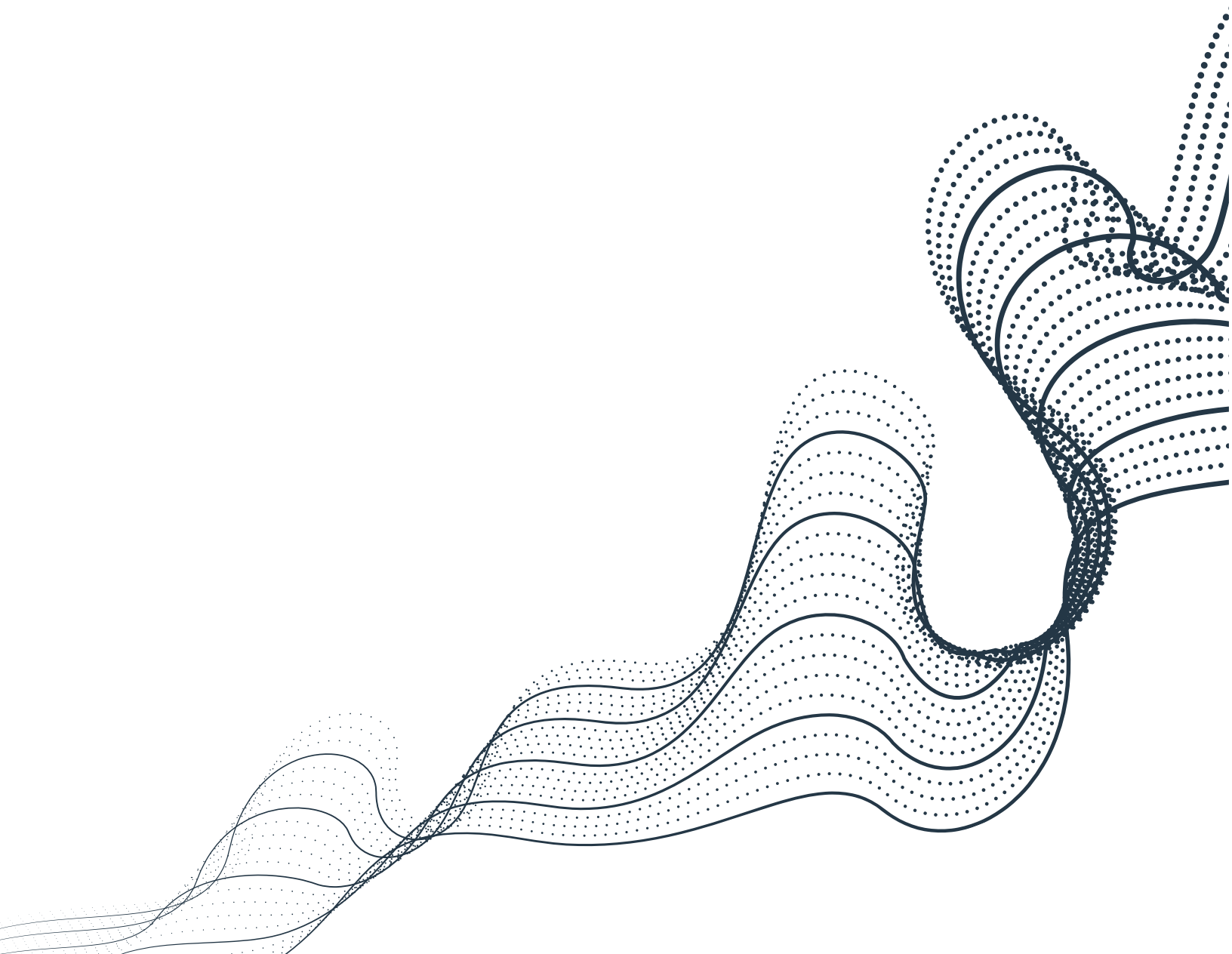

Release Notes



Contents

What's New in vCommander Version 7.5	3
Enhanced Support for Google Cloud Platform	3
Self-service automation	3
Resource and cost optimization	5
Lifecycle and policy management	7
Enhanced Kubernetes Support	7
Cluster administration	7
Kubernetes resources in the Service Portal	8
Log in to vCommander Using SAML SSO	10
Dynamic Lists in Request Forms	10
New Features in REST v3	11
System Requirements	13
Software requirements	13
Hardware requirements	14
VM Access Proxy hardware requirements	16
Network requirements	16
Guest OS Scanning Port Requirements	18
Required administrative accounts	18
Third-party integrations	18
Upgrade Notes	20
Supported upgrade paths	20
Changes to system requirements	20
Changes affecting upgrading users	20
Deprecated and Removed Features and Platforms	22
End of Support for vCommander 5.7 and 6.0	22
Issues Resolved in this Release	23
Resolved in version 7.5.9	23
Resolved in version 7.5.8	23
Resolved in version 7.5.7	23
Resolved in version 7.5.6	23
Resolved in version 7.5.5	23
Resolved in version 7.5.4	24
Resolved in version 7.5.3	24

Resolved in version 7.5.2	24
Resolved in version 7.5.1	24
Resolved in version 7.5.0	25
Known Issues	26

What's New in vCommander Version 7.5

Version 7.5 introduces significant expansion in our support for Google Cloud Platform, including deployment provisioning and instance rightsizing. For Kubernetes, vCommander now supports self-service administration for Kubernetes resources; access is controlled at the namespace level, allowing Service Portal users to manage resources within the namespaces they own. We've added SAML SSO for the vCommander admin console, so that both Service Portal and vCommander users can benefit from this important security feature. We've also added dynamic drop-down lists to your forms to retrieve real-time values from third party systems. Finally, we've made some REST API enhancements.

