



Red Hat CloudForms 4.6

Release Notes

Summary of new features, corrections, and known bugs for Red Hat CloudForms Management Engine 5.9

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Abstract

A summary of enhancements, known bugs, and support information for Red Hat CloudForms 4.6. If you have a suggestion for improving this guide or have found an error, please submit a Bugzilla report at <http://bugzilla.redhat.com> against Red Hat CloudForms Management Engine for the Documentation component. Please provide specific details, such as the section number, guide name, and CloudForms version so we can easily locate the content.

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1. INTRODUCTION

Red Hat CloudForms Management Engine (CFME) delivers the insight, control, and automation enterprises need to address the challenges of managing virtual environments, which are far more complex than physical ones. This technology enables enterprises with existing virtual infrastructures to improve visibility and control, and those just starting virtualization deployments to build and operate a well-managed virtual infrastructure.

Red Hat CloudForms 4.6 is comprised of a single component, the CloudForms Management Engine. It has the following feature sets:

- Insight: Discovery, Monitoring, Utilization, Performance, Reporting, Analytics, Chargeback, and Trending.
- Control: Security, Compliance, Alerting, Policy-Based Resource and Configuration Management.
- Automate: IT Process, Task and Event, Provisioning, Workload Management and Orchestration.
- Integrate: Systems Management, Tools and Processes, Event Consoles, CMDB, RBA, and Web Services.

1.1. Getting Support

If you experience difficulty with a procedure described in this documentation, visit the Red Hat Customer Portal at <http://access.redhat.com>. Through the customer portal, you can:

- Search or browse through a knowledgebase of technical support articles about Red Hat products
- Submit a support case to Red Hat Global Support Services (GSS)
- Access other product documentation

Red Hat also hosts a large number of electronic mailing lists for discussion of Red Hat software and technology. You can find a list of publicly available mailing lists at <https://www.redhat.com/mailman/listinfo>. Click on the name of any mailing list to subscribe to that list or to access the list archives.

1.2. Red Hat CloudForms Life Cycle

For an overview of the life cycle phases for Red Hat CloudForms and the status of support for this product, see [Red Hat Cloudforms Life Cycle](#).

2. MIGRATION CONSIDERATIONS

2.1. Migrating to a New Appliance

If you are migrating from an existing appliance to a new one, the target appliance must be able to accommodate the new 12 Gb resource profile used by Red Hat CloudForms 4.6, even if the source appliance only uses 8 Gb.

2.2. Migrating on the same appliance

If you are migrating from a previous version of Red Hat CloudForms to Red Hat CloudForms 4.6 using the same appliance, the resource profile will remain the same. Before installing or starting any providers, however, you must assess your memory needs and adjust the resource profile accordingly to avoid performance issues.

3. TECHNOLOGY PREVIEW

The following enhancements are available with this release of Red Hat CloudForms as technology preview only.



NOTE

For more information on the support scope for features marked as technology previews, see [Technology Preview Features Support Scope](#)

Alert Management

- Red Hat CloudForms can receive alerts from Prometheus in OpenShift Container Platform
- Alerts generated by Prometheus are visible in the Red Hat CloudForms user interface
- Ability to assign alerts to a user and add notes

Integration with ServiceNow CMDB

You can integrate Red Hat CloudForms into ServiceNow to enable authentication with an existing ServiceNow database and add/amend items in the ServiceNow database during state machine processing, such as the virtual machine provisioning state machine.

Red Hat Insights Plug-In

You can access Red Hat Insights directly from the Red Hat CloudForms appliance web user interface. Red Hat Insights is an automated service that provides information that helps you to rapidly identify key issues in your Red Hat CloudForms deployment.

4. ENHANCEMENTS

The following enhancements are available with Red Hat CloudForms 4.6 (CFME 5.9).

