

Embotics® vCommander® Release Notes

Embotics® vCommander®
Release 6.1.7



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What's New in This Release

This section includes information on all new features introduced in previous 6.0.x and 6.1.x releases. If you're upgrading, see also [Upgrade Notes](#) and [Issues Resolved in This Release](#).

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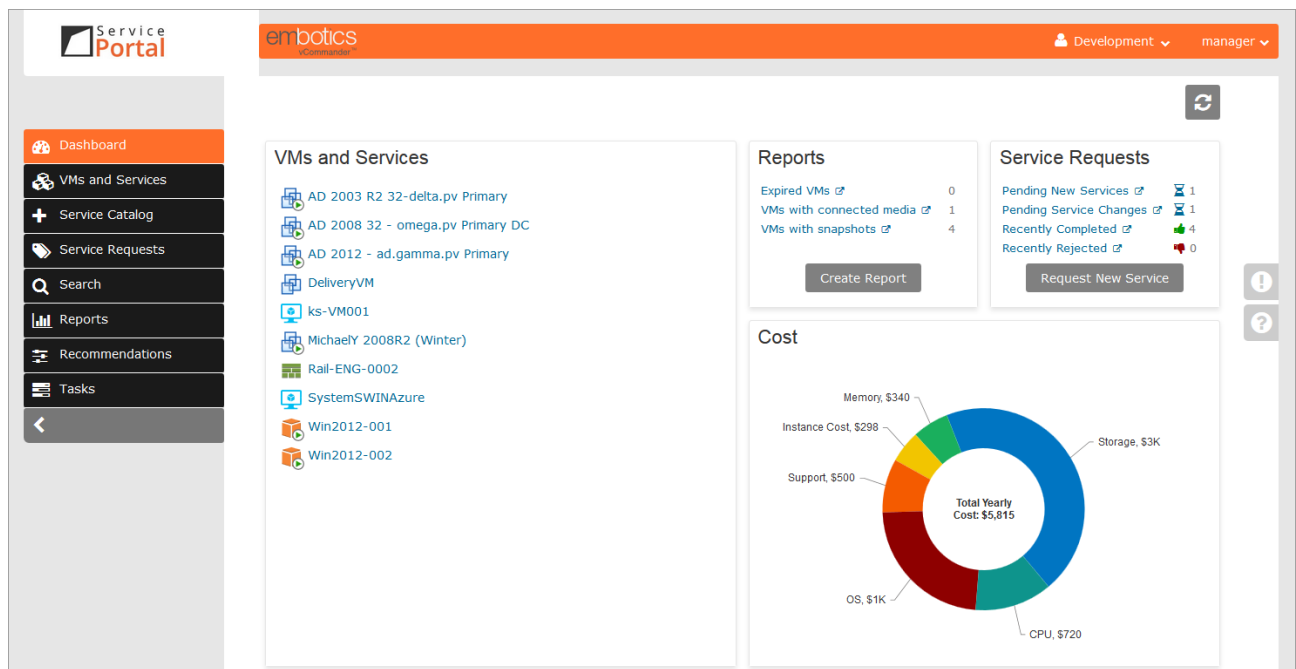
This release brings a brand-new Service Portal user interface and an updated Embotics® vCommander® user interface to match. It also provides new cloud governance and cost optimization features. We've extended our Azure support to include Azure Resource Manager (ARM), with full support for ARM templates.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

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:

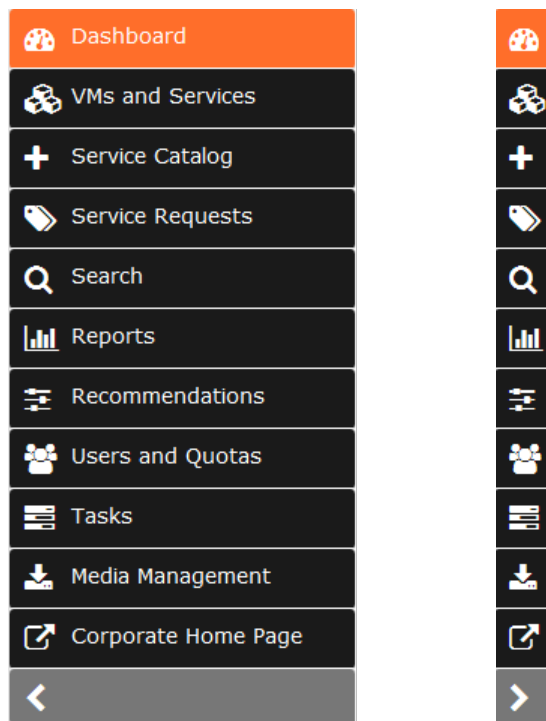
Intuitive design

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

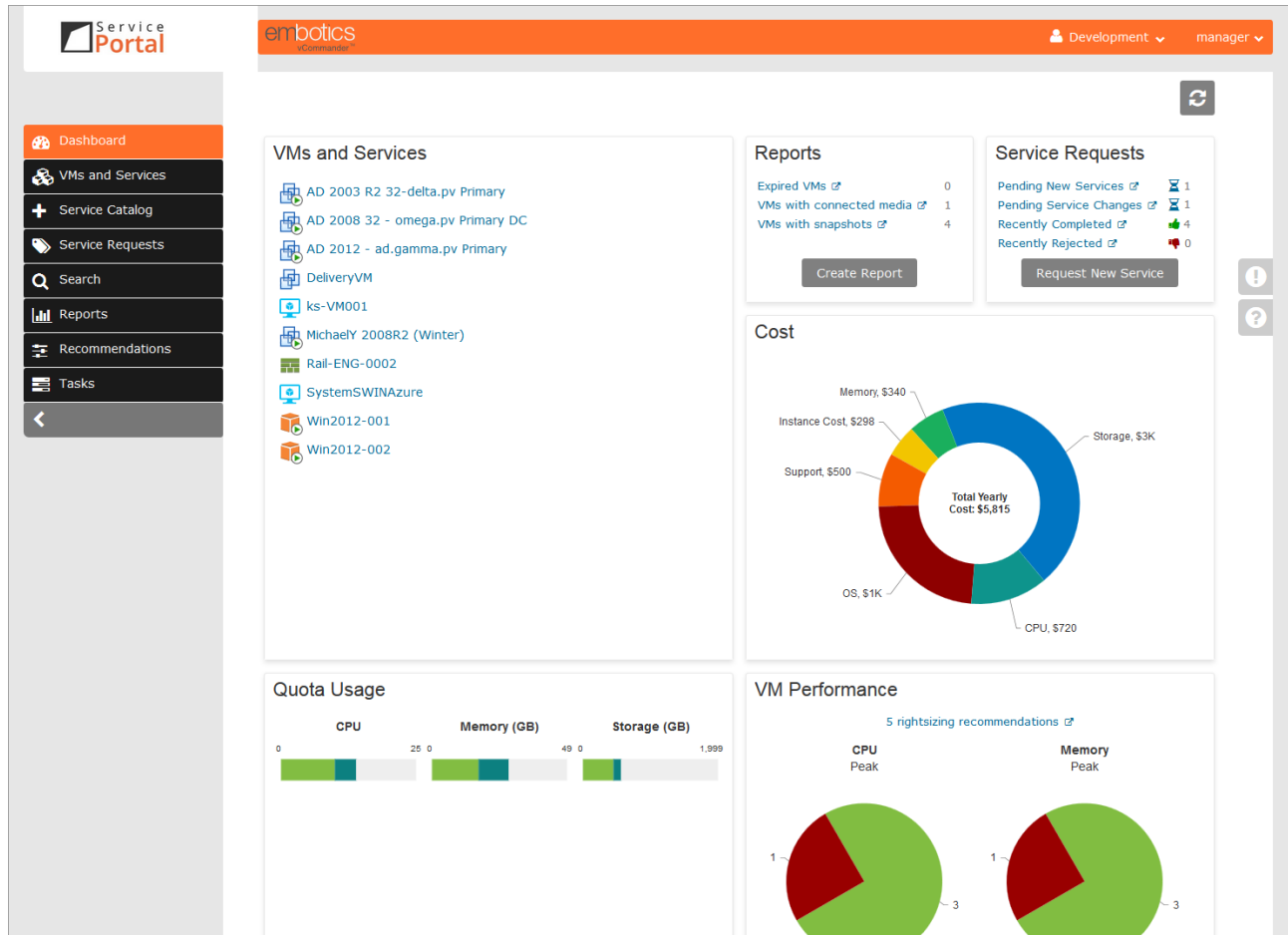
Performance

Tasks from last 30 days

Events from last 30 days

New dashboard

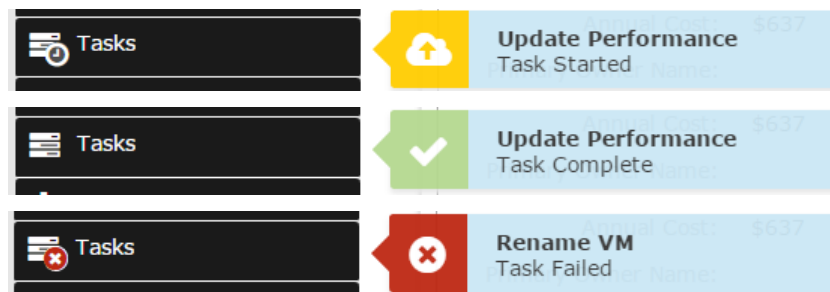
As in the previous release, the Dashboard provides a quick view of your VMs and Services, reports, service requests, costs, VM performance and quota usage.



