snow

Commander

Version 8.4.1

Release Notes

Contents

What's New in Version 8.4

Snow Commander Version 8.4 brings a new way of managing your reserved instances (RIs) with two new reports – the Reserved Instance Utilization report and the Reserved Instance Coverage report.

This release also provides Service Portal users the ability to view and perform administrative action on their deployed Azure SQL databases.

To accompany this Commander release, we're also offering an updated VM Access Proxy. This VM Access Proxy now uses a container-based installation process, which provides a simpler installation, security enhancements, and easier upgrades in the future. We're also now tracking Tenancy in AWS, to help provide insight on potential BYOL potential savings and violations.

We've also made improvements to the look and feel of Commander to enhance your working experience.

For more information, see:

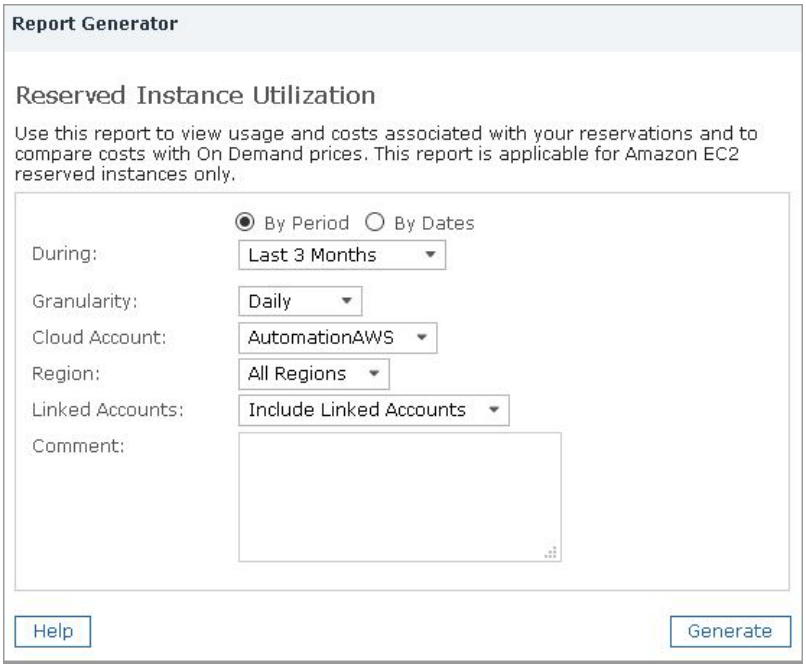
- AWS Reserved Instance Reports
- Azure Database Display in Service Portal
- Improved VM Access Proxy
- UI/UX Improvements
- REST v3 API Features

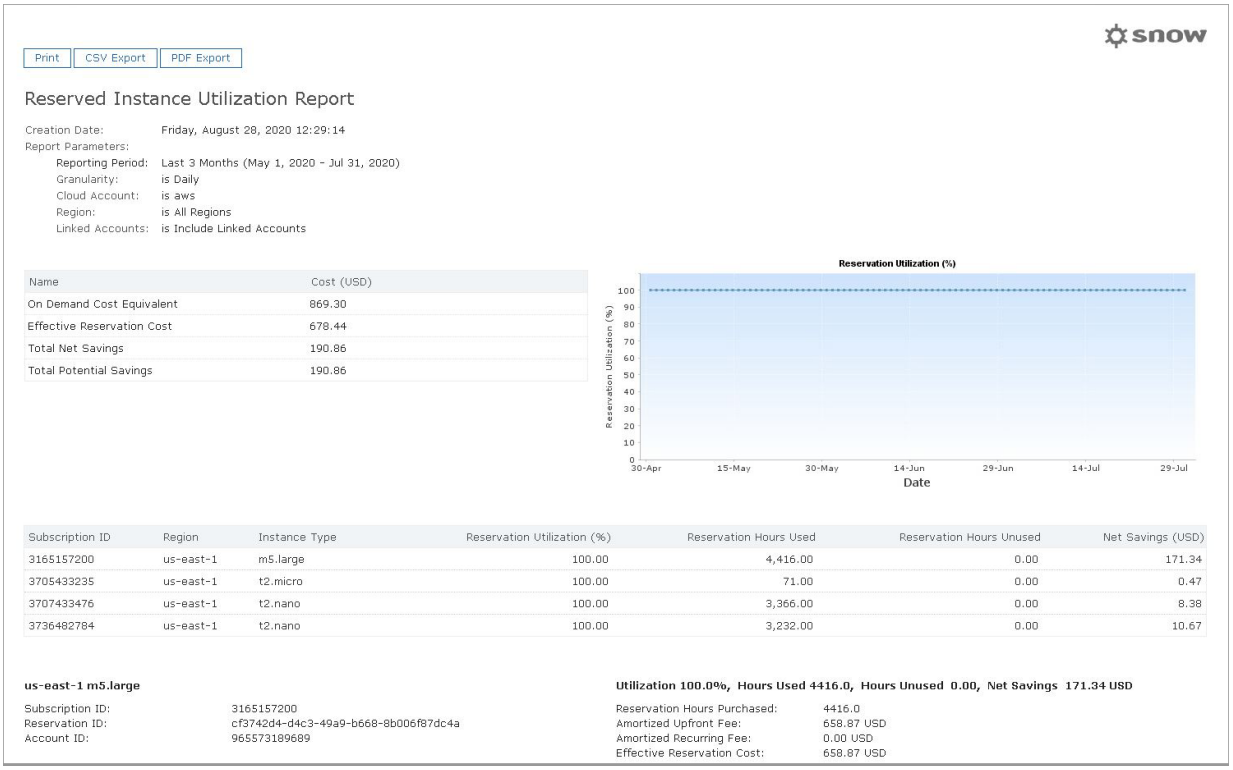
AWS Reserved Instance Reports

We've introduced two new reports to help you optimize your AWS EC2 reserved instance purchases for managing and governing your cloud costs.

Reserved Instance Utilization report

With the Reserved Instance Utilization report, you can verify that your resources are being utilized as forecast and track down any underutilized reservations. You can see usage costs for RIs and compare cost savings to on-demand instances.



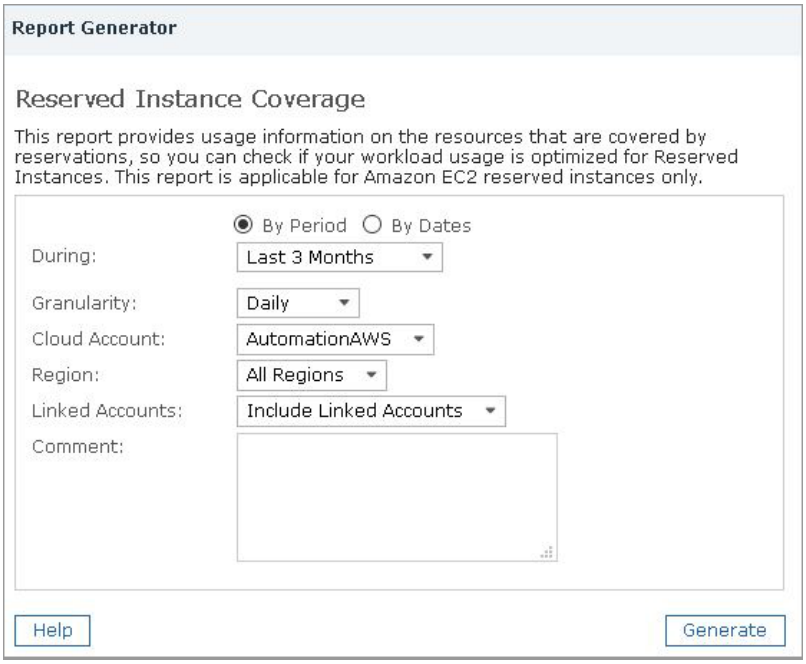


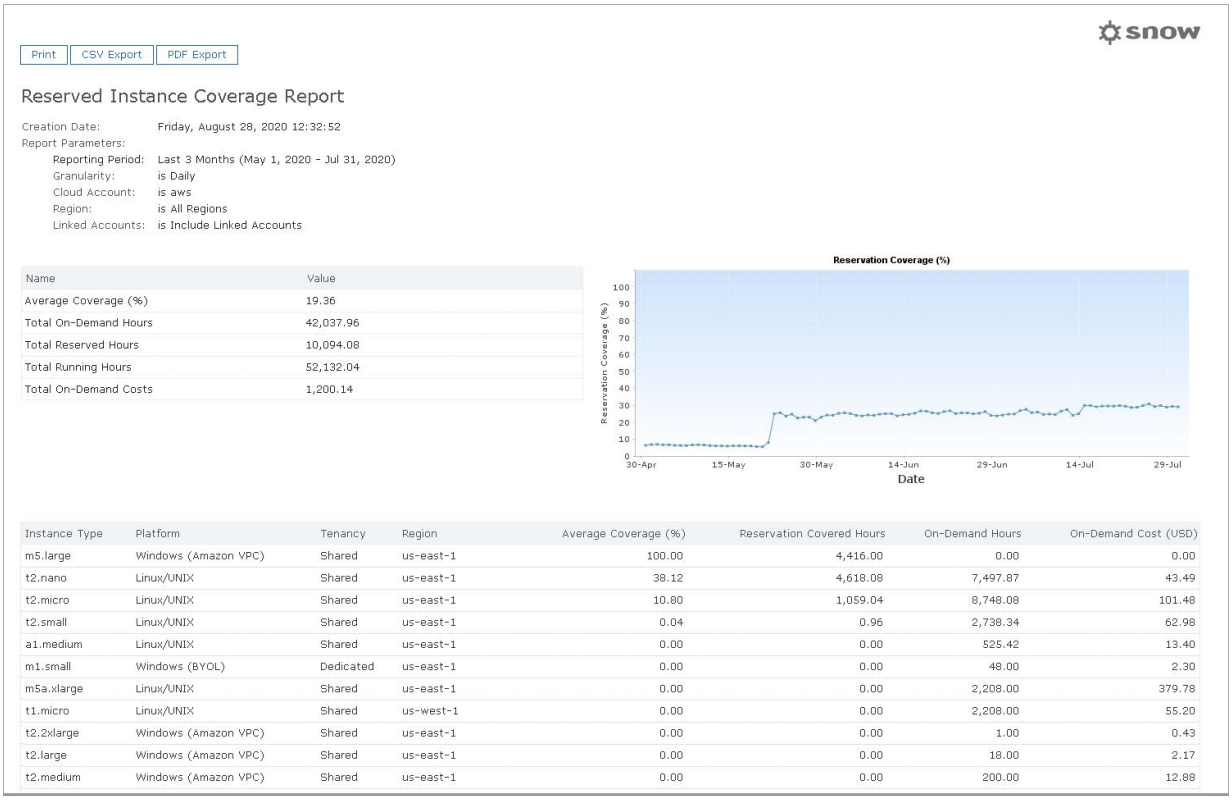
For more information, see Reserved Instance Utilization Report in the Commander User Guide.

Reserved Instance Coverage report

Use this report to identify instance hours that aren't covered by RIs, highlighting opportunities for savings. Optimize your RI purchases for cost efficiency by identifying instance hours that are consistently running at

on-demand rates and purchasing the appropriate new RIs. This report is also useful to identify EC2 instances that aren't using RIs, so you can change or delete them.





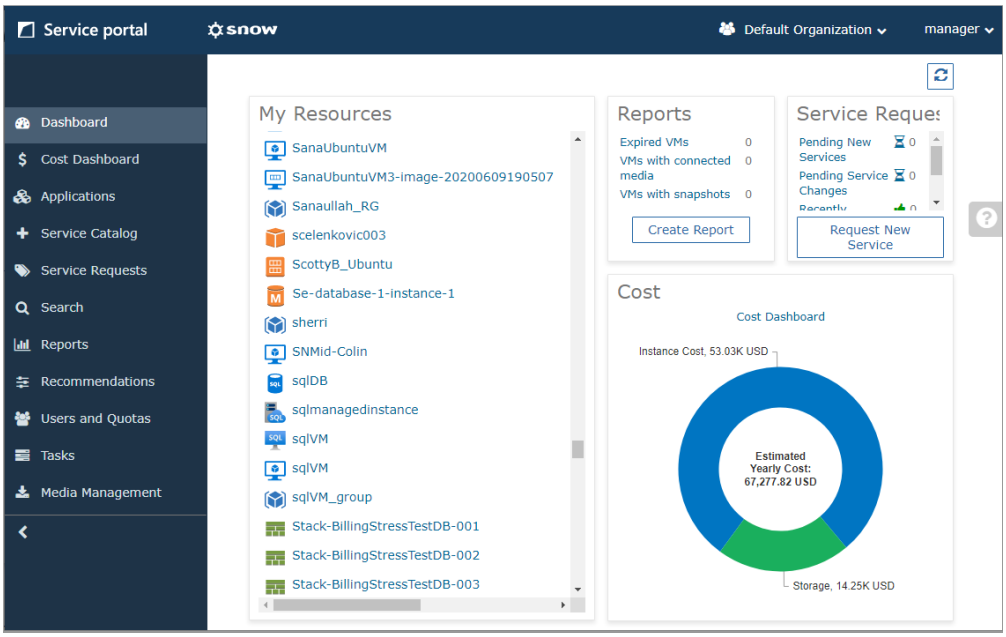
For more information, see Reserved Instance Coverage Report in the Commander User Guide.

Azure Database Display in Service Portal

Service Portal users can now view their deployed Azure SQL databases.

