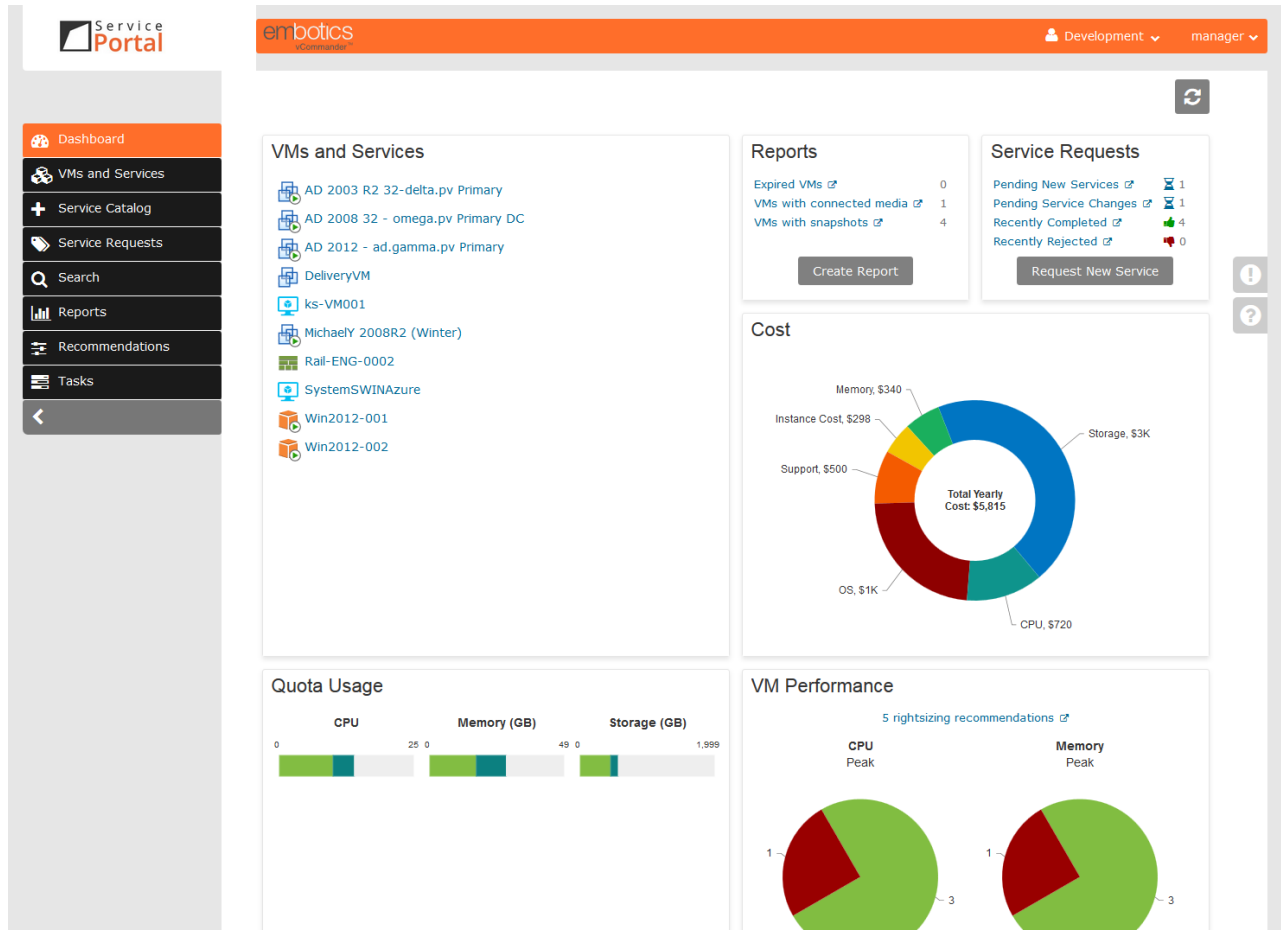
Performance    

Tasks from last 30 days  

Events from last 30 days  

## New dashboard

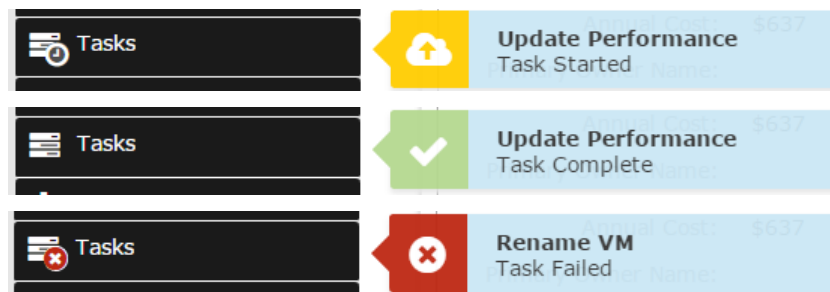
As in the previous release, the Dashboard provides a quick view of your VMs and Services, reports, service requests, costs, VM performance and quota usage.



Flash technology is no longer used; all previous Flash elements have been replaced by HTML5.

## Task messages

The Service Portal provides messages on the status of your long-running task. A small pop-up appears next to the task menu item when a task is started, completed or failed.



You can check on the status of a task by navigating to the Tasks page.

## Extensibility

In a previous release, it was possible to provide access to a global external web page for Service Portal users with permission. In this release, we've enhanced this functionality: you can now use a vCommander variable to create organization-specific (that is, per-tenant) external web pages. You might use this page to provide information on other service offerings, or a summary of information for this organization.

### Custom External Page

To provide access to an external page from the Service Portal, enter a title and URL. All users with the Show External Page permission will see this page as an extra item in the side menu.

Title:

URL:  #{}

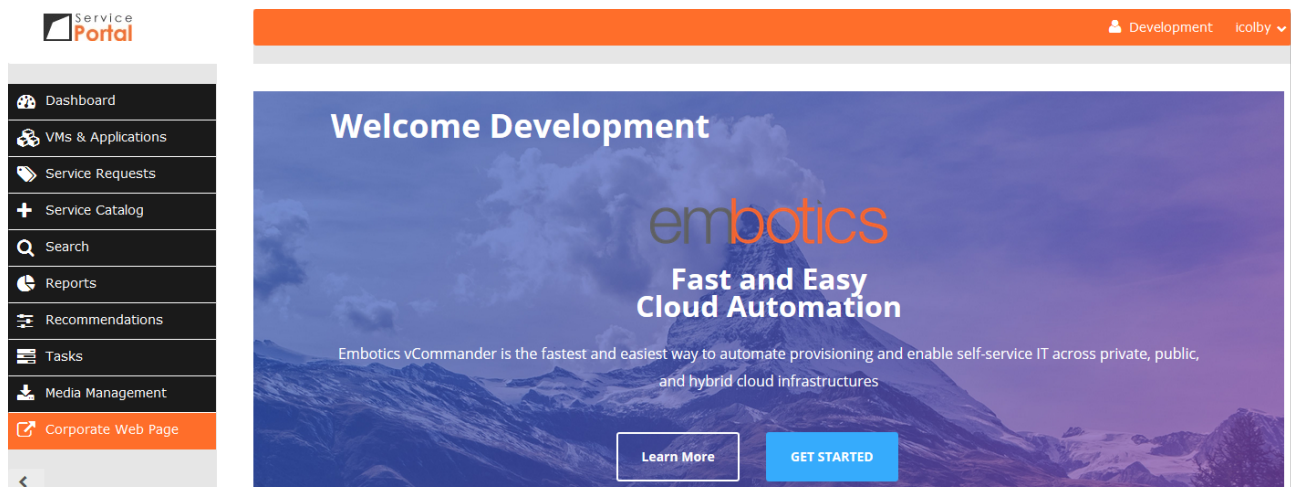
☒ Use Proxy

Credentials:  [Add Credentials](#)

Select credentials if required for access to secure web pages.

[Save Settings](#)

Once you've configured this URL, users with the Show External Page permission will see a link in the left menu.



You can also display custom VM-specific information on a VM's details page, such as third-party VM metrics. vCommander variables are supported in this URL as well, including custom attribute variables.

### Custom External Information for VMs

To provide access to external VM-specific information in the Service Portal, enter a title and URL. All users with the Show External Page permission will see this information when they view a VM's details.

Title:

URL:  #{ }

☒ Use Proxy

Credentials:  [Add Credentials](#)

Select credentials if required for access to secure web pages.

[Save Settings](#)

To learn more, see "Providing Access to External Web Pages" and "Providing Access to External VM-Specific Information" in the *vCommander User Guide*.



## Service requests

Easily request new services by clicking **Service Catalog** in the left menu. As in previous releases, users can select services to request and fill out a request form.

Service Catalog

1. Add 2. Customize 3. Review

Request New Service

 <p><b>AWS - CentOS</b></p> <p>Production, Linux</p> <p>Service Components:</p> <p>CentOS 6.2 (64-bit) CentOS 4/5/6 (64-bit) 1 GB Memory - 1 vCPU - 20 GB Disk - 1 NIC</p>	\$445	+
 <p><b>Window Server 2008 R2</b></p> <p>Windows, Development</p> <p>Service Components:</p> <p>2008R2w/SQL2014 Microsoft Windows Server 2008 R2 (64-bit) 4 GB Memory - 2 vCPU - 80 GB Disk - 1 NIC</p>	\$1640	+

The Service Requests page allows you to filter the list, choose and rearrange columns, and export to .csv format.



## Easy service management

You can manage VMs from the VMs and Services page as well as from each VM's details page.

Type	Name	Description	Annual Cost	State
Microsoft Windows Server 2008 R2 (64-bit)	2008R2w/SQL2014	Microsoft Windows Server 2008 R2 (64-bit)	\$2106	
Microsoft Windows Server 2012 (64-bit)	2012R2w/SQL2016	Microsoft Windows Server 2012 (64-bit)	\$7750	Running Since 2017/06/12
AWS CloudFormation Sample Template	VirtualService001	LAMP_Single_Instance: Create a LAMP stack using a single EC2 instance and a local MySQL database for storage. This template de...	\$0	Rollback Complete
Linux	VM001	Linux	\$705	Not Running Since 2017/06/05
Ubuntu	VM002	Ubuntu	\$696	Not Running Since 2017/06/05
Microsoft Windows	Win2012-001	Microsoft Windows	\$825	Running Since 2017/06/12
Microsoft Windows	Win2012-002	Microsoft Windows	\$825	Running Since 2017/06/12

You can perform tasks such as running power commands, opening a console connection, setting an expiry date and assigning ownership.

## Easier custom theming

Creating a custom theme is now more straightforward. We recommend the use of [jQuery ThemeRoller](#), a curated set of themes built on top of the jQuery JavaScript Library, as a quick way to get started. You can pick a pre-built theme or build your own. You can then download the ThemeRoller files, copy the content to branding files installed with vCommander, and customize the files further as required. If you prefer not to use ThemeRoller, you can edit the sample files. As long as you're using CSS built on the jQuery framework, your custom theme will work with the Service Portal. Embotecs® Support would be happy to help you try out the new theming options; contact [support@embotics.com](mailto:support@embotics.com).

If your Service Portal already had a custom theme, your previous theme will not be used after upgrade to Release 6.0.2.

To learn more, see "Branding the Service Portal" in the *vCommander User Guide*.

## Cloud cost optimization and governance


vCommander cloud governance and cost optimization help reduce your public cloud costs as well as your private infrastructure costs. vCommander not only makes cost-reduction recommendations—it can also implement the recommended changes to your underlying cloud infrastructure. And vCommander helps ensure good public cloud governance through best-practice AWS tagging policies.

Watch our [vCommander Cloud Cost Optimization video](#) on YouTube.

## New Getting Started with Cost Optimization wizard

Go to **Help > Getting Started with Cost Optimization** for an overview of the steps involved in cost optimization with vCommander.

Getting Started
Cost Models
Cost Configuration
RI Recommendation Configuration



# Getting Started with Cost Optimization

## Cost Configuration

1
[Configure Cost Models](#)

Configure your private cloud cost models, or enhance your public cloud cost models, for infrastructure costs and reporting.

Use browser's BACK button to return to this Getting Started page.

## Recommendations

2
[Check Recommendations](#)

vCommander issues rightsizing, power schedule and Reserved Instance recommendations.

## Reports

3
[Run the VM Billing Report](#)

Calculates the accrued costs to date of a set of VMs.

4
[Run the VM Comparative Economics Report](#)

Assesses the benefit of moving VMs, applying right sizing recommendations, or both.