4.1. Ansible

Red Hat CloudForms continues to build on its next generation automation and management features, adding the following functionality to its Ansible Automation Inside role:

- Call Ansible playbooks as methods in state machines, allowing for hybrid Ruby and Ansible orchestration.
- Compute resource linking in services, providing visibility of Ansible deployed compute items.
- A foundational layer to curate Ansible modules, adding secure authentication for Ansible callbacks to CloudForms.
- Support for additional Ansible credentials, including OpenStack, Azure, Google, Satellite, Subversion, GitLab, as well as Ansible Networking.

- Several field reported enhancements such as state machine timeouts, instructions to back up the CloudForms appliance to include CloudForms and Ansible Automation Inside PostgreSQL databases, and privilege escalation.

4.2. Dynamic Resource Objects

This release of Red Hat CloudForms introduces dynamic resource objects, designed to manage objects other than those related to private infrastructure, and public or private cloud providers. Dynamic resource objects are object-like entities, defined at runtime, that have unique names and user-defined attributes and relationships. Using automate requests, services and catalog items, dynamic resource objects can be directly accessed or passed, during any step, as a parameter to a service state machine. As a result, dynamic resource objects can be used to quickly add the capability to provision and collect data on resources not supported by Red Hat CloudForms.

4.3. Providers

The following section outlines enhancements to existing providers.

OpenShift Container Platform

This release of Red Hat CloudForms contains the following new features and enhancements for OpenShift Container Platform providers:

- OpenSCAP:
 - Ability to specify per provider the location of OpenSCAP CVEs and image-inspector images
 - Environment variable to configure OpenSCAP CVE definitions URL
 - Advanced settings available per provider on instances
- Chargeback:
 - Chargeback reports based on limits defined in pods for CPU and memory
- Alert management:
 - CloudForms can receive alerts from Prometheus in OpenShift
 - Alerts generated by Prometheus are visible in the CloudForms user interface
 - Ability to assign alerts to a user and add notes
- Performance:
 - Inventory graph refresh for OpenShift to improve collection performance
- User experience:
 - Dashboard available at project level
 - Report for container projects by quota
 - Configuration of the OpenShift proxy per provider in the user interface
 - Metrics endpoints detection when adding an OpenShift provider

Red Hat OpenStack Platform

This release of Red Hat CloudForms contains the following new features and enhancements for OpenStack cloud providers:

- Targeted graph refresh based on entity events to improve performance
- Security group management for network providers and instances
- Flavor management and creation from the CloudForms user interface
- SmartState analysis for instances booted from a volume
- Force option for volume backup and restore
- Ability to charge volume types differently in chargeback
- Support for provisioning instances from volumes, volume snapshot and image snapshots

Red Hat Virtualization

This release of Red Hat CloudForms contains the following new features and enhancements for Red Hat Virtualization providers:

- Targeted refresh improvements for template and host events
- Targeted graph refresh to improve performance
- Support for using Sysprep to prepare Windows templates for deploying virtual machines
- Open Virtual Network (OVN) network switch visualization and control
- Ability to create a template from a virtual machine
- Restart functionality for virtual machines

4.4. Physical Providers

This release adds the following physical infrastructure providers:

- Lenovo XClarity

4.5. Administrative User Interface

The following section outlines enhancements to the administrative user interface.

OpenShift Template Provisioning

This release of CloudForms adds the ability to create a service dialog to expose OpenShift template parameters, create a catalog item based on the template, and provision the OpenShift template from a service catalog.

Dynamic Resource Objects

This release adds support for dynamic resource objects to the following:

- Service
- Create, read, update, and delete operations

Alert Management

This release enhances the alert management features in CloudForms, adding the ability to:

- Send alerts to the alert user interface.
- Set an alert to critical, warning, info.
- See all alerts in the dashboard related to a particular entity.
- Assign an alert to another user.
- Add a note to an alert in the alert user interface.

Service Dialog

- Ability to add service dialogs using a new drag-and-drop service dialog editor.
- Advanced validation of dialog fields as you type.
- More tool tips including a help icon for every element.

Custom Button

- Ability to add a custom button at any level, enabled only in certain conditions.
- Ability to set a custom icon to the custom button.

4.6. Self Service User Interface

The following section outlines enhancements to the service user interface, including parity of certain user experience improvements with the administrative user interface.