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:

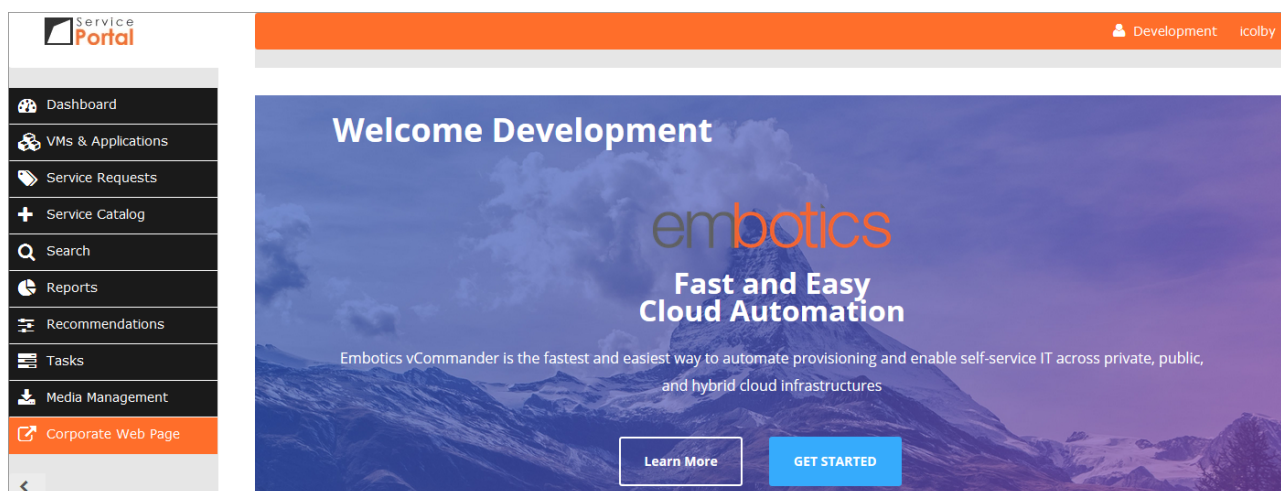
☒ Use Proxy

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.

The screenshot shows the 'Service Catalog' interface with a progress bar at the top indicating steps: 1. Add, 2. Customize, and 3. Review. Below the progress bar is a search bar labeled 'Search by name or description'. The main section is titled 'Request New Service' and displays two service cards.

Service 1: AWS - CentOS

- Icon: Linux penguin
- Category: Production, Linux
- Price: \$445
- Service Components:
 - CentOS 6.2 (64-bit)
 - CentOS 4/5/6 (64-bit)
 - 1 GB Memory - 1 vCPU - 20 GB Disk - 1 NIC

Service 2: Window Server 2008 R2

- Icon: Windows logo
- Category: Windows, Development
- Price: \$1640
- Service Components:
 - 2008R2w/SQL2014
 - Microsoft Windows Server 2008 R2 (64-bit)
 - 4 GB Memory - 2 vCPU - 80 GB Disk - 1 NIC

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.

The screenshot shows the 'VMs and Services' page. On the left is a sidebar menu with options: Dashboard, VMs and Services (highlighted), Service Catalog, Service Requests, Search, Reports, Recommendations, Users and Quotas, Tasks, Media Management, and Corporate Home Page. The main area has a title 'VMs and Services' and buttons for 'Power', 'Connections', and 'Actions'. Below is a search bar and a table of services/VMs.

Type	Name	Description	Annual Cost	State
Document icon	2008R2w/SQL2014	Microsoft Windows Server 2008 R2 (64-bit)	\$2106	
Document icon	2012R2w/SQL2016	Microsoft Windows Server 2012 (64-bit)	\$7750	Running Since 2017/06/12
Document icon	VirtualService001	AWS CloudFormation Sample Template 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
Folder icon	VM001	Linux	\$705	Not Running Since 2017/06/05
Folder icon	VM002	Ubuntu	\$696	Not Running Since 2017/06/05
Folder icon	Win2012-001	Microsoft Windows	\$825	Running Since 2017/06/12
Folder icon	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. Embotics® Support would be happy to help you try out the new theming options; contact support@embotics.com.

If you're upgrading from release 5.7 and your Service Portal already had a custom theme, your previous theme will not be used after upgrade to release 6.x.

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

Enhanced vCommander user interface

The vCommander UI has been updated to match the look and feel of the Service Portal's UI. This provides vCommander with the same clean look given to the Service Portal, and it provides administrators with a consistent management experience.

New vCommander UI examples

The tabs, buttons and fonts in the updated vCommander UI now match the look and feel of those used by the Service Portal.

The screenshot displays the vCommander web interface. At the top, a navigation bar includes 'Views', 'Configuration', 'Tools', 'Reports', and 'Help'. A user status bar indicates 'superuser is logged in as Superuser'. The main content area is divided into several sections:

- Summary:** Shows 'Craig-VM-001' with a notification 'There is 1 recommendation for this VM'.
- General:**
 - Guest OS: Red Hat Enterprise Linux 5 (64-bit)
 - Resources: 1 CPU, 3 GB Memory
 - Guest Tools Status: VMware Tools are Not Running (Not Installed)
 - IP Address: [blank]
 - DNS Name: [blank]
 - Power State: Running
 - Host: panoramix.embotics.com
 - VM Files: [blank]
 - Service Request: [blank]
- Operational:**
 - Expiry State: No Expiry Date Set
 - Expiry Date: No Expiry Date Set
 - Expiry Group: Default Expiry Group
 - Compliance State: Compliant
 - Organization: [blank]
 - Primary Owner Login: [blank]
- Commands:**
 - Stop VM
 - Reset VM
 - Update Performance
 - Set Compliance Data
 - Set Ownership
 - Set Custom Attributes
 - Set Expiry Date
 - Request Service Change
 - Generate Inventory Report
- Details:**
 - Annual Cost: \$5553
 - Created By: EMBOTICS\cshorrock@kernit
 - Date Created: 2017/05/16 14:08:44
 - Uptime: 89 days, 5 hours
 - Powered Off Since: [blank]
 - Snapshot Count: 30
 - Oldest Snapshot Date: 2017/05/26 08:33:16
 - Virtual Disk Size (GB): 1.0

A left-hand sidebar shows a tree view of the system hierarchy, including 'Operational', 'aws', 'blaze', 'it@embotics.com', 'kernit', 'Automation', 'Craig', 'panoramix.embotics.com', and various VMs like 'Craig-VM-001', 'Craig-VM-003', 'Craig-VM-006', 'Craig-VM-007', 'Craig-VM-NoOS', 'Craig-VM-wOS', and 'Test2'. At the bottom, there are tabs for 'Tasks', 'Workflows', and 'Alerts'.

The redesigned vCommander interface has a cleaner look and updated icons to make it even easier for you to navigate between user tasks.

The screenshot shows the 'Service Catalog' section of the vCommander interface. The top navigation bar includes 'Getting Started', 'Service Catalog', 'Form Designer', 'Approval Workflow', 'Provisioning Configuration', 'Completion Workflow', and 'Email Notification'. The 'Service Catalog' section has a sub-header 'Make services available to your users by publishing them in the catalog. Categorize services and assign icons to help users find what they need. Configure how they will be deployed and decide who has access to each service.'

Below the header, there is a search bar showing '4 unfiltered rows'. The catalog lists four services:

- AWS Linux:** t2.nano 8GB, Magnetic. Price: \$56. Links: Show Details, Edit, Copy, Remove.
- NO OS VM:** Empty VM for testing purposes. Price: \$6525. Links: Show Details, Edit, Copy, Remove.
- VMware CentOS VM 1:** 1 CPU 1 GB Mem 500 GB Storage. Price: \$6525. Links: Show Details, Edit, Copy, Remove.
- VMware Windows VM 1:** Windows 2016 R4 2 CPU 2 GB Mem 500 GB Storage. Price: \$7500. Links: Show Details, Edit, Copy, Remove.

On the right side, there is a 'Did You Know?' section with a lightbulb icon. It explains that a service is a container for IT assets, can consist of multiple VMs or virtual services, and can be predefined or built from individual components. A 'Learn More' link is provided. A 'Hide Did You Know?' link is at the bottom right.