5
[Run the Reserved Instance Planner Report \(AWS\)](#)

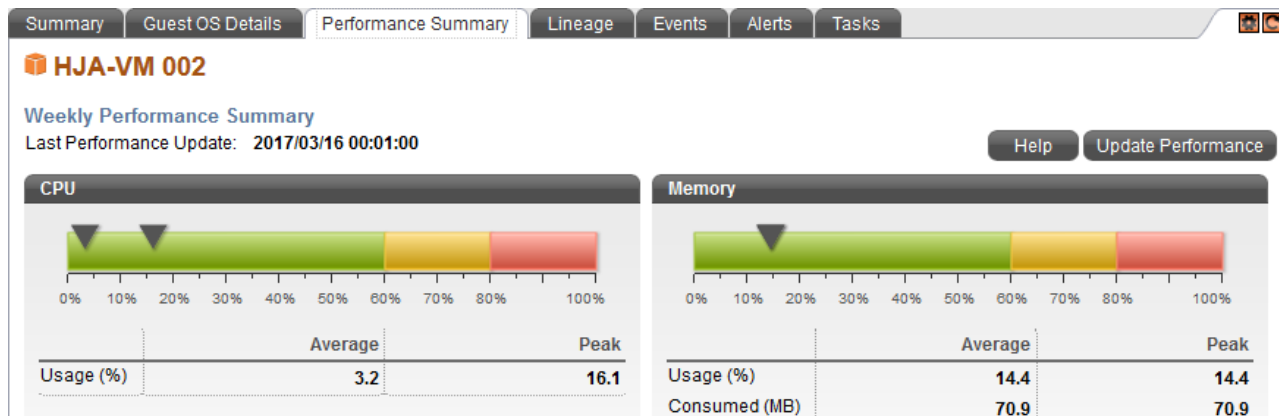
Recommends Reserved Instance purchases for each AWS region, OS and instance type, based on usage metrics.

## Working with vCommander

6
[Go to Chargeback & IT Costing Dashboard](#)

## Memory usage monitoring and memory rightsizing for Amazon EC2 instances

vCommander administrators and VM owners can now monitor memory usage for Amazon EC2 instances in both vCommander and the Service Portal.



While Amazon CloudWatch provides CPU, network and disk usage metrics for Amazon EC2 instances, it does not provide memory usage metrics by default. vCommander now provides the ability to monitor memory usage through the use of custom CloudWatch scripts.

Memory usage monitoring for new VMs also means that vCommander bases rightsizing recommendations on memory usage as well as CPU usage data.

To learn more, see "Monitoring Memory Metrics for Amazon EC2 Linux Instances", "Monitoring Memory Metrics for Amazon EC2 Windows Instances" and "Rightsizing VMs" in the vCommander User Guide.

## Reserved Instance purchase recommendations to reduce on-demand costs

With AWS Reserved Instances, you can pre-purchase instances for a set term, as opposed to buying "on-demand" instances. vCommander now recommends Reserved Instance purchases for each AWS region.


## Recommendations

vCommander issues rightsizing and power schedule recommendations for VMs, as well as Reserved Instance purchase recommendations for AWS regions.

reserved

✖

2 filtered rows



us-east-1

AWS

Reserved Instance Purchase

Cost Before:

\$981


Cost After:

\$482

Savings:

\$499

[Show Details](#)



us-east-2

AWS

Reserved Instance Purchase

Cost Before:

\$79

Cost After:

\$54


Savings:

\$25

[Show Details](#)

Recommendations are also shown on the Summary tab for each AWS region.

Summary Virtual Machines Datastores Subnets Events Alerts Tasks


 **us-east-1**

General

EC2-VPC Supported: **Yes**  
EC2-Classic Supported: **Yes**  
Instance Limit: **2000**  
Number of VMs: **65**  
Number of Datastores: **2**


Details

You can customize this view by clicking the icons.  
[Click for help](#)

 There is 1 recommendation for this Region

**Reserved Instance**

**Reserved Instance Purchase**  
Based on your Amazon EC2 instance uptime, we recommend 4 Reserved Instance purchases for this region.  
Decrease in annual VM cost: \$499  
[View](#) [Ignore](#)

 [Close](#)

Viewing the details of a recommendation takes you to the new Reserved Instance Planner Report. The report recommends EC2 Reserved Instance purchases for each combination of operating system, instance type and region, and shows you the projected savings for each purchase.

Print Delete CSV Export PDF Export

## Reserved Instance Planner Report

Creation Date: Thursday, December 1, 2016 15:42:18

empowered by  
**embotics**  
vCommander™

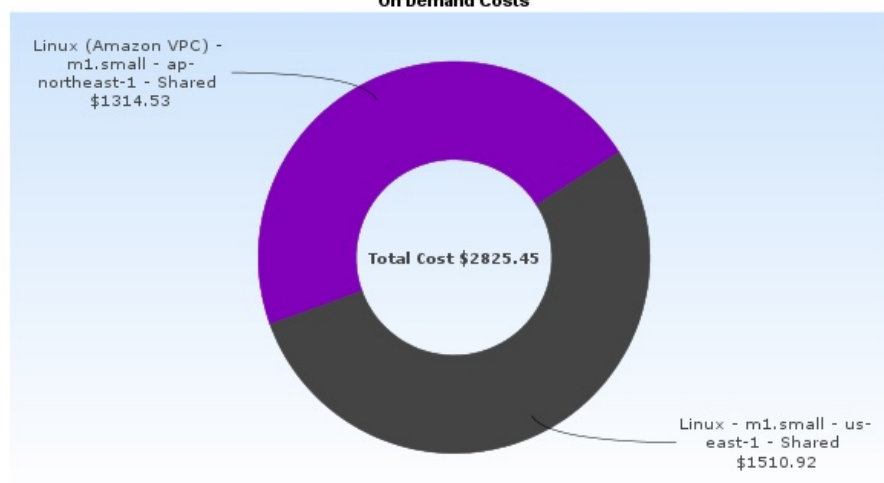
### Report Parameters:

Report Period: is 30 days  
Purchase Model: is No Upfront  
Include Detailed Data: is Yes  
Limit Spending To: is 0  
Required Savings %: is 20  
Sort Purchases By: is Projected Savings

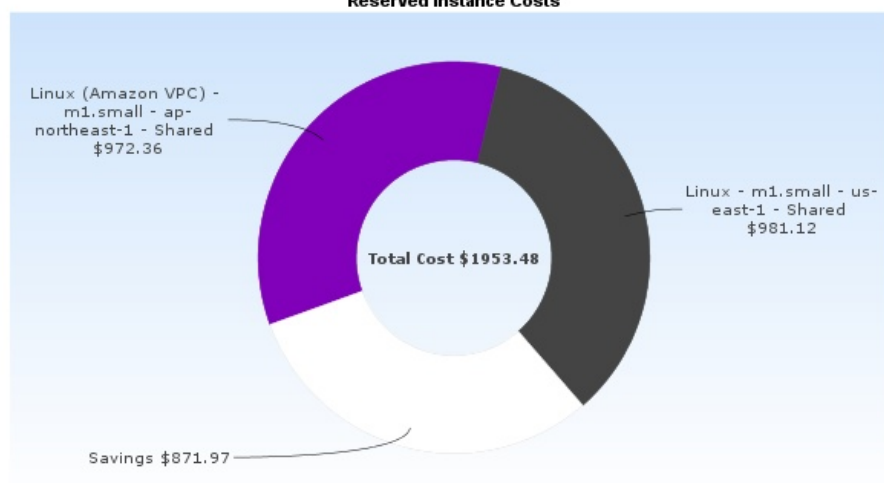
### Report Notes:

Total number of hours in reporting period: 721

#### On Demand Costs



#### Reserved Instance Costs



### Recommended Reserved Instance Purchases

Instance Type	Region	Operating System	Tenancy	Quantity	RI Purchase Cost	Projected Annual Savings
m1.small	us-east-1	Linux	Shared	4	\$981.12	\$529.80 (35%)
m1.small	ap-northeast-1	Linux (Amazon VPC)	Shared	3	\$972.36	\$342.17 (26%)

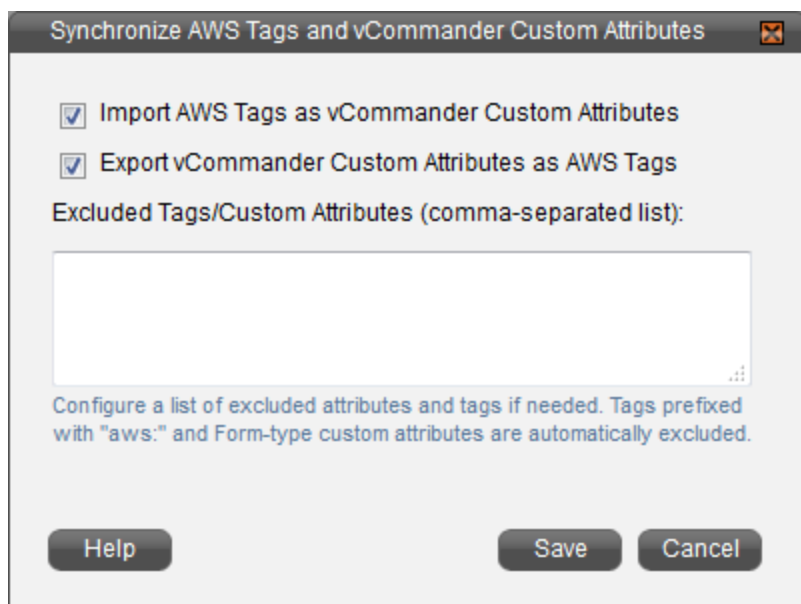
Linux (Amazon VPC) - m1.small - ap-northeast-1 - Shared

Running Instance Count	Running Instance Count Frequency (%)	Reserved Instances Applied	On-Demand Annual Cost	RI Annual Cost	Recommend RI Purchase
2	97%	0	\$1036.66	\$648.24	Yes
3	52%	0	\$1314.53	\$972.36	Yes
4	52%	0	\$1592.39	\$1296.48	Yes

To learn more, see "Configuring and Managing Reserved Instance Recommendations" and "Reserved Instance Planner Report" in the vCommander User Guide.

### Synchronize AWS tags with custom attributes and metadata

Synch your AWS tags, such as cost center, business unit, tier or version, with vCommander custom attributes, as well as ownership and expiry information. Custom attributes allow you to assign an unlimited amount of metadata to services and cloud infrastructure. Once assigned, this metadata persists throughout a service's lifecycle, enabling administrators to know exactly what a workload is being used for. vCommander can also issue [power schedule recommendations](#) based on AWS tag values.



Synchronize AWS Tags and vCommander Custom Attributes

☒ Import AWS Tags as vCommander Custom Attributes

☒ Export vCommander Custom Attributes as AWS Tags

Excluded Tags/Custom Attributes (comma-separated list):

Configure a list of excluded attributes and tags if needed. Tags prefixed with "aws:" and Form-type custom attributes are automatically excluded.

Help Save Cancel

Note that tags aren't synchronized unless you configure synchronization.

To learn more, see "Synchronizing AWS Tags and Embotics® vCommander® Metadata" in the vCommander User Guide.

### Apply VM power schedule recommendations to increase elasticity

Power schedule groups help to ensure that VMs are powered on when needed and powered off when not needed, to minimize cost without hindering productivity. vCommander now issues power schedule recommendations for VMs and instances based on custom attributes or AWS tags.

## Recommendations


vCommander issues rightsizing and power schedule recommendations for VMs, as well as Reserved Instance purchase recommendations for AWS regions.

✖ 8 filtered rows

[Show Details](#)


**AD 2008 32 - beta.pv Primary DC**  
 Power Schedule Group

Cost Before: **\$4500**  
 Cost After: **\$1350**  
 Savings: **\$3150**  
[Show Details](#)


**i-07dbc1a3dfb3df4c3**  
 Power Schedule Group

Cost Before: **\$1030**  
 Cost After: **\$309**  
 Savings: **\$721**  
[Hide Details](#)

**Add to power schedule group**

VM tagged as Project Code: test has been powered on for 20 hours, greater than the configured maximum of 12 hours

Adding the VM to a Power Schedule Group can significantly reduce costs associated with this VM. Cost savings assume the VM is powered on 30% of the time.

Decrease in annual VM cost: \$721

Created On: 2017/01/12 [Apply](#)

By default, power schedule recommendations are generated for public cloud instances that:

- do not belong to a power schedule group
- have an uninterrupted uptime greater than 24 hours
- have any custom attribute or AWS tag whose value is dev, qa, sandbox, staging, or test

You can customize this behavior for your public cloud instances, and you can also enable power schedule recommendations for your private cloud VMs.

Both vCommander and Service Portal users with permission can view the power schedule recommendation details and decide whether to apply the recommendation.

To learn more, see "Configuring and Applying Power Schedule Recommendations" in the vCommander User Guide.

## Use AWS tags to enforce cloud governance policy

Public cloud best practices dictate that your AWS instances have appropriate tags, to ensure that your instances have been assigned the metadata important to your organization. With vCommander's new [AWS tagging synchronization](#) and vCommander's previously existing Compliance Policy, you can ensure that all your AWS instances adhere to these best practices. You can make policy enforcement as strict or lenient as you like—by simply reporting on non-compliant instances, by ensuring that they're always powered off, or by running custom workflows that can perform any task you'd like upon detection of an offending instance.

## Use your AWS billing data for accurate VM billing records and reporting

vCommander can use your AWS account billing data to ensure accurate cost calculations and VM billing records. This data is then used in reports such as the VM Billing Report and the new Reserved Instance Planner report.

**AWS Billing Data Settings**

Provide information to locate your AWS billing report. A maximum of 60 days of billing data is retrieved immediately. Only full days of data are updated. Once configured, data is updated during a nightly task.