Snapshot management

This release adds the ability to see all snapshots in a list and timeline view on the snapshot level page. It also adds the ability to create and view snapshots from service level and resource details level.

Utilization

- Reworked resource details level page for improved user experience.
- Show details of dynamic resource objects at the service level.

Service Dialog

- Advanced validation of dialog fields as you type.
- More tool tips including a help icon for every element.

Custom Button

- Ability to add a custom button at any level that will be enabled only in certain conditions.
- Ability to set a custom icon to the custom button.

User Interface Customization

- The service user interface adds the ability to perform certain user interface customizations in terms of branding, including a custom logo and a background image on the login screen.
- Adds role-based access control to the help menu.

User Experience Improvements

- Ability to filter services by tags.
- Ability to modify dialog inputs when duplicating an existing order.
- Automatic refresh of updates without having to click anywhere on the user interface.
- Adds a visual progress of requests and orders during service provisioning.

5. KNOWN ISSUES

These known issues exist in Red Hat CloudForms at this time:

BZ#1600642

After completing a fast-forward upgrade from Red Hat OpenStack Platform 10 to Red Hat OpenStack Platform 13, validation of OpenStack infrastructure and cloud providers fails under certain circumstances. This issue occurs when Red Hat OpenStack Platform 10 environments using Keystone API v2 are upgraded to Keystone API v3 as part of the upgrade process. To resolve this issue, edit the infrastructure and cloud providers associated with your Red Hat OpenStack Platform environment and update the value of the 'API Version' field to 'Keystone v3', and the value of the 'Keystone V3 Domain ID' field (by default, the value is 'default').

BZ#1283772

If you select the legacy network adapter setting when configuring a Red Hat CloudForms virtual machine on Hyper-V, it is not possible to access the virtual machine externally such as via SSH. The network adapter setting must be selected instead. For more information, see the following TechNet article -

<https://technet.microsoft.com/en-us/library/ee941153.aspx>

BZ#1344557

Presently, SmartState Analysis does not accept a wildcard character ("*") for directory names, causing CloudForms to fail to collect the specified file(s). To work around this, specify the directory's full path without wildcard characters. For example, when attempting to collect all users' public SSH keys using the filename `"/home/*.ssh/id_rsa.pub"` in an Analysis Profile will fail, however, specifying the path `"/home/user/.ssh/id_rsa.pub"` succeeds. This known issue is an RFE for next release.

BZ#1391095

In highly available CloudForms environments, data synchronization to the global region ceases to function after a remote region failover event. This

occurs because of an issue with both primary to standby database (HA) replication configured along with region-to-region (remote/global) replication. To work around this, remove and re-create the subscription in the global region web user interface to point to the new primary database server in the remote region. After applying the workaround, replication to the global region will be restored.

[BZ#1427653](#)

At current, Red Hat CloudForms is unable to correctly collect inventory details from Red Hat Virtualization environments that have been upgraded from Red Hat Enterprise Virtualization 3.X to Red Hat Virtualization 4.X. This is caused by Red Hat CloudForms attempting to collect inventory details from the old FQDN for the environment and the new FQDN for the environment after the FQDN has been updated for that provider. As a workaround, restart the evmserved on the appliance.

[BZ#1435468](#)

Certain users (MIQ LDAP - OpenLDAP) with special attributes are unable to log in to the Red Hat CloudForms Services User Interface.

Steps to Reproduce:

1. Configure MIQ LDAP - OpenLDAP provider
2. Navigate to self-service UI and try to log in.

Result: The user is unable to log in and there is not an error message to let the user know that they are not able to log in.

[BZ#1451300](#)

A known issue exists presently where different CloudForms tenants can create catalogs with the same name, and consequently, CloudForms displays multiple catalogs with the same name in the Catalog dropdown menu. This can result in difficulty differentiating catalog items when an administrative user creates a service catalog item, as the user interface does not display the name of the tenant that owns the catalog. This will be fixed in a later release.

[BZ#1490641](#)

Attempting to connect to the VMware WebMKS console for a virtual machine fails when the server security type is set to '2' for that virtual machine.