At the bottom of the catalog, there are buttons for 'Help', 'Configure', and '+ Add Service'. The bottom navigation bar includes 'Tasks', 'Workflows', and 'Alerts'.

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) 80 unfiltered rows

Page Size: 20 1 2 3 4 Page 1 of 4

Target Name	Managed System	Recommendation	CPU Change	Memory Change (MB)	Instance	Savings	Action
AD 2008 32 - carrot	manta	Memory (Down)		-256		\$125	
AD 2008 32 - nume	manta	Memory (Down)		-128		\$62	
AD 2008 32 - omeg	manta	Memory (Down)		-256		\$125	
AD 2008 32 - sigma	manta	Memory (Down)		-128		\$62	
AJ 2008R2 (Jones)	manta	vCPU (Down)	-1			\$1000	
Artifactory	manta	Memory (Down)		-1024		\$500	
Artifactory	manta	vCPU (Down)	-1			\$1000	
AutomationDB5	kermi	vCPU (Down)	-2			\$0	

- 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.

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*.

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.

Recommendations

- 2** [Check Recommendations](#)
vCommander issues rightsizing, power schedule and Reserved Instance recommendations.

Reports

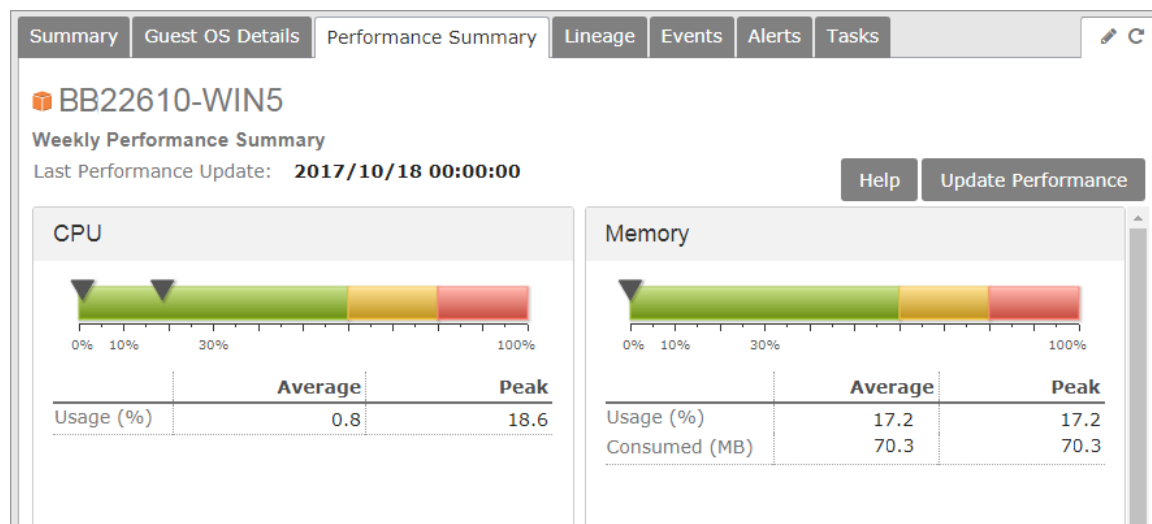
- 3** [Run the VM Billing Report](#)
Calculates the accrued costs to date of a set of VMs.
- 4** [Run the VM Comparative Economics Report](#)
Assesses the benefit of moving VMs, applying right sizing recommendations, or both.
- 5** [Run the Reserved Instance Planner Report \(AWS\)](#)
Recommends Reserved 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: 55
 Number of Datastores: 2

Details

You can customize recommendations 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

empowered by
embotics
vCommander™

Reserved Instance Planner Report

Creation Date: Tuesday, October 17, 2017
13:13:12

Report Parameters:

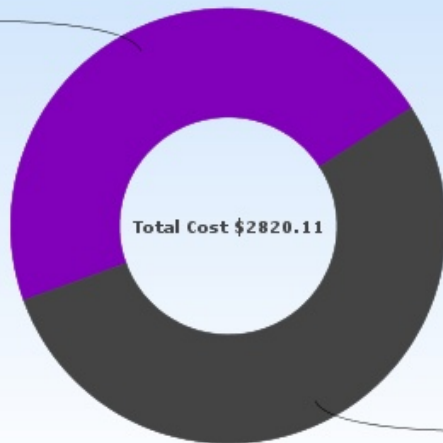
Report Period: is 30 days
Purchase Model: is No Upfront
Include Detailed Data: is Yes
Limit Spending To: is 0
Required Savings %: is 20
Sort Purchases By: is Projected Savings

Report Notes:

Total number of hours in reporting period: 720

On Demand Costs

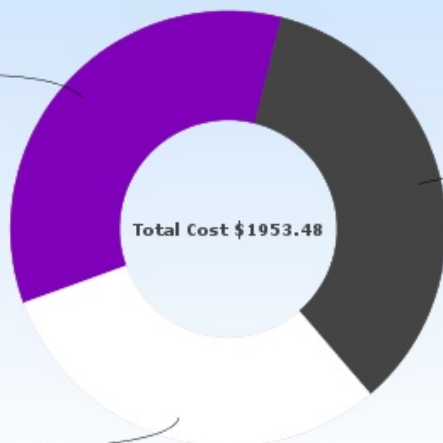
Linux (Amazon VPC) -
m1.small - ap-
northeast-1 - Default
Tenancy \$1309.18



Linux - m1.small - us-
east-1 - Default
Tenancy \$1510.92

Reserved Instance Costs

Linux (Amazon VPC) -
m1.small - ap-
northeast-1 - Default
Tenancy \$972.36



Linux - m1.small - us-
east-1 - Default
Tenancy \$981.12

Savings \$866.63

Recommended Reserved Instance Purchases

Instance Type	Region	Operating System	Tenancy	Quantity	RI Purchase Cost	Projected Annual Savings	Savings Percentage
m1.small	us-east-1	Linux	Default	4	\$981.12	\$529.80	35%
m1.small	ap-northeast-1	Linux (Amazon VPC)	Default	3	\$972.36	\$336.82	25%
TOTAL:					\$1953.48	\$866.62	