**Billing Report Location**

☐ Disabled

☒ S3 Bucket

S3 Bucket Name:

Report Prefix:

Report Name:

**Consolidated Billing Accounts**

☒ AWS Dev

Associated GovCloud Account:

Billing data found

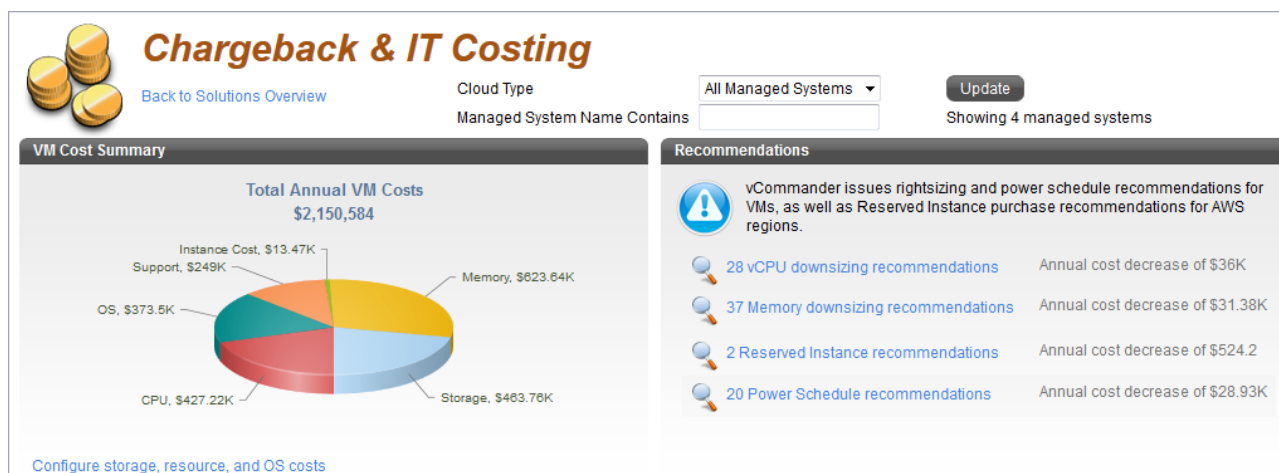
Help Test OK Cancel

vCommander supports AWS consolidated billing as well as GovCloud account billing, and retrieves billing data for VMs that have never been managed by vCommander too. To learn more, see "Retrieving Billing Data for AWS Managed Systems" in the vCommander User Guide.

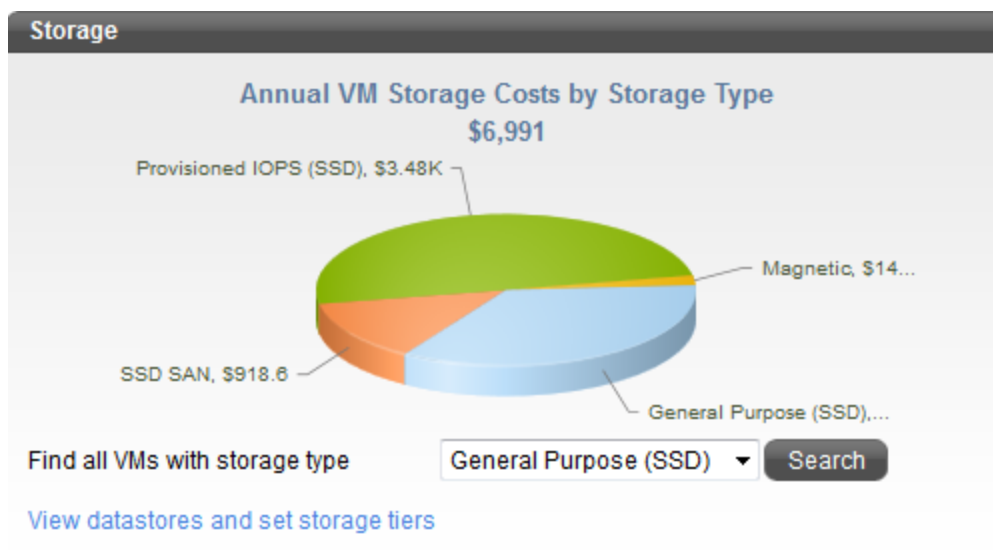


## Improved Chargeback & IT Costing Dashboard

We've added some great features to our Chargeback & IT Costing solutions page. You can now filter the entire page by cloud type (private or public) and by managed system name. We've also added a Recommendations panel, to show the cost savings you can reap if you apply rightsizing recommendations, power schedule recommendations, and Reserved Instance recommendations.



We've improved the storage costs information on the dashboard too. Now the Storage panel includes costs for both storage tiers and disk types.



To access this dashboard, go to **Views > Solutions > Chargeback & IT Costing**. To learn more about our chargeback and IT costing solutions, see "Chargeback and IT Costing" in the vCommander User Guide.

This release of the new cloud cost optimization functionality is a technology preview. We encourage you to reach out to [support@embotics.com](mailto:support@embotics.com) to provide your input.

## Workflow automation

### Modify VM storage resources during a new service request or a change request

This release enhances the ability to automate requests to change VM storage resources—a time-consuming and potentially error-prone process. Users may occasionally request disks that they don't need, or that are larger than they need. It was already possible to add disks through a change request, but users can now submit a change request to:

- expand disks for vCenter VMs (as long as the disks aren't involved in a snapshot or linked clone chain)
- delete disks for vCenter and SCVMM VMs

We've made it easier to tailor storage resources for new service requests as well. When requesting a new vCenter VM, requesters can:

- shrink a disk that an administrator added to the service catalog blueprint
- expand existing disks (as long as the disks aren't involved in a snapshot or linked clone chain)
- delete existing disks

You can control this ability for both change requests and new service requests with the Storage form element, which now has three allowed actions: **Add**, **Change** and **Remove**:

Infrastructure

Resources

Attributes

Form

Allow requesters to modify the default component settings configured on the other tabs.

↑

↑

↓

↓

(Storage)

Edit Delete

Storage

Display Label:

Display Storage Tier: ☒

Selectable Values:

Ctrl-click to select multiple values

Storage Tier 1

Storage Tier 2

Storage Tier 3

Storage Tier 4

Storage Tier 5

Storage Tier 6

Allowed Actions:

☒ Add

☒ Change


☒ Remove

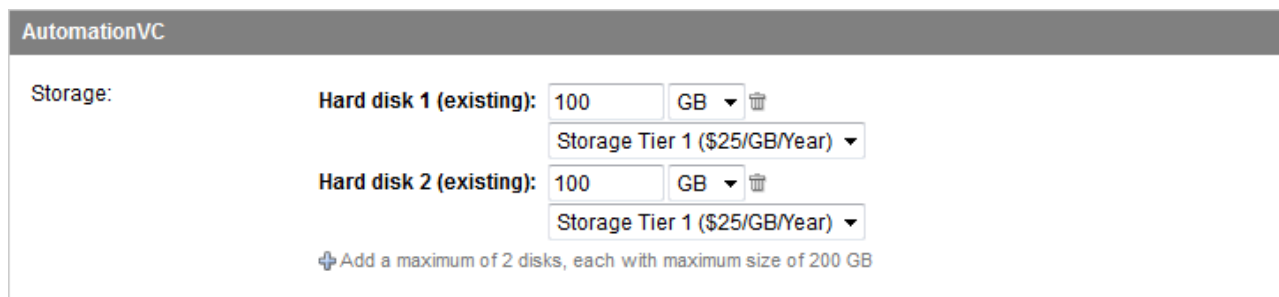
Maximum Disk Size:

Maximum Extra Disks:

OK


Cancel


Notice that the Service Portal user can now use the trash can  to delete existing disks when requesting a new service.




AutomationVC

Storage:


Hard disk 1 (existing): 100 GB  Storage Tier 1 (\$25/GB/Year) ▼


Hard disk 2 (existing): 100 GB  Storage Tier 1 (\$25/GB/Year) ▼

 Add a maximum of 2 disks, each with maximum size of 200 GB

To learn more, see "Adding a vCenter Service to the Catalog", "Adding an AWS Service to the Catalog", "Adding an SCVMM Service to the Catalog" and "Customizing Service Request Forms" in the *vCommander User Guide*.

## Reconfigure Network Resources in the Service Portal

You can now add a network adapter or reconfigure an existing one in the Service Portal using the Reconfigure Resources command. Select a VM on the VMs and Services page and select Reconfigure Resources from the  Commands drop-down menu. You can then modify the network settings as required.

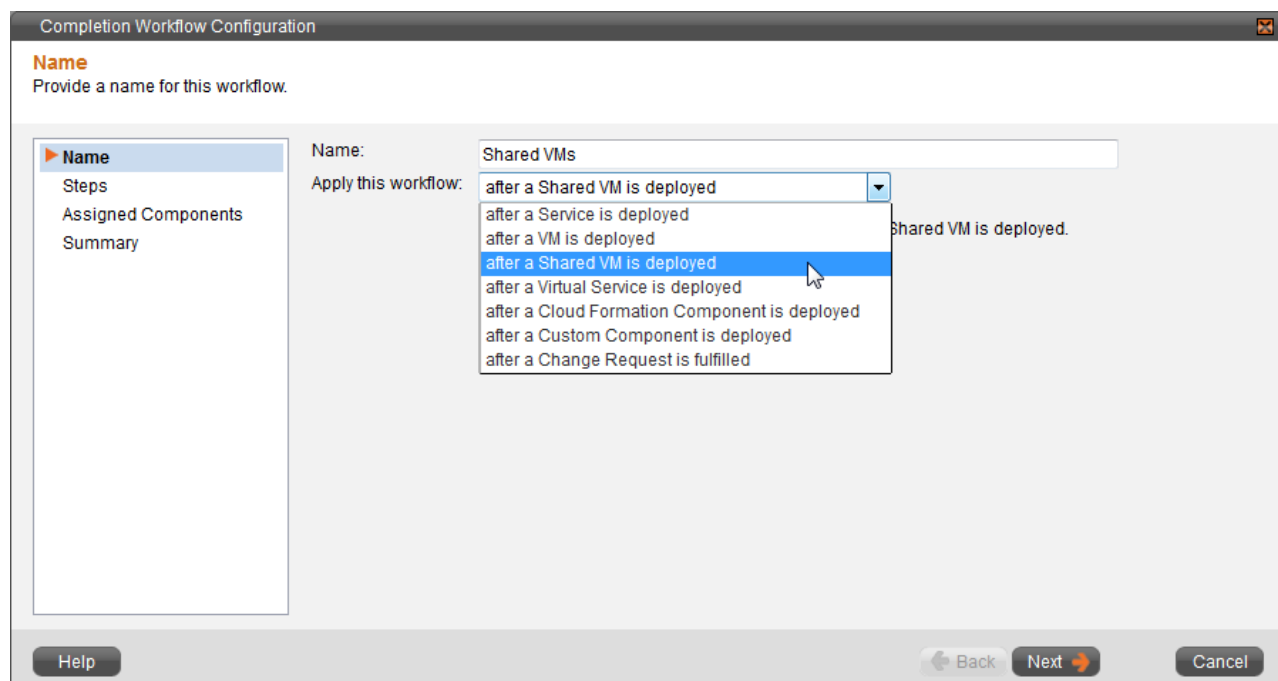
You can now to add a new network adapter or reconfigure an existing one in the Service Portal. Highlight a VM on the VMs and Services page and select Reconfigure Resources from the  Commands drop-down.

To learn more, see "Reconfigure VM Resources in the Service Portal" in the *Service Portal User Guide*.

## Attach a completion workflow to shared VMs

You can now create completion workflows for shared VMs, which are service catalog items added by users who want to share an exact copy of a VM with other users. This allows you to customize a completion workflow for post-deployment tasks specific to shared VMs, such as resolving IP and DNS conflicts. For example, you could create a completion workflow for shared VMs that deletes all network adapters on the deployed VM, waits for 30 seconds, and adds a new network adapter, so that the VM receives a new IP address from DHCP.

A new type of component-level completion workflow makes it easier to create workflows that target only shared VMs.



To learn more, see "Creating a Completion Workflow" and "Sharing VMs with Other Users" in the vCommander User Guide.

## Provision Amazon EC2 VMs with an IAM role

AWS provides the ability to delegate access to resources through Identity and Access Management (IAM) roles. With this release of vCommander, you can assign IAM roles to new VMs in several ways, depending on what works best in your situation. You can assign the required IAM role to the catalog blueprint for each template (AMI), or if you deploy the same template to multiple destinations, you can configure an IAM role for each deployment destination. Administrators can also assign an IAM role during manual deployment. Using variable substitution, you can assign the IAM role based on information users provide on the request form.

For example, let's say you use Amazon EC2 Run Command to execute a Shell script on a Linux instance. In AWS, you configure an IAM role with appropriate permissions, called RunCommand. In the vCommander catalog blueprint for this AMI, you add the IAM role, so that images deployed from this service catalog entry are automatically configured with this IAM role.

Getting Started | Service Catalog | Form Designer | Approval Workflow | Provisioning Configuration | Completion Workflow | Email Notification

## Edit Service: AWS Development Linux

Service Description  
Component Blueprints  
Dev-AmazonLinux  
Deployment  
Visibility  
Summary

Infrastructure | Resources | Attributes | Puppet | Form

Set infrastructure options for this component.