[BZ#1513592](#)

NPAPI support has been removed from all major browsers and VMware no longer supports this console type. As a result, the `VMware MKS plugin` option has been disabled in CloudForms.

[BZ#1516757](#)

At current, provisioning virtual machines via life cycle can exceed quota if a value in the Automate method is invalid. As a workaround, ensure that all values specified in or passed to the Automate method are valid.

BZ#1518613

At current, the results of running a compliance policy on a provider can be accessed from the 'Policy' menu, but are not displayed in the inventory page for that provider. This issue will be resolved in a future update of Red Hat CloudForms.

BZ#1540641

The hostnamectl tool, as used by the ipa-client-install command and in the appliance console, is limited by the 'HOST_NAME_MAX (64)' kernel variable. Because of this limitation in the underlying technology, Red Hat CloudForms cannot support fully qualified domain names longer than 64 characters.

BZ#1550024

At current, attempting to open the appliance console using the 'ap' command fails under certain circumstances after upgrading from Red Hat CloudForms 5.8 to Red Hat CloudForms 5.9. As a workaround, log out of and back in to the appliance, or enter the full command 'appliance_console'.

6. RELEASE NOTES

This section outlines important details about the release, including recommended practices and notable changes to Red Hat CloudForms. You must take this information into account to ensure the best possible outcomes for your deployment.

BZ#1392415

If you configure a Red Hat CloudForms appliance to act as a dedicated database instance when you configure the database, you can enable the EVM server and user interface on that appliance via the following procedure -

If you have already configured a region on the appliance and other appliances connect to that region, use the 'Join Region in External Database' option to enable the EVM server. Enter 'localhost' as the database host name.

If you have not already configured a region on the appliance, use the 'Create Region in External Database' option to enable the EVM server. Enter 'localhost' as the database host name.

7. DEPRECATED FUNCTIONALITY

The following are deprecated with Red Hat CloudForms 4.6 (CFME 5.9).

- Due to VMware licensing restrictions we are not able to ship with WebMKS starting in version 4.5.3. However, it can be easily added to the UI appliances by following the steps in this documentation. <https://access.redhat.com/solutions/3376081>

8. CHANGING THE USER INTERFACE LOCALE

Red Hat CloudForms allows you to change the locale of the user interface to one of several preset locales.

This procedure outlines how to change the user interface locale.

1. Navigate to **Settings** → **My Settings** from the navigation bar.
2. Select the user interface locale from the **Locale** list in the **Display Settings** area.
3. Click **Save**.

8.1. User Interface Locales

This table outlines the user interface locales provided in this release of Red Hat CloudForms.

Table 1. User Interface Locales

Locale	Language
English	English
Español	Spanish
Français	French
日本語	Japanese
简体中文	Simplified Chinese

9. CHANGES IN THE CORE SET OF RUBY GEMS

Users of Red Hat CloudForms can construct custom automation methods in Ruby to extend the product. Red Hat CloudForms ships with a core set of Ruby gems used by the CloudForms Management Engine (CFME) Rails Application. The Ruby gems in this set are subject to change, and have changed since the previous release. If you are calling gems using Automate that are no longer in the CloudForms Management Engine Appliance, you can install them by using the **gem install** command.

While gems can be imported into automation methods using **require**, it is recommended that the authors of the automation methods clearly document the use of gems either in the core set or a custom set. It is the responsibility of the author of such custom automation to own the life cycle of any gem being referenced in those methods.

You can find a list of all gems included in the appliance in `/var/www/miq/vmdb/log/gem_list.txt`

To get lists of all gems for different CloudForms Management Engine releases, see the following resource:

- <https://access.redhat.com/articles/1534753>

9.1. Red Hat CloudForms 4.6.0

This section outlines the changes to the core set of Ruby gems included in this release in comparison to the Ruby gems included in Red Hat CloudForms 4.5.3. This is the latest version of Red Hat CloudForms 4.5 as of the release of Red Hat CloudForms 4.6, and this section shall be replaced with the details of the Ruby gems included in Red Hat CloudForms 4.6.0 in line with the general availability of the release.