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

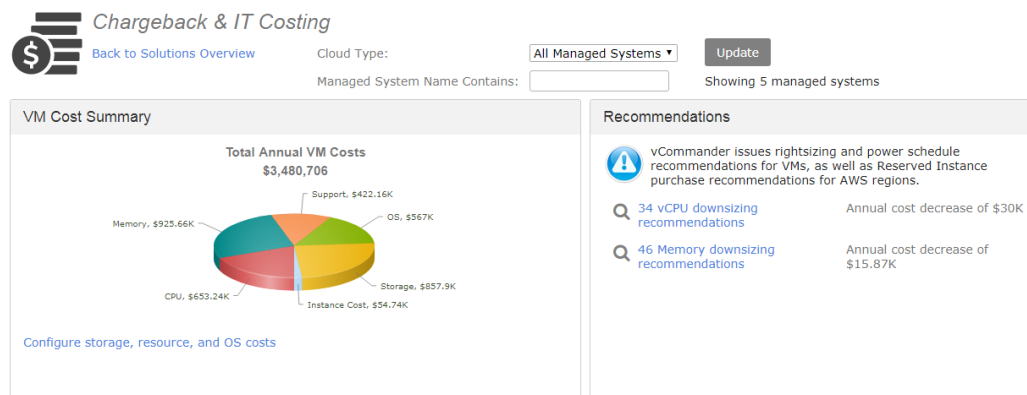
OK

Cancel

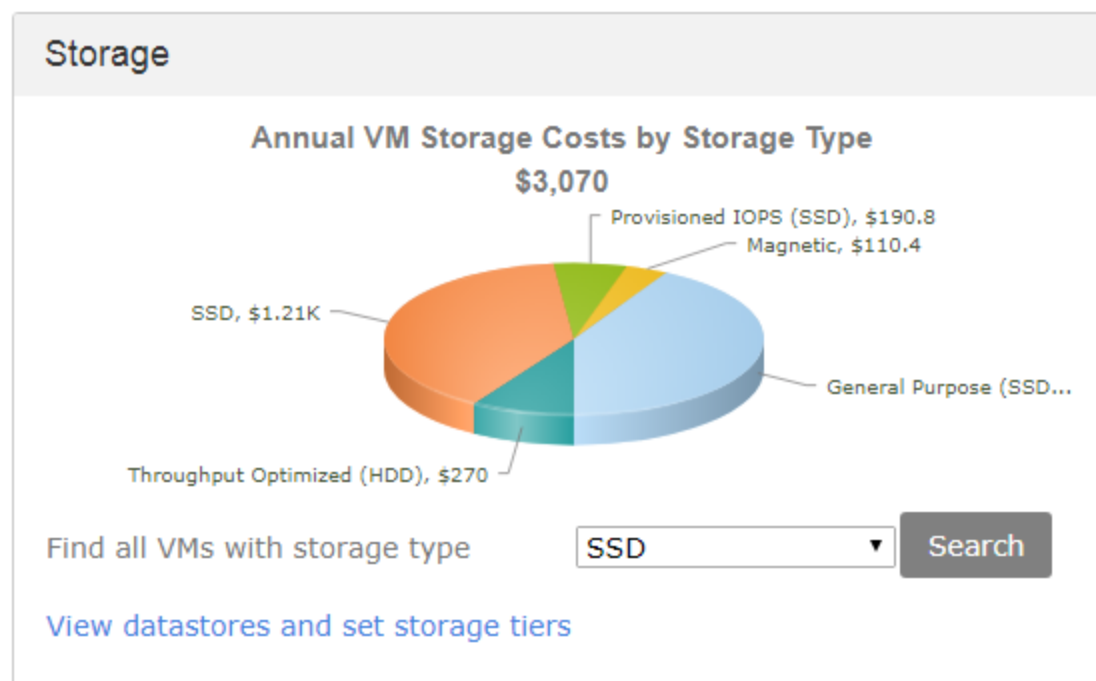
vCommander supports AWS consolidated billing as well as GovCloud account billing, and retrieves billing data for VMs that have never been managed by vCommander too. To learn more, see "Retrieving Billing Data for AWS Managed Systems" in the *vCommander User Guide*.

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 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

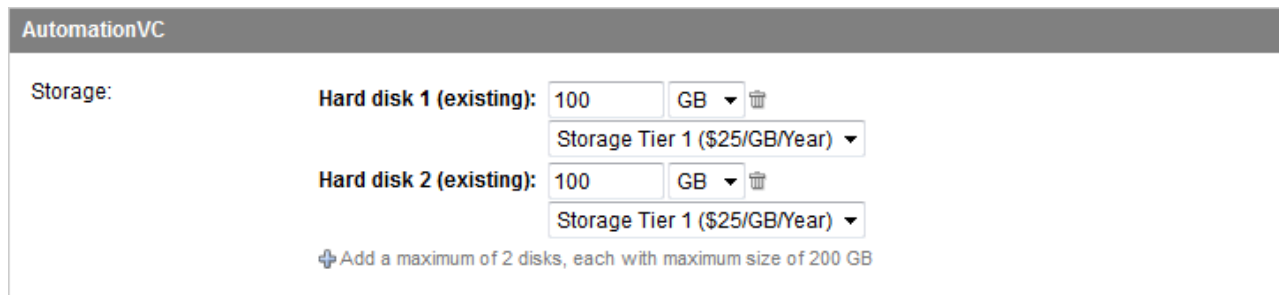
You can control this ability for both change requests and new service requests with the Storage form element, which now has three allowed actions: **Add**, **Change**, and **Remove**:

The screenshot shows a 'Storage' configuration form. On the left is a vertical toolbar with four arrow icons. The form header is '(Storage) Storage' with 'Edit Delete' links. The fields are as follows:

- Display Label:** A text box containing 'Storage'.
- Display Storage Tier:** A checkbox that is checked.
- Selectable Values:** A list box containing 'Storage Tier 1' through 'Storage Tier 6'. Below the list is the text 'Ctrl-click to select multiple values'.
- Allowed Actions:** Three radio buttons: 'Add' (checked), 'Change' (unchecked), and 'Remove' (unchecked).
- Maximum Disk Size:** A text box with '100' and a dropdown menu showing 'GB'.
- Maximum Extra Disks:** A text box with '2'.


At the bottom right are 'OK' and 'Cancel' buttons.


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-AWSLinux
Deployment
Visibility
Summary

Infrastructure | Resources | Attributes | Chef | Form

Set infrastructure options for this component.

Name: Dev-AWSLinux
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.

Reconfigure VM Resources

Instance Type
Storage

Disks
/dev/xvda
/dev/sdf
Add Delete

Capacity
Disk File: vol-09b76f8344a91c3a8
Device Name: /dev/sdf
Capacity: 500 GB

Volume Type
Throughput Optimized (HDD) [?](#) Throughput: 20 / 123 MB/s
Low-cost Hard Disk Drive volume designed for frequently accessed, throughput-intensive workloads. Best for streaming workloads requiring consistent, fast throughput at a low price, such as big data, data warehouses, and log processing. Cannot be a boot volume.

Encryption: ☐
Delete on Termination: ☒

Help OK Cancel

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*.

Set separate network configurations for multi-VM service requests through REST v3 calls

For multi-VM service requests, you can now include scripts in approval and completion workflow steps that use REST API v3 calls to set distinct network configurations for each VMware VM.

Capacity and resource management

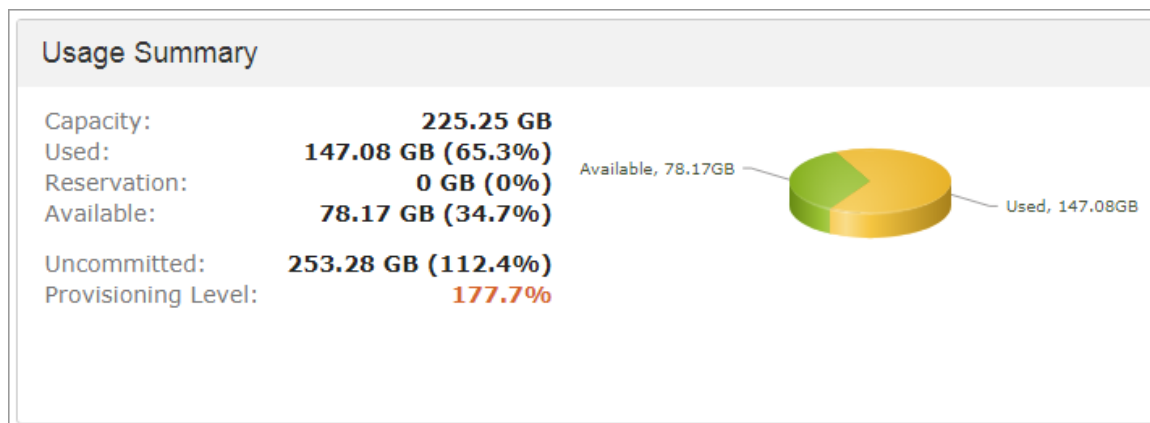
Placement considers storage requirements of concurrent requests

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*.

VM management

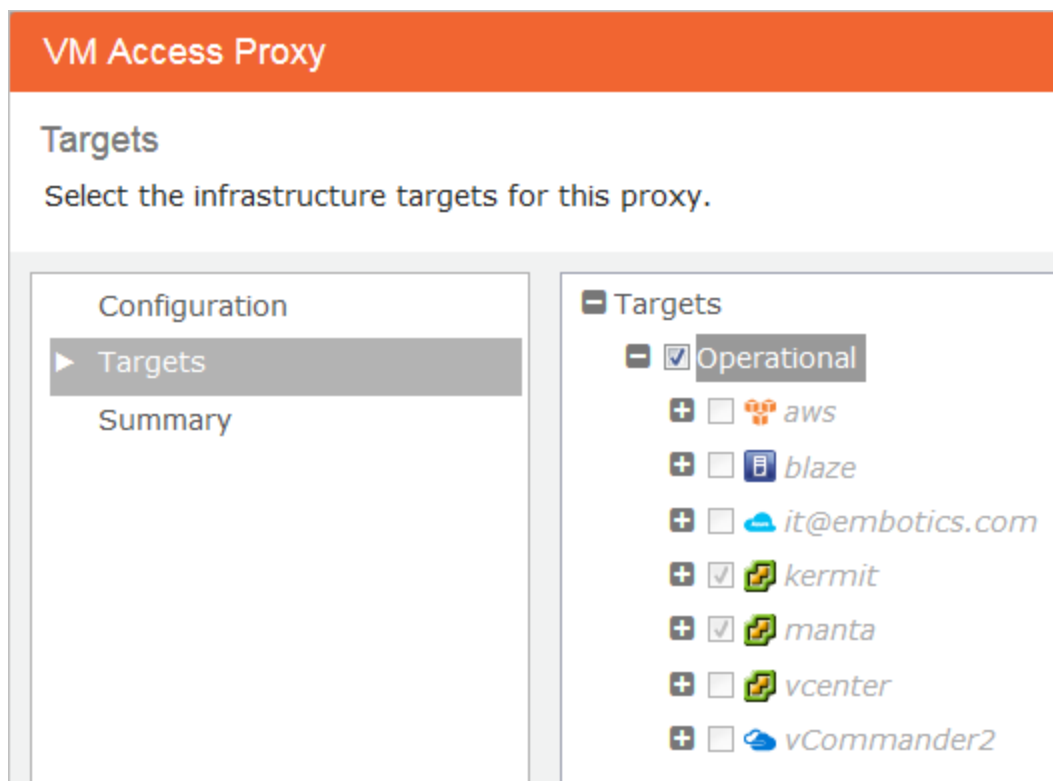
Enable automatic authentication for SSH connections to AWS Linux VMs through key pair assignment

You can now associate key pair credentials with users or organizations and have the proper key pair assigned to a requested instance based on who made the service request. This enables better control over who can open a secure SSH connection to an AWS Linux instance. It also enables automatic user authentication when opening a secure SSH connection using a key pair.