In the example below, the following three types of possible Azure SQL databases are shown in the My Resources section of the Dashboard:

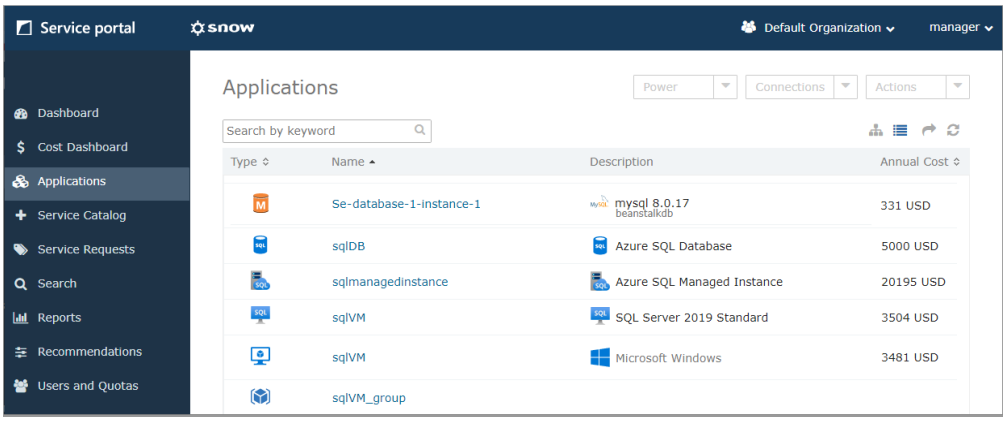
- Azure SQL Databases (a single server with possibly multiple databases)
- Azure Managed Instances (a single server with one database)
- Azure SQL VMs (a VM with SQL Server installed)



Notes:

- The Azure SQL VM "SQLVM" appears twice below – once as a database and once as the VM that manages the database. Azure SQL Databases and Azure Managed Instances only appear as database elements because they aren't associated with a VM.
- This example also shows an AWS RDS database "Se-database-1-instance-1". Service Portal users could already view and manage AWS RDS databases in previous releases.

Users can also view their deployed databases on the Applications page.



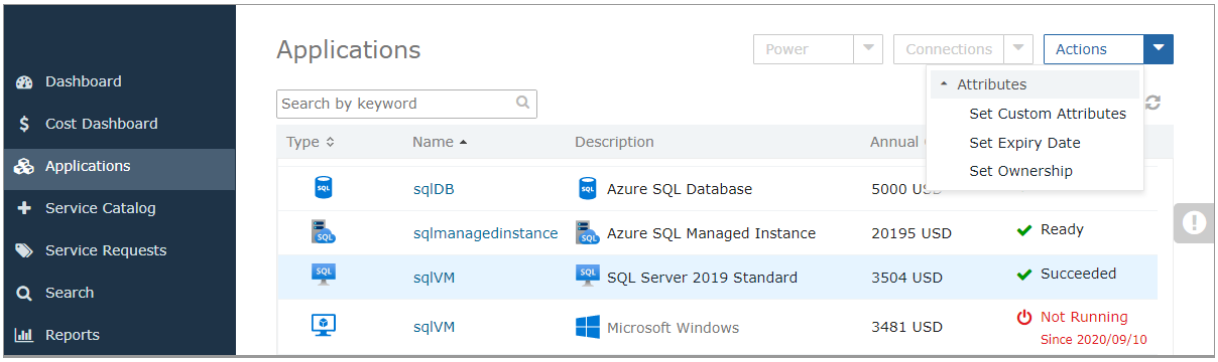
View detailed database information

In the Service Portal, users can click any listed Azure SQL database to go to its summary page and view more information for it.

Manage databases

Service Portal users can now perform administrative actions for Azure SQL databases.

Users can run the administrative actions from either the Applications page or from a selected Azure SQL database's summary page. The actions can be accessed from the menus at the top of the Service Portal page.



This ability to perform administrative actions functionality matches that already available for AWS RDS databases.

Providing users with administrative actions allows them to efficiently manage their deployed databases. For example, Service Portal users may be able to run command workflows on their Azure SQL databases (see Running and Scheduling Commands in the Service Portal User Guide) or request service changes for them (see Submitting Change Requests in the Service Portal User Guide).

Improved VM Access Proxy

The Commander VM Access Proxy allows you to secure your virtualized infrastructure behind a firewall while still permitting your users secure console, RDP, VNC, and SSH access to their VMs.

The following improvements have been made to version 3.4 of the Commander VM Access Proxy:

- A container-based installation process, which is simpler and will provide easier upgrades in the future.
- Security enhancements.
- Improved copy/paste functionality in Secure RDP, Secure SSH, and Secure VNC connections.
- The ability to install the VM Access Proxy on a machine with a Linux distribution of your choice that complies with your company's best practices and security requirements.

For more information, see Setting Up VM Access Proxies in the Commander User Guide.

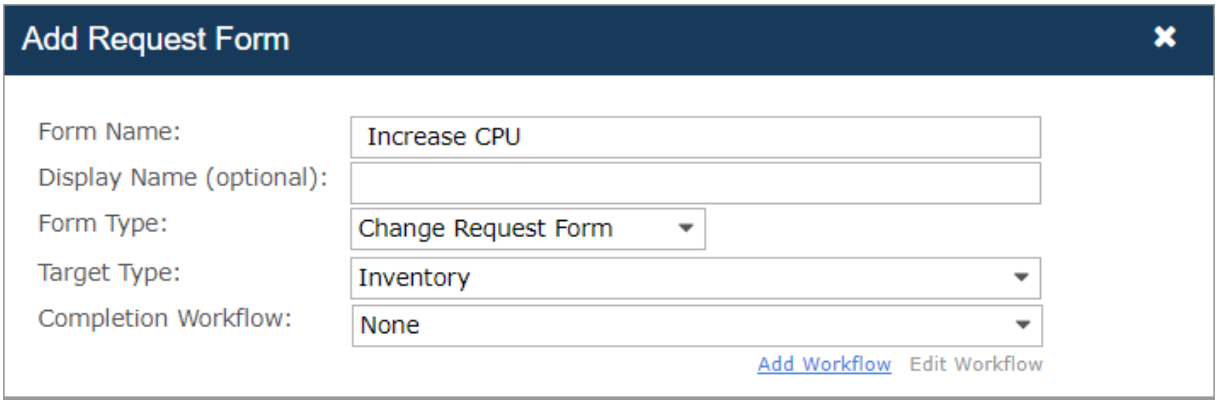
If you are upgrading to Commander Release 8.4, and you currently use a Commander VM Access Proxy, see Redeploying the Commander VM Access Proxy in the Commander Installation Guide.

UI/UX Improvements

We've made the following improvements:

Add or edit a completion workflow in change request forms

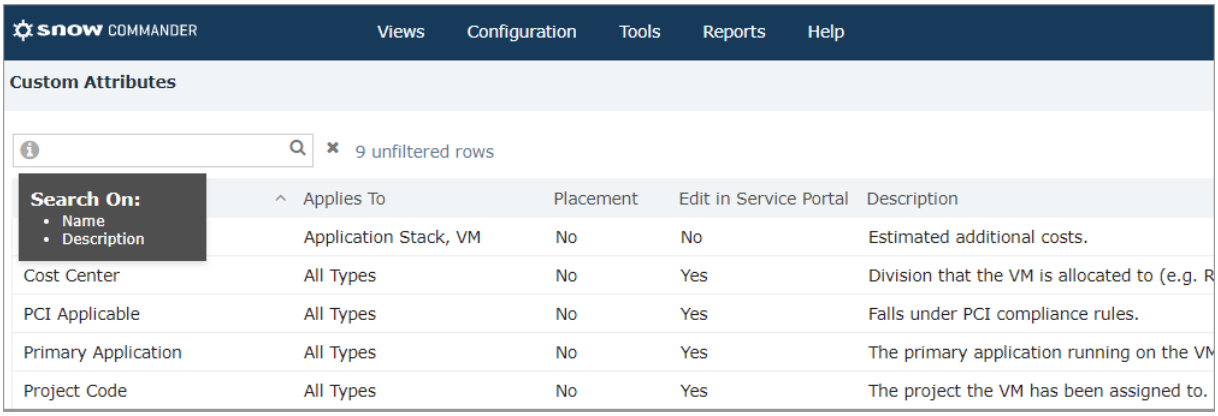
You now have the option to add a new completion workflow or edit an existing one when you create or edit a service change request form.



For more information, see Creating service change request forms and Editing existing forms in the Commander User Guide.

Search for custom attributes

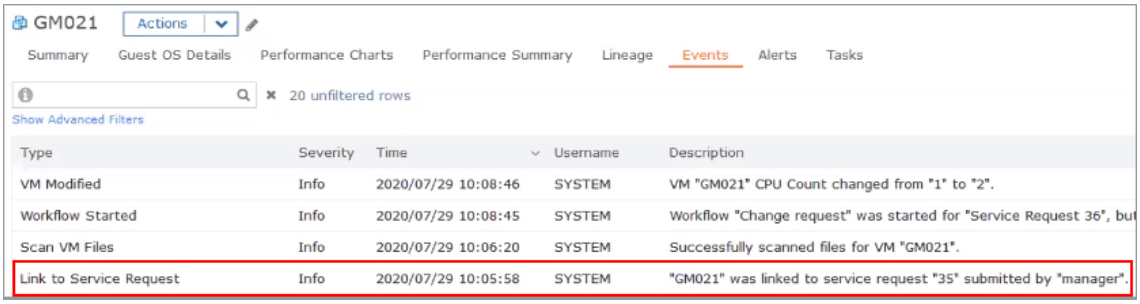
You can now search for custom attributes by name or description.



View service request details

To help manage and diagnose events related to service requests:

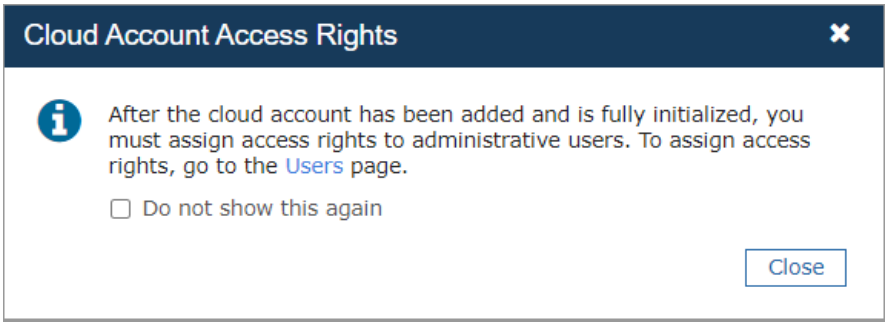
- For new service requests, the Service Requests page now displays the name of the requested service instead of the name of the service request form.
- When provisioning a new service, an event now associates the service with the request number and the user who requested the service.



For information about related upgrade changes, see Service request details in the Installation Guide.

Reminder to assign cloud account access rights

To help streamline user and access management, a new message appears as a reminder to assign administrative access rights after you add a cloud account. You can click the link in the message to go directly to the Users page where you can assign the required access rights.



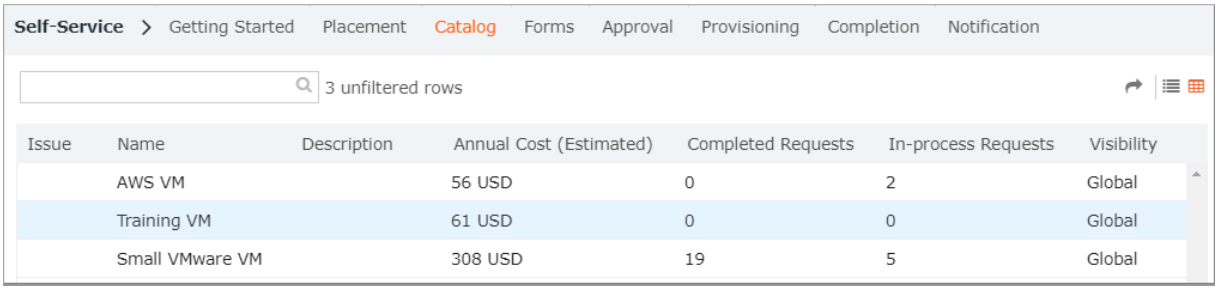
For more information about access rights, see Assigning Access Rights to Administrative Users in the Commander User Guide.

Increased First Name and Last Name character limits

To correctly enter and display a user's complete first and last name associated with a user account, we've increased the character limit for the First Name and Last Name fields to 100 characters. Previously, the limit was set to 25 characters.