Name: Dev-AmazonLinux

Description: Linux

Deployed Name: ☒ Use default naming format ☐ Use: HJA-VM #{uniqueNumber[3]} [Configure global text replacement rules](#)

Completion Workflow: Default (Global) [Add Workflow](#) [Edit Workflow](#)

User Data: 

#{.}

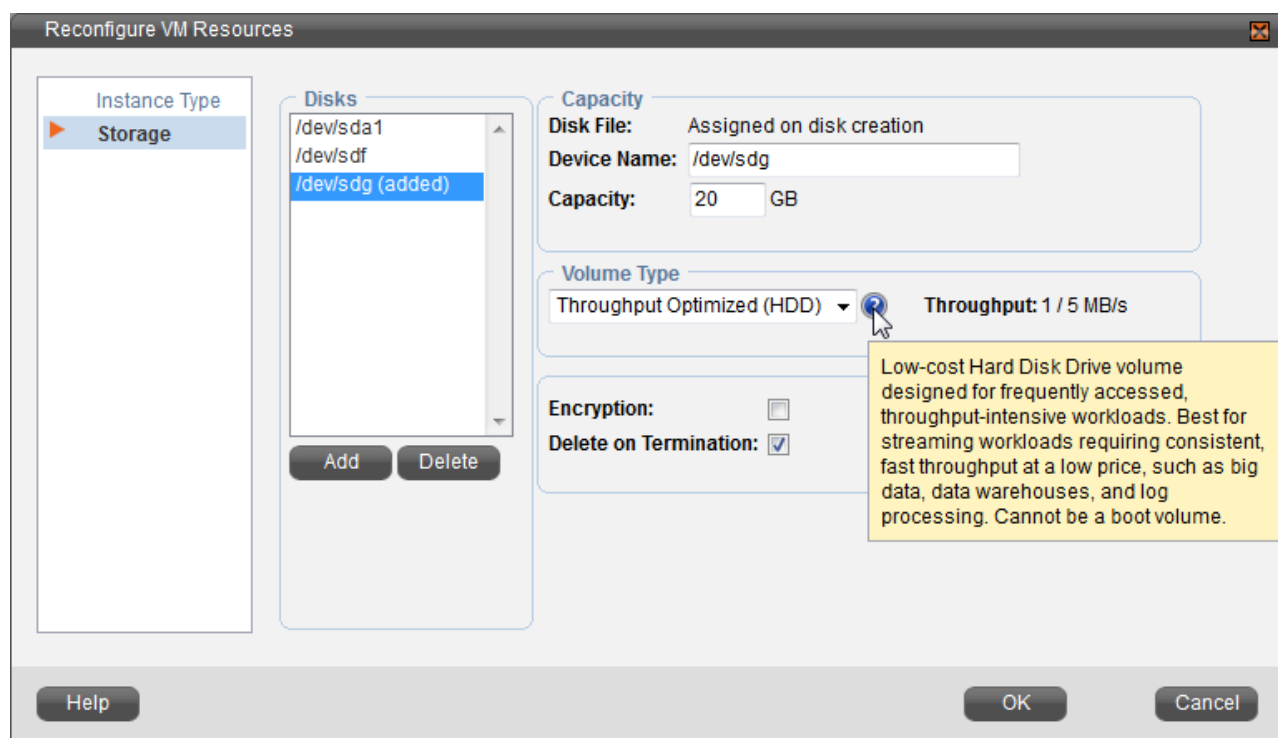
IAM Role: RunCommand 

#{.}

To learn more, see "Managing Amazon Web Services with vCommander" in the *vCommander User Guide*.

### Support for latest AWS VM storage types

We've added support for two new AWS storage types: Throughput Optimized HDD and Cold HDD. The HDD-backed volumes are optimized for large streaming workloads where throughput (measured in MiB/s) is a better performance measure than IOPS.



You can add disks with the new storage types when reconfiguring VM resources (as shown in the image above), when configuring a VM blueprint in the service catalog, when configuring the Storage-AWS request form element, when requesting new AWS VMs and when manually deploying AWS VMs. Costs for these new storage types are reflected throughout vCommander and the Service Portal as well.

To learn more, see "Manually Reconfiguring VM Resources" in the *vCommander User Guide*.

## Capacity and resource management

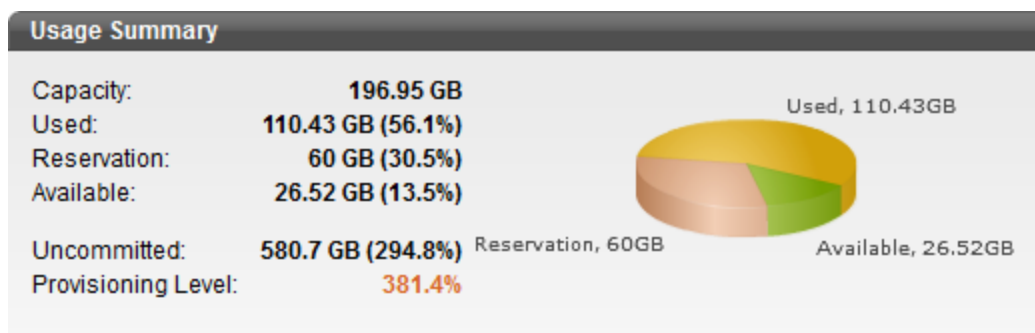
### Placement considers storage requirements of concurrent requests

Previously, vCommander chose the placement destination for new vCenter and SCVMM services without accounting for the storage requirements of other in-flight requests. The same was true for service change requests. This meant that vCommander might try to deploy or fulfill multiple concurrent service requests on a datastore where there was room for only one, for example, leading to failed service requests. This problem could also occur for multiple services within a single request.

vCommander now reserves storage as soon as deployment or fulfillment starts — whether it's manual deployment and fulfillment, automated deployment and fulfillment, scheduled fulfillment, vCenter migration, or the manual Reconfigure Resources command. This ensures that new or expanded disks are placed on a datastore with sufficient storage space. Once deployment or fulfillment has succeeded (or failed), the storage reservation is released.

When an administrator is manually deploying or fulfilling a request or reconfiguring VM resources, the wizard shows any existing storage reservation, so that the administrator can make an informed choice of datastore.

When storage is reserved on a particular datastore, you can see it in the datastore's Usage Summary.



Four new datastore properties can be added to the Datastores tab and used in searches:

- Available %
- Available (GB)
- Reservation %
- Reservation (GB)

The existing property Provisioning Level now includes the amount of reserved storage.

To learn more, see "Configuring Datastore Placement" and "How Deployment Destinations Work" in the vCommander User Guide.

## Lifecycle and policy management

### Enhanced Expiry Policy

The Expiry Policy now allows you to set a maximum for the number of allowed expiry extensions, and has also been enhanced with workflow variables so that you can better communicate and automate lifecycle decommissioning. This feature enhances the flexibility of automated decommissioning, while helping to prevent the VM sprawl that can occur from long-running but unused workloads.

**Policy Configuration**

Select expiry date extension options.

- [Choose a Policy](#)
- [Policy Name/Description](#)
- [Choose a Target](#)
- [Compliance](#)
- [Configure the Policy](#)
- [Configure Groups](#)
- Expiry Extension**
- Notifications
- Summary

☒ **Enable expiry date extension**  
 Days to extend expiry date by:   
 Maximum number of extensions:   
 Approval state will be:



Here's part of the email that's sent to the primary owner after configuring vCommander as shown in the two images above:

## Summary

The service AutomationRT1, with the primary owner Brian Carter, is set to expire soon.

## Extend Expiry Date

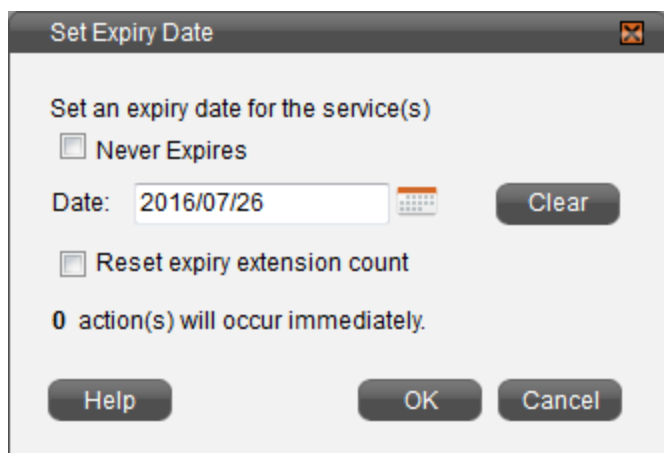
You may extend the expiry date to 2016/10/25 by clicking on the following link. You have 2 extensions remaining.

<https://Keller.embotics.com/portal/expiryextension/ExtendExpiry?expiryId=8e634167-3c5c-4689-ad04-4c7541b4ada8>

Both vCommander and Service Portal users can view the number of extensions remaining for a VM in the VM's Details pane.

Details	
Annual Cost:	\$35542 <a href="#">Details</a>
Primary Owner Login:	bcarter@delta.pv
Date Created:	2016/07/19 10:51:47
Uptime:	2 days, 3 hours
Expiry Extensions Remaining:	2
Powered Off Since:	
Snapshot Count:	1
Virtual Disk Size (GB):	400.0


Administrators can reset the expiry extension count whenever required by using a new option in the Set Expiry Date dialog.



**Set Expiry Date**

Set an expiry date for the service(s)

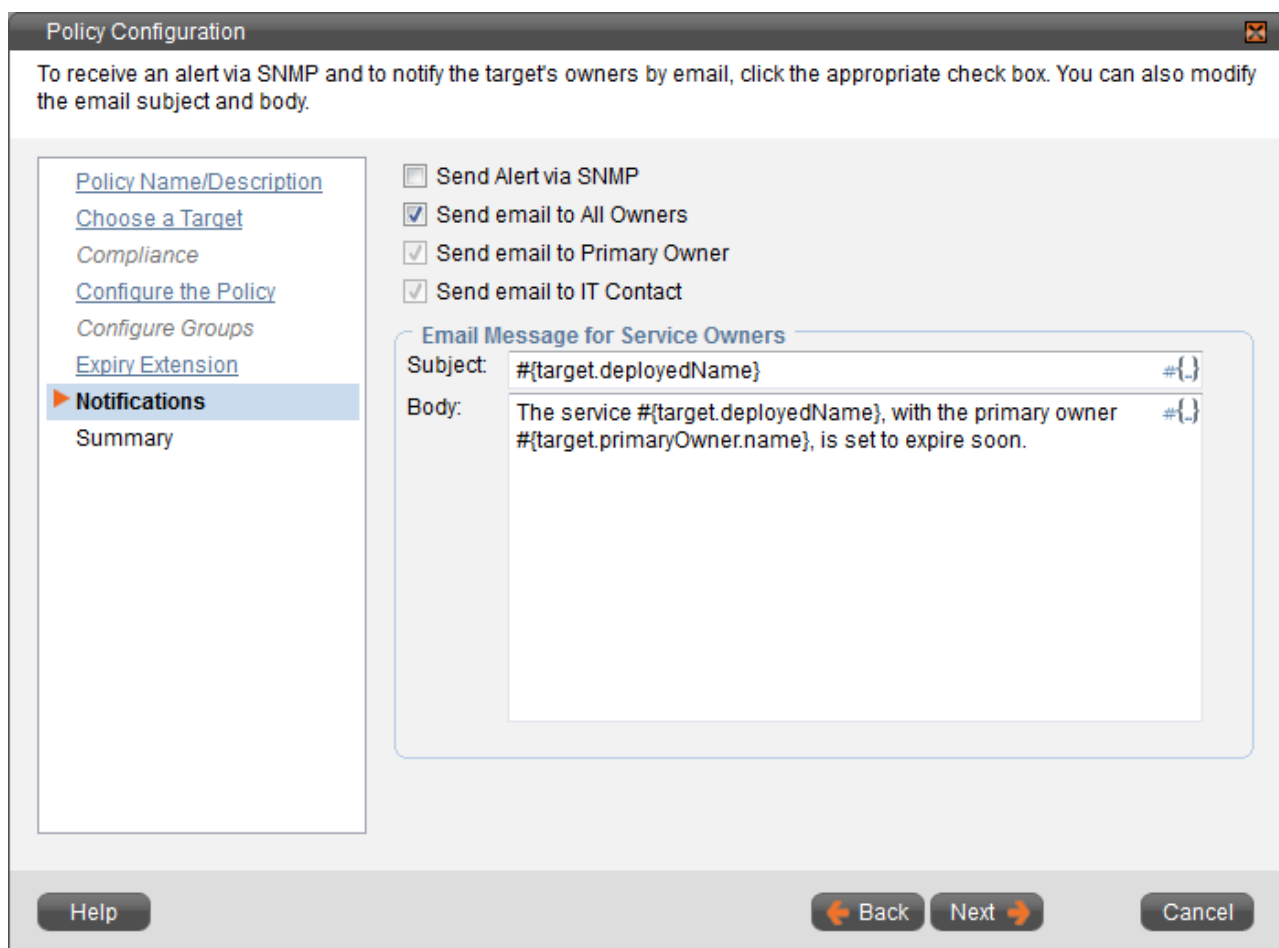
☐ Never Expires

Date:  

☐ Reset expiry extension count

0 action(s) will occur immediately.