- [Enhanced Support for Google Cloud Platform](#)
- [Enhanced Kubernetes Support](#)
- [Log in to vCommander Using SAML SSO](#)
- [Dynamic Lists in Request Forms](#)
- [New Features in REST v3](#)

Enhanced Support for Google Cloud Platform

Building on the features introduced in previous releases, which included Google Cloud Platform (GCP) inventory/discovery and billing integration, vCommander version 7.5 expands our support for GCP. vCommander now provides end-to-end service request automation, costing, reporting and self-service portal access for GCP. You can add Deployment Manager configurations to the service catalog to support self-service deployments; you can also fully automate day-two operations, such as changing memory and vCPU resources. And vCommander's comprehensive GCP governance gives you a range of cloud expense management capabilities.

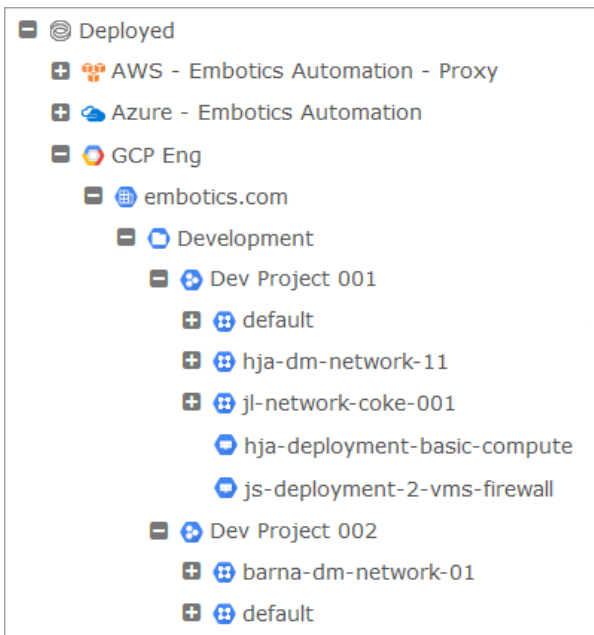
Read on to learn about the new features in this release. To get started with GCP, see "Managing Google Cloud Platform" in the vCommander User Guide.

Self-service automation

[Manage existing GCP deployments](#)

vCommander's single-pane-of-glass view of your hybrid and multi-cloud environments now supports Google Cloud Deployment Manager. You can now manage all aspects of the GCP deployment lifecycle in vCommander and the Service Portal.

GCP deployments and their child resources can be managed from vCommander's Operational view and the Deployed view (as shown below). vCommander directly manages virtual machines, virtual networks, subnets, and indirectly manages other resources.



You can assign metadata such as ownership, expiry date, maintenance group and custom attributes to GCP deployments, both manually and through automation. Once ownership has been assigned, a Service Portal user can view and administer the deployment and its resources – both those that vCommander manages directly, such as instances, and those managed indirectly, such as firewalls.

Deployment resources are shown in the Resources drop-down panel.

Resources			
Logical ID	Name	Type	Annual Cost
jl-debian-001	jl-debian-001	VM	\$79
jl-debian-002	jl-debian-002	VM	\$253
jl-firewall-001	https://www.googleapis.com/compute/v1/projects/dev-project-001-216815/global/firewalls/jl-firewall-coke-001	compute.v1.firewall	
jl-network-001	jl-network-001	Virtual Cloud	

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

Request and provision new GCP deployments

This release introduces end-to-end support for requesting and provisioning GCP deployments. Through deployments, you can use vCommander to provision any type of GCP resource.

Much like our support for AWS CloudFormation templates and ARM templates, [adding a GCP deployment to the service catalog](#) involves uploading relevant files and configuring options such as the request form.

Once the item is published in the Service Catalog, then all other self-service automation capabilities are used in a similar fashion. Deployment destinations for the location, post-provisioning completion workflows for further automation after the service is deployed, and, of course, new service requests initiated by the Service Portal user.

To learn more, see "Adding GCP Services to the Catalog" in the vCommander User Guide.

Submit change requests for GCP instances

vCommander and Service Portal users can now submit a change request for a GCP instance. Supported actions include modifying CPU and memory resources, decommissioning, and setting metadata such as custom attributes, ownership and expiry date. When you require users to submit a change request, you can benefit from vCommander's flexible approval process.

For resource changes, in addition to enabling users to choose another predefined GCP instance type, you can optionally allow them to set custom values for CPU and memory.

Change Request Form: Resource Change Request (CPU/Memory/Disk)

H (Header) Edit Delete
Resource Change Request

(Component Name) * Edit Delete
VM Name

(Instance Type) * Edit Delete
Instance Type
 Display Label: Instance Type
☒ Allow Custom CPU/Memory for GCP Instances
 CPU Count: 1,2,4
 Max Memory Size: 624.0 GB
 OK Cancel

Memory Size

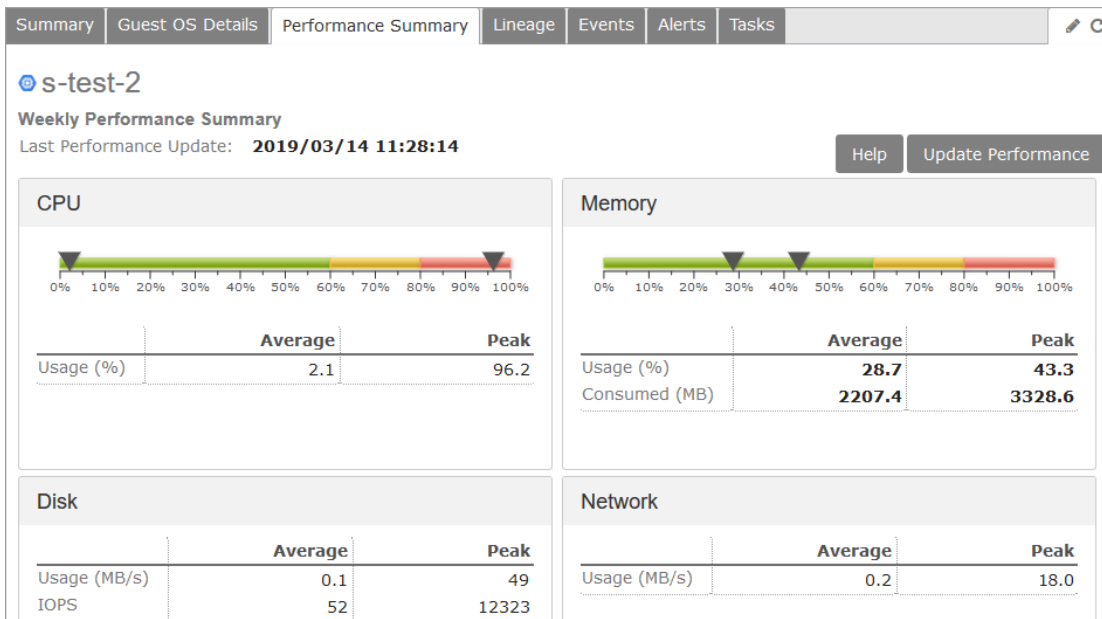
You can configure change request fulfillment to be manual or automatic. Automatic fulfillment can occur immediately or in the instance's maintenance window, depending on your organizational policy and the type of change request. For example, you may want to immediately fulfill decommissioning requests and non-disruptive resource change requests, but schedule resource changes to be fulfilled during a maintenance window.