Note that to take advantage of key pair assignment, you must deploy the VM Access Proxy version 3.1 or later. To learn more, see "Using Key Pairs to Connect to Amazon EC2 Instances" and "Configuring the VM Access Proxy for Secure VM Connections" in the *vCommander User Guide*.

Configure multiple VM Access Proxies to target subsets of your infrastructure

The vCommander VM Access Proxy secures your virtualized infrastructure behind a firewall while still permitting your users remote access to their VMs. When you configure one or more VM Access Proxies, your users can access their VMs within a browser, without the need for a network connection to the managed system. To minimize geographical distance and network lag, you can configure multiple proxies; for example, you can configure a separate proxy for each public cloud region.



This feature requires version 3.0 or later of the VM Access Proxy, as well as vCommander 6.1.5 or later. To learn more, see "Configuring the VM Access Proxy for Secure VM Connections" 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

Allow the primary owner to extend the expiry date. When enabled, the expiry email that the primary owner receives will contain an Extend Expiry Date section, with a link. You must also configure notifications on the next page.

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:

Help

< Back

Next >

Cancel

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What's New in This Release
docs.embotics.com

Here's part of the email that's sent to the primary owner after the policy configuration:

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.

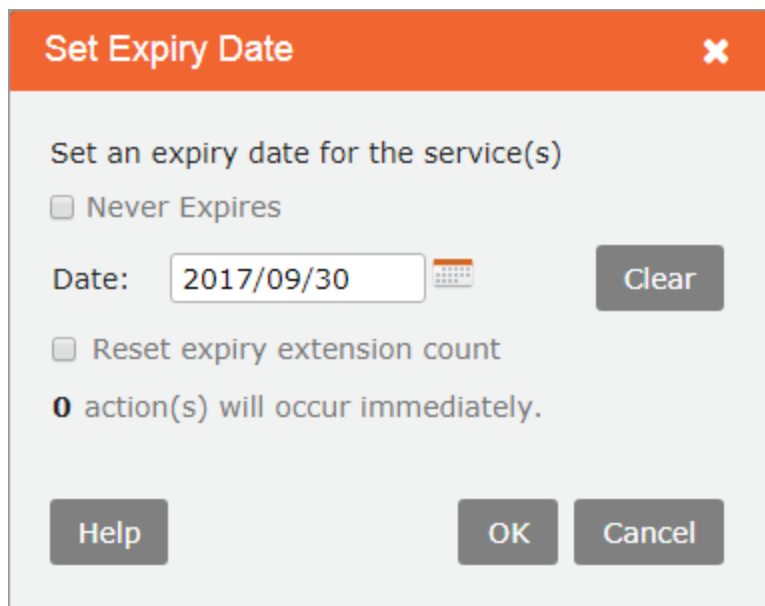
<https://Keller.embotics.com/portal/expiryextension/ExtendExpiry?expiryId=8e634167-3c5c-4689-ad04-4c7541b4ada8>

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:	\$6103 Details
Date Created:	2017/09/20 15:40:20
Uptime:	23 hours, 37 minutes
Powered Off Since:	
All Owner Logins:	
Virtual Disk Size (GB):	1.0
Expiry Extensions Remaining:	2

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



Set Expiry Date [X]

Set an expiry date for the service(s)

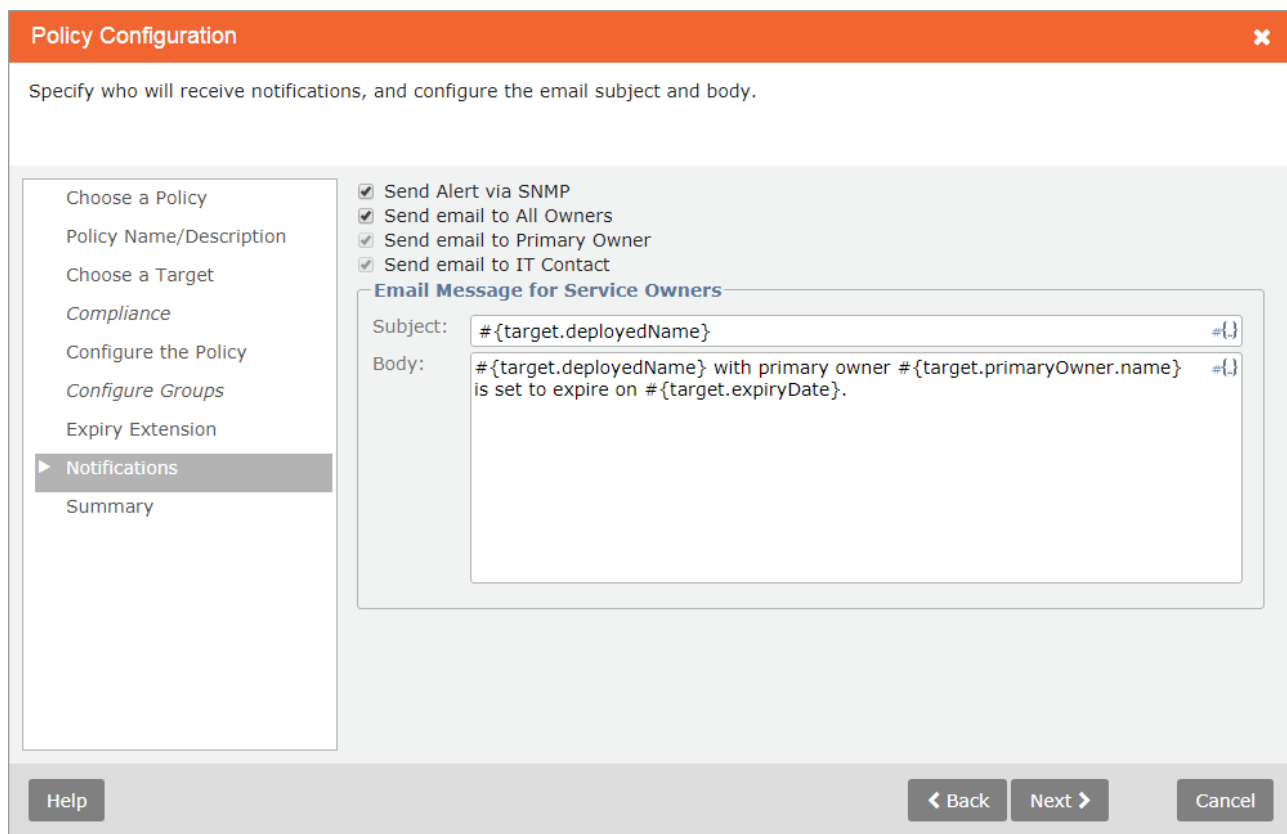
☐ Never Expires

Date: [Calendar Icon]

☐ 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 [X]

Specify who will receive notifications, and configure the email subject and body.

Choose a Policy

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: [X]

Body: [X]

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*.

Microsoft® SCVMM enhancements

A number of improvements have been made for integrating Microsoft System Center Virtual Machine Manager (SCVMM) managed systems with vCommander.

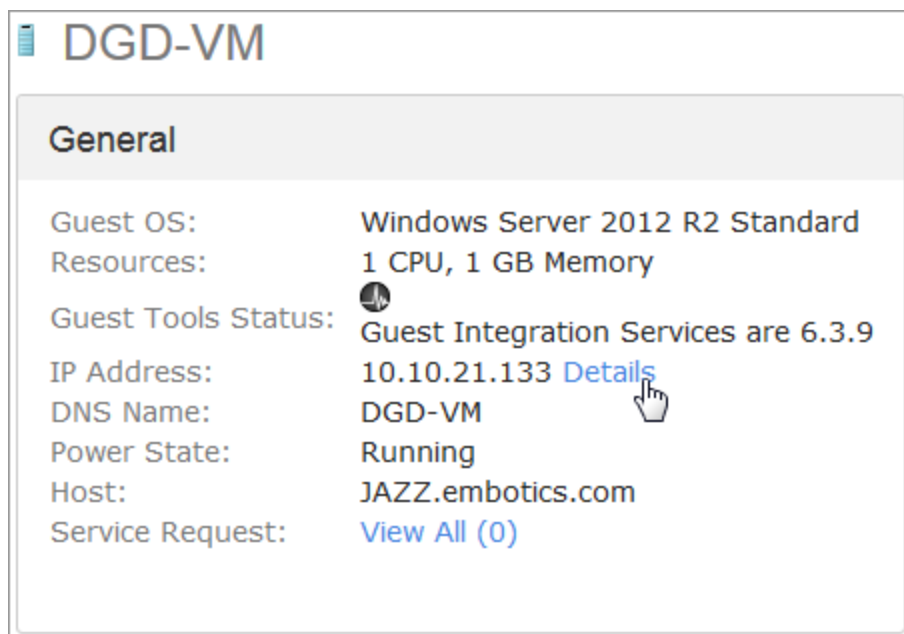
Automatically obtain SCVMM VM IP address changes

vCommander now uses SCVMM's refresher mode to automatically obtain IP address changes for SCVMM VMs.