You can also now use vCommander variables in the subject and body of the Expiry Policy notification email.



**Policy Configuration**

To receive an alert via SNMP and to notify the target's owners by email, click the appropriate check box. You can also modify the email subject and body.

[Policy Name/Description](#)

[Choose a Target](#)

[Compliance](#)

[Configure the Policy](#)

[Configure Groups](#)

[Expiry Extension](#)

**► Notifications**

Summary


☐ Send Alert via SNMP


☒ Send email to All Owners

☒ Send email to Primary Owner

☒ Send email to IT Contact

**Email Message for Service Owners**

Subject:  

Body:  

In addition to the deployed name and primary owner name shown above, you can use other variables such as DNS name, expiry date, owner email, expiry date, cost information and custom attributes.

To learn more, see "Managing Service Expiry" and "Controlling Expired Services with the Expiry Policy" in the vCommander User Guide.

## User interface enhancements

### Enhancements to Recommendations

We've improved the Recommendations page in several ways, to make it easier for you to find, apply and manage recommendations.

- You can now multi-select recommendations in the Table view, so that you can apply or ignore multiple recommendations simultaneously, as well as exclude multiple VMs from recommendations at the same time.
- You can use quick search and advanced search filters in the Table view, to narrow down a long list of recommendations. Your filters are saved between vCommander sessions.

**Recommendations**  
vCommander issues rightsizing and power schedule recommendations for VMs, as well as Reserved Instance purchase recommendations for AWS regions.

Recommendation: equals Instance Type (Down) 72 unfiltered rows

Page Size: 20 Page 1 of 4

Target Name	Managed System	Recommendation	Memory Change	Savings	Action Taken
us-east-1	it@embotics.com	Reserved Instance			
vCenter 6 (Kermit)	manta	vCPU		\$499	
Pat (Pat)	manta	vCPU		\$240	
sqlsyntax-patch	manta	vCPU		\$240	
TBJ's 2008 R2 (Opus	manta	vCPU		\$120	
dev-docker-01	manta	vCPU		\$120	
pgsyntax-trunk	manta	vCPU		\$120	
sqlsyntax-trunk	manta	vCPU (Down)	-1	\$120	

Dropdown menu options: Instance Type (Down), Instance Type (Up), Memory (Down), Memory (Up), Other, Power Schedule Group, Reserved Instance Purchase, vCPU (Down), vCPU (Up).

- You can make the Recommendations page your landing page.
- We've made it easier to distinguish recommendations that will cost you money from those that will save you money. We've renamed the Cost column to Savings, and savings are now expressed as a positive number. Previously, for example, to find all VMs with recommendations that would save more than \$200, you had to filter by Recommendation Cost Difference < -200. Now, you can simply filter by Recommendation Annual Cost Savings > 200. If you had saved searches using the Recommendation Annual Cost Savings filter, they are automatically updated during upgrade.

To learn more, see "Managing Recommendations" in the vCommander User Guide.

## **vCommander now uses HTML5 technology**

The platform used for displaying graphics has been changed from Adobe Flash to HTML5. This includes all areas of the product, such as reports, dashboards, and forms for both the Service Portal and the vCommander admin UI. Aside from a cleaner look, the product works exactly as it did in the previous release.

## **New supported platforms**

### **Azure Resource Manager (ARM) support**

vCommander now manages Azure Resource Manager. See [Azure Resource Manager support](#) above.

### **vSphere 6.5 support**

vSphere 6.5 is now supported as a virtualization platform. For the full list of supported platforms, see [System Requirements](#).

### **Windows Server 2016 supported for vCommander installation**

vCommander can now be installed on Windows Server 2016.

### **Microsoft SQL Server 2016 database support**

vCommander can now be installed against a Microsoft SQL Server 2016 database.

## **Preview of all-new REST API**

### **Version 3 of REST API available for beta testing**

We're excited to introduce a beta version of our completely new REST API. Based on customer feedback, we had several key design goals for version 3:

- Simplicity and ease-of-use
- Pagination on all multiple return calls
- Detailed response messages
- Interactive documentation

Note that the v3 APIs are for preview purposes only and are subject to change in the next release. To learn more, see [REST API v3 Preview](#).

## **Enhancements to REST API version 2.8**

For more information on the REST API, see the *vCommander REST API Getting Started Guide* (included with the REST API package). You can also access the built-in reference information here:

`https://<vCommander hostname or IP address>:<port>/apihelp/`

You can download the REST API PowerShell client here:

<http://support.embotics.com/support/solutions/articles/8000035227-download-vcommander-rest-client>

## Changes in REST API Release 6.0.2 (PowerShell Client v2.8.0)

The vCommander REST API PowerShell client version 2.8.0 is compatible with vCommander Release 6.0.2 and higher. This version includes the ability to:


- view and clear quota reservation
- view and clear storage reservation
- create and assign a completion workflow targeting shared VMs
- delete and resize disks as part of a new service request
- modify storage resources through a change request
- add an ARM managed system
- add ARM templates to the service catalog

## REST API v3 Preview

This section provides information about the preview of version 3 of the Embotics® vCommander® REST API.

The key principles that went into creating this API are:

- Simplicity and ease-of-use
- Pagination on all multiple return calls
- Detailed response messages
- Interactive documentation

 The v3 APIs are for preview purposes only and are subject to change in the next release.

## REST API v3 capabilities

vCommander REST API v3 provides a limited set of features, detailed in the following sections.

### User Management

- Get all users (GET - /rest/v3/users)
  - Limit the number of results returned per page and specify which page to return
  - Filtering support exact match filtering on username only
- Get a user's details
- Add a user
- Update a user
- Delete a user

### Organization Management

- Get all organizations
  - Limit the number of results returned per page and specify which page to return
  - Filtering support exact match filtering on org\_name only
- Get an organization's details

- Add an organization with or without a resource or cost quota
- Update a organization and quota
- Delete a organization

## Member Management

- Get all members
  - Pagination for organization members not supported
  - Filtering for organization members not supported
- Get a member's detail including is resource or cost quota
- Add a member with or without resource or cost quota depending on the organization
- Update a member and quota
- Delete a member

## Service Provisioning

- Get all services available for provisioning for the requester
- Get the service request forms (service and component level) for an available service.
- Submit a new service request
- Get all service requests
  - Limit the number of results returned per page and specify which page to return
  - Filtering on service request state only (except FAILED)
- Get a service request's details including its workflows, costs, and resources.
- Get a service request's comments
- Add a comment to a service request

## Workflows

- Get all workflows
  - Limit the number of results returned per page and specify which page to return
  - Filtering by type, status, service request ID and duration
- Get a workflow's details

## Tasks

Get an asynchronous tasks details. In the event that a method takes too long to complete, an asynchronous task is returned in place of the object (user, org, member, service request, etc.).

## How does the REST API work?

The API uses standard HTTP methods (GET, POST, PATCH, DELETE). You can use any REST client to communicate with the vCommander REST service, Embotics does not provide a PowerShell client for REST API v3.

## Security

vCommander REST API calls are privileged in the sense that the logged-in user must be authenticated before access is granted. The REST API supports HTTP basic authentication.

## Responses and error handling

vCommander uses standard HTTP status codes to indicate the status of API calls. For example, 200 for success and 4XX series for bad request format will describe the error. A list of applicable responses is provided with each endpoint request method example.

## Create a user account for the REST API

We recommend creating a dedicated local user account to access the REST service. This account must have either a vCommander administrative role (either Enterprise Admin or Superuser) and appropriate access rights on the target managed systems

## Service Request workflow

The following is an example of a service request submission workflow using the available V3 APIs.

1. Browse the available service using the **GET /services**.
2. Get the service request form for using **GET /services/{id}/servicerequestform**.
3. Submit the completed form using **POST /servicerequests**.
4. Query the service request details using **GET /servicerequests/{id}**.

# System Requirements


This section provides information on software, hardware and port requirements as well as supported third-party integrations.

## Software requirements

<b>Virtualization and Cloud Platforms Supported</b>	<ul style="list-style-type: none"> <li>VMware vSphere 6.5, 6.0, 5.5, 5.1, 5.0</li> <li>Microsoft® System Center Virtual Machine Manager (SCVMM) 2012 R2</li> <li>Amazon Web Services</li> <li>Microsoft Azure Resource Manager (ARM) (see note 1)</li> <li>Microsoft Azure Service Manager (ASM) (see note 1)</li> </ul>
<b>Operating Systems Supported for vCommander Installation</b>	<ul style="list-style-type: none"> <li>Microsoft Windows Server 2016</li> <li>Microsoft Windows Server 2012 R2</li> <li>Microsoft Windows Server 2012</li> <li>Microsoft Windows Server 2008 R2 or higher</li> </ul>
<b>Languages Supported</b>	<ul style="list-style-type: none"> <li>English</li> </ul>
<b>Recommended Databases</b>	<ul style="list-style-type: none"> <li>Microsoft SQL Server 2016</li> <li>Microsoft SQL Server 2014</li> <li>Microsoft SQL Server 2012</li> <li>Microsoft SQL Server 2008 R2</li> </ul>
<b>Default Database</b>	<ul style="list-style-type: none"> <li>PostgreSQL is included with vCommander for evaluation environments</li> </ul>
<b>Browser Recommended</b>	<ul style="list-style-type: none"> <li>Mozilla Firefox 54</li> </ul>
<b>Browsers Supported</b>	<ul style="list-style-type: none"> <li>Mozilla Firefox 54, 53</li> <li>Microsoft Internet Explorer 11, 10 (see note 2)</li> <li>Google Chrome 59, 58</li> <li>Microsoft Edge (experimental)</li> </ul>
<b>Network</b>	<ul style="list-style-type: none"> <li>Gigabit Ethernet Minimum</li> </ul>
<b>Licensing</b>	<ul style="list-style-type: none"> <li>For more information about licensing, please refer to the terms in your license agreement or contact your Embotics® representative.</li> </ul>
<b>SCVMM Requirements</b>	<ul style="list-style-type: none"> <li>If you manage SCVMM, you must install Microsoft .NET Framework version 4.5 or higher. Note that if you are upgrading from a previous release and managing SCVMM, you must install Microsoft .NET Framework version 4.5 or higher <i>before</i> upgrading.</li> </ul>

1 vCommander does not support Azure subscriptions that contain both Azure Classic and Azure Resource Manager resources. To learn how to migrate resources to ARM, see [Migrate Classic Resources to Azure Resource Manager](#) in the Microsoft documentation.

2 Using Internet Explorer 10 requires editing the security configuration in new installations of vCommander. To learn how to enable the use of Internet Explorer 10 with vCommander, see the Knowledge Base article [Modifying vCommander's SSL Ciphers](#).

 When vCommander is installed, an application called Erlang OTP is also installed, and it will appear in the list of installed programs on the vCommander host. Erlang OTP should not be uninstalled.



## Hardware requirements

The following table provides vCommander deployment tiers based on typical use. See "Scaling Embotics® vCommander® Hardware Requirements" in the vCommander Installation Guide for more details. You can also contact Embotics® Support to discuss requirements further, should you have any questions or unique configurations.

Profile	Description	Base Requirements
Evaluation	A single-vCPU deployment used to evaluate vCommander's feature set. Will not grow significantly beyond original occupancy and is not expected to be upgraded to production.	<ul style="list-style-type: none"> <li>• 1 vCPU / 2.0 GHz dual core</li> <li>• 4.0 GB Memory</li> <li>• 2.0 GB disk space</li> <li>• Default Postgres database</li> </ul>
Small	A single-vCPU production deployment for static environments of fewer than 500 VMs, supporting fewer than 10 concurrent users, with infrequent reporting.	<ul style="list-style-type: none"> <li>• 2 vCPU / 2.0 GHz quad core</li> <li>• 4.0 GB Memory</li> <li>• 1.0 GB disk space (installation)</li> <li>• 4.0 GB disk space (data partition)</li> <li>• Dedicated application server</li> <li>• Microsoft SQL Database</li> </ul>
Medium	A dual-vCPU production deployment for dynamic environments with fewer than 1500 VMs, supporting fewer than 30 concurrent users, with frequent reporting.	<ul style="list-style-type: none"> <li>• 2 vCPU / 2.0 GHz quad core</li> <li>• 6.0 GB Memory</li> <li>• 1.0 GB disk space (installation)</li> <li>• 10.0 GB disk space (data partition)</li> <li>• Dedicated application server</li> <li>• Separate Microsoft SQL Database</li> <li>• DB data file (mdf) and log file (ldf) stored on separate disks</li> </ul>
Enterprise	A dual-vCPU production deployment for dynamic environments with more than 1500 VMs, supporting more than 30 concurrent users, with frequent reporting.	<ul style="list-style-type: none"> <li>• 2 vCPU / 2.0 GHz quad core</li> <li>• 8.0 GB Memory</li> <li>• 1.0 GB disk space (installation)</li> <li>• 10.0 GB disk space (data partition)</li> <li>• JVM memory increased to 6 GB</li> <li>• Dedicated application server</li> <li>• Separate Microsoft SQL Database</li> <li>• SAN backing for database files</li> </ul>

### vCommander VM Access Proxy Hardware Requirements

Minimum requirements:


- 2 CPUs  
Note that the higher the number of CPUs available, the more concurrent connections the VM Access Proxy can handle.
- 2 GB Memory
- 7 GB disk space

The template archive size is approximately 2.5 GB.