To learn more, see "Designing a Form's Appearance and Content" and "Creating Approval Workflows for Change Requests" in the vCommander User Guide.

Resource and cost optimization

Monitor performance metrics for GCP instances

vCommander now retrieves performance metrics for GCP instances. Performance metrics can help users determine whether an instance has the right resources for its workload, as well as help in troubleshooting performance issues.



vCommander retrieves CPU, network and disk usage metrics for all GCP instances. As with other public clouds, retrieving GCP memory usage metrics requires additional configuration.

To learn more, see "Monitoring Performance Metrics for VMs, Hosts and Clusters" in the vCommander User Guide.

Rightsize GCP VM instances

Using performance metrics from Google Stackdriver, vCommander now issues rightsizing recommendations for GCP VM instances. Rightsizing is a critical part of both cloud expense management and resource optimization. To minimize costs and maximize performance, each instance in your cloud infrastructure should be allocated optimal resources to suit the workload.

vCommander issues rightsizing recommendations for both predefined instance types and custom machine types, providing a detailed explanation for each recommendation.

rattle1

General

Project:	QA Project C
Guest OS:	Debian
Description:	
Instance Type:	custom (4 C Memory)
IP Address:	34.73.248.1
DNS Name:	
Private IP Address:	10.142.0.12
Power State:	Running
Deletion Protection:	Disabled
Service Request:	View All (0)

There is 1 recommendation for this VM

Rightsizing
[Exclude VM](#)

Change from 3,840 MB to 4,352 MB memory
VM performance data indicates peak weekly active memory usage is 81.0%. Data was gathered between 2019/04/05 and 2019/04/12. Increasing the amount of memory will reduce memory paging, resulting in better performance for applications hosted on the VM.

Increase in annual VM cost: \$19
[Apply](#) [Ignore](#)

[Close](#)

You get to decide how much freedom to allow your users. vCommander's fine-grained permissions mean that you can require some users to submit a change request but allow others to apply the recommendations. Recommendations can be applied immediately or during the maintenance window.

Rightsizing groups allow you to configure distinct rightsizing rules and automation options. You may want to configure automated rightsizing for your development team's instances, while requiring recommendations for production instances to be reviewed and approved before they're applied. You could also enable automated downsizing but require review for upsizing recommendations.

To learn more, see "Rightsizing VMs and Instances" and "Configuring Rules for VM Rightsizing" in the vCommander User Guide.

Lifecycle and policy management

Import GCP labels as vCommander custom attributes

You can now import GCP labels as vCommander custom attributes. Label import is another tool for implementing the same level of vCommander orchestration and governance in [Cloud Direct environments](#) as you can in Cloud Brokered environments. Label import provides:

- better targeting of [power schedule recommendations](#) – automatically set one power schedule for VMs with the label "dev" and another for those labeled "prod"
- advanced [search and reporting](#) – filter searches and reports by label such as application ID or environment, or use a label to group report data
- [workflow conditions](#) based on label values – automatically select the right Chef recipe or Ansible playbook to run during post-provisioning, depending on compliance requirements

As with AWS and Azure tag sync, you can configure a blacklist of labels you don't want to import from GCP.

To learn more, see "Synchronizing GCP Labels and vCommander Custom Attributes" in the vCommander User Guide.

Enhanced Kubernetes Support

In version 7.5, we've expanded our support for managing Kubernetes resources.

Cluster administration

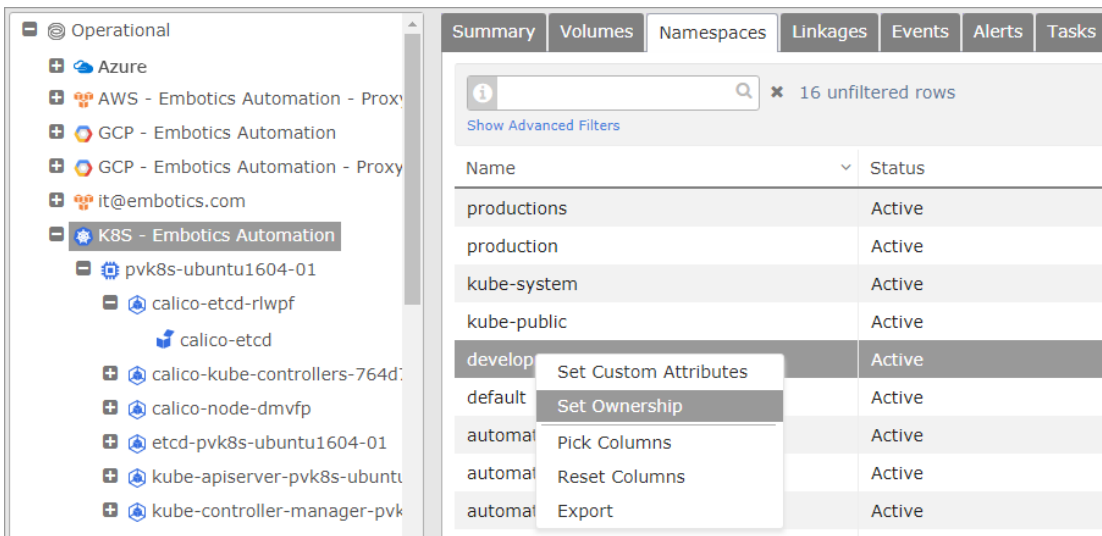
In vCommander, administrators can now control Service Portal users' access to the resources in Kubernetes namespaces.