- ✍ To use the refresher mode, all Microsoft SCVMM servers must be running SCVMM 2012 R2 Rollup 12 or higher.

By using the refresher mode, vCommander now:

- is automatically updated with the initial IP addresses of newly deployed VMs so that it can run completion workflows
- is automatically updated with any changes to the IP addresses of VMs so that it can run command workflows
- displays the IP addresses of VMs in the VM's Summary page



Note that if there are multiple IP addresses for the VM (for example, if the VM may use multiple NICs), you can click the **Details** link on the VM's Summary page to view additional networking details.

Networking Details ✕				
All networking adapters and known IP information:				
NIC	MAC	Network	Subnet	IPs
Network adapter 1	00:15:5D:15:1A:23	PVNet21 Switch		10.10.21.124
Network adapter 2	00:15:5D:15:1A:28	PVNet21 Switch		10.10.21.133
Network		PVNet21		

OK

Support for host group target destinations for automated deployments

When configuring SCVMM automated deployments, if you group SCVMM hosts in folders, you can now choose those folders as target destinations instead of being forced to choose clusters or hosts. Whatever target destination you choose, vCommander will determine the appropriate host for deployment.

SCVMM VMs with static MAC addresses can be deployed from templates

vCommander now supports the deployment of images with static MAC addresses from SCVMM templates. To support these deployments, SCVMM templates that are configured to use static MAC addresses from a MAC address pool must use a NIC that is set to static, and the vCommander advanced system property `embotics.mediator.vmm.deploy.keeptemplatemacaddress` must be explicitly set to true (the default is false). When these conditions are met, the SCVMM VM that vCommander deploys will be assigned a network adapter with a static MAC address from the MAC address pool.

For information on how to set advanced system properties, please contact support@embotics.com.

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.

REST API v2 enhancements

Changes in REST API release 6.1.1 (PowerShell Client v2.8.1)

The vCommander REST API PowerShell client version 2.8.1 is compatible with vCommander 6.1.1 and higher.

This new version includes REST APIs for managing AWS Stacks.

/references/stacks – Retrieve a list of stack references, sorted by their ID.

/stacks/{id} – Query for a stack by its ID and delete a stack.

/stacks/{id}/action/applyattribute – Apply a custom attribute value to the specified stack.

/stacks/{id}/action/applyexpirygroup – Apply an expiry group to the specified stack.

/stacks/{id}/action/applyownership – Apply ownership to the specified stack.

/stacks/objecthandle/{object_handle_id} – Retrieve a stack by its object handle ID.

For more information, see the Embotix® REST API v2 documentation. To access the REST API reference information built in to <%PRODUCT NAME%, enter the following URL in your Web browser: <https://<vCommander hostname or IP address>:<port>/apihelp/>

For more information on the REST API, see the *vCommander REST API Getting Started Guide* (included with the REST API package).

You can download the REST API PowerShell client here:

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

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.

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 user name 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 task's details. In the event that a method takes too long to complete, an asynchronous task is returned in place of the object (such as a user, organization, member, or service request).

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 a vCommander administrative role (either Enterprise Admin or Superuser) and appropriate access rights on the target managed systems.

Service request example




The following is an example of a service request submission 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

Virtualization and Cloud Platforms Supported	<ul style="list-style-type: none"> • VMware vCenter 6.5, 6.0, 5.5, 5.1, 5.0 • Microsoft® System Center Virtual Machine Manager (SCVMM) 2012 R2 Update Rollup 12 • Amazon Web Services • Microsoft Azure Resource Manager (ARM) • Microsoft Azure Service Manager (ASM)
Operating Systems Supported for vCommander Installation	<ul style="list-style-type: none"> • Microsoft Windows Server 2016 • Microsoft Windows Server 2012 R2 • Microsoft Windows Server 2012 • Microsoft Windows Server 2008 R2 or higher <p> vCommander does not support Azure subscriptions that contain both Azure Classic and ARM resources. To learn how to migrate resources to ARM, see Migrate Classic Resources to Azure Resource Manager in the Microsoft documentation.</p>
Languages Supported	<ul style="list-style-type: none"> • English
Recommended Databases	<ul style="list-style-type: none"> • Microsoft SQL Server 2016 • Microsoft SQL Server 2014 • Microsoft SQL Server 2012 • Microsoft SQL Server 2008 R2 <p> The default Cardinality Estimator used for Microsoft SQL Server 2014 and 2016 increases query compile time, which can reduce the vCommander Dashboard display speed. To increase the display speed of the Dashboard, you should change the SQL Server's compatibility level to SQL Server 2012 (110), then restart vCommander service. To learn how to change the SQL Server compatibility level, see View or Change the Compatibility Level of a Database in the Microsoft documentation.</p>
Default Database	<ul style="list-style-type: none"> • PostgreSQL is included with vCommander for evaluation environments
Browser Recommended	<ul style="list-style-type: none"> • Mozilla Firefox 57
Browsers Supported	<ul style="list-style-type: none"> • Mozilla Firefox 57, 56 • Microsoft Internet Explorer 11, 10 • Google Chrome 63, 62 • Microsoft Edge (experimental) <p> To use Internet Explorer 10, you must edit 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.</p>
Network	<ul style="list-style-type: none"> • Gigabit Ethernet Minimum

Licensing

- For more information about licensing, please refer to the terms in your license agreement or contact your Embotix® representative.

-  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 Embotix® vCommander® Hardware Requirements" in the vCommander Installation Guide for more details. You can also contact Embotix® Support to discuss requirements further, should you have any questions or unique configurations.

Profile	Description	Base Requirements
Evaluation	A deployment used to evaluate vCommander's feature set with fewer than 100 VMs, supporting fewer than five concurrent users, with infrequent reporting. It will not grow significantly beyond original occupancy, and it is not expected to be upgraded to production.	<ul style="list-style-type: none"> • 2 vCPU / 2.0 GHz dual core • 8.0 GB Memory • 2.0 GB disk space • Default Postgres database (Microsoft SQL Database server recommended)
Small	A 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"> • 2 vCPU / 2.0 GHz quad core • 8.0 GB Memory • 1.0 GB disk space (installation) • Dedicated application server • Microsoft SQL Database (remote database server recommended) • 4.0 GB disk space (data partition)
Medium	A 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"> • 2 vCPU / 2.0 GHz quad core • 10.0 GB Memory • JVM memory increased to 6 GB • 1.0 GB disk space (installation) • Dedicated application server • Remote Microsoft SQL Database server • 10.0 GB disk space (data partition) • DB data file (mdf) and log file (ldf) stored on separate disks
Enterprise	A 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"> • 2 to 4 vCPU / 2.0 GHz quad core • 12.0 GB Memory (or greater) • JVM memory increased to 8 GB • 1.0 GB disk space (installation) • Dedicated application server • Remote Microsoft SQL Database server • 10.0 GB disk space (data partition) • SAN backing for database files

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.

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. Additional ports 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.

Connection	Ports	Protocol	Direction	Description
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.
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	636	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.
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.
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 requires firewall rules to handle a dynamic range of ports that are opened for the response when vCommander queries the VMs on TCP port 135. To avoid opening a large range of high ports, 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	Scripted
	Jenkins CI with PowerShell plug-in	Scripted
	ServiceNow or ServiceNow Express, with REST API access	Scripted
	Zerto Virtual Manager (ZVM) Replication 4.5u1 (vCenter only)	Scripted
	Docker 1.11.2	Scripted
	vCommander REST API plus Windows Task Scheduler (and similar)	Scripted
	vCenter metadata synchronization, for all vCenter versions supported by vCommander	Scripted
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	Additional download required

Integration Category	Supported Systems and Protocols	Integration Type
Workflow Automation	vCommander REST API client for PowerShell 4, 3 with .NET Framework 4.5 or higher	Additional download required

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 6.1.7
6.1.x	Yes
6.0.2	Yes
6.0.1	No
6.0.0	No
5.7.x	Yes
5.6.x and earlier versions	No See the Knowledge Base article What Upgrade Paths are Supported? 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](#).