## Network requirements

The following ports are used by the various vCommander components. You configure some of these ports during installation, and you can also configure ports after installation using the vCommander Control Panel. Certain ports can be configured only through a system property; for more information, contact [support@embotics.com](mailto:support@embotics.com).

**IMPORTANT:** To protect the security of the vCommander system, all ports must be firewalled, with the exception of ports that are required to be inbound.

 Where the direction is outbound, this implies a corresponding inbound connection to the target.

**Table: Network Requirements - Basic Operations**

Connection	Ports	Protocol	Direction	Description
vCommander Webserver	443	TCP	Inbound	Access to vCommander admin console, Service Portal and REST API
vCommander Microsoft SQL Server	1433	TCP	Outbound	Access to the vCommander database. <a href="#">Additional ports</a> may be required depending on the configuration of your SQL server
vCenter	443	TCP	Outbound	Communications with individual vCenters or their external Platform Services Controllers
vCenter Hosts	443	TCP	Outbound	Access to the vCenter hosts for VM Guest OS file copy operations
Amazon Web Services	443	TCP	Outbound	Communications with Amazon Web Services API
Microsoft Azure	443	TCP	Outbound	Communications with Microsoft Azure API
Windows Guest OS Features	135 139 445	TCP	Outbound	Access to Windows VMs for issuing WMI commands and file copy operations
Linux Guest OS Features	22	TCP	Outbound	Access to Linux VMs for issuing SSH commands

Connection	Ports	Protocol	Direction	Description
Datastore Scanning	443	TCP	Outbound	Access to VMware hosts through HTTPS to collect file layout
Legacy Datastore Scanning	22	TCP	Outbound	Access to VMware hosts through SSH to collect file layout. Only used when HTTPS access is not available

**Table: Network Requirements - Authentication**

Connection	Ports	Protocol	Direction	Description
Kerberos Key Distribution Center	88	TCP	Outbound	Access to authenticate against an Active Directory or LDAP server
Active Directory Domain Controller for Remote LDAP Traffic	389	TCP UDP	Outbound	Access to authenticate against an Active Directory or LDAP server
Active Directory Domain Controller for Remote Global Catalog Traffic	3268	TCP	Outbound	Access to query the global catalog of an Active Directory or LDAP server
Active Directory Domain Controller for Remote Secure LDAP Traffic	686	TCP	Outbound	Access to authenticate against a secure Active Directory or a secure LDAP server
Active Directory Domain Controller for Remote Secure Global Catalog Traffic	3269	TCP	Outbound	Access to query the global catalog of a secure Active Directory or secure LDAP server

**Table: Network Requirements - Optional**

Connection	Ports	Protocol	Direction	Description
Splunk Server	8089	TCP	Outbound	Communications with Splunk server for retrieval of guest OS performance metrics

Connection	Ports	Protocol	Direction	Description
BlueCat™ Server	80	TCP	Outbound	Communications with BlueCat™ IP address management server for addressing assignments

**Table: Network Requirements - Client Connections**

All of these connections go from the client browser to the respective servers.

Connection	Ports	Protocol	Direction	Description
VM Access (Remote Desktop)	3389	TCP	Inbound	Access to remote control VMs using RDP
VM Access (Virtual Network Computing)	5900	TCP	Inbound	Access to remote control VMs using VNC
VMware Console - WebMKS (HTML5)	9443 (vCenter 6.0) 7343 (vCenter 5.5)	TCP	Inbound	Access to remote control VMs using WebMKS Console
VMware Console - Plug-in	443 (vCenter) 902 (ESX)	TCP	Inbound	Access to remote control VMs using VMware Remote Console (VMRC) Plug-in

**Table: Network Requirements – Advanced Configuration**

Connection	Ports	Protocol	Direction	Description
VM Access Proxy Appliances – Web Server	443	TCP	Inbound	Publishing listener for WebMKS open console sessions
VM Access Proxy Appliances – Web Server	8443	TCP	Inbound	Publishing listener for RDP, VNC, SSH and plug-in-based open console sessions
Service Portal Appliances – Database Connection	1433	TCP	Outbound	Access to the vCommander database for distributed Service Portal nodes. <a href="#">Additional ports</a> may be required depending on the configuration of your SQL server

Connection	Ports	Protocol	Direction	Description
vCommander Authentication Service	8042	TCP	Inbound	Communications with distributed Service Portal nodes
Highly Available vCommander Heartbeat	443	TCP	Bidirectional	Passive node access to check health of active node
VM Access (Hyper-V Console)	2179	TCP	Outbound	Access to remote control VMs using the Hyper-V console

### Guest OS Scanning Port Requirements

Guest OS scanning of Windows VMs also requires firewall rules to handle a dynamic range of ports opened for the response when vCommander queries the VMs on TCP port 135. To avoid opening a large range of high ports, please refer to the following Knowledge Base articles for instructions on how to configure the Windows Firewall to enable these ports:

- [Configuring Windows for Guest OS Scans Using Group Policy](#)
- [Configuring Windows for Guest OS Scans](#)

### Third-party integrations

The following table provides a list of third-party software that can be integrated with vCommander, including supported versions where applicable.

**Table: Third-Party Integrations**

Integration Category	Supported Systems and Protocols	Integration Type
Authentication	Active Directory®	Bundled
	LDAP	Bundled
	SAML2 WebSSO	Bundled
	Windows SSO	Bundled
Configuration Management and Application Deployment / Automation	Chef™ 12.15.7	Bundled
	Puppet™ Enterprise 2017.1.1	Bundled
	SCCM 2012 R2	<a href="#">Scripted</a>
	Jenkins CI with PowerShell plug-in	<a href="#">Scripted</a>
	ServiceNow or ServiceNow Express, with REST API access	<a href="#">Scripted</a>
	Zerto Virtual Manager (ZVM) Replication 4.5u1 (vCenter only)	<a href="#">Scripted</a>
	Docker 1.11.2	<a href="#">Scripted</a>

Integration Category	Supported Systems and Protocols	Integration Type
	vCommander REST API plus Windows Task Scheduler (and similar)	<a href="#">Scripted</a>
	vCenter metadata synchronization, for all vCenter versions supported by vCommander	<a href="#">Scripted</a>
IPAM	BlueCat™ IPAM 4.1	Bundled
Application Monitoring	Splunk® 6.2, 6.1 (with HTTPS protocol)	Bundled
Notification	SNMP 2	Bundled
	SMTP	Bundled
Backup	Veeam Backup & Replication 8.0	<a href="#">Additional download required</a>
Workflow Automation	vCommander REST API client for PowerShell 4, 3 with .NET Framework 4.5 or higher	<a href="#">Additional download required</a>

## Deprecated and Removed Features and Platforms

This section lists features and platforms that are deprecated. Support for these features and platforms will be removed in a future release. If you need more information about any of the deprecated or removed features, please contact [support@embotics.com](mailto:support@embotics.com).

### Removed in version 6.0

#### Graphical Lineage view for VMs

The Graphical Lineage tab for VMs has been removed.

### Removed in version 5.7

#### vSphere 4.1, 4.0 and 2.5 support

Support for vSphere 4.1, 4.0 and 2.5 as virtualization platforms has been removed.

### Deprecated in previous versions

#### Deprecated variables

As part of the usability improvements to vCommander variables, we have renamed some variables to clarify their purpose, and we have deprecated those that are not needed. The deprecated variables are not guaranteed to work in a future release.

If you are using any of the variables that have been renamed, they will automatically be updated with the new names during upgrade.

If you need to continue using any of the deprecated variables, please contact [support@embotics.com](mailto:support@embotics.com), so that we can add them to the list of supported variables.

### Version 1 of REST API

Version 1 of the vCommander REST API is deprecated and will be removed in a future release.

### Graphical Lineage view for VMs

The Graphical Lineage tab for VMs is deprecated and will be removed in a future release.

### User-specific component forms for new service requests

With the introduction of the blueprint service catalog model, user-specific component forms for new service request (that is, component forms created in the Form Designer) are deprecated and will be removed in a future release.

### End of Life Policy, Suspect Policy and Approval Policy

The End of Life policy, Suspect policy and Approval policy and the relevant VM states are deprecated and will be removed in a future release.

### Connect to the same network as the source service

The option to connect to the same network as the source service when configuring deployment destinations is deprecated and will be removed in a future release. We recommend selecting one or more networks from the list of available networks.

## Upgrade Notes

### Supported upgrade paths

Consult the following table to see whether a direct upgrade from your currently installed version is supported:

Current installed version	Direct upgrade supported to Release 6.0.2
5.7.x	Yes
5.6.x and earlier versions	No See the Knowledge Base article <a href="#">What Upgrade Paths are Supported?</a> for instructions on how to upgrade from earlier versions.

### Changes to system requirements

See also [New supported platforms](#) and [Deprecated and Removed Features and Platforms](#).

### Changes to software requirements

A warning not to uninstall Erlang OTP has been added.

## Changes to hardware requirements

The base memory requirement for Enterprise installations of vCommander has changed from 6 GB to 8 GB.

## Changes affecting upgrading users

### Applying custom branding to the Service Portal

Due to the complete redesign of the Service Portal user interface, the branding points have changed. If your Service Portal already has a custom theme, before upgrading your production vCommander to Release 6.0.2, we recommend that you install a separate instance of vCommander in a staging area where you can reproduce your current theme, using the new method. That way, you can deliver a theme providing seamless branding during the maintenance window for your upgrade. Contact [support@embotics.com](mailto:support@embotics.com) to obtain a staging license for this purpose.

Note also that users must clear their browser cache for the branding changes to take effect.

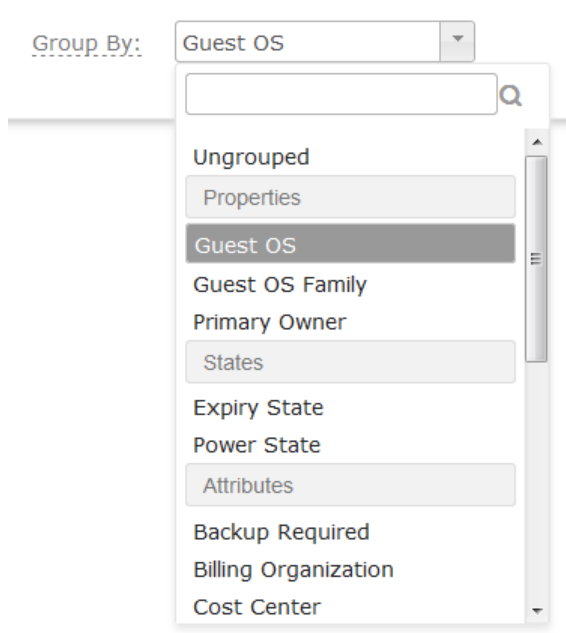
To learn more, see "Branding the Service Portal" in the vCommander User Guide.

### Bookmarks to Service Portal pages will not work after upgrade

With the new Service Portal user interface, bookmarks created in the previous release will not work after upgrade. The URL for the Service Portal home page, however, remains the same after upgrade, and users can easily create bookmarks in the new vCommander.

### Service Portal folders replaced by grouping

In the redesigned Service Portal, it's no longer possible to organize services in folders in the tree. Instead, by editing the VMs and Services widget settings, you can now group by properties such as guest OS, owner, expiry state, power state or custom attributes.





## Changes to datastore properties

Now that [deployment placement considers the storage requirements of concurrent requests](#), we've made some changes to existing datastore labels and properties.

The "Free" label on the storage pie chart that's displayed on a datastore's Usage Summary, as well as during manual VM deployment, reconfiguring VM storage resources and VM migration, has been changed to "Available". Available storage excludes reserved storage.

The existing property "Provisioning Level (%)" now includes the used, uncommitted and reserved space on the datastore, as a percentage of total space.

## Changes to the Storage form element

With the new ability to [modify VM storage resources](#) through a change request and when requesting a new service, the **Storage** and **Storage-AWS** form elements have changed. There are now three allowed actions, **Add**, **Change** and **Remove**, so the UI has been simplified:

Infrastructure Resources Attributes **Form**

Allow requesters to modify the default component settings configured on the other tabs.

↑  
↑  
↓  
↓

(Storage-AWS) Edit Delete

Storage

Display Label: Storage

Selectable Disk Types: General Purpose (SSD)  
Ctrl-click to select multiple values Provisioned IOPS (SSD)  
Magnetic

Allowed Actions: ☒ Add ☒ Change ☒ Remove

Maximum Disk Size: 20 GB

Maximum Extra Disks: 2

Encryption ☐ Specify whether new disks are encrypted by default

Delete on Termination ☒ Specify whether new disks are deleted on termination by default

OK  
Cancel

After upgrade, existing settings are preserved; if you want to allow users to remove disks, you must edit the Storage and/or Storage-AWS element on your service catalog blueprints and resource change request forms.

To learn more, see "Adding a vCenter Service to the Catalog", "Adding an AWS Service to the Catalog", "Adding an SCVMM Service to the Catalog" and "Customizing Service Request Forms" in the vCommander User Guide.