Improved table view of the Catalog

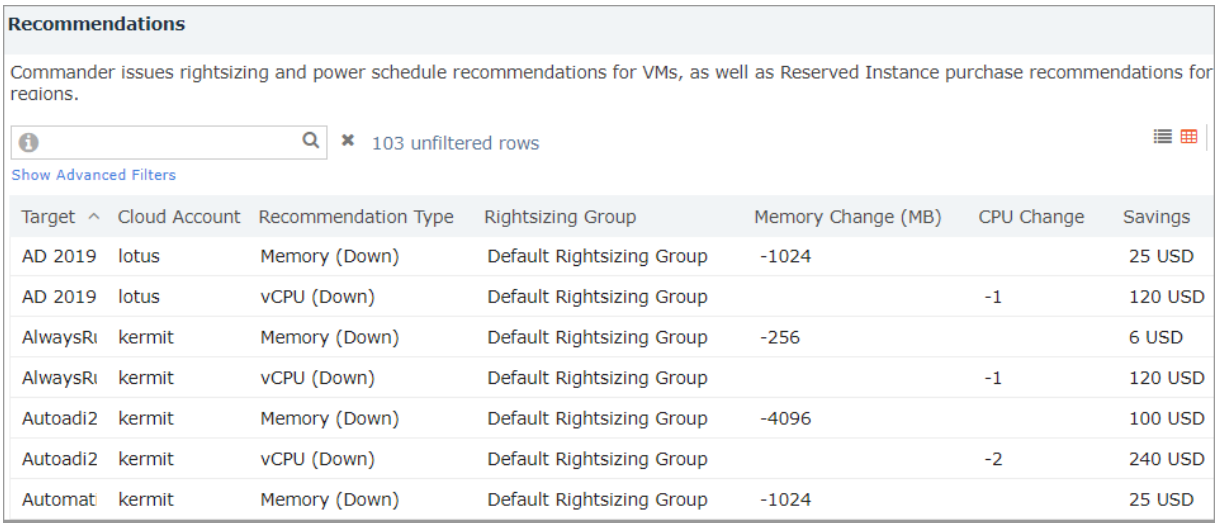
We've added an Annual Cost column to the Catalog table view and reduced the number of displayed columns to show the most important information. To display any columns that are now hidden by default, you can right-click on the table to select the columns you want.



For more information on how to select which columns to display, see Adding, removing, or rearranging table columns in the Commander User Guide.

New Rightsizing Group for the Recommendations table

You now have the option to add the Rightsizing Group column to the Recommendations table. The column is hidden by default.



For more information on how to select which columns to display, see Adding, removing, or rearranging table columns in the Commander User Guide.

Renamed VM Comparative Economics report

The VM Comparative Economics report is now called the Cloud Migration Planner report.

For more information about the report, see Cloud Migration Planner Report in the Commander User Guide.

Renamed My Resources page in the Service Portal

The My Resources page in the Service Portal is now called the Applications page.

REST v3 API Features

We're continuing to expand the REST v3 API. In this release, we've added a number of features for the following:

- Deployment destinations
- Retrieve additional resources
- IP pools
- Database instances
- System health and version

To get started, see Getting Started with the Commander REST v3 API in the REST APIs Guide. To browse the API reference, see Snow Commander REST API.

Deployment destinations

For this release, the following improvements have been made to REST deployment destination models:

- You can now use both datastores and datastore clusters as storage when creating VMware deployment destinations.
- You can now retrieve the details of VMware deployment destinations that have either datastores or datastore clusters as storage.
- You can now use both standard networks and distributed portgroups as networks when creating VMware deployment destinations.
- You can now retrieve the details of VMware deployment destinations that have either standard networks or distributed portgroups.

To add this new functionality, some properties in the deployment destination models have been renamed. See Deprecated and Removed Features and Platforms for more information about the changes.

Retrieve additional resources

We've extended the number of resources you can browse and filter through the API. This allows you to discover the resources required to create deployment destinations. You can now:

- Browse distributed portgroups as part of the networks collection.
- Filter subnets by name.
- Filter networks by name, cluster, host, resource pool, and virtual app.
- Filter clusters by virtual cloud and region.
- Filter datastores by name, cluster, host, resource pool, and virtual app.
- Browse virtual apps, and filter by name and cloud account.
- Browse placement attributes and filter by name.

IP pools

IP pools can now be configured and managed through the API, which extends the support for Commander on-boarding scenarios. You can:

- Browse IP pools and filter by name and network name.
- Create, update, and delete an IP pool.

- Browse the IP slots available to a pool, and filter by the state of the IP address, and the number of conflicts it has.
- Retrieve the properties of an IP pool's IP address, including the number and type of conflict.
- Assign IP addresses to, and remove them from, an IP pool.

Database instances

AWS and Azure database instances can now be retrieved through the API. You can:

- Browse database instances, and filter by name, cloud account, datacenter, region, organization, primary owner, remote ID, and for Azure databases, whether the instance uses the Azure Hybrid Benefit
- Retrieve the properties of a database instance including its infrastructure, cost, life cycle, and license information
- Apply custom attributes to a database instance, and manage those attributes

System health and version

You can now retrieve the installed Commander version, and monitor its real-time system health information. The system information can be used to debug performance issues and includes:

- Total, free, and maximum amount of memory used by Commander.
- Size of the observation queue and observation cache.
- Size of the event queue.
- Properties of the long, short, scheduled, and provisioned task queues.
- Thread count.
- Number of users signed in to Commander, the Service Portal, and the REST API.

Features Introduced in Versions 8.0 - 8.3

For details of What's New in specific releases, go to the Release Notes Archive.

Cloud Expense Management Enhancements

A large number of enhancements to cloud expense management have been previously added. These include tracking and displaying public cloud software licensing information for the following deployed cloud resources.

The Version 8.0 - 8.3 releases also added support for billing tags, custom charges with additional line items and markups and discounts, international currencies, cost anomaly detection, daily cost zooming, and enhanced billing retrieval.

Azure Hybrid Benefit and AWS Bring Your Own License

Commander Version 8.3 now tracks and displays public cloud software licensing information for the following deployed cloud resources:

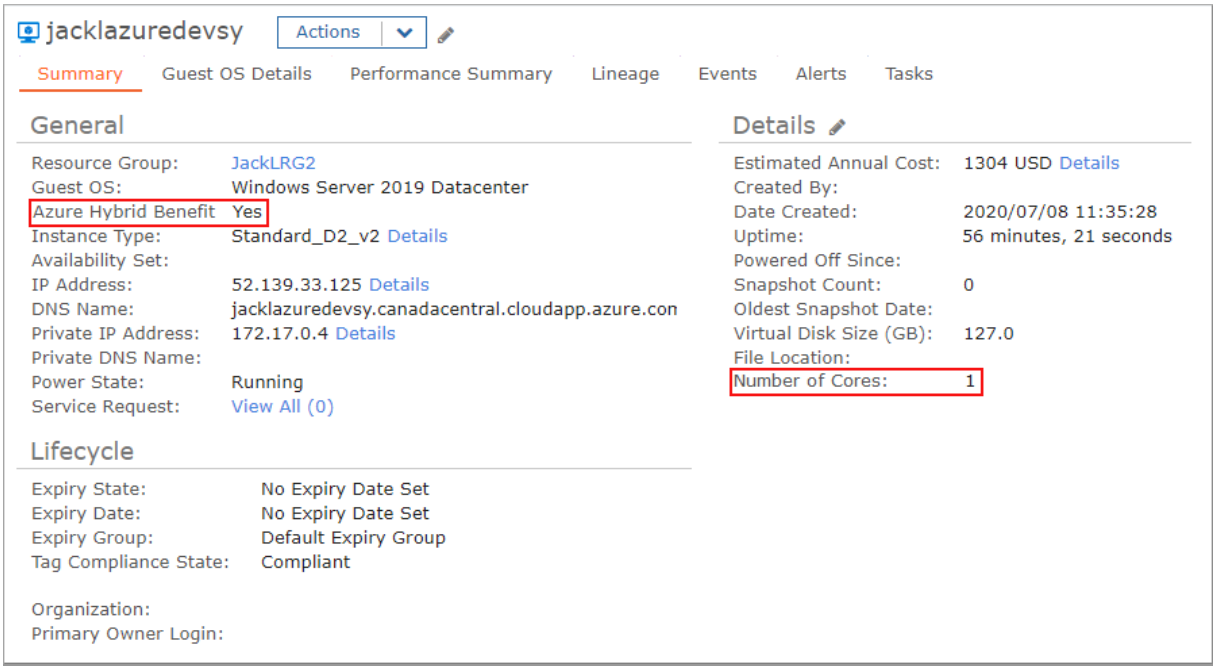
- Azure VMs – You can view whether the Azure Hybrid Benefit is enabled or if it isn't applicable (as would be the case, for example, for Linux VMs).
- AWS EC2 instances – You can view the Tenancy model, number of cores, and Image ID used.

  For a complete list of the available VM and EC2 properties that can be displayed, see VM, Instance, Template, and Image properties in the Commander User Guide.
- Azure SQL databases – You can view whether the Azure Hybrid Benefit is enabled, the license model used, and more. The following types of Azure SQL databases are tracked: Azure SQL Databases, Azure Managed Instances, and Azure SQL VMs.

  For a complete list of the available Azure SQL database properties that can be displayed, see Database properties (Azure) in the Commander User Guide.

This information provides insights for which of your cloud resources are accruing costs for software licenses for MS Server and SQL Server, and which can take advantage of AWS Bring Your Own License (BYOL) and Azure Hybrid Benefits licensing models. For those cloud resources that are BYOL or Azure Hybrid Benefit eligible, you may be able to apply your license entitlements for Windows Server or SQL Server that you already have. By applying your license entitlements to those cloud resources you can reduce your monthly cloud expenditures.

The image below shows the Summary page for an Azure VM. It indicates that the Azure Hybrid Benefit is in use. In the Details section you can also see the number of virtual cores used, which is an important factor for license entitlements.



For more information, see Cloud Software License Costs in the Commander User Guide.

Estimated costs for Azure resources updated for licensing

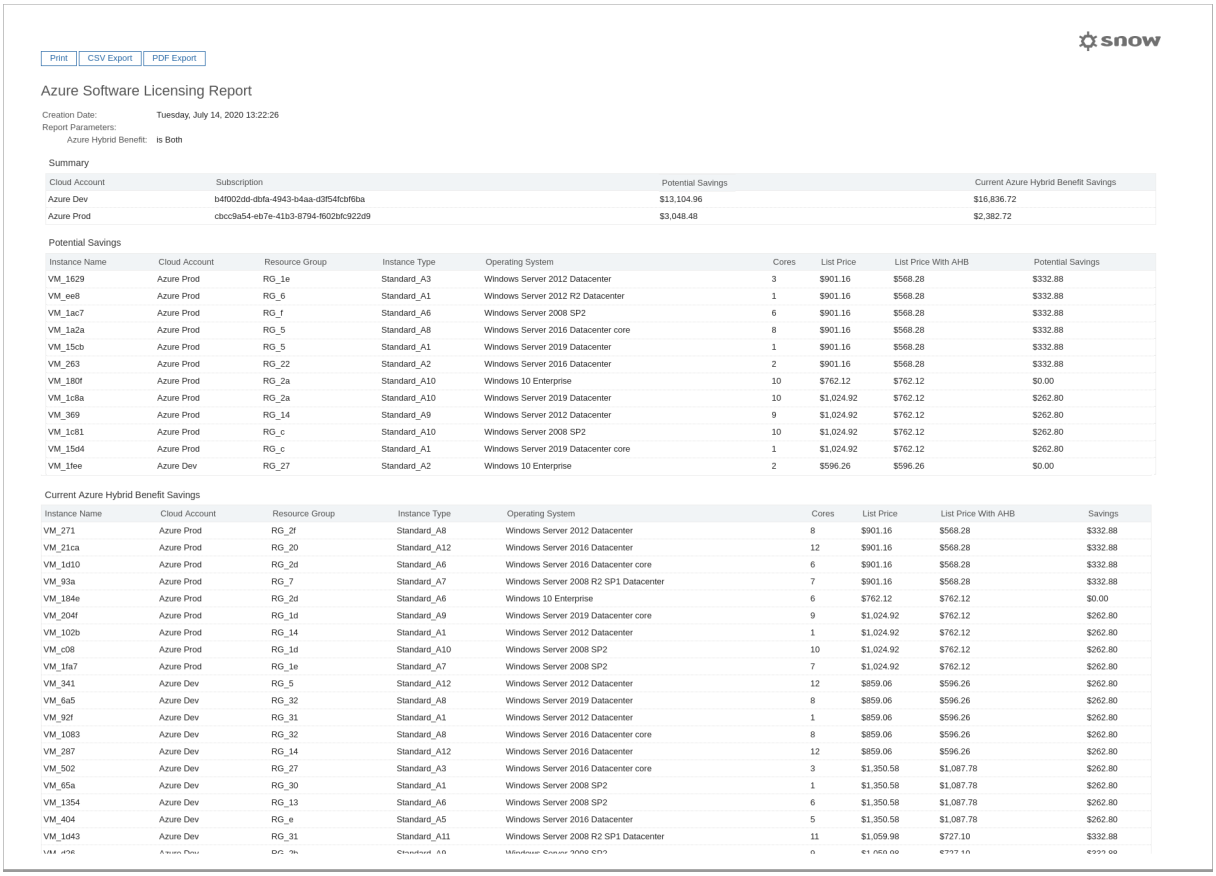
By default, an Estimated Annual Cost is provided for Windows VMs and Azure SQL databases deployed in Azure cloud accounts. However, to help you better realize your cloud costs, the estimated costs displayed for Windows VMs and Azure SQL databases are automatically adjusted according to whether the Azure Hybrid Benefit is enabled or not. If the Azure Hybrid Benefit is enabled, the resources should have lower costs because extra software licensing fees aren't accrued.

Note: The estimated cost displayed for a Windows VM or an Azure SQL database with the Azure Hybrid Benefit enabled presumes that you've applied an eligible license entitlement to the deployed resource through the Azure portal.

Azure Software License Report

You can use the Azure Software License Report to determine whether your deployed Azure VMs running Windows Server and your Azure SQL database instances are taking advantage of Azure Hybrid Benefits.

The Azure Software License Report shows which of your currently deployed Windows VMs and Azure SQL databases don't have the Azure Hybrid Benefit enabled. It also shows you the potential savings that you could realize if it's enabled and existing license entitlements are applied to those resources.