Assign ownership to Kubernetes namespaces

In vCommander, you can now assign the ownership of a Kubernetes namespace to one or more users and/or groups. You can also assign an organization to the namespace.

The ability to assign ownership to namespaces allows you to control who can view a namespace and its associated resources. These resources may include pods, services, ingresses, replica sets and controllers, deployments, stateful sets and persistent volume claims.

You can set ownership for individual namespaces, or you can set the ownership for all the namespaces within a cluster (that is, set the ownership for all of the cluster's children).



To learn more, see "Assigning Ownership to Services" in the vCommander User Guide.

Use Default Ownership policies to automatically assign namespace ownership

In vCommander, you can set a Default Ownership policy on a Kubernetes cluster. This will automatically assign the ownership of any new namespaces that belong to that cluster. Any objects under those namespaces will also be assigned that ownership.

Setting a Default Ownership policy for a cluster allows you to make that cluster exclusive to a single organization that's assigned ownership of the cluster and allow those namespaces to be immediately available to Service Portal users that belong to that organization. Setting a Default Ownership policy can also reduce administrative burden because you don't need to set ownership on a per-namespace basis.

To learn more, see "Assigning Service Ownership with the Default Ownership Policy" in the vCommander User Guide.

Kubernetes resources in the Service Portal

In the Service Portal, the complexity of a cluster and its management are hidden from users. However, Service Portal users can access a namespace and its child resources if they own that namespace. This allows users, such as application developers, to see performance issues and interact with their namespace and its child resources in a safe, simple manner.

Given the appropriate permission, users may also be able to manage the resources in their namespace: they may apply YAML configuration files to create new resources in the namespace and/or update existing resources; they may also delete existing resources in the namespace.

View Kubernetes resources

Users can now view deployed Kubernetes namespaces and their child resources in the My Resources page of the Service Portal. This allows application developers to see the namespaces and their child resources that they, or an organization they're a member of, own.

The My Resources page provides details on the configuration of the selected namespace and its dependent resources, including:

- namespace status
- known Kubernetes issues

- the parent Kubernetes cluster
- key/value pair labels attached to the resource objects

More detailed information is provided in each expanding section on the page.

kube-node-lease

Issues: None
Status: Active
Cluster: K8s-TD-Dev-Config
Labels:

Details

Resources

Tasks from last 30 days

Events from last 30 days

Search by event or description

Event	Description	Time
View Yaml	Container Resource Yaml accessed for "kube-node-lease".	2019/04/12 15:47:46
Organization Updated	Container Namespace "kube-node-lease" has been assigned to organization "Default Organization".	2019/04/12 15:36:10
Owner Added	"manager" has been added as the primary owner of Container Namespace "kube-node-lease".	2019/04/12 15:36:09

Apply, modify and delete resources

Service Portal users that have a [Service Portal role](#) with the "Manage Kubernetes" permission can:

- apply a YAML configuration file to create unique Kubernetes resources and/or update existing resources in the namespace
- modify an existing resource by editing its YAML configuration file
- delete an existing resource, such as a deployment that's no longer needed

The ability for users to manage the resources in their own namespaces means that application developers don't have to rely on an administrator. For example, they could:

- add a new application to a namespace or additional resources, such as a new microservice
- modify existing resources, such as changing the version of an image for a deployment or the number of replicas
- delete existing resources, such as a deployment that's no longer needed

In the example below, the YAML configuration file that is to be applied will create new resources in the namespace.



To learn more, see "Managing Kubernetes Resources" in the Service Portal User Guide.

Assign ownership

In the Service Portal, an application developer that's the primary owner of a namespace can change the ownership assignment for the namespace. This allows the application developer to collaborate and share a namespace with other developers. To learn more, see "Assigning Ownership" in the Service Portal User Guide.

Log in to vCommander Using SAML SSO

You can now log in to the vCommander admin console using SAML SSO. vCommander already previously supported SAML SSO for the Service Portal, so now this capability is provided across both interfaces. This capability also provides for multi-factor authentication (MFA), since many SAML SSO providers directly support MFA.

Note that the SAML settings for vCommander won't be shared with the SAML settings for the Service Portal. Note also that if SAML is misconfigured or malfunctioning, you have the ability to bypass SAML and log in to vCommander using vCommander credentials. No bypass is available for the Service Portal.

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

Dynamic Lists in Request Forms

Now you can add dynamic drop-down lists to your forms to retrieve real-time values from third party systems, thereby removing the need to manually pre-configure list values. The Dynamic List form element runs a script to retrieve items from an external source to populate the form list at request time, so the drop-down list of values is always up to date. The scripts can be written in the language of your choice and they have the option to use values of other components on the form in order to build a dynamic list of values with relevant context.

Use dynamic drop-down lists to maintain real-time values for any frequently changing form options. Using any external system's API, dynamic lists can retrieve lists such as:

- available organizations to join
- cost centers that are accessible to a user
- database types and then the appropriate versions for each database type
- all subnets in the destination selected on the form
- a list of products and their related version/build numbers

The Dynamic List form element is available in the Form Designer for New Service Requests, Service Change Requests, and the Service Catalog blueprint form. It contains the "Configure" link to the Edit Script dialog where you can edit and test the script before publishing it. Like other form elements, it provides a label and the option to make this element a required field. It also provides the ability to test and debug a specific dynamic form element as you are building it.