## Disk Storage Type property for VMs renamed to Disk Type

With the introduction of the VM property Disk Type, the existing VM property Disk Storage Type has been renamed to Disk Provisioning Type for clarity.

To see the full list of VM properties, see "Properties Reference" in the vCommander User Guide.

## Changes to SAML 2.0 Web Single Sign-On

Several enhancements have been made to our SAML 2.0 Web Browser SSO implementation.

**Important:** Because of these enhancements, you must reconfigure SAML SSO after upgrade. Your previous configuration is not retained.

- Two SSO options that previously could be configured only by editing a configuration file—setting the hash algorithm and specifying that vCommander metadata was unsigned—are now available in the SAML Single Sign-On dialog.
- The configuration file `sso-sp-config.properties` is no longer used. If you previously set properties in this configuration file, after upgrade, you must set these properties in the SAML Single Sign-On dialog after upgrade.
- It's no longer necessary to restart the vCommander service after making changes to the SSO configuration.
- Several other options have been added to the configuration dialog to enhance security. For example, you must now upload a PKCS #12 keystore file, which vCommander uses to sign SSO requests.

**SAML Single Sign-On**

Enabled: ☐  
 Global Logout: ☐

**Identity Provider (IdP) Metadata**

☒ URL:   
☐ File:

**SAML Key Pair**

Keystore (PKCS #12):   
 Keystore Password:   
 Key Pair Alias:   
 Key Pair Password:

**vCommander Metadata**

Service Portal External URL:   
 Credential Attribute:   
 Hash Algorithm:   
 Sign Metadata: ☒  
 Logout URL:   
 IdP Error URL:   
 vCommander Error URL:

To learn more, see "Configuring SAML 2.0 Web SSO for the Service Portal" in the vCommander User Guide.

### Adobe Flash Player no longer required

Adobe Flash Player is no longer required for either the vCommander admin console or the Service Portal.

### Changes to the VM Billing Report

Related to the new ability to [retrieve AWS billing data](#), we've made some changes to the report options for the VM Billing report when you're managing AWS. The **Current** and **Projected** selections for the **Cost Model** drop-down list are no longer supported for AWS VMs. When you select either of these options and the **Location** is set to **Global**, and you've added one or more AWS accounts to vCommander, the AWS VMs are excluded from the report, and the report displays the following message: "AWS instances will not be included because the selected Cost Model does not apply to AWS." When you select either **Current** or **Projected** and the **Location** is set to an AWS managed system, the Report Generator displays an error, and the report cannot be generated. Using the **Historical** option ensures that cost data is taken from historical billing records, which are updated nightly with AWS billing data.

New columns have been added to the report (although these new columns appear only if applicable), and some of the existing column names have changed slightly.

To learn more, see "VM Billing Report" in the vCommander User Guide.

### Removal of Pricing Plans from cost model and VM Comparative Economics Report

With the introduction of support for [Reserved Instances](#), it's no longer useful to be able to select a yearly term when configuring the AWS cost model, or when generating the VM Comparative Economics Report. We have removed the Pricing Plan drop-down list from the Resources page of the AWS Cost Model wizard. We have also removed the Pricing Plans from the AWS, Rackspace and IBM SoftLayer options in the Projected Destination tree in the VM Comparative Economics report. The report now supports only on-demand pricing comparisons.

If you had selected a term pricing plan in the cost model, it will continue to work as it did before, but it's no longer possible to change it after upgrade. If you saved a report template using term pricing, the template will continue to work as expected.

To learn more, see "Configuring Cost Models" and "VM Comparative Economics Report" in the vCommander User Guide.

### Changes to Power Schedule Groups

vCommander now issues power schedule recommendations, and as a by-product of this new feature, we have made some changes to power schedule groups.

The Default Power Schedule group is no longer displayed in the list of power schedule groups, and is no longer considered to be a power schedule group in practice. VMs that were previously members of the Default Power Schedule Group are now considered to not be members of a power schedule group.

To learn more, see "Configuring and Applying Power Schedule Recommendations" in the vCommander User Guide.

## Mark All VMs as Approved setting removed from Add Managed System dialog

Because the Approval Policy is deprecated, the setting enabling you to mark all VMs as approved has been removed from the Add Managed System dialog.

## Rightsizing recommendation changes

With the addition of power schedule and Reserved Instance recommendations, we've introduced the following changes:

- One of the Service Portal permissions for viewing rightsizing recommendations now also allows users to view [power schedule recommendations](#). As a result, we have renamed the rightsizing permissions as follows:
  - **Show Rightsizing Down** is now **Show Recommendations: Cost Decrease**
  - **Show Rightsizing Up** is now **Show Recommendations: Cost Increase**
- The Rightsizing Recommendations page has been renamed the Recommendations page, in both vCommander and the Service Portal.
- For clarity, the command to apply a rightsizing recommendation through a change request has changed from Submit Change Request to Request Service Change, in both vCommander and the Service Portal.
- We've made it easier to distinguish recommendations that will cost you money from those that will save you money. We've renamed the Cost column to Savings, and savings are now expressed as a positive number. Previously, for example, to find all VMs with recommendations that would save more than \$200, you had to filter by Recommendation Cost Difference < -200. Now, you can simply filter by Recommendation Annual Cost Savings > 200. If you had saved searches using the Recommendation Annual Cost Savings filter, they are automatically updated during upgrade. This change has been made in the Service Portal as well as the vCommander console.
- The Recommendations property for VMs has been renamed to Has Recommendations for clarity.

## Change to minimum update frequency for public cloud managed systems

The minimum update frequency for public cloud managed systems has been changed from 1 minute to 10 minutes. If you had set a value lower than 10 minutes before upgrade, it will be changed to 10 minutes after upgrade. To learn more, see "Adding a Managed System" in the vCommander User Guide.

## Microsoft Azure cost model renamed Microsoft Azure (Classic)

With the addition of support for Azure Resource Manager, if you were managing an Azure subscription before upgrade, the associated cost model will be renamed Microsoft Azure (Classic) after upgrade.

## vCommander User Guide no longer available as PDF

The vCommander User Guide PDF is no longer included under the Help menu in vCommander, or on our Knowledge Base. Online help is available in vCommander and at <http://docs.embotics.com>.

## Issues Resolved in This Release

Issue	Description and Solution
<b>21882</b>	<b>REST API: Unable to replace VM component in service catalog entry when list-type custom attribute default value is null</b> <i>Using the REST API to update a service catalog entry in this situation now works as expected.</i>
<b>21498</b>	<b>Secondary Chef server fails to sync</b> <i>When multiple Chef servers are integrated with vCommander, scheduled and manual sync tasks now update vCommander with data from all integrated Chef servers.</i>
<b>21415</b>	<b>Changing a Change Request form's assignment to Global may not take effect</b> <i>If you edit the assignment of a change request form from specific organizations to Global, the change now takes effect as expected.</i>
<b>21155</b>	<b>Exception when creating custom attribute with a name exceeding 32 characters</b> <i>It's now possible to create custom attributes with names up to 128 characters in length.</i>
<b>21134</b>	<b>Variable descriptions are unclear</b> <i>The descriptions for the variables <code>#{request.storage.gb}</code>, <code>#{request.cpuCount}</code> and <code>#{request.memory.gb}</code> have been clarified to indicate that these variables return the sum of the existing resources plus any additional requested resources.</i>
<b>21126</b>	<b>Unable to delete credentials referenced by a workflow</b> <i>When deleting credentials that are currently in use, you're now prompted to replace the credentials.</i>
<b>21010</b>	<b>REST API: Completion workflows are reset by Update-PublishedService</b> <i>Service-level and component-level workflows are no longer reset when using Update-PublishedService REST and PowerShell APIs.</i>
<b>20998</b>	<b>Error when using workflow step output as input to Set Custom Attribute workflow step in busy system</b> <i>A race condition no longer occurs when using the output of a workflow step as input to a Set Custom Attribute workflow step in a busy system.</i>
<b>20981</b>	<b>VM search with cost filter displays incorrect columns and cost data</b> <i>When filtering a VM search by Annual, Daily, Monthly or Quarterly Cost, the search results display the proper period and the proper cost values.</i>
<b>20899</b>	<b>Description for <code>#{request.service.settings.destination.name}</code> is not clear</b> <i>The description for this variable was updated to indicate that it returns the name of the destination selected using the Destination form element.</i>
<b>20881</b>	<b>"Other Organization Usage" label in Service Portal is unclear</b> <i>This label has been changed to "Organization Usage" to make it clear that the data includes quota used by all members in the organization of the currently logged-in user.</i>

Issue	Description and Solution
<b>20847</b>	<b>Contents of tomcat\public subdirectory removed during upgrade</b> <i>Files stored in the tomcat\public subdirectory of the vCommander installation directory are now preserved during upgrade.</i>
<b>20840</b>	<b>Variable #{target.networks} replaces underscore with question mark in returned value</b> <i>The correct value for this variable is now returned when the network name contains an underscore.</i>
<b>20699</b>	<b>Error when deleting network zones referenced by unpublished services</b> <i>When an unpublished service catalog entry references a network zone, deleting the network zone now works as expected.</i>
<b>20688</b>	<b>Variable Assistant and documentation do not indicate that quotation marks must surround variables in conditional workflow steps</b> <i>The Variable Assistant for conditional workflow steps now automatically surrounds variables with quotation marks to show that they are required in this context, and documentation has been updated to indicate this requirement as well.</i>
<b>20629</b>	<b>Organization does not display full name of added user until next user is added</b> <i>A user's full details are now displayed in the list of organization users when the user is added to the organization.</i>
<b>20502</b>	<b>Requested destination name variable not supported in global naming convention</b> <i>The variable for the name of the requested destination can now be used in the global naming convention.</i>
<b>20487</b>	<b>Edit Start Order command does not change start order for virtual service in Service Portal</b> <i>The Edit Start Order command now successfully changes the start order for a virtual service.</i>
<b>20418</b>	<b>Documentation incorrectly mentions IP pool support for SCVMM</b> <i>The documentation has been updated to remove mention of this functionality.</i>
<b>20376</b>	<b>Possible issue when installing vCommander to path containing spaces</b> <i>Installing vCommander to a path containing a space no longer causes the vCommander service to fail to start.</i>
<b>20346</b>	<b>VM Access Proxy: Unable to open Secure VNC and Secure SSH connections</b> <i>The VM Access Proxy now supports opening a secure VNC or secure SSH connection.</i>
<b>20306</b>	<b>Adding a disk to an AWS service request form before selecting Instance Type may cause error</b> <i>Adding a disk to an AWS service request form before you select the instance type for the service now works as expected.</i>
<b>20298</b>	<b>After upgrade, user added to new organization may be unable to switch to new organization in Service Portal</b> <i>If you add a user that existed before upgrade to an organization created after upgrade, the user can now switch to the new organization immediately.</i>

Issue	Description and Solution
<b>20289</b>	<b>Charts in reports generated before upgrade cannot be displayed after upgrade</b> <i>Charts in reports generated before upgrade are now displayed as expected after upgrade.</i>
<b>20150</b>	<b>Cannot connect to SCVMM managed system in certain situations</b> <i>It's now possible to connect to an SCVMM managed system that has a VM with no host, or an orphaned checkpoint.</i>
<b>20144</b>	<b>Cannot export Guest OS Disk Usage report to PDF if no Excluded VMs section appears in report</b> <i>If the Guest OS Disk Usage report does not contain an Excluded VMs section, exporting the PDF now works as expected.</i>
<b>20097</b>	<b>Delete custom attribute task may take a long time to complete</b> <i>When deleting a custom attribute that has been applied to a large number of VMs, the task will run and complete efficiently.</i>
<b>20088</b>	<b>Fulfilling decommissioning request may fail if custom attributes are configured for specific format</b> <i>If a custom attribute is configured to accept values of a specific format (regular expression) but is not added to a change request form, change request fulfillment is no longer affected by this validation.</i>
<b>19967</b>	<b>REST API: Change request fails to add disk to VM</b> <i>Adding a disk to a VM through a change request with the REST API now works as expected.</i>
<b>19953</b>	<b>Unable to cancel workflow tasks with no timeout configured</b> <i>Manually canceling a workflow task with no timeout configured now works as expected.</i>
<b>19952</b>	<b>Recent Workflows tab shows too many failed workflows</b> <i>To improve system performance, the Workflows tab at the bottom of the vCommander console window now shows only failed tasks from the last seven days. This tab still shows all running workflows. As in previous releases, you can access the complete list of workflow tasks by going to Tools &gt; Workflow Status.</i>
<b>19849</b>	<b>REST API: Get-ServiceRequests -query results in error</b> <i>Using the -query parameter for Get-ServiceRequests now works as expected.</i>
<b>19788</b>	<b>\$NETWORK deployment parameter does not take precedence over other settings</b> <i>The \$NETWORK deployment parameter now takes precedence over other methods of setting the network zone.</i>
<b>19690</b>	<b>High availability configuration may cause vCommander versioning issue during upgrade</b> <i>The vCommander High Availability Configuration Guide has been updated to include instructions on upgrading a warm standby system.</i>
<b>19585</b>	<b>Unable to launch vCommander Dashboard</b> <i>The Dashboard in the vCommander Views menu now works as expected.</i>