Print CSV Export PDF Export

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Azure Software Licensing Report

Creation Date: Tuesday, July 14, 2020 13:22:26
Report Parameters:
Azure Hybrid Benefit: is Both

Summary

Cloud Account	Subscription	Potential Savings	Current Azure Hybrid Benefit Savings
Azure Dev	b4f002dd-dbfa-4943-b4aa-d3f54fcbf6ba	$13,104.96	$16,836.72
Azure Prod	cbcc9a54-eb7e-41b3-8794-f602bfc922d9	$3,048.48	$2,382.72

Potential Savings

Instance Name	Cloud Account	Resource Group	Instance Type	Operating System	Cores	List Price	List Price With AHB	Potential Savings
VM_1629	Azure Prod	RG_1e	Standard_A3	Windows Server 2012 Datacenter	3	$901.16	$568.28	$332.88
VM_ee8	Azure Prod	RG_6	Standard_A1	Windows Server 2012 R2 Datacenter	1	$901.16	$568.28	$332.88
VM_1ac7	Azure Prod	RG_f	Standard_A6	Windows Server 2008 SP2	6	$901.16	$568.28	$332.88
VM_1a2a	Azure Prod	RG_5	Standard_A8	Windows Server 2016 Datacenter core	8	$901.16	$568.28	$332.88
VM_15cb	Azure Prod	RG_5	Standard_A1	Windows Server 2019 Datacenter	1	$901.16	$568.28	$332.88
VM_263	Azure Prod	RG_22	Standard_A2	Windows Server 2016 Datacenter	2	$901.16	$568.28	$332.88
VM_180f	Azure Prod	RG_2a	Standard_A10	Windows 10 Enterprise	10	$762.12	$762.12	$0.00
VM_1c8a	Azure Prod	RG_2a	Standard_A10	Windows Server 2019 Datacenter	10	$1,024.92	$762.12	$262.80
VM_369	Azure Prod	RG_14	Standard_A9	Windows Server 2012 Datacenter	9	$1,024.92	$762.12	$262.80
VM_1c81	Azure Prod	RG_c	Standard_A10	Windows Server 2008 SP2	10	$1,024.92	$762.12	$262.80
VM_15d4	Azure Prod	RG_c	Standard_A1	Windows Server 2019 Datacenter core	1	$1,024.92	$762.12	$262.80
VM_1fee	Azure Dev	RG_27	Standard_A2	Windows 10 Enterprise	2	$596.26	$596.26	$0.00

Current Azure Hybrid Benefit Savings

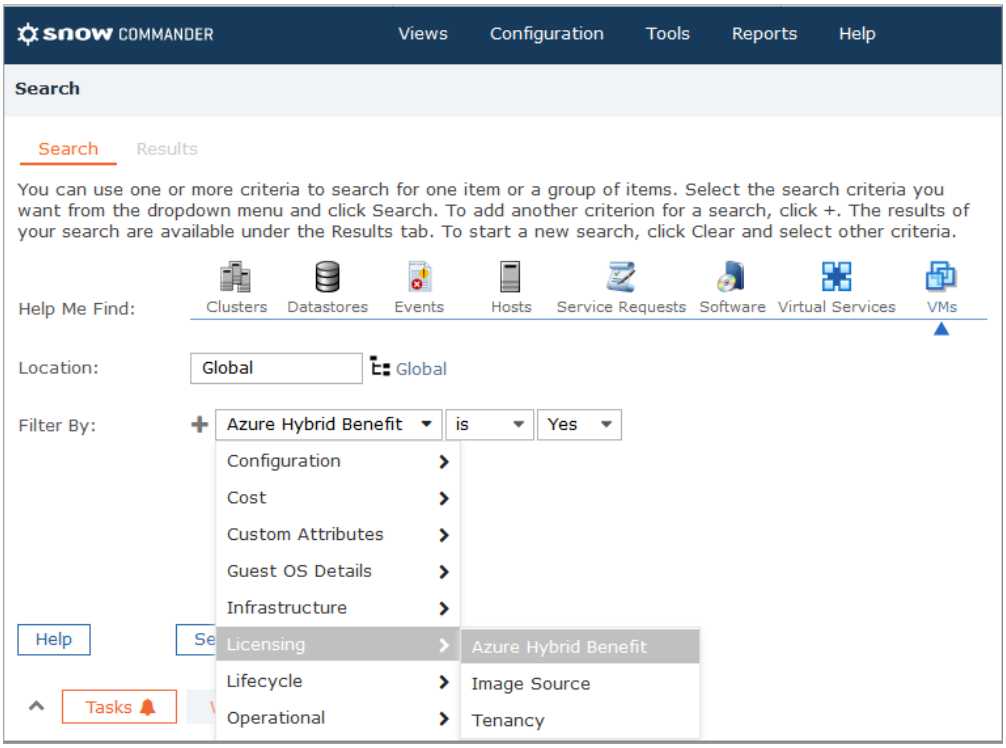
Instance Name	Cloud Account	Resource Group	Instance Type	Operating System	Cores	List Price	List Price With AHB	Savings
VM_271	Azure Prod	RG_2f	Standard_A8	Windows Server 2012 Datacenter	8	$901.16	$568.28	$332.88
VM_21ca	Azure Prod	RG_20	Standard_A12	Windows Server 2016 Datacenter	12	$901.16	$568.28	$332.88
VM_1d10	Azure Prod	RG_2d	Standard_A6	Windows Server 2016 Datacenter core	6	$901.16	$568.28	$332.88
VM_93a	Azure Prod	RG_7	Standard_A7	Windows Server 2008 R2 SP1 Datacenter	7	$901.16	$568.28	$332.88
VM_184e	Azure Prod	RG_2d	Standard_A6	Windows 10 Enterprise	6	$762.12	$762.12	$0.00
VM_204f	Azure Prod	RG_1d	Standard_A9	Windows Server 2019 Datacenter core	9	$1,024.92	$762.12	$262.80
VM_102b	Azure Prod	RG_14	Standard_A1	Windows Server 2012 Datacenter	1	$1,024.92	$762.12	$262.80
VM_c08	Azure Prod	RG_1d	Standard_A10	Windows Server 2008 SP2	10	$1,024.92	$762.12	$262.80
VM_1fa7	Azure Prod	RG_1e	Standard_A7	Windows Server 2008 SP2	7	$1,024.92	$762.12	$262.80
VM_341	Azure Dev	RG_5	Standard_A12	Windows Server 2012 Datacenter	12	$859.06	$596.26	$262.80
VM_6a5	Azure Dev	RG_32	Standard_A8	Windows Server 2019 Datacenter	8	$859.06	$596.26	$262.80
VM_92f	Azure Dev	RG_31	Standard_A1	Windows Server 2012 Datacenter	1	$859.06	$596.26	$262.80
VM_1083	Azure Dev	RG_32	Standard_A8	Windows Server 2016 Datacenter core	8	$859.06	$596.26	$262.80
VM_287	Azure Dev	RG_14	Standard_A12	Windows Server 2016 Datacenter	12	$859.06	$596.26	$262.80
VM_502	Azure Dev	RG_27	Standard_A3	Windows Server 2016 Datacenter core	3	$1,350.58	$1,087.78	$262.80
VM_65a	Azure Dev	RG_30	Standard_A1	Windows Server 2008 SP2	1	$1,350.58	$1,087.78	$262.80
VM_1354	Azure Dev	RG_13	Standard_A6	Windows Server 2008 SP2	6	$1,350.58	$1,087.78	$262.80
VM_404	Azure Dev	RG_e	Standard_A5	Windows Server 2016 Datacenter	5	$1,350.58	$1,087.78	$262.80
VM_1d43	Azure Dev	RG_31	Standard_A11	Windows Server 2008 R2 SP1 Datacenter	11	$1,059.98	$727.10	$332.88

For more information, see Azure Software License Report in the Commander User Guide.

Cloud software license searches on VMs

In Commander, a new Licensing filter group is provided, which you can use to perform custom searches on VMs for public cloud software licensing information.

In the following example, the configured search would display all of the Windows VMs that have the Azure Hybrid Benefit enabled for the location you select. Notice that the new Licensing group also includes Tenancy and Image Source filters, which are important for AWS BYOL.



For more information, see Performing Advanced Searches in the Commander User Guide.

For convenience, the following saved searches for public cloud software licensing are also provided:

- Optimization: Azure Hybrid Benefit - Savings – This search finds all of the Windows VMs that have the Azure Hybrid Benefit enabled. These VMs will cost less when unused Microsoft Server license entitlements have been allocated to them.
- Optimization: Azure Hybrid Benefit - Potential Savings – This search finds all of the powered-on Windows VMs that don't currently have the Azure Hybrid Benefit enabled. These are the VMs that you can reduce costs for if you enable the Azure Hybrid Benefit and apply unused Microsoft Server license entitlements to them.
- Optimization: AWS BYOL - Savings – This search finds all Windows EC2 instances that don't use shared tenancy states and were deployed from AWS-provided images. These are Windows instances that can realize BYOL savings if you apply your existing license entitlements.
- Optimization: AWS BYOL - Potential Violations – This search finds all Windows EC2 instances with shared tenancy states that were deployed from non-AWS-provided images. This search identifies potential license violations as these are incorrectly deployed.

For more information, see Running and Scheduling Saved Searches in the Commander User Guide.

Billing Tags

Billing Tags are tags or labels that are applied to resources in your public cloud. They bring more flexibility to your cost analysis by allowing you to group and filter your cloud expenses in more detail. Commander now retrieves ALL billing tags, which you can use to filter expenses in Cost Analytics, the Service Portal Cost Dashboard, and the Cloud Billing Report. This provides full visibility and cost analysis specific to your reporting needs. You can also incorporate Billing Tags into formulas for additional line items, so you'll be able to filter for costs based on tags.

For Azure and GCP cloud accounts, tags (called labels in GCP) are assigned automatically by the cloud provider. For AWS cloud accounts, you must configure which tags should be transformed to billing

records. For public cloud accounts, tags or labels are automatically imported when you retrieve billing data. For private clouds, Billing Tags are generated from custom attributes.

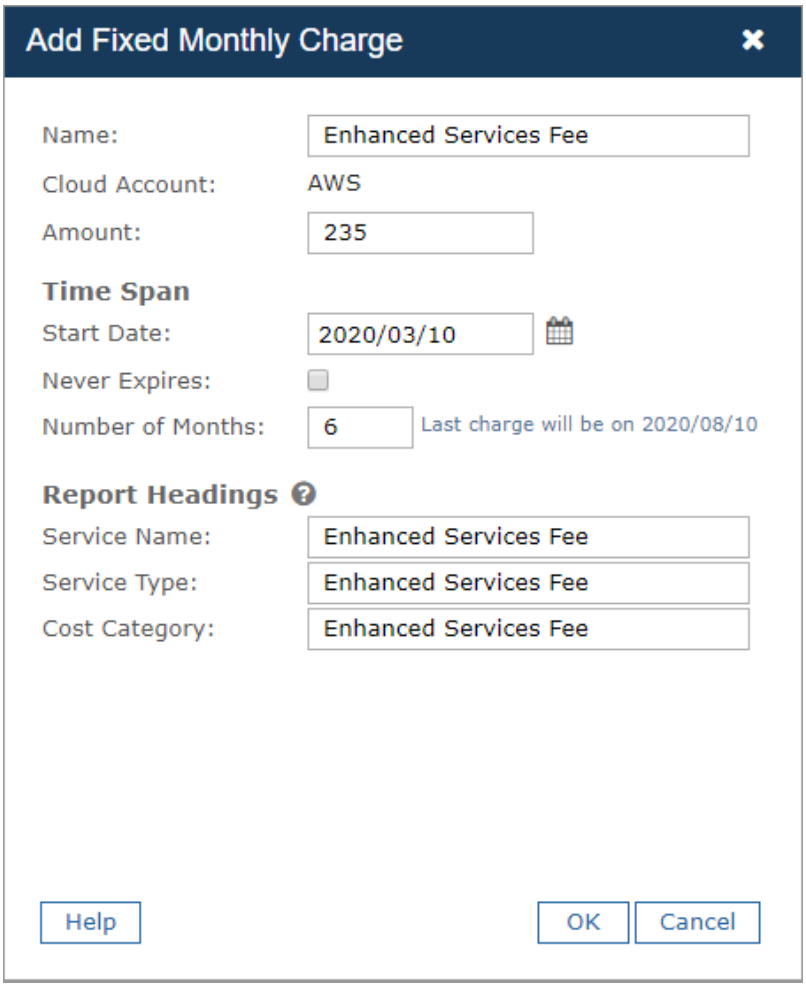
Note that billing tags will only be retrieved from version 8.1 and forward, unless billing records are reset. If you want to reset billing records, contact support@snowsoftware.com.

For information on using Billing Tags in formulas for Additional Line Items, see Additional Line Items page in the Commander User Guide.