Edit Script

Script Arguments:

Script Result must be a JSON string array

```
#Return a list of organizations configured in vCommander
$base64AuthInfo =
[Convert]::ToBase64String([Text.Encoding]::ASCII.GetBytes(("{0}:{1}" -f "username", "password")))
$restResult = Invoke-RestMethod -Headers @{"Authorization"=("Basic {0}" -f
$base64AuthInfo)} -Uri https://192.168.0.1/rest/v3/organizations
ConvertTo-Json @($restResult.items.name)
```

Executable:

Credentials: [Add Credentials](#)

Timeout: seconds

Fallback Value:
Value to be used in case of script failure or timeout

[Help](#) [OK](#) [Cancel](#)

To learn more, see "Adding dynamic lists to forms" in the vCommander User Guide.

New Features in REST v3

We're continuing to expand version 3 of vCommander's REST API. In v3, we've added the ability to:

- manage organization, ownership, and attributes of Azure Resource Groups via REST v3
- filter the collection of VMs and VM images based on attributes (for more information, see "Filtering API call results" in the API Conventions chapter of the REST API documentation)
- browse VMs and VM images
- get the properties of VMs and VM images
- delete VMs and VM images

To get started, see "Getting Started with the vCommander REST API v3". To browse the API reference, see "vCommander REST API Reference" at <https://docs.embotics.com/REST-API/V3/>.




System Requirements

In this topic:

- [Software requirements](#)
- [Hardware requirements](#)
- [VM Access Proxy hardware requirements](#)
- [Network requirements](#)
- [Required administrative accounts](#)
- [Third-party integrations](#)

See also [Changes to system requirements](#) and [Deprecated and Removed Features and Platforms](#).

Software requirements

Virtualization and Cloud Platforms Supported	<ul style="list-style-type: none"> Amazon Web Services Google Cloud Platform Kubernetes Microsoft Azure Microsoft® Hyper-V System Center Virtual Machine Manager (SCVMM) 2016 <div>  To manage SCVMM 2016, vCommander must be running on Windows 2016. </div> VMware Cloud on AWS <p>VMware Cloud on AWS is a service that allows you to migrate, provision and run your vSphere environment on AWS hardware. vCommander can manage vCenter running on VMware Cloud on AWS.</p> VMware vSphere 6.7, 6.5, 6.0 <div>  VMware vSphere 6.7 doesn't support linked clone deployment. </div>
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
Languages Supported	<ul style="list-style-type: none"> English
Databases Supported	<ul style="list-style-type: none"> Microsoft SQL Server 2017 (recommended) Microsoft SQL Server 2016 Microsoft SQL Server 2014 Microsoft SQL Server 2012 SP3 PostgreSQL (default) <div>  PostgreSQL is included with vCommander for use with evaluation environments only. </div>
Browsers Supported	<ul style="list-style-type: none"> Mozilla Firefox latest version (recommended) Google Chrome latest version (recommended) Microsoft Internet Explorer 11
Network	<ul style="list-style-type: none"> Gigabit Ethernet minimum
Licensing	<ul style="list-style-type: none"> For more information about licensing, refer to the terms in your license agreement or contact your Embotics representative.

Hardware requirements

The following table provides vCommander deployment tiers based on typical use for [on premise](#) and [public cloud](#) vCommander installations.

See [Scaling Embotix vCommander Hardware Requirements](#) for more details. You can also contact Embotix Support (support@embotix.com) to discuss requirements, if you have any questions or unique configurations.

On premise deployment sizing

Sizing Profile	Base Requirements
Evaluation A deployment to evaluate vCommander's feature set. It should contain fewer than 1000 VMs and have fewer than five concurrent users, with infrequent reporting. It shouldn't grow significantly beyond original occupancy, and it's not expected to be upgraded to production.	<ul style="list-style-type: none"> • 2 vCPU / 2.0 GHz dual core • 12.0 GB memory (for default Postgres database) or 8.0 GB memory (for Microsoft SQL Database server) • Approximately 1.0 GB disk space (application installation) • Minimum 4.0 GB disk space for database • Default Postgres database (although Microsoft SQL Database server is recommended)
Regular A deployment for production 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 • 8.0 GB Memory • Approximately 1.0 GB disk space (application installation) • Dedicated application server • Microsoft SQL Database. A remote database server is required. • 6.0 GB disk space (data partition) for database • For larger deployments – a 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) • Approximately 1.0 GB disk space (application installation) • Dedicated application server • Remote dedicated Microsoft SQL Database server • 20.0 GB disk space (data partition) for database • SAN backing for database files


AWS deployment sizing

Sizing Profile	Base Requirements
<p>Evaluation</p> <p>A deployment to evaluate vCommander's feature set.</p> <p>It should contain fewer than 1000 VMs and have fewer than five concurrent users, with infrequent reporting. It shouldn't grow significantly beyond original occupancy, and it's not expected to be upgraded to production.</p>	<ul style="list-style-type: none"> • EC2 instance t3, medium (when using a Microsoft SQL Database server) or EC2 instance t3.large (when using a Postgres database) • RDS for SQL Server 2016 Express db.t2.medium (when using a Microsoft SQL Database server) • 8.0 GB memory (for Microsoft SQL Database server) or 12.0 GB memory (for default Postgres database) • Approximately 1.0 GB disk space (application installation) • 4.0 GB disk space for database • Default Postgres database (although Microsoft SQL Database server is recommended)
<p>Regular</p> <p>A deployment for production environments with fewer than 2500 VMs, supporting fewer than 30 concurrent users, with frequent reporting.</p>	<ul style="list-style-type: none"> • EC2 instance m5.large with Windows Server 2016 • Amazon RDS db.m5.large with SQL Standard or Amazon RDS db.m5.xLarge with SQL Enterprise • Approximately 1.0 GB disk space (application installation) • Dedicated application server • Microsoft SQL Database. A remote database server is required. • 6.0 GB disk space (data partition) for database • For larger deployments – a DB data file (mdf) and log file (ldf) stored on separate disks

Sizing Profile	Base Requirements
Enterprise A production deployment for dynamic environments with more than 2500 VMs, supporting more than 30 concurrent users, with frequent reporting.	<ul style="list-style-type: none"> • EC2 instance m5.xlarge with Windows Server 2016 • Amazon RDS db.m5.xlarge with SQL Enterprise • Approximately 1.0 GB disk space (application installation) • Dedicated application server • Remote dedicated Microsoft SQL Database server • 20.0 GB disk space (data partition) for database

VM Access Proxy hardware requirements

Minimum requirements:

- 2 CPUs
-  The higher the number of CPUs available, the more concurrent connections the VM Access Proxy can handle.
- 4 GB Memory
- 10 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.