Updated hardware requirements

The [Hardware Requirements](#) have been updated as follows:

Profile	New requirement	Previous requirement
Evaluation	This profile is recommended for fewer than 100 VMs, supporting fewer than 5 concurrent users	N/A
	Microsoft SQL Database server now recommended over default Postgres database	N/A
Small	Microsoft SQL Database server now recommended to be remote	N/A
Medium	10 GB memory	8 GB memory
	6 GB JVM memory	N/A

Profile	New requirement	Previous requirement
Enterprise	2 to 4 vCPU	2 vCPU
	12 GB memory (or greater)	8 GB memory
	8 GB JVM memory	6 GB JVM memory

Correction to port requirements

The [Network Requirements](#) table has been updated to indicate that port 636, not port 686, is used for the Active Directory Domain Controller for Remote Secure LDAP Traffic.

Changes to software requirements

A warning not to uninstall Erlang OTP has been added to the [Software Requirements](#).

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 6.1.7, 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 to obtain a staging license for this purpose.

Users must clear their browser cache for the branding changes to take effect.

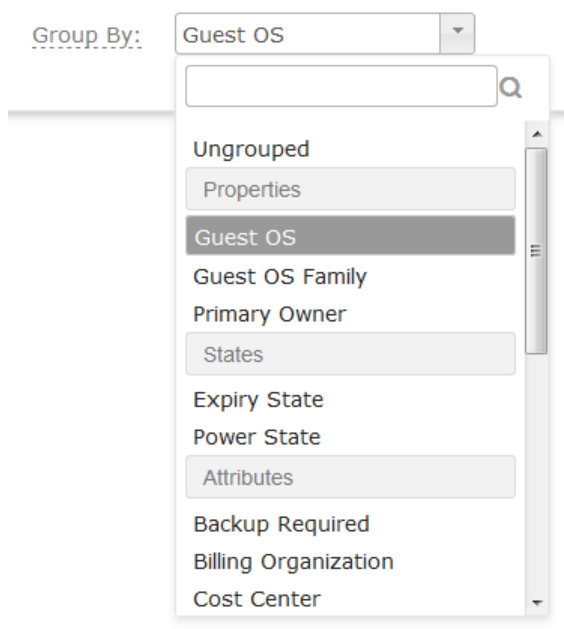
To learn more, see "Branding the Service Portal" in the vCommander User Guide.

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 Service Portal.

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:

The screenshot shows the 'Storage' form element for 'Storage-AWS'. It includes the following fields and options:

- Display Label:** A text box containing 'Storage'.
- Selectable Disk Types:** A dropdown menu with the following options: 'General Purpose (SSD)', 'Provisioned IOPS (SSD)', 'Throughput Optimized (HDD)', 'Cold (HDD)', and 'Magnetic'. Below the dropdown is the text 'Ctrl-click to select multiple values'.
- Allowed Actions:** Three checkboxes: 'Add' (checked), 'Change' (unchecked), and 'Remove' (unchecked).
- Maximum Disk Size:** A text box containing '20' followed by 'GB'.
- Maximum Extra Disks:** A text box containing '2'.
- Encryption:** A checkbox that is unchecked, with the text 'Specify whether new disks are encrypted by default' to its right.
- Delete on Termination:** A checkbox that is checked, with the text 'Specify whether new disks are deleted on termination by default' to its right.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom right.

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 with the product upgrade notification email, or on our Knowledge Base. Online help is available in vCommander and at <http://docs.embotics.com>.

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.

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, 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.

Issues Resolved in This Release

Issues resolved in the 6.1.7 maintenance release

Issue	Description and Solution
23345	May be unable to upgrade from release 5.7.9 due to OutOfMemory error <i>An issue preventing upgrade from release 5.7.9 to 6.1.6 has been addressed in release 6.1.7.</i>
23250	Conditional workflow steps may not work as expected when condition contains numeric string <i>Workflow steps that contain conditions using numeric strings now work as expected.</i>
23248	Administrator may be able to link a single VM to multiple service requests <i>Administrators are now prevented from manually linking a single VM to multiple service requests. Issues with accessing the Service Requests page in this situation have been addressed; upgrading will ensure that a VM is linked to only one service request.</i>
22832	Incorrect pagination on Member Quotas page of Configure Organization wizard for large organizations <i>The pagination of the list of members on the Member Quotas page now works as expected.</i>

Issues resolved in previous 6.1.x releases

Issue	Description and Solution
23207	Issues with SAML SSO integration may prevent users from logging into Service Portal <i>SAML single sign-on now works as expected for Service Portal users.</i>
23205	Administrator unable to update private key using key pair credential <i>Administrators can now add and update the private key for a key pair credential in vCommander.</i>
23189	Outdated cacert file may cause AWS managed system disconnection <i>This release includes an updated certificate. AWS managed systems remain connected as expected.</i>
23002	Performance issue affecting vCommander service startup <i>A recommendation-related performance issue affecting vCommander service startup has been addressed.</i>

Issue	Description and Solution
22972	Automated deployment fails when deployment parameter \$IP1=\$ is used <i>Automated deployment now works as expected when the deployment parameter \$IP1=\$ is entered during request approval.</i>
22916	Unable to deploy Azure template if parameter value contains an integer <i>ARM templates with integer parameter values can now be deployed successfully.</i>
22787	vCommander variable #{request.storage.gb} in conditional approval workflow fails if value greater than 250 GB <i>This variable now works properly in conditional workflow steps when the storage value is greater than 250 GB.</i>
22770	Value for Destination form element not included with copied service request <i>When a service request is copied, the value for the Destination form element is now included as expected.</i>
22759	High Availability: Failover may occur due to number of login errors <i>Because of an issue with the HA heartbeat login using the same session count as the REST API, a high availability failover might occur when not required. The HA heartbeat login no longer counts against the REST API session limit.</i>
22695	Unable to update performance data for Azure Resource Manager VM <i>vCommander is now able to gather performance data for ARM VMs with the scheduled task as well as through the Update Performance command.</i>
22664	Licensing warning causes Update License button to be hidden <i>When a license warning appears on the Licensing tab under Configuration > System Configuration, the Update License button is no longer hidden.</i>
22609	Cross-site scripting vulnerability in Manage Snapshots command <i>The XSS vulnerability in the Manage Snapshots command has been addressed.</i>
22582	Windows session authentication may fail with DecryptTokenFailer error <i>This error in Windows session authentication has been resolved.</i>
22452	Execute SSH Command workflow step may fail for certain RHEL 7.4 and CentOS distros <i>The Execute SSH Command workflow step now works as expected in completion workflows for RHEL 7.4 and CentOS 7.3 VMs.</i>
22351	Service Portal user with Connect Media permission cannot see files in the Media Library <i>A Service Portal user with the Connect/Disconnect Media permission can now see files in the Media Library as expected.</i>
22325	Issues with Edit Organization wizard if Use Per Storage Tier Quotas option isn't enabled <i>When the organization is not configured to use storage tier quotas, using the Edit Organization wizard to add members or configure member quotas now works as expected.</i>

Issue	Description and Solution
22182	Removing and re-adding CloudFormation template to service catalog may cause exception <i>In certain cases, removing a CloudFormation template from the service catalog made it impossible to add another CloudFormation template to the catalog. This issue has been fixed.</i>
22181	Unable to deploy public ARM image "Windows Server 2012 R2 Datacenter" to VM <i>Deploying a service that includes the ARM "Windows Server 2012 R2 Datacenter" public image now works as expected.</i>
22056	Default superuser account may not be able to access Service Portal <i>Adding the default "superuser" account to an organization and assigning this account a Service Portal role now allows access to the Service Portal as expected.</i>
21980	Save User Preferences task may stay in vCommander Tasks tab indefinitely <i>The Save User Preferences task no longer appears in the vCommander Tasks tab.</i>
22777	Cannot sync own account if it is given access via AD group <i>Accounts can now be synced.</i>
22768	vCommander becomes disconnected because of Null Pointer Exception in observation system <i>This error has been corrected.</i>
22765	Syncing User directory account removes account's managed system permissions <i>Access control functions as expected.</i>
22758	Copying a completed VM request and requesting again fails when using a custom attribute to modify the VM name <i>The VM name is now properly changed in a copied request.</i>
22731	Inability to thin provision on VMFS6 datastores <i>Disk provisioning is now successful when the disk provisioning format is set to Thin.</i>
22694	Accounts with both vCommander "Auditor" role and Service Portal role displayed as "No individual role" in vCommander <i>The user's role is now shown correctly in vCommander.</i>
22658	Performance charts not accessible from Service Portal if Service Access is restricted and VM Access Proxy is used <i>Performance charts are now accessible in the Service Portal in this configuration.</i>
22643	Pending Completion state of VMs not appearing in Service Portal <i>VMs deployed from requests that are pending completion are now marked as "Pending Completion" and actions for these VMs are limited.</i>
22641	Text may be deleted from text boxes on request form <i>Request form text fields now function as expected.</i>