Additional Line Items

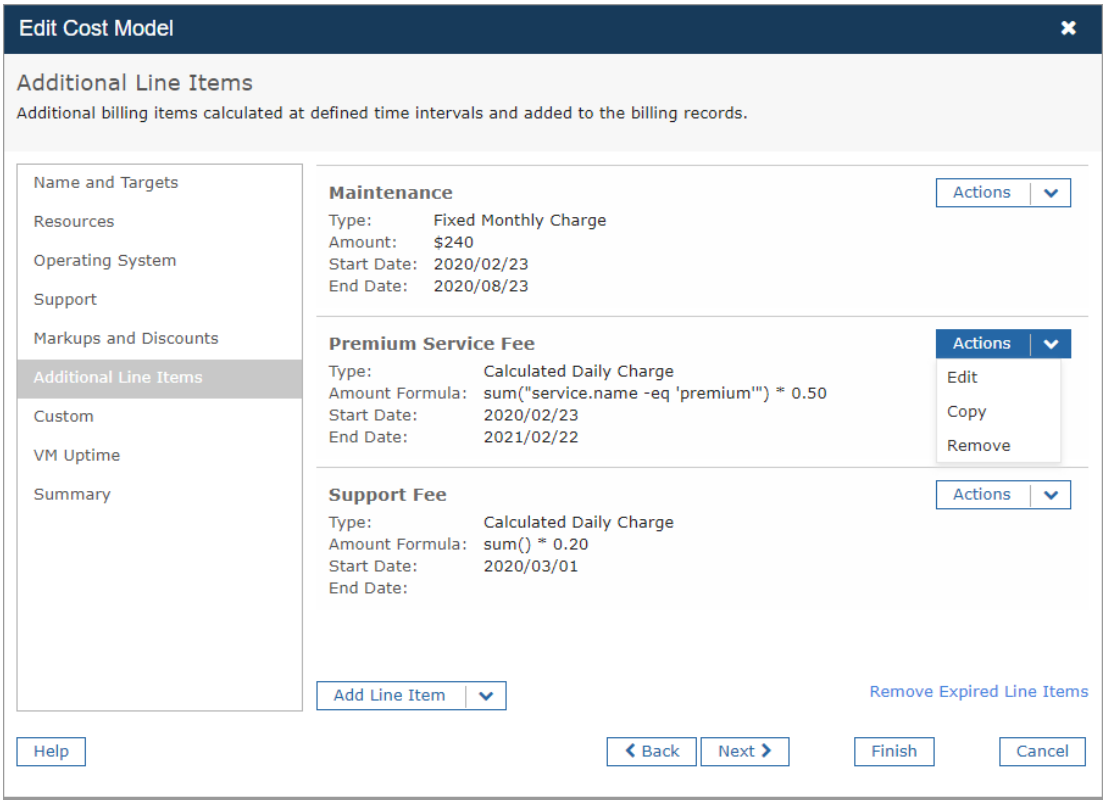
With the new Additional Line Items features of the Cost Model wizard, you can set up fixed monthly or calculated daily costs such as extra maintenance or support fees.

The new Add Fixed Monthly Charge dialog lets you configure these additional charges for any public or private cloud environment.

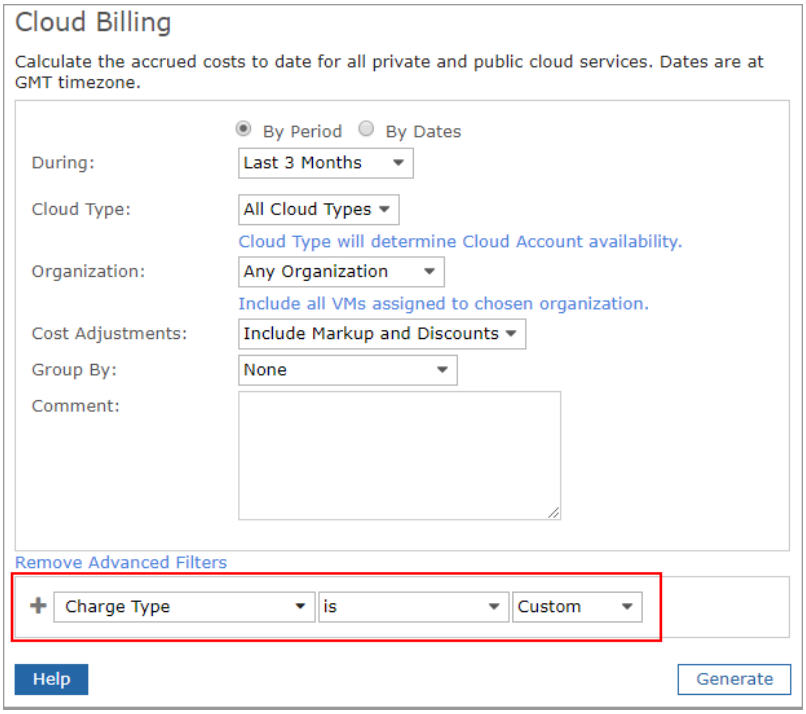


To custom-design the daily additional fees, you can use the new formula-based feature to specify costs based on a range of input parameters. You can also control how long the charges will be applied and how they will appear in reports.

The Additional Line Items are accessed through the cost model configuration. This provides the ability to configure line items on different cloud accounts or per customer tenant organization.



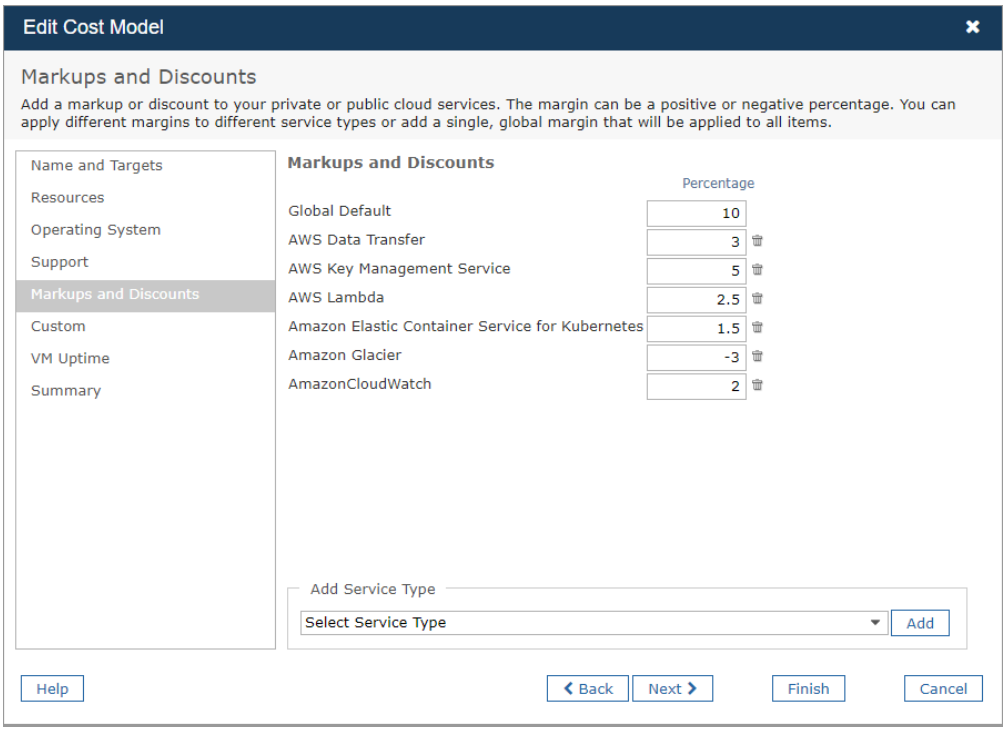
The Additional Line Items charges appear in Cost Analytics and Dashboard charts and tables. This charge will also show up in the Cloud Billing Report and is classified as a "Custom" Charge Type. It can be filtered out of the Cloud Billing Report using Advanced Filters as shown in the Cloud Billing Report generator dialog:



For more information, see Additional Line Items page in the Commander User Guide.

Markups and discounts

If you want to adjust your cloud services costs before you reveal them to your users, you can add a markup or a discount percentage using the Markups and Discounts page in the Edit Cost Model dialog. With this feature, Service Portal users will see the adjusted costs throughout the Service Portal and in any emails to them that contain cost information. The cost adjustments, which can be used with any private or public cloud services, can be applied globally or to specific service types. This is useful for applying different markups or discounts for different groups of bill line items.



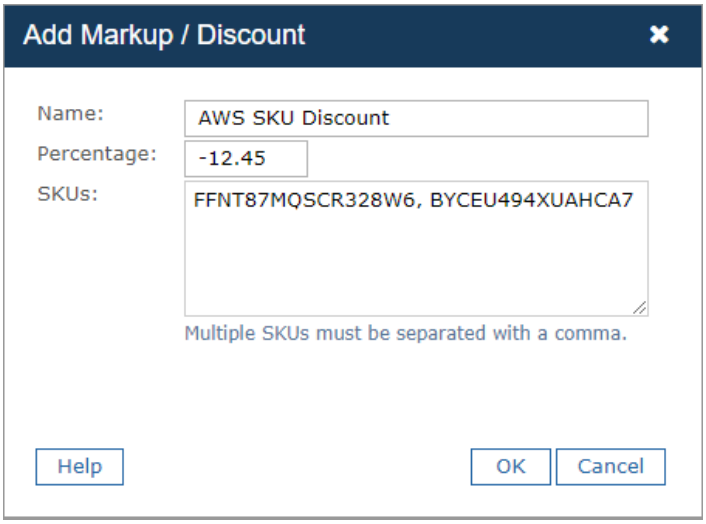
To better manage cloud resources, Commander administrators now have the option of viewing original or adjusted costs on the Cost Analytics dashboard.

For more information, see Filtering cost analytics information in the Commander User Guide.

You now have the option to generate some reports that have only the adjusted costs, so you can provide Service Portal users with only marked-up and discounted costs, not the actual costs you pay. Reports that can have adjusted pricing include the Cloud Billing report, the VM Billing report, and the VM Comparative Economics report.

Markups and discounts based on SKU

Building upon the Service-based markup/discount capabilities delivered in Commander 8.0, we have further enhanced this ability to do SKU-based markups and discounts for public cloud accounts. This allows you to adjust your cloud services costs before you reveal them to your users.



Markups and discounts for specific dates

The amount you need to mark up or discount your costs can change over time, for example in specific contracts or agreements you have with your cloud consumers or customers. In a previous release, Commander already provided the ability to markup/discount cloud service costs. With these new enhancements in Commander 8.2 you can now apply different values to your cost markups/discounts for different periods. Alternatively you can use “Never Expires” to retain the markup/discount indefinitely.

For more information on applying markups and discounts, see Markups and Discounts page in the Commander User Guide.

Charge type classification

With the new Charge Type Classification feature, you can offer your Service Portal users a more customized Cloud Billing Report. Now you can choose which charge types to include or exclude from your AWS or GCP cloud billing reports. Charge types like taxes, credits, and rounding adjustments can be excluded from the billing report that your customers see. The report is also easier to read because the total taxes and credits can be displayed as separate items in the report.

For more information, see Cloud Billing Report in the Commander User Guide.

A new setting is available in the Configure Organization wizard to allow you to show or hide cloud credit and tax information from Service Portal Cost Dashboard users.

For more information, see Displaying credits and taxes in the Service Portal Cost Dashboard in the Commander User Guide.

International currencies

You can now configure any international currency as the default currency code. Costs in Commander and the Service Portal will be displayed with the currency code you specify. Previously, only a short list of default currencies was available and costs were displayed with the currency symbol. For more information, see Default currency in the Commander User Guide.

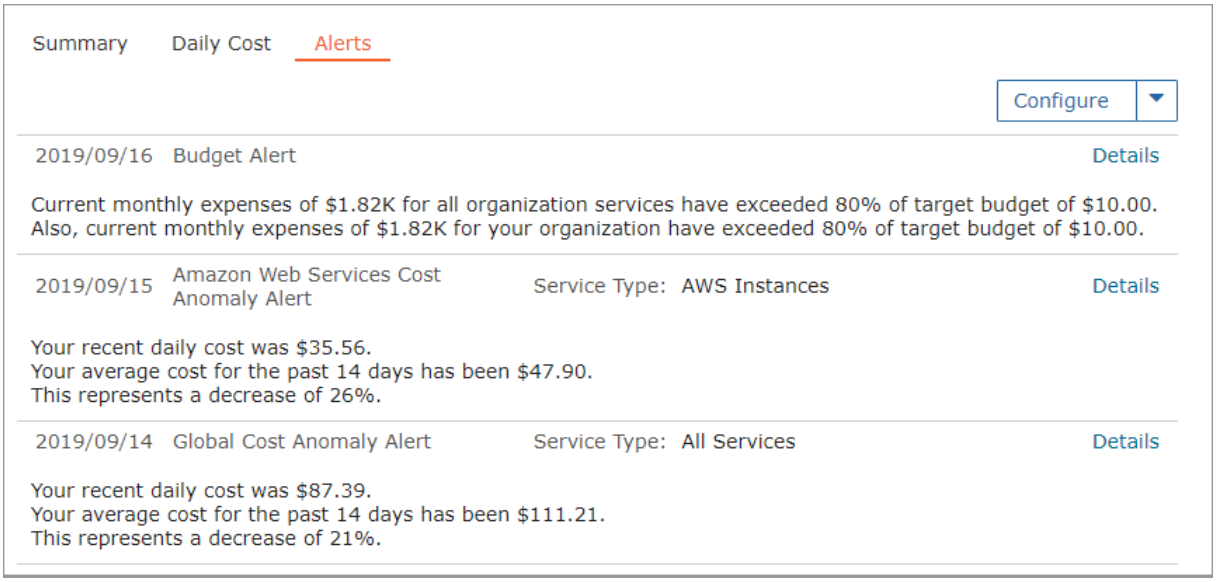
Note: This capability only changes the currency code, and must be used in conjunction with the Snow Globe article mentioned below to perform the exchange rate conversion.

In combination with the new default currency code, you can now use an extension to update the exchange rate associated with a cost model. This capability allows Service Portal users to see costs in their local

currency. Note that only some costs in the Commander UI will reflect the updated currency. For more information about the currency exchange rate extension, see Automatically Syncing Foreign Exchange Rate to Commander in the Snow Globe user community. If you plan to use this capability, contact support@snowsoftware.com.