Network Requirements - Basic Operations

Connection	Ports	Protocol	Direction	Description
vCommander Web Server	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.
Microsoft Azure	443	TCP	Outbound	Communications with Microsoft Azure API.

Connection	Ports	Protocol	Direction	Description
Google Cloud Platform	443	TCP	Outbound	Communications with Google Cloud Platform 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.

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.

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.

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.
VM Access Console - WebMKS (HTML5)	9443	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.

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](#)

Required administrative accounts

vCommander requires an administrative account on each managed system. The account must have full administrative access on the entire managed system. Administrator privileges are required for a number of functions that vCommander performs, including retrieving VM and infrastructure information, managing VM identity, powering VMs on and off, and other policy actions.

Embotics recommends that you create a uniquely identifiable administrative account on each managed system (for example, "Embot"). Creating a unique account name allows you easily to track vCommander commands sent to the managed system by vCommander or by vCommander users.

-  vCommander doesn't make use of VMware's Linked Mode feature. vCommander communicates with each vCenter directly.

Third-party integrations

New vCommander integrations are continually being added. Please consult the [Embotics Knowledge Base](#) or email support@embotics.com if you have a specific technology integration interest.

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

Integration Category	Supported Systems and Protocols	Integration Type
Authentication	Active Directory®	Bundled
	LDAP	Bundled
	SAML2 WebSSO	Bundled
	Windows SSO	Bundled

Integration Category	Supported Systems and Protocols	Integration Type
Configuration Management and Application Deployment/Automation	Chef™ 12.18.14	Bundled
	Puppet™ Enterprise 2019.1	Bundled
	SCCM 2012 R2	Scripted
	Jenkins CI: Inbound integration	Additional download required
	Jenkins CI: Outbound integration	Additional download required
	ServiceNow or ServiceNow Express, with REST API access	Scripted
	Zerto Virtual Manager (ZVM) Replication 4.5u1 (vCenter only)	Scripted
	Docker 1.2	Scripted
	vCommander REST API plus scheduled workflows	Additional download required
	vCenter metadata synchronization, for all vCenter versions supported by vCommander	Scripted
	Ansible 2.4	Additional download required
	Terraform 0.11.x	Additional download required
	SaltStack 2018.3.4	Additional download required
IPAM	BlueCat™ IPAM 4.1	Bundled
	phpIPAM 1.3.1	Scripted
	Infoblox 8.1.2	Scripted
Application Monitoring	Splunk® 7.1, 7.0, 6.2, 6.1 (with HTTPS protocol)	Bundled
Notification	SNMP 2	Bundled
	SMTP	Bundled
Backup	Veeam Backup & Replication 9.0, 8.0	Additional download required
Workflow Automation	vCommander REST API v3	Bundled
	vCommander REST API v2 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 7.5.9
7.5.x	Yes
7.1.x	Yes
7.0.x	No
6.1.x	No
6.0.x	No End of Life is December 31, 2019. See End of Support for vCommander 5.7 and 6.0 .
5.7.x	No End of Life is December 31, 2019. See End of Support for vCommander 5.7 and 6.0 .
5.6.x and earlier versions	No End of Life was December 31, 2018. See End of Support for vCommander 5.5 and 5.6 . See the Knowledge Base article What Upgrade Paths are Supported? for instructions on how to upgrade from earlier versions.

Changes to system requirements

Although there aren't any changes to our system requirements for 7.5, it's recommended that you review the [System Requirements](#) before upgrading. See also [Deprecated and Removed Features and Platforms](#).

Changes affecting upgrading users

The following changes were made in version 7.5:

Changes to global service request email notification

You can now add any email address to the list of individuals who receive email notification for all service requests. The email address doesn't have to be associated with a vCommander account. If the email address is associated with a vCommander account, the account no longer requires access rights on the target managed system. See "Configuring Email Notification for Service Requests" in the vCommander User Guide to learn more.

Manage Kubernetes Service Portal permission

In new installations of vCommander 7.5, the new ["Manage Kubernetes" permission](#) is enabled for Customer, Delegated Admin and Manager roles by default. However, if you upgrade vCommander from an earlier version, you must manually enable the new permission for each role. See "Customizing Service Portal Roles for End Users" in the vCommander User Guide to learn how.

Minor UI changes for AWS stacks

With the [introduction of support for GCP deployments](#), we've made our UI for AWS stacks more generic in a few places.

The "Stack" target type for command workflows has been renamed "Application Stack". Command workflows targeting application stacks act on both AWS stacks and GCP deployments.

Command Workflow Configuration

Name & Type

Provide a name, an icon, and a target type for this command workflow.

▶ Name & Type

Steps

Permissions

Options

Summary

Name: Delete Stack

Icon: [Manage Icons](#)

Target Type: Application Stack

- Any Inventory Type
- Application Stack
- Auto Scaling Group
- Database
- Load Balancer
- Managed System
- Virtual Service
- VM
- No Inventory Target

The "Stack Resources" tab in vCommander and the "Stack Resources" drop-down panel in the Service Portal have both been renamed "Resources" to accommodate both AWS stacks and GCP deployments.