Issue	Description and Solution
<b>19573</b>	<b>Push notifications may overwhelm busy systems</b> <i>In busy environments, push notifications no longer cause the Service Portal user interface to be refreshed too often.</i>
<b>19571</b>	<b>Service Portal: Not possible to export list of VMs &amp; Applications</b> <i>Clicking Export when viewing the list of VMs &amp; Applications now works as expected.</i>
<b>19554</b>	<b>Clicking link in approval email produces a 404 error</b> <i>When a Service Portal receives an approval email and clicks the request approval link, a 404 error is no longer displayed, and it's possible to approve the service request.</i>
<b>19511</b>	<b>vCommander and Service Portal session timeouts are not respected</b> <i>The session timeouts set on the Configuration &gt; System Configuration &gt; Authentication page of vCommander are now respected.</i>
<b>19473</b>	<b>Out of Memory error, managed systems may become disconnected due to insufficient Java Max Permanent space</b> <i>In new installations of vCommander, the MaxPermSize setting has been increased to 400 MB to prevent Out of Memory errors. If you have an upgraded system, see the Knowledge Base article <a href="#">Configuring Java MaxPermSize</a> to learn how to change this setting.</i>
<b>19472</b>	<b>Setting a custom Service Portal logo has no effect</b> <i>Setting a custom Service Portal logo on the Configuration &gt; System Configuration &gt; Service Portal page of vCommander now works as expected.</i>
<b>19374</b>	<b>Change Request fulfillment may fail when adding large thin disk</b> <i>When adding a large thin-format disk through a change request, fulfillment no longer fails with the error "No datastores accessible for the requested storage tier".</i>
<b>19273</b>	<b>Error when generating metadata for SAML SSO with non-default keystore password</b> <i>Setting a non-default keystore password is now supported with our SAML 2.0 SSO configuration.</i>
<b>19249</b>	<b>Emailed scheduled search does not contain Storage Tier column</b> <i>When a scheduled search is emailed, the Storage Tier column is now included.</i>
<b>19148</b>	<b>AD security group users may be unable to log in to vCommander</b> <i>A user whose account has been disabled and then re-enabled in Active Directory, and is a member of multiple AD security groups that are added as vCommander accounts, but is not directly added as a vCommander user, can now log in to vCommander as expected.</i>
<b>19075</b>	<b>REST API: Incorrect API version reported when Debug is enabled</b> <i>The REST API version is now displayed correctly when the Debug logging level is enabled.</i>
<b>19019</b>	<b>Scheduled task for two rightsizing recommendations may cause two reboots</b> <i>When multiple recommendations that require a service restart are scheduled for a VM, the VM is now only restarted once.</i>



Issue	Description and Solution
<b>19017</b>	<b>VM deployment fails for SCVMM highly available service when Destination element present on form</b> <i>When attempting to deploy an SCVMM service catalog entry that's configured as highly available and the Destination form element appears on the request form, vCommander now deploys the service to a highly available cluster on SCVMM as expected.</i>
<b>19007</b>	<b>Unable to filter Service Requests list by organization in Submitted By column in vCommander</b> <i>You can now filter the Service Requests list in the vCommander UI by any part of the value displayed in the Submitted By column, including the user's organization.</i>
<b>19003</b>	<b>AD users may be unable to log in if vCommander does not fail over to secondary domain controller</b> <i>In some situations, vCommander did not switch to a secondary Active Directory server when the primary AD server failed. This issue has been resolved.</i>
<b>18984</b>	<b>Change Request form issues with existing disks greater than 1 TB in size</b> <i>It's now possible to submit a change request for VMs with existing disks whose sizes are greater than the form limits when the size is not changed. The disk size is now displayed properly in TB rather than KB, and these disks can be expanded as expected.</i>
<b>18972</b>	<b>File Not Found error when attempting download certificate for Azure if using a non-default keystore password</b> <i>If using a non-default keystore password, it's now possible to download the vCommander certificate when adding an Azure managed system.</i>
<b>18922</b>	<b>IP pool conflict events not always generated</b> <i>IP pool conflict events are now generated as expected.</i>
<b>18888</b>	<b>Unable to remove disconnected managed system</b> <i>In rare cases, it was not possible to remove a disconnected managed system, such as if a VM in the managed system was running on a host that wasn't part of the managed system due to VM migration. These issues have been fixed.</i>
<b>18812</b>	<b>Rightsizing recommendations are not updated when cost model changes</b> <i>Costs in rightsizing recommendations are now updated when the VM's cost model is changed.</i>
<b>18759</b>	<b>Full Name column blank on Name and Members page of Configure Organization wizard</b> <i>The Full Name column now displays organization members' combined first and last name fields as expected.</i>
<b>18522</b>	<b>No ability to prompt Service Portal users for console credentials</b> <i>In previous releases, you could specify that vCommander users were prompted for VM console connection credentials. You can now specify the same behavior for Service Portal users.</i>

## Known Issues

Issue	Description and Solution
<b>21911</b>	<p><b>Credential selection is not preserved when service request is copied</b></p> <p>When you copy a service request that contains an ARM public image component, and credentials were selected on the Resources tab of the blueprint but the Credentials element was not added to the Form tab, deploying at the service level fails with an error saying that the source URI does not exist, because credentials could not be found.</p> <p><i>Manually deploy at the component level so that you can specify credentials.</i></p>
<b>21870</b>	<p><b>Deploying the VM Access Proxy disables the "Synchronize guest time with host" option</b></p> <p>When you deploy the VM Access Proxy, the Synchronize guest time with host option is disabled.</p> <p><i>In vCenter, right-click the VM Access Proxy deployment and select Edit Settings. On the VM Options tab (the Option tab in the Thick Client), enable the "Synchronize guest time with host" option in the VMware Tools panel.</i></p>
<b>21088</b>	<p><b>Unable to view performance charts for VMs on managed systems running vSphere 6.5</b></p> <p>Performance charts are not available for vSphere 6.5, as the managed system does not support it.</p> <p><i>Performance Summary information for vSphere 6.5 is still available for vCommander and Service Portal users. Administrators can also view the VM Performance Trending report.</i></p>
<b>20403</b>	<p><b>Run Program workflow step fails for Windows Server 2016 VMs on ESXi 5.5</b></p> <p>The Run Program workflow step fails for VMs running Windows Server 2016 on ESXi 5.5.</p> <p><i>When creating the Guest OS credentials for the Run Program workflow step for Windows Server 2016 VMs on ESXi 5.5, use the DOMAIN\user notation instead of user@DOMAIN.</i></p>
<b>19502</b>	<p><b>Google Chrome version 58 does not support Common Name in self-signed certificates</b></p> <p>Chrome Version 58 now requires a Subject Alternative Names instead of the Common Name used in the self-signed certificate delivered with vCommander.</p> <p><i>If you are using Chrome version 58, generate a self-signed certificates using the Subject Alternative Name. See the Knowledge Base article <a href="#">Trusting a Self-Signed Certificate</a> for more information.</i></p>
<b>19275</b>	<p><b>Open SSH Session not supported in Chrome and Firefox</b></p> <p>The commands Open SSH Session and Open SSH Session with Key Pair are no longer supported in Chrome and Firefox due to the discontinuation of support for the Java plug-in (applets) by these browsers.</p> <p><i>Use Internet Explorer to open an SSH session.</i></p>
<b>19273</b>	<p><b>Error when generating metadata for SAML SSO with non-default keystore password</b></p> <p>If you have set a non-default keystore password, attempting to generate vCommander metadata during SAML 2.0 SSO configuration will fail.</p> <p><i>Change the keystore password back to the default, and generate metadata again.</i></p>

Issue	Description and Solution
<b>17455</b>	<p><b>Performance metrics may not be available immediately after upgrade to vSphere 6</b></p> <p>Attempting to run the <b>Update Performance and Capacity</b> command for a cluster immediately after upgrading to vSphere 6 may fail, because performance metrics are not yet available to vCommander.</p> <p><i>Wait about an hour for vSphere to make performance metrics available, and run the command again.</i></p>
<b>16002</b>	<p><b>Mouse pointer may not be visible when opening VM console using IE 11 or 10</b></p> <p>When the WebMKS console connection method is configured, Internet Explorer 11 or 10 users may be unable to see the mouse pointer in the console session.</p> <p><i>To open a console to a Windows VM from Internet Explorer 11 or 10 when using WebMKS, try enabling mouse trails with the shortest option. Or, use the VMRC plug-in method instead of the WebMKS method.</i></p> <p><i>For Linux VMs, use the VMRC plug-in connection method.</i></p> <p><i>Note that if your users install the VMRC plug-in from a version 5.5 update 2 vCenter, they will be able to open a console for a VM in any version 5.x vCenter.</i></p> <p><i>See "Prerequisites for Opening a Console Session on vCenter" in the vCommander User Guide to learn how to change the console connection method for HTML5 browsers.</i></p>
<b>15602</b>	<p><b>Multiple connections in same browser not supported</b></p> <p>vCommander and the Service Portal do not support multiple connections in the same browser. For example, you can connect to vCommander in both Firefox and Chrome at the same time, but you cannot connect to vCommander in two instances of Firefox at the same time.</p> <p><i>Use a different browser to open another session.</i></p>
<b>14837</b>	<p><b>Caps Lock key may cause duplicate characters in a secure RDP session</b></p> <p>In a secure RDP session, if Caps Lock is enabled, duplicate characters may be printed for the characters c, x, and v.</p> <p><i>Use the Shift key instead of enabling Caps Lock.</i></p>
<b>14353</b>	<p><b>VM console connection does not time out if connection cannot be established</b></p> <p>If a console connection to a VM cannot be established, a "Connecting" message is displayed indefinitely.</p>
<b>14165</b>	<p><b>Evaluation Exception when running a Compare Drift command on a VM after upgrading vCommander</b></p> <p>When running the <b>Compare Drift</b> command, an Evaluation Exception error occurs.</p> <p><i>This issue disappears once the scheduled Database Maintenance task runs. This task is scheduled for Saturday night at 2 a.m. following the upgrade. If you want to run this scheduled task earlier, go to Tools &gt; Scheduled Tasks, select the Database Maintenance task, and click Run Now.</i></p>
<b>13566</b>	<p><b>Failed status may not be displayed for service request with failed completion workflow steps</b></p> <p>If a completion workflow step fails, the list of service requests may not display the proper Failed status for that service request.</p> <p><i>Open the service request details to view the workflow status, or go to Tools &gt; Workflow Status.</i></p>

Issue	Description and Solution
<b>11671</b>	<p><b>Automated deployment may fail for VM with no storage tier specified</b></p> <p>For a Service Catalog request of a VM template with no explicit storage tier set, automated deployment uses the default storage tier specified by the cost model applied to the deployment destination. If the deployment destination for the service request does not contain a datastore for this storage tier, the automated deployment will fail. For example, if a highly available datastore is not assigned to the default storage tier for a VM configured to be highly available, automated deployment will fail.</p> <p><i>Always configure the default storage tier to include datastores for vCenter, SCVMM highly available storage, and SCVMM non-HA storage. If this configuration is not possible due to the way your organization uses storage, contact <a href="mailto:support@embotics.com">support@embotics.com</a> for other configuration options.</i></p>
<b>10874</b>	<p><b>Exporting CSV files from a table may result in incomplete data</b></p> <p>If you right-click a table and click <b>Export</b> to export results, the exported .csv file may not contain complete data.</p> <p><i>Export reports while viewing them, using the Export button. Exporting a .csv file through a scheduled search or report also generates complete data.</i></p>
<b>10515</b>	<p><b>Comments may not be displayed on approval landing page for command workflow</b></p> <p>For a command workflow that includes an approval email step, request comments may not appear on the approval landing page.</p> <p><i>View the request comments from the Workflow Management dialog.</i></p>
<b>10330</b>	<p><b>Guest OS scans for non-English Windows guests may report disk metrics as Unknown</b></p> <p>WMI scans may fail to retrieve disk usage metrics for a non-English guest OS.</p> <p><i>vCommander also pulls disk space properties directly from VMware Tools. Obtain disk usage data from VMware Tools instead of a guest OS scan.</i></p>
<b>9154</b>	<p><b>Acknowledgment email for a completion workflow may contain inaccurate or incomplete information</b></p> <p>Information such as CPU count, MAC address and cost may be inaccurate or incomplete in acknowledgment emails for completion workflows.</p> <p><i>To ensure that the information in the acknowledgement email is correct, add a "Wait for event" step to the beginning of the completion workflow. In the Wait For drop-down menu, select an option as follows:</i></p> <ul style="list-style-type: none"> <li>• If VMware Tools is installed, <b>Service to obtain IP address</b> is the recommended option. You can also select <b>Service to obtain DNS name</b> or <b>Service to obtain IP address and DNS name</b>.</li> <li>• If VMware Tools is not installed, select <b>Time to Elapse</b>. Specify sufficient time for VMware to update all properties changed by vCommander.</li> </ul>

## Help and Support

If you require additional help and support, send an email to [support@embotics.com](mailto:support@embotics.com) or telephone 877-599-0494 (toll-free in Canada and the US) or +1 613-599-0494.

## Release Notes

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**Embotics®  
vCommander®  
Release 6.0.2  
Document Issue 1.0**

embotics



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