Note: Future enhancements are planned to provide comprehensive multi-currency capabilities.

Cost anomaly detection



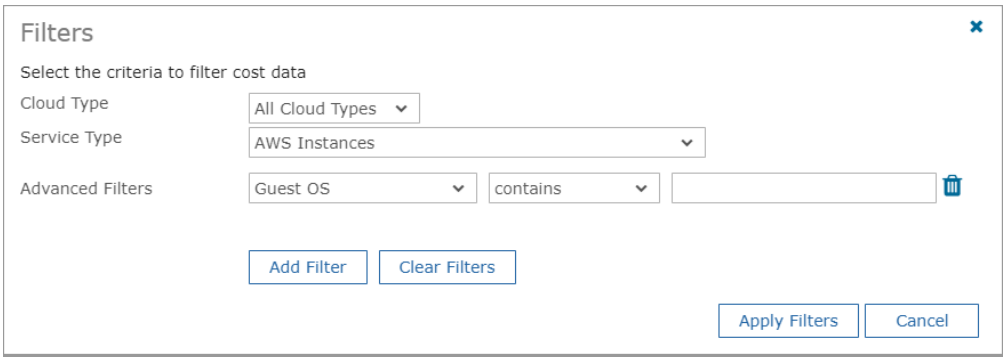
Users will have full flexibility to configure the thresholds and service types for these anomaly alerts.

In order to configure and view the alerts, users require the permissions: Show All Organization Services, Show Cost Dashboard, and Manage Cost Anomalies. To see alerts, you must have “All Services” selected as the default organization.

For more information, see Cost Anomaly Detection in the Service Portal User Guide.

Filtering by service type

To see the context of cost anomalies even further, in the Service Portal you can now filter by Service Type. When you filter by Service Type, you can analyze cost trends and see forecasts for that service type only.



For more information, see Filtering Cost Dashboard data in the Service Portal User Guide.

Zooming in and out on daily costs

In both Commander and the Service Portal, the new zooming and scrolling features on the Daily Costs chart allow you to see cost trends on bigger or smaller scales. You can zoom in to see one week of data or zoom out to see up to 2 years of data. Scrolling lets you scan your data to get a better picture of your costs over time.

For more information, see Daily Costs in the Commander User Guide.

Enhanced billing data retrieval

To provide even greater precision for your Cost Analytics charts and Billing Reports, we've improved our billing data retrieval and display processes with the following enhancements:

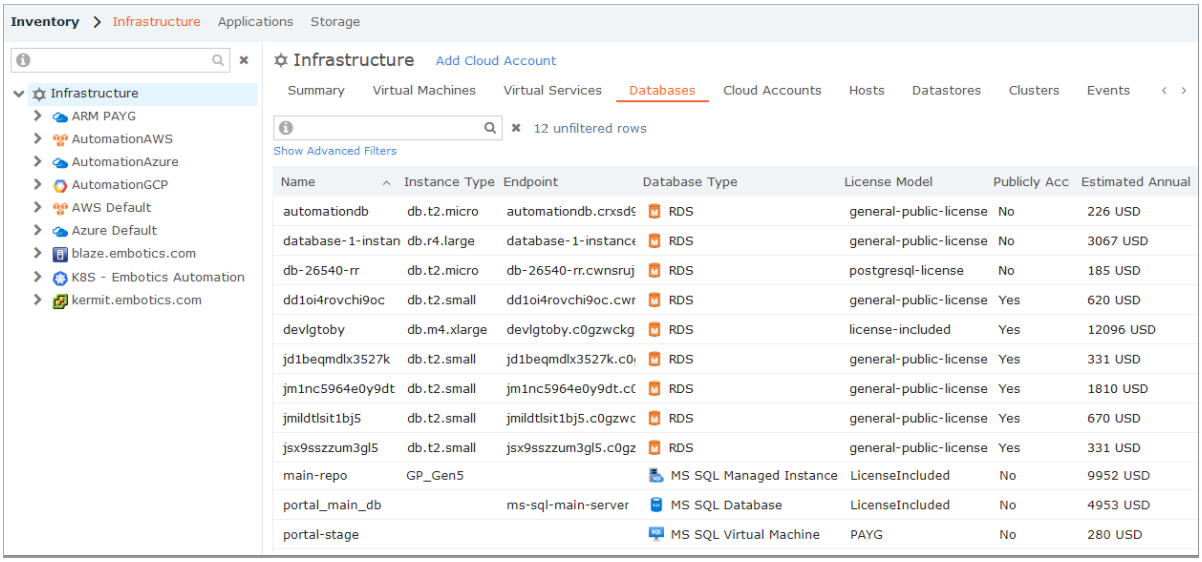
- Accurate daily billing data takes a while for public cloud providers to accumulate and publish, so Commander will wait 24 hours before retrieving and displaying any public cloud billing records. You'll see the most accurate information possible. For private clouds, you'll be able to see yesterday's estimated costs, but for public clouds, the most recent costing information will be the costs from the day before yesterday.
- For AWS, to make sure Commander captures any late billing adjustments, Commander will confirm the accuracy of all daily AWS costs every day of the current month.

  Commander will also check every day for AWS bill updates for the previous billing month.

For more information, see Setting Up Cost Analytics in the Commander User Guide.

Database Display

In the Commander Inventory view there is a new Database tab that lists your deployed Azure SQL databases and AWS RDS database instances. This tab is present for the root element and also for any Azure or AWS cloud account.



You can double-click any listed database to see either the AWS RDS instance details, which previously existed in Commander, or the new Azure SQL database details.

Azure Database Display

In Commander you can now view the Azure SQL database instances that you have deployed in your Azure cloud accounts. These instances include: Azure SQL Databases, Azure Managed Instances, and Azure SQL VMs.

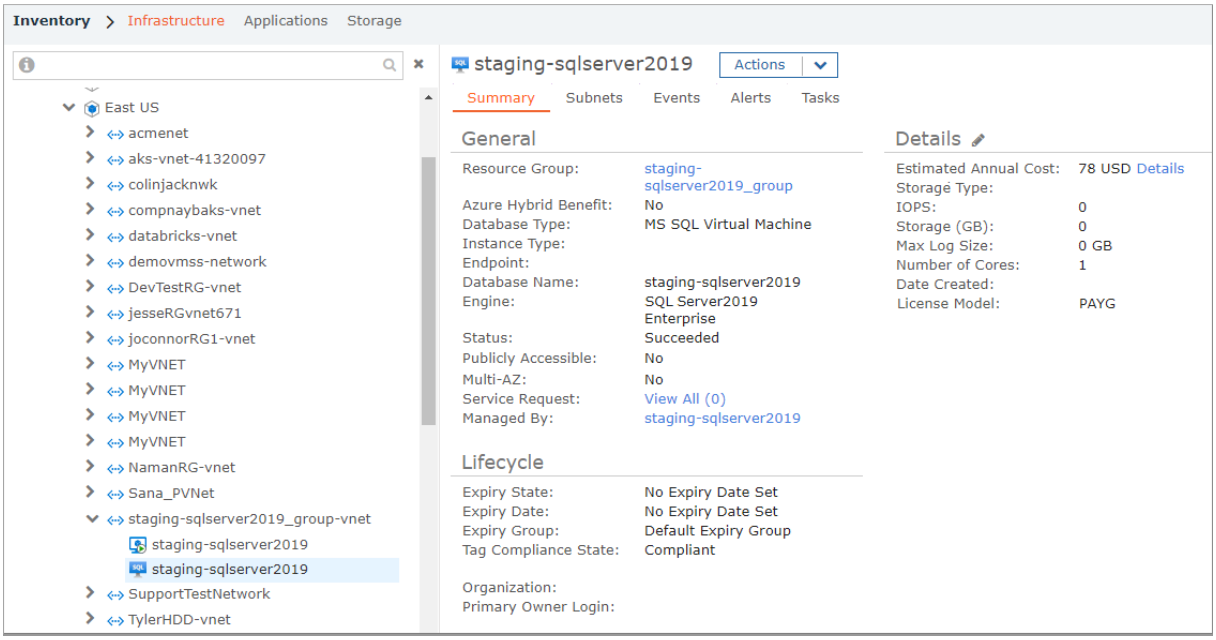
In Commander you can select an Azure cloud account from the Inventory views to see a complete list of Azure SQL databases deployed for that cloud account. The complete list of deployed Azure SQL databases are now displayed in a new Databases tab, and you can select any listed database to view more information for it.

Each Azure SQL database is also displayed as a hierarchical element in Commander's Inventory views. You can select an Azure SQL database element to view more information for it.

On the Databases tab, you can also double-click any listed Azure SQL database to view more detailed information for it. For a complete list of the available Azure SQL database properties that can be displayed, see Database properties (Azure) in the Commander User Guide.

Note: In the example below, database details are shown for the selected Azure SQL VM `staging-sqlserver2019`. However, `staging-sqlserver2019` appears in the Inventory view under the virtual private network both as a database and as a VM. Azure SQL Databases and Azure Managed Instances only appear as database elements because they aren't associated with a VM.

Tip: You can customize the properties that you want to display for the Azure SQL databases and the order in which the properties are displayed. For more information, see Customizing the Commander Display in the Commander User Guide.



Manage Azure databases

In Commander, you can now also perform administrative actions on Azure SQL databases. This allows you efficiently manage your Azure SQL databases. For example, in Commander you can run command workflows on your Azure SQL databases (see Running Command Workflows in the Commander User

Guide) or request service changes on them (see Requesting changes to services in the Commander User Guide).

Note: The management of Azure SQL databases in the Service Portal is planned for a future Commander release.

User Experience Improvements

A number of UI/UX improvements have been made for the 8.0 - 8.3 Version releases.

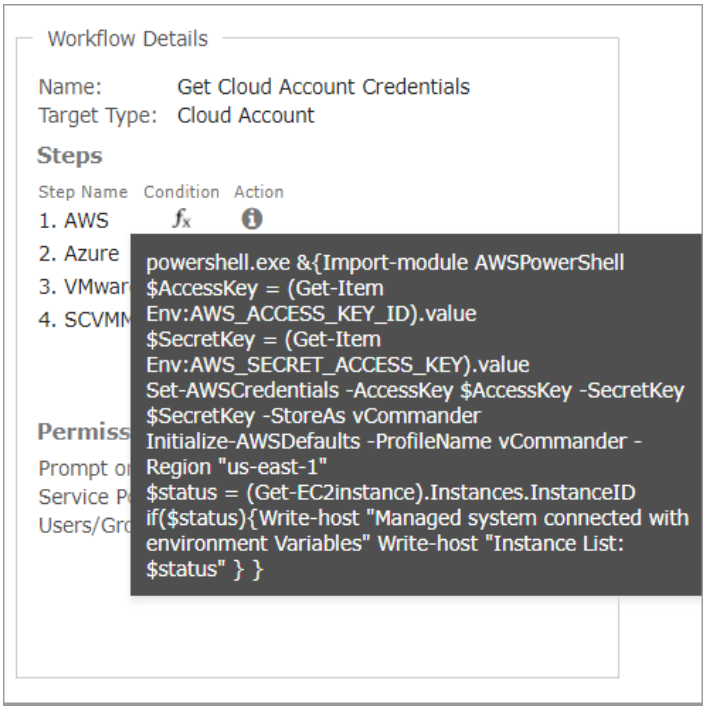
Environment variables for credentials

You can now use credentials as environment variables in scripts to execute workflow steps. Environment variables provide a secure way to store your credentials and allow you to configure workflows more efficiently.

Credentials are previously set, then retrieved and executed in the context of the script. As the values for the credentials remain in the system, there's no risk of exposing credentials through the code.

Environment variables are available for:

- Credentials for AWS, Azure, SCVMM, and VMware cloud accounts (as shown below).
- A named Commander credential.
- A selected credential.



For more information, see Using Environment Variables for Credentials in the Commander User Guide.

Redesigned sign-in pages

The sign-in pages for Commander and the Service Portal now have a fresh new look and feel. As part of the redesign, the terms "login" and "logout" are changed to "sign in" and "sign out".

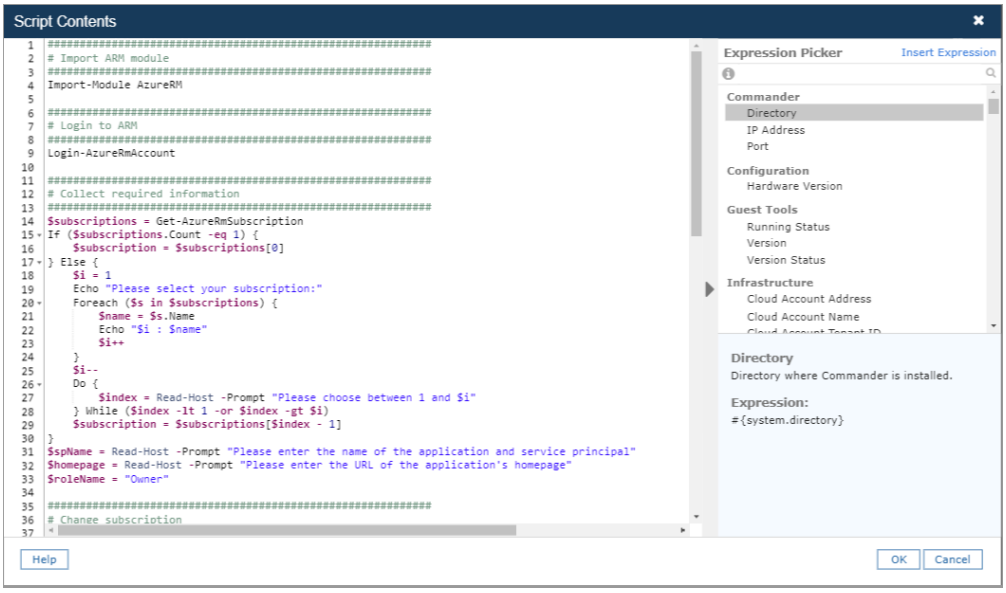
Note: Changes are required upon upgrade if you configured a custom theme for the Service Portal prior to version 8.0. For more information, see Changes affecting upgrading users in the Installation Guide.