Resources			
Logical ID	Name	Type	Annual Cost
jl-debian-001	jl-debian-001	VM	\$79
jl-debian-002	jl-debian-002	VM	\$253
jl-firewall-001	https://www.googleapis.com/compute/v1/projects/dev-project-001-216815/global/firewalls/jl-firewall-coke-001	compute.v1.firewall	
jl-network-001	jl-network-001	Virtual Cloud	

The "Status Reason" column on the Resources tab and panel for an AWS stack has been renamed "Error Messages" for clarity.

Resources					
Logical ID	Name	Type	Annual Cost	Status	Error Message
EC2Instance	i-0bf503c3218093d49	VM	\$12	DELETE_FAILED	The instance 'i-0bf503c3218093d49' may not be termin
InstanceSecurityGroup	VirtualService001-InstanceSecurityGroup-W18TQ7LQ1ZR	AWS::EC2::SecurityG		DELETE_FAILED	resource sg-05a9667227925f67a has a dependent obje

Deprecated and Removed Features and Platforms

This section lists features and platforms that have been removed or are deprecated. Support for deprecated features and platforms will be removed in a future release. If you need more information about any of the deprecated or removed features, contact support@embotics.com. See also [System Requirements](#).

- **Microsoft SQL Server 2012:** As of Release 7.1.2, our support for Microsoft SQL Server 2012 now requires SP3.
- **Microsoft Windows Server 2008 R2 and higher:** Support for Microsoft Windows Server 2008 R2 and higher was removed in Release 7.1.2.
- **Microsoft SQL Server 2008 R2:** Support for Microsoft SQL Server 2008 R2 was removed in Release 7.1.2.
- **Microsoft Internet Explorer:** Support for Internet Explorer 10 was removed in Release 7.1.
- **Microsoft Azure Classic:** Support for Azure Classic (ASM) as a cloud platform was removed in Release 7.0.
- **Microsoft Hyper-V SCVMM 2012:** Support for SCVMM 2012 as a cloud platform was removed in Release 7.0.
- **VMware vCenter/ESXi 5.5, 5.1 and 5.0:** Support for VMware vCenter and ESXi 5.5, 5.1 and 5.0 was removed in Release 7.0.
- **vCommander Dashboard:** The vCommander Dashboard option in the vCommander Views menu was removed in Release 7.0.
- **Projected cost model option in Reports:** The Projected option for the Cost Model setting in the VM Billing Report and the VM Comparative Economics Report is deprecated and will be removed in a future release.
- **User-specific component forms for new service requests:** With the introduction in vCommander 5.7 of the blueprint service catalog model, user-specific component forms for new service requests (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.

End of Support for vCommander 5.7 and 6.0

The End of Support and End of Life for vCommander 5.7 and 6.0 and all their derivatives (5.7.x and 6.0.x) is December 31, 2019. In order to maintain your full level of support beyond this date, Embotics recommends upgrading to (at minimum) vCommander 6.1.x.

If you need assistance with upgrading to a newer version of vCommander, contact support@embotics.com.

Issues Resolved in this Release

Resolved in version 7.5.9

Issue	Description
27506	When customizing a guest OS in the completion workflow of a service request, setting the advanced system property, <code>embotics.workflow.customize.reserve.ip</code> , to true will retrieve the appropriate network configuration from an IP pool that's linked to a Distributed Port Group.
27092	Attributes on VMs deployed via REST v3 are consistent with deployments via UI and REST v2.
27003	Deployed VMs are now assigned attributes used for intelligent placement.

Resolved in version 7.5.8

Issue	Description
27468	You can now configure vCommander to allow HTTP access in cases where SSL termination is done by an external device.
27434	The <code>#{destination.virtualNetwork.cidrBlock}</code> and <code>#{destination.subnet.cidrBlock}</code> variables are now available for deploying ARM templates to Azure.
25846	The <code>#{workflowId}</code> variable was added along with the Pause Workflow Plug-in Step. You can now pause the execution of a workflow, call out to a third-party system, and then resume the workflow.
25603	A new system property named <code>embotics.workflow.credentials.commander</code> is now available to specify a set of additional credentials in a script environment.

Resolved in version 7.5.7

Issue	Description
27455	The character limit for the global provisioning naming conventions has been increased to accommodate multiple naming variables that could cause very long naming formats.

Resolved in version 7.5.6

Issue	Description
27274	You can now use the RESTv3 API to set attributes on Azure Resource Groups.
27244	You can now use the RESTv3 API to view and set ownership on Azure Resource Groups.

Resolved in version 7.5.5

Issue	Description
27411	A validation error occurred when inserting the <code>#{request.services[x].components[x].targetManagementServerType}</code> variable in approval workflow steps for service requests. You can now use the variable as expected.
27405	For customers in GMT + timezones, the aggregated costing data shown on the Cost Analytics page and in the Cloud Billing Report did not accurately reflect detailed billing data. The costing data is now accurately aggregated as expected.
27387	Policy actions and recommendations now behave as expected.
27337	In the Service Portal, service requests for multiple services are now copied as expected.
27325	Currency values in reports are now formatted with commas and are right-justified to increase readability.

Issue	Description
27322	Deployments to vSphere NSX-T Opaque Networks are now supported.
27283	When using multiple naming variables in templates for services and components, the naming format could exceed the maximum character limit causing deployments to fail. The character limit for templates is now increased to accommodate longer naming variables.
27276	A REST v2 GET request for active sessions will now complete and return the requested services as expected.