Issue	Description and Solution
22632	Assigning users Access Rights does not properly update in certain security group configurations <i>Access Rights can now be assigned and viewed as expected.</i>
22593	The Server version is disclosed in the HTTP Header of the server's response <i>On a fresh installation, the HTTP Header does not show the server version. To address this issue during upgrade, you must add server="Apache" to the connector element in server.xml. See http://www.techstacks.com/howto/suppress-server-identity-in-tomcat.html for more information.</i>
22592	XSS vulnerability in VM Access Proxy <i>This XSS vulnerability has been resolved.</i>
22588	Error when viewing VM details and then switching organizations in the Service Portal <i>Switching organizations when viewing details for a VM no longer results in an error.</i>
22586	Workflows that execute scripts may unexpectedly stop, and system restarts are required <i>Workflows that execute scripts are now working as expected.</i>
22500	When using a non-standard port, unable to perform some actions in Service Portal <i>Service Portal tasks can now be performed as expected when using a non-standard port.</i>
22455	Removing custom attribute value from custom attribute definition may cause exception <i>In the case when a VM had a list-type custom attribute value and the VM is then deleted, it's now possible to remove that value from the custom attribute definition.</i>
22430	Display Domain Field login preference does not take effect in Service Portal <i>The Display Domain Field login preference now works as expected in the Service Portal.</i>
22428	When using Chef Run-lists, service requests from the Service Portal might fail <i>Service requests from the Service Portal are working as expected in this situation.</i>
22425	In the Manage Service Icons window, some control buttons are not accessible <i>Control buttons are now accessible in the Manage Service icons window.</i>
22416	Upgrades from 5.7.10 and 6.0.2 to 6.1.0 fail to delete a file in the tomcat\webapps folder <i>Upgrade to 6.1.4 functions normally.</i>
22257	Scheduled VM Billing Reports do not return data <i>Scheduled VM Billing reports now run and return data as expected.</i>
22197	Allow Multi-Service Requests option isn't enforced <i>When the "Allow multi-service requests" configuration option was disabled in vCommander, Service Portal users were still allowed to create multi-service requests, which would eventually fail. The option now works as expected.</i>

Issue	Description and Solution
22189	Invoking the Get-PSRequestParams REST API method for an ARM Service returns an error <i>Using the REST API to get the request parameters for an ARM service that exists in the vCommander service catalog now works as expected.</i>
22179	Cannot add local user with @ symbol in user name <i>Local user names may now contain the "@" symbol.</i>
22155	Decreased performance from Dashboard when using SQL Server 2014 <i>When using Microsoft SQL Server 2014 or greater with the default SQL Server compatibility level, vCommander Dashboard performance is slow. The Cardinality Estimator added in SQL Server 2014 increases query compile time. Therefore, to increase the Dashboard's display speed, change the SQL Server's compatibility level to SQL Server 2012 (110), then restart the vCommander service. To learn how to change the SQL Server compatibility level, see View or Change the Compatibility Level of a Database in the Microsoft documentation.</i>
22126	vCommander cannot connect to vCenter 6.5 managed system without TLSv1.0 or 1.1 enabled <i>vCommander can now connect to a vCenter 6.5 managed system that does not have TLSv1.0 or 1.1 enabled, which may occur if the VMWare TLS Reconfiguration Utility is used.</i>
22099	When deploying CloudFormation templates to VPCs, no values for VPC and subnet ID variables are returned <i>The vCommander variables #{destination.subnet.remoteId} and #{destination.vpc.remoteId} now return the requested information.</i>
22092	Incorrect default value for advanced system property embotics.ad.skip.supportedupnsuffix <i>The default value for both new and upgraded vCommander installations is true. For upgrades, if the value was set to false before upgrade, it will stay false. If the value was set to true before upgrade, it will stay true.</i>
22059	When requested AWS stacks are deployed, the Outputs may not be immediately available <i>Outputs now automatically display after requests for AWS stacks are completed; a manual refresh is not required.</i>
22054	After upgrading, deployed AWS stacks may not be available because their server types are not retained <i>Server types are now properly retained after an upgrade, so all AWS stacks that were requested and deployed are still available after an upgrade to vCommander 6.1.7.</i>
22051	Custom attribute descriptions unavailable in service requests <i>When making service requests in the Service Portal, you can now mouse over the custom attribute label to read the custom attribute's defined description.</i>
22032	Deletion of AWS stacks in vCommander may not appear to complete <i>The deletion of an AWS stack will now complete even if the stack contained a resource with a deletion policy of "retain".</i>

Issue	Description and Solution
22005	Unable to copy requests from Service Requests view <i>In Service Portal 6.0.x, you could not copy an existing a service request. You can now right-click and copy a listed service request.</i>
20956	Security group member unable to log in to Service Portal if first assigned vCommander role <i>A Service Portal user added as part of a security group can now log in to the Service Portal if they had previously been assigned a vCommander role.</i>

Known Issues

Issue	Description and Solution
23092	Direct console connection to VM on vCenter 5.1 will fail if running VMRC 10 Due to a VMware change, attempting to open a direct (non-proxied) console connection to a VM on vCenter 5.1 will fail if the standalone VMRC 10 app is in use. <i>Use a different method, such as a previous version of the VMRC app, to connect to a VM on vCenter 5.1. In our testing, version 7.0.1 of the VMRC app was successful.</i>
23090	SSH Java applet does not work when using Open SSH Session command for Linux VMs <i>You can successfully establish an SSH session if you SSH into the VM directly with a tool like PuTTY.</i>
23056	WebMKS not supported for direct console connections to vCenter 6.0 VMs on ESXi 5.5 The WebMKS method is not supported for direct (non-proxied) console connections to vCenter 6.0 VMs on ESXi 5.5. <i>Use the VMRC method instead of the WebMKS method to open console connections in this environment. Contact support@embotics.com to learn how to edit an advanced system property that controls the preferred connection method.</i>
21911	Credential selection not preserved when service request is copied 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. <i>Manually deploy at the component level so that you can specify credentials.</i>
21900	Service Portal's VMs and Services page maintains loading state In the Service Portal, the VMs and Services page can sometimes display a perpetual loading symbol. <i>Click Refresh to manually reload and display the data.</i>

Issue	Description and Solution
21870	<p>Deploying the VM Access Proxy disables the "Synchronize guest time with host" option</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>
21159	<p>Google Chrome version 58 does not support Common Name in self-signed certificates</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 Trusting a Self-Signed Certificate for more information.</i></p>
19502	<p>Distributed Service Portal: Time zone for Service Portal nodes different from vCommander</p> <p>When you set up a distributed Service Portal, tasks appear in the Service Portal in UTC time, and it's not currently possible to configure the time zone. As a result, expiry dates may not match, expiry policy actions may be triggered at the incorrect time, and scheduled tasks may be executed at the incorrect time.</p>
19275	<p>Open SSH Session not supported in Chrome and Firefox</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>
17455	<p>Performance metrics may not be available immediately after upgrade to vSphere 6</p> <p>Attempting to run the Update Performance and Capacity 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>
16002	<p>Mouse pointer may not be visible when opening VM console using IE 11 or 10</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>

Issue	Description and Solution
15602	<p>Multiple connections in same browser not supported</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>
14837	<p>Caps Lock key may cause duplicate characters in a secure RDP session</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>
14353	<p>VM console connection does not time out if connection cannot be established</p> <p>If a console connection to a VM cannot be established, a "Connecting" message is displayed indefinitely.</p>
14165	<p>Evaluation Exception when running a Compare Drift command on a VM after upgrading vCommander</p> <p>When running the Compare Drift 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 > Scheduled Tasks, select the Database Maintenance task, and click Run Now.</i></p>
13566	<p>Failed status may not be displayed for service request with failed completion workflow steps</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 > Workflow Status.</i></p>
11671	<p>Automated deployment may fail for VM with no storage tier specified</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 support@embotics.com for other configuration options.</i></p>
10874	<p>Exporting CSV files from a table may result in incomplete data</p> <p>If you right-click a table and click Export 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>

Issue	Description and Solution
10515	<p>Comments may not be displayed on approval landing page for command workflow</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>
10330	<p>Guest OS scans for non-English Windows guests may report disk metrics as Unknown</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>
9154	<p>Acknowledgment email for a completion workflow may contain inaccurate or incomplete information</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"> • <i>If VMware Tools is installed, Service to obtain IP address is the recommended option. You can also select Service to obtain DNS name or Service to obtain IP address and DNS name.</i> • <i>If VMware Tools is not installed, select Time to Elapse. Specify sufficient time for VMware to update all properties changed by vCommander.</i>

Help and Support

If you require additional help and support, send an email to 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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