Script editor

The script editor now provides syntax highlighting and a larger text field to edit multiple lines. In addition, you can now use keyboard shortcuts to expedite common actions, such as finding and replacing.

You can use the script editor for:

- Workflow steps
- Dynamic list scripts
- Email body for expiry policy notifications



For more information, see Using the script editor in the Commander User Guide.

Changed "managed systems" to "cloud accounts"

"Managed system" is now renamed to "cloud account". The changes apply to the Commander user interface, variables, and also to REST endpoints, properties, and filters.

Fresh new look and name

We're excited to announce that Embotics' flagship product has a brand new name. Instead of vCommander, our product is now called Commander.

Along with a new name, Commander now has a fresh, updated UI. Our goals are to create a more modern look and feel and provide a richer experience.

You'll note that we've changed colors, as well as streamlined navigation and improved the overall look. We've also updated the styling for reports and emails.

Inventory views

The Summary tab for all Inventory views (Infrastructure, Applications, and Storage) is now restyled to provide a modern look. The following changes have been made to the Summary tab to provide more detailed information:

- In the Infrastructure and Applications views for the root node, the information previously provided in the General section is replaced with the Public Cloud, Private Cloud, and Kubernetes sections.
- In the Applications view for the root node, the My Dashboard section is added.
- In the Infrastructure and Applications views for the root node, you can now configure My Dashboard to display up to eight searches. Previously, you could only display four searches. For more information, see Monitoring Your Inventory in the Commander User Guide.
- In the Infrastructure view for VMs, the Operational section is now called Lifecycle.

Inventory tree search

You can now search the tree in the Infrastructure, Applications, and Storage views to quickly and easily find resources within the hierarchy.

From the filtered results you can then click through to see the details of the resource you were looking for. For more information, see Searching the tree in the Commander User Guide.

Actions menu

When you select a resource from the Infrastructure, Applications, or Storage views (formerly called the Operational, Deployed, and Storage views), the actions that you can take on that resource are now displayed in a drop-down list at the top of the Views page. The Actions drop-down list replaces the Commands pane that was previously displayed in the Views page.

For VMs many available actions may be available. You can click ✎ Pick Properties to set any Action commands that you may frequently use to the top of the drop-down list. In the following example, the first five actions were chosen to be "quick actions". For more information on how to customize what quick actions you want add, see Customizing the Commander Display in the Commander User Guide.

Note: You can also right-click an object in the Inventory tree and choose an available action. However, you can't set any quick actions for right-click menu.

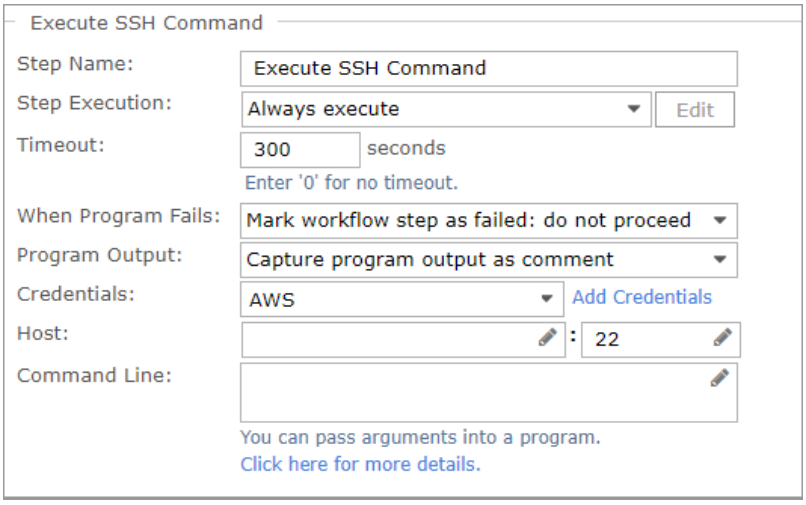
Reorganized identity and access

We've moved all Organizations, Users, Service Portal Roles, and Authentication under one menu called **Identity and Access**, so all this related information can be easily found in one place.

Enhanced SSH Workflow

You can now specify an SSH port when creating a workflow step. Because public cloud SSH ports may be different for each case, you can now customize the SSH port during execution of the SSH command step.

You can set the port value using either a fixed integer, such as 22, or a variable.



To accommodate workflow steps from previous releases, you can leave the port field empty and the system will use port 22. If you have an invalid variable, the system will also use port 22.

New Features in REST API

To get started, see Getting Started with the Commander REST v3 API in the REST APIs Guide. To browse the API reference, see Snow Commander REST API.

Manage user roles with REST API

Using REST API, you can now manage user roles by doing the following:

- browse user roles
- retrieve properties and permissions

Browse billing records

Using REST, billing records can now be retrieved and filtered on several properties including:

- cloud account
- date
- charge type
- billing record tag

Manage cloud accounts

We've expanded cloud account management with a number of new features. These include:

- creating, retrieving, and updating cloud accounts
- managing the custom attributes on cloud accounts
- assigning ownership to the child resources of a cloud account
- managing access rights to a cloud account
- reconnecting to a cloud account

Browse tasks and events

You can now query and filter system tasks and events. This allows you to create audit trails of important system events and to monitor the state of long running tasks for completion.

Browse recommendations

You can now browse active and ignored recommendations. This includes rightsizing, power scheduling, and reserved instance purchase recommendations for virtual machines and AWS regions.

VM ownership and attributes

We've added the ability to apply ownership and attributes to VMs using REST v3.

Blueprints from multi-cloud templates

In REST v2, we've added the ability to create blueprints based on multi-cloud templates.

Installation and Upgrade Notes

- If you're going to perform a first installation of Commander, refer to the Installation Guide for an overview of the Commander requirements and for instructions on how to install Commander.
- If you're going to upgrade an existing Commander installation to 8.4.1, see Upgrading Commander in the Installation Guide for important information before starting the upgrade process and for instructions on how to upgrade a Commander installation.

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
8.3.x	8.4.x
8.2.x	8.3.x, 8.4.x
8.1.x	8.2.x, 8.3.x, 8.4.x
8.0.x	8.1.x, 8.2.x, 8.3.x, 8.4.x
7.5.x	8.0.x
7.1.x	7.5.x
7.0.x	7.1.x
6.1.x	7.0.x, 7.1.x

Deprecated and Removed Features and Platforms

The following features or platforms have recently been removed or deprecated. If you need more information about any deprecated or removed features, contact support@snowsoftware.com.

- **Scanning Guest Operating Systems**: The Scanning Guest Operating Systems (OS) feature has been removed in version 8.4, including the following:
  - Scheduled tasks for Guest OS Scan
  - Software search category
  - Saved searches for Microsoft Software, SQL Software, VMs with stopped services that should be started automatically, and Guest OS scans that haven't been done in more than a week
  - Guest OS Details tab and related properties
  - `POST vms/{id}/action/applyscangroup` endpoint in REST V2
  - `guest_os_scan_group` property from the GET groups endpoints in both REST V2 and V3

  For information about related upgrade changes, see Changes affecting upgrading users in the Installation Guide.

  Note: This feature was deprecated in version 8.1.
- **VM Billing Report for Public Clouds**: You can use the VM Billing Report for private cloud environments; however, for public or hybrid cloud environments it's recommended that you use the Cloud Billing Report. The ability to use the VM Billing Report for public clouds 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 were deprecated as of Release 7.0.2 and will be removed in a future release.
- **Microsoft Windows Server 2012 R2 and Windows Server 2012**: Support for Commander installations on Microsoft Windows Server 2012 R2 and Windows Server 2012 has been removed as of Release 8.1.
- **Deployment destinations REST API**: Some properties changed in the deployment destination models in Release 8.4, affecting the `POST /rest/v3/deployment-destinations` and `GET /rest/v3/deployment-destinations/{id}` endpoints. The following changes occurred to the `VmwareVcenterDeploymentDestinationPostRequest` and `VmwareVcenterDestinationDetails` models on these endpoints:
  - renamed the property `datastores` to `storage`
  - changed the type of the `storage` property from `ReferenceId` to `TypedReferenceId`
  - changed the type of the `networks` property from `ReferenceId` to `TypedReferenceId`
- **Microsoft SQL Server 2012**: Our support for Microsoft SQL Server 2012 now requires SP4 as of Release 8.1. However, Microsoft SQL Server 2012 support is now considered deprecated and will be removed in a future release.

  Note: As of Release 8.1, Microsoft Windows Server 2019 and Microsoft SQL Server 2019 were supported for use with Commander. For information on software, hardware, and other requirements to run Commander, see System Requirements in the Installation Guide.

Resolved Issues

This section lists the issues that have been resolved in versions 8.0.0 to 8.4.1.

Issues resolved in version 8.4.1

The following issues have been resolved in version 8.4.1.

Issue	Description
17990	Azure systems no longer intermittently disconnect when tag synchronization is on.
17924	Deleting a VM that had OS scan data associated with it now completes without errors.
17891	The transaction log no longer runs out of space during upgrade.

Issues resolved in prior 8.x versions

The following issues have been resolved in prior 8.x versions.

Issue	Description
27633	The `/webservices/services/rest/v2/security/sessions/count` endpoint now returns the number of active sessions and the configured maximums as expected.
27627	The destination control in the Commander administrator console incorrectly showed costs that included markup. The destination control now shows regular costs in Commander and marked up costs in the Service Portal, as expected.
27621	The VM Billing Report now takes into consideration the digit-separating commas in 4-digit or higher numbers so that billing totals are correct.
27555	For an Azure deployment, the variable `#{target.region.name}` is now populated with the region of the target's placement destination.
27519	To add a Kubernetes cluster as a managed system, the provided kubeconfig file must be properly encoded in UTF-8. If the file isn't properly encoded, an error is now displayed, and no managed system is added.
27505	The CSV export of the Cloud Billing report no longer rounds cost and usage to 2 decimal places.
27471	The cost associated with recommendations for VMs that have been powered on for long periods now update as expected.
27437	The Azure region selection dialog is now populated with only the Azure regions that support Microsoft Compute to allow integration with Commander.
27433	Resource group names for ARM templates are now generated based on uniqueness across a subscription.
27416	The summary costs in the Cloud billing report are now right-aligned for easier reading.

Issue	Description
27398	The following changes were made to the REST v3 API virtual-machines/{id} properties: • "public_dns_name" and "private_dns_name" properties are now listed under "resources" instead of under "resources/network interfaces" • each network interface only displays its own IPs
27376	Multi-cloud service requests now deploy to the proper destination when component resource settings are modified.
27374	Using the REST v3 API to remove a child organization from a parent organization and then later re-adding it now works as expected.
27310	In the Service Portal, you won't be able to clone published services that are corrupted (for example, the source template was deleted, the snapshot is missing, the credentials were deleted). A notification will let you know that you can't clone and will report the published service state.
27304	When deploying VMs on a distributed port group that has an associated IP pool, in some cases IP addresses weren't assigned to VMs even though there were free IPs in the pool. The deployed VMs are now assigned IP addresses as expected.
27299	The descriptions for the RolePermission data type values in the REST v2 Reference Docs now align with the permissions described in the service portal documentation.
27285	Making REST v2 API calls with the Commander PowerShell commandlets no longer requires you to configure Internet Explorer before using the commandlets.
27284	The `#{target.settings.dynamicList['*']}` variable is now available. You can use the variable to reference a specified dynamic list for the Deployed Name in a component form.
27272	Change requests that assign ownership to an Active Directory user not directly managed in Commander will now function correctly.
27271	Refactored internal representation of storage tier name identifier so storage tier name handling is now more robust.
27265	When you add an AWS managed system account with the "Add Managed System" API call, Commander now prevents you from adding duplicate AWS managed system accounts. You can't add duplicate managed systems accounts for any managed system type.
27260	Service Portal users are now able to upload files in the New Service Request form when requesting a service catalog item.
27245	Command workflows configured to be visible to users in specific organizations are now consistently displayed in the Service Portal as expected.
27210	For AWS, you can now use REST v3 to deploy a cloud formation template-based service that contains IAM resources such as Roles.
27192	A VM search with a filter of "Version (Guest Tools)" returns the applicable tool information (for example, the VMware tools version) as expected. However, if the results are sent through scheduled email notification, the "Version (Guest Tools)" information could be listed as "Unknown". VM search results received in an email notification now present applicable tool information as expected.
27161	A REST v3 API call to get a list of workflows now consistently returns, as expected.
27158	Resource group variable now gets populated with the appropriate resource group.