Resolved in version 7.5.4

Issue	Description
27397	<p>A new advanced system property, <code>embotics.mediator.aws.defaultregion</code>, is now available to configure the default region used to connect to AWS. This allows connections to organization accounts governed by service control policies (SCPs) that won't permit access to us-west-2, which is the default region for the vCommander system.</p> <p>See "Advanced Configuration through System Properties" in the vCommander User Guide to learn how to configure system properties.</p>

Resolved in version 7.5.3

Issue	Description
27215	<p>The Cloud Billing report displayed date selection in users' local timezone. In some cases, in positive offset timezones this could cause dates to be shifted by a day.</p> <p>The Cloud Billing report now display dates in UTC.</p>
27176	The Customize VM workflow step now properly assigns DNS servers to CentOS 7.6 VMs when they're linked to IP pools.
27009	<p>No CloudFormation Template variable was available to get all availability zones from an AWS destination.</p> <p>The variable <code>destination.availabilityZones</code> was added to Commander. You can now use this variable as a parameter in an AWS CloudFormation template to get all availability zones from an AWS destination.</p>

Resolved in version 7.5.2

Issue	Description
27143	Azure billing record retrieval succeeds when using a proxy.
27139	Conditions on the Run Module workflow step may now include the output and error code of previous steps in the workflow.
27120	Cost charts are now populated when vCommander is running in a positive offset time zone.
26665	Frequent, automatic updates to the destination list were causing a blank edit dialog in the Provisioning Destination Wizard. A refresh button now allows on-demand updating.

Resolved in version 7.5.1

Issue	Description
27108	500 errors may occur on startup or intermittently in rare cases. This has been resolved.
27054	AWS billing records are processed as expected when a credit spans multiple days.

Resolved in version 7.5.0

Issue	Description
27082	Fixed errors that occurred while viewing the Workflow Status page.
27017	Azure instance type and storage costs are now being properly identified in the South East Asia region.
27011	A change request to increase the storage for a vCenter VM (6.5 or higher) to 2 TB or more will no longer cause the VM to reboot.
27002	A REST v3 POST request for a service with a custom component that was renamed will now complete and return the requested service as expected.
26974	If you create a workflow with an Execute Embedded Script step that runs a PowerShell script, the workflow can now be run on many VMs simultaneously.
26947	Issues related to storage resources for Azure published services have been resolved. First, vCommander now supports service catalog entries for multiple images captured from a single VM (that is, images that reference the same disk). Second, a VM's base disk is no longer marked as unmanaged if the source disk is deleted in the Azure portal.
26887	When you reject a failed service request, the Reject dialog now shows the correct service request ID.
26845	Calls to look up user directory user information have been optimized to avoid resolving remote data whenever possible.
26829	If a VM image is copied from one region to another in the Azure portal, vCommander now successfully handles the image in the new region during managed system synchronization.
26789	When a service request is copied, the service created from the copy will use the configuration of the source service. It won't use the service request's current configuration, which could have been modified from the service's original configuration.
26788	Selecting the SCVMM "Highly Available" option on the Service Catalog Deployment page no longer invalidates VMware destinations for a Multi-Cloud service.
26773	Retrieving AWS billing data now works as expected when the Default Ownership policy isn't configured to assign new services to an organization.
26755	The approval workflow variable <code>#{request.rebootRequired}</code> now returns the correct value when Memory Hot Plug is enabled in vCenter.
26710	Users can now modify existing storage resources for Hyper-V VMs as expected.
26642	In REST v3, a GET on the ID of a completed vApp service request now returns the vApp ID in its results.
26587	An AD group member with both an individual and an organizational role can now log in to the Service Portal.
26518	Added a REST endpoint to retry fenced network decommissions.
26512	If a vCenter service catalog entry is configured with locked hard disks, and that service is later edited in vCommander, the disks will stay locked unless you explicitly clear the locks.
26496	A new advanced system property, <code>embotics.workflow.customize.reserve.ip</code> , when set to <code>true</code> , enables IP addresses to be reserved and applied from an IP pool as part of the Customize VM workflow step. See "Advanced Configuration through System Properties" in the vCommander User Guide to learn how to configure system properties.
26417	Up to 50 characters are now allowed in the user data telephone input fields.
26362	Previously, subscribing to email notification for all service requests using an email address associated with a vCommander user account could prevent notifications from being sent, if that user had no access rights to the target managed system. Now, all subscribed email addresses receive notifications; notifications aren't affected by an email address's association with a user account or the account's assigned access rights.
26305	When a VM's IP changed and a new VM was given the changed VM's IP address, the original VM was still listed as having that IP. Conflicts between IPs in the IP pool that were duplicated in this way can now be manually resolved.
25789	When you use the REST API v2 to request an Azure public image or an AWS marketplace AMI, that request will now complete as expected, even if a instance type form element for those images is used in a vCommander service catalog form.

Known Issues

Issue	Description and Solution
25537	<p>For vCenter versions 6.5 and beyond, the host performance charts aren't available in vCommander.</p> <p><i>While vCenter 6.5 VM performance charts are available in vCommander, you must log in to vCenter directly to access performance charts for hosts.</i></p>
24428	<p>Due to changes in VMware vSphere 6.7, linked clone deployments from a template are not supported for vCenter 6.7 managed systems.</p> <p><i>You can convert a template to a VM and then use that VM for linked clones for vCenter 6.7 managed systems.</i></p> <p><i>When VMware vSphere 6.7 supports linked clone deployments from a template, that functionality will also be provided in a future vCommander release.</i></p>
21870	<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>
21477	<p>Google Chrome no longer supports the Common Name in self-signed certificates. Chrome now requires a Subject Alternative Name instead of the Common Name used in the self-signed certificate delivered with vCommander.</p> <p><i>If you're using Chrome, generate a self-signed certificate for vCommander using the Subject Alternative Name. See the Knowledge Base article Trusting a Self-Signed Certificate for more information.</i></p>
19275	<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 the VM Access Proxy for SSH sessions.</i></p>
17455	<p>Performance metrics may not be available immediately after upgrade to vSphere 6. As a result, attempting to run the Update Performance and Capacity command for a cluster immediately after upgrading to vSphere 6 may fail.</p> <p><i>Wait about an hour for vSphere to make performance metrics available, then run the command again.</i></p>
16002	<p>When the WebMKS console connection method is configured, Internet Explorer 11 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 when using WebMKS, try enabling mouse trails with the shortest option. Or, use the VMRC plug-in method instead of the WebMKS method. For Linux VMs, use the VMRC plug-in connection method. See About the Console Connection Methods to learn how to change the console connection method for HTML5 browsers.</i></p>
15602	<p>vCommander and the Service Portal don't 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 can't 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>