Issue	Description
27152	The DRS setting is now re-enabled as expected when a vCenter VM is deployed through a completion workflow.
27151	The advanced system property `embotics.workflow.customizeos.event.leadinperiod` now accepts -1, to be able to look back an unlimited period for the "customization completed" event.
27111	When using Global Text Replacement in names that are applied to deployed VMs, virtual services, and application stacks, variables will now correctly resolve names that contain underscore symbols.
27094	For scheduled tasks, the View Last Report option is now only available for Reports (tasks with a type of Report or Saved Search).
27079	List custom attributes can now be updated using REST v2.
27042	In some cases, errors displayed for service requests with no set expiry date even though they successfully completed. Those errors are no longer displayed.
26973	The Service Portal Dashboard has been updated to improve screen rendering.
26830	With the Commander REST v2 API, you can now add existing users to multiple organizations as expected.
26301	When an organization name is changed, using the Organization Name advanced filter for reports that use historical billing data (such as the VM Billing Report) now works as expected for the new organization name. Note that billing data created prior to upgrading to this release won't be included in reports when you filter on the new organization name.
26141	You can now submit service requests as a Service Portal user as expected when using Connect-Client2 to communicate with the Commander REST API.
24428	Update 3 for VMware vCenter 6.7 restores support for deploying linked clones from a template. As a result, linked clone deployments from a template are now also supported for vCenter managed systems in Commander.
17509	Azure cloud accounts no longer disconnect if a SQL database uses a Subnet in a different subscription.
17387	The exception that occurred when resolving stolen IP conflict on a VM with multiple network adapters has been resolved.
17288	After a resource change request completes, the value for the organization quota is as expected even if the associated completion workflow fails.
17255	You can now use V3 of the REST API to reset billing records for private clouds.
17001	You can now validate the cloud account credentials used to configure console connections for VMs.
16998	Applications in the Service Portal display as expected in the tree view.
16827	When making a New Service Request or Change Request in the Service Portal, an appropriate error message now appears if an invalid value is entered in the Storage field.
16815	The names of deleted VMs are now being purged properly, so a new VM can be deployed directly to a Datacenter or Cluster root using the same name as a previously deleted VM on VMware.
16608	The Cloud Billing Report has been optimized to improve generation time, even with large datasets.

Issue	Description
16574	Improvements have been made to Commander to make it more tolerant of database deadlocks.
16572	Billing records include timestamps as expected.
16446	If a container (stack, auto scaling group, vApp, and resource group) was owned by a user's organization, but wasn't owned by the user, and a VM within that container was owned by the user's organization and was owned by the user, the user couldn't see the VM in the Service Portal Resources list. This has now been fixed.
16406	When a VM with IPs from the IP Pool is converted to a template, the IP addresses that were associated with that VM are now correctly released back to the IP pool.
16359	Deleting a subnet that's still associated to a RDS database instance no longer causes AWS to disconnect.
16321	If a cloud account contains an invalid resource (such as a load balancer without a VPC on AWS), an error is now logged and the cloud account stays connected.
16281	In some cases Azure accounts may disconnect. This no longer occurs.
16274	A potential security vulnerability was identified with version 8.5.54 of Apache Tomcat. Tomcat is now upgraded to version 8.5.57.
16244	The AWS cloud account will now remain connected when you enable the system property `embotics.observation.caching` and scan a remote inventory.
16231	When performing a Change Request in the Service Portal, the Storage was set to Instance Store Volumes (xvdb) by default, which could potentially result in the loss of data. As recommended, the Storage is now set to EBS volumes by default.
16203	Upgrades no longer fail when a custom attribute named "Folder" is in use.
16182	The "Send Ctrl+Alt+Del" button now works as expected, so Service Portal users can now use Open Console to restart vCenter VMs.
16180	A javascript error no longer occurs with Open Console for vCenter VMs via Commander.
16152	Clicking rapidly around Commander Inventory no longer causes a refresh loop action.
16114	Billing retrieval for VMware failed due to an incorrectly generated timestamp. The timestamp is now correctly generated for billing records and billing retrieval works as expected.
16064	The Completion Workflow Module list now appears as expected in the Run Module workflow step.
16038	In the Service Portal, all users that have "Show Performance" enabled can now view performance charts.
15993	After upgrade to 8.2, an AWS Cloud Account can become disconnected if bare metal instances are used. Release 8.2.1 has resolved this issue.
15967	AWS billing retrieval logic has been fixed to properly handle costs with usage start and end dates on different days.
15931	AWS cloud accounts no longer disconnect if you delete an AMI and snapshot while synchronizing inventory.
15881	Memory consumption has been optimized when retrieving AWS billing records.
15817	A REST GET service request now returns a service catalog custom component's name and form metadata.

Issue	Description
15816	Quota approval email workflow steps failed to complete if no quota was assigned to an organization. This has been fixed and quota approval email workflow steps now complete as expected.
15769	Viewing all IP addresses now works as expected in cases where there are two or more IP addresses configured for a VM's network interface.
15721	The Cloud Billing report can now include negative costs, such as refunds or adjustments.
15675	VMware web service connections now properly handle SOAP messages created by vSphere plugins that aren't supported by the standard VMware WDSL.
15666	A `GET /rest/v3/virtual-machines/` call will now always apply the correct visibility filtering.
15589	REST v3 JSON web tokens sometimes expire before the set renewal time had elapses. This has been corrected.
15506	AWS Reserved Instance Fee costs were inaccurate. This has now been corrected, except as noted in the Known Issues. To correct historical data, you can use the REST API billing reset.
15503	Viewing service request details on resources with a null storage tier was causing an error. This has now been resolved.
15383	The previous day costs in the Daily Cost Breakdown table will now be accurately represented for billing records when the billing tags changed on the previous day.
15350	Users that belong to an AD group can now run API V3 calls as expected. They no longer have to be explicitly added to Commander.
15319	Command workflow approval email links now direct the user to the approve/reject page, as expected.
15287	BlueCat™ IPAM integration with Commander has been fixed.
15255	Users are now prevented from editing service catalog entries to which they don't have access.
15220, 15217	Users couldn't sign in to the Service Portal or Commander using the SAML single sign-on (SSO) integration with the REST API. The SAML SSO integration now works as expected.
15219	In the VM Billing Report, 0 costs are no longer shown as -1.00.
15213	You can now search for an email address in the Service Portal after a wrong email address was entered in the form for a new service request.
15211	Service Portal users can now submit change requests using REST v2.
15165	Performance optimizations have been made for the retrieval of VM performance data for AWS cloud accounts with large numbers of AMIs.
15163	Performance optimizations have been made for the retrieval of billing records.
15092	Billing retrieval took much longer than expected, and now completes in the expected amount of time.
15088	You can run a command workflow from the Service Portal to modify a VM's network as expected.
15019	Inventory synchronization could fail for Azure storage accounts of type FileStorage. Inventory synchronization now works as expected.
15016	GCP billing retrieval no longer fails in cases when there are multiple credits associated with a service.
12011	You can now use bullets in workflow emails.

Issue	Description
6478	If the Billing Record generation task is unable to get data from all of the requested cloud accounts, it now registers as a failed task and produces an error event instead of just issuing a warning.
3656	The system now waits for the deletion confirmation before completing a delete task. The maximum wait time can be set using the system property `embotics.task.delete.image.timeout` and has a default value of 20 minutes. If the defined value is 0 (zero), the task won't wait for the confirmation.
2297	Under some circumstances, tasks may fail and become suspended without issuing a failure notification. This no longer occurs.
2295	You can now skip a workflow step that has an in-progress task. When the step is skipped, the workflow will continue with the next step.
2253	Optimized memory usage during nightly billing record retrieval.
2204	If billing retrieval fails, an event is generated for the parent account and also for each linked child account.
2198	Billing data for GCP was not displayed if it contained high usage values. The size of numeric fields used to store billing records has been increased to accommodate high usage values. As such, billing data for GCP is now displayed as expected.
2156	The default field size for the CIDR Block field has been increased, so GCP data for this variable won't be truncated.
2153	Nightly billing retrieval didn't finish successfully for all cloud accounts when a retrieval for one cloud account encountered an unexpected error. The result was that billing data wasn't updated for all cloud accounts. This has now been fixed.
2148	For some environments with a large number of cloud accounts, the nightly scheduled task to retrieve billing records could show a decreasing percentage done. Now, as billing records are retrieved, the displayed percentage done will increase, as expected.
2133	Service Portal users were not able to enter any text if the Message of the Day was enabled. Service Portal users can now enter text as expected while the Message of the Day is enabled.
2122	The same AWS account can't be added twice, even if different credentials are used.
2050	When upgrading Commander, the default number of scheduled tasks that can run was reduced from 5 to 1. The default number of scheduled tasks that can run will remain at 5, as expected.
2028	When doing a manual billing retrieval of a cloud account with linked accounts, the linked accounts are now synced as expected.
2005	The Cloud Billing report now correctly shows cost entries that were previously missing in the Details table when the “Group By” feature is used.
1966	Usage and costs in the Cloud Billing Report now display as expected when using the Group By filter.
1964	The Send Email step of the Completion Workflow now executes fully when resources are allocated in any order.
1957	vSphere remains connected when datastores are orphaned from their hosts.
1922	In some cases, if Commander failed to retrieve billing data for a cloud account, it wouldn't attempt to retrieve billing data for other subsequent cloud accounts. Now if Commander fails to retrieve billing data, it will log the failure, then continue to retrieve billing data for other cloud accounts.

Issue	Description
1888	The Service Portal Cost Dashboard could show totals that include recommendations for resources not owned by an organization. The Service Portal Cost Dashboard now only shows totals that include recommendations for resources owned by an organization.
1883	You can now reassign ownership of policies when you delete a user account.
1855	Total costs in the Cloud Billing Report now display as expected.
1845	If you deleted a subnet in AWS for an Auto Scaling Group with no VMs, Commander could fail to sync with that AWS account and lose the connection to it. Now, for such a scenario, Commander will synchronize with the AWS account and maintain the connection, as expected.
1828	Search terms that contain special characters or non-English characters will no longer return 500 errors.
1823	Service Portal report scheduling is no longer affected by Commander time zone settings.
1820	Refunds for AWS cloud accounts are now categorized as cost adjustments.
1806	You can now assign descriptive names of up to 300 characters to parent organizations. This matches the length allowed for organization names.
1758	The Choose button for the Upload Files field now displays as expected when using a custom theme.
1753	Scheduled reports that include advanced filters with enumerations now generate as expected.
1747	For some Azure deployments, rightsizing recommendations were created that crossed instance families creating inconsistent behavior. Recommendations now correctly suggest instance types within the same family.
1741	When creating or editing an Azure blueprint, a validation error occurred if you only specified a variable for the deployed name instead of using the default naming convention. The validation now passes as expected.
1722	In Azure, using REST v2, you can now create ownership policies on resource groups so that ownership is set properly when resources are deployed into resource groups.
1721	You can no longer add duplicate AWS cloud accounts through the Commander admin console.
1717	The properties returned from a REST v3 API call of GET `/rest/v3/organizations/<name>` now includes the current cost quota usage of an organization.
1711	With REST v3, you can now filter resource groups by organization.
1699	REST v3 requests were intermittently failing and resulting in incorrect error messages due to issues with concurrent use. This has been fixed, so multiple requests are now handled appropriately.
1682	The user directory locking mechanism now allows for users to authenticate even when a user directory synchronization is happening.
1681	The REST v3 API documentation now includes Bearer Authorization.
1650	Some region codes used in billing records could cause cost analytics discrepancies because they vary from codes recognized by the Azure API. Support for some additional region codes, such as "all regions" and "krcentral", have been added.
1637	The vSphere server no longer disconnects when one of its hosts is remediated.

Issue	Description
1621	When used in completion workflow steps, the Jenkins workflow plugin could cause server connections to fail when using HTTPS. The Jenkins workflow plugin now allows server connections using both HTTP and HTTPS.
1608	Invalid XML in `log4j2.xml` will no longer cause upgrades to fail.
1603	The VM Capacity Remaining values in the Cluster Capacity report now match as expected.
1583	When using REST v2 to create an Azure deployment destination, validation now occurs as expected to ensure that the resource group is valid for the cloud account.
1543	Administrators and Service Portal users can now power off suspended VMs with the "Stop VM" and "Power Off" options, respectively.
1529	If a URL path used by an Execute REST workflow step included spaces, the spaces would be considered illegal characters, and the step would fail. The workflow step now appropriately handles spaces in a URL path.
1480	Multiple Azure Enterprise Agreement accounts now show separate data for each account.
1451	A REST v3 API `/internal/system-health` endpoint is now available. This endpoint provides metrics on the health of Commander.
1450	If the advanced system property `embotics.execute.command.task.succeed.unknown.exitcode` is set to true, when a workflow step returns an unknown exit code, the system now behaves as expected: a warning will be recorded in the comment log, and the step will complete. If false, Commander continues to query for the result until the timeout is reached.
1449	The maximum allowed lengths for list-based custom attribute values and organization names have been increased.
1107	For Service Portal users that are permitted to modify VM networks, you can now limit the networks available to those users according to their organization membership and the VM placement destination.

Note: To access complete release notes for previous releases, go to the Release Notes Archive.

Known Issues

These are the known issues for Commander 8.4:

Issue	Description and Solution
21870	When you deploy the VM Access Proxy, the **Synchronize guest time with host** option is disabled. 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.
16002	When the WebMKS console connection method is configured, Internet Explorer 11 users may be unable to see the mouse pointer in the console session. 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 Console connection methods in the Commander User Guide to learn how to change the console connection method for HTML5 browsers.
15602	Commander and the Service Portal don't support multiple connections in the same browser. For example, you can connect to Commander in both Firefox and Chrome at the same time, but you can't connect to Commander in two instances of Firefox at the same time. Use a different browser to open another session.
9223	In some cases, when you attempt to generate a Cloud Billing report and use the Group By option of Cost Adjustments, the report will fail to generate.

Version 8.4.1

Document issue 1.0