9.1.1. New Ruby Gems in Red Hat CloudForms 4.6.0

The following Ruby gems have been added:

Table 2. New Ruby Gems in Red Hat CloudForms 4.6.0

Ruby Gem	Version in Red Hat CloudForms 4.6.0
activerecord-id_regions	0.2.0
amazon_ssa_support	0.1.0
crass	1.0.3
docker-api	1.33.6
dry-configurable	0.7.0
dry-container	0.6.0
dry-core	0.4.2
dry-equalizer	0.2.0
dry-logic	0.4.2
dry-types	0.12.2
dry-validation	0.11.1
faker	1.8.3
faraday-cookie_jar	0.0.6
font-fabulous	1.0.0
hashdiff	0.3.7
inflecto	0.0.2
log_decorator	0.1.0
manageiq-api	3.0.0
manageiq-appliance_console	1.2.4
manageiq-automation_engine	0.1.0

Ruby Gem	Version in Red Hat CloudForms 4.6.0
manageiq-consumption	0.0.1
manageiq-messaging	0.1.0
manageiq-network_discovery	0.1.2
manageiq-postgres_ha_admin	1.0.0
manageiq-providers-ansible_tower	0.1.0
manageiq-providers-foreman	0.1.0
manageiq-providers-google	0.1.0
manageiq-providers-kubernetes	0.1.0
manageiq-providers-openshift	0.1.0
manageiq-providers-openstack	0.1.0
manageiq-providers-ovirt	0.1.0
manageiq-providers-scvmm	0.1.0
manageiq-schema	0.1.0
manageiq-smartstate	0.2.7
mini_mime	1.0.0
minitar	0.6.1
monetize	1.7.0
money	6.10.1
money-rails	1.10.0
prometheus-alert-buffer-client	0.2.0
prometheus-api-client	0.6.0
ripper_ruby_parser	1.1.2
socksify	1.7.1

Ruby Gem	Version in Red Hat CloudForms 4.6.0
stomp	1.4.4
vmware_web_service	0.2.5
webpacker	2.0

9.1.2. Updated Ruby Gems in Red Hat CloudForms 4.6.0

The following Ruby gems have been updated:

Table 3. Updated Ruby Gems in Red Hat CloudForms 4.6.0

Ruby Gem	Version in Red Hat CloudForms 4.6.0
actioncable	5.0.6
actionmailer	5.0.6
actionpack	5.0.6
actionview	5.0.6
activejob	5.0.6
activemodel	5.0.6
activerecord	5.0.6
activerecord-session_store	1.1.0
activesupport	5.0.6
acts_as_tree	2.7.1
akami	1.3.1
amq-protocol	2.3.0
autoprefixer-rails	7.2.5
aws-sdk	2.9.44
aws-sdk-core	2.9.44
aws-sdk-resources	2.9.44

Ruby Gem	Version in Red Hat CloudForms 4.6.0
aws-sigv4	1.0.2
config	1.6.1
default_value_for	3.0.3
event_emitter	0.2.6
excon	0.60.0
ffi-vix_disk_lib	1.0.4
fog-core	1.45.0
fog-google	0.5.4
gettext	3.2.6
globalid	0.4.1
gyoku	1.3.1
httpclient	2.8.3
httpi	2.4.2
i18n	0.9.3
iniparse	1.4.4
jbuilder	2.7.0
linux_admin	1.2.0
loofah	2.1.1
mail	2.7.0
method_source	0.9.0
mime-types	2.6.1
minitest	5.11.3
more_core_extensions	3.5.0

Ruby Gem	Version in Red Hat CloudForms 4.6.0
multi_json	1.13.1
net-ldap	0.16.1
net-ssh	4.2.0
nori	2.6.0
oauth	0.5.4
ovirt_metrics	2.0.0
parallel	1.12.1
pg-pglogical	2.1.2
rails	5.0.6
railties	5.0.6
rake	12.3.0
rbvmomi	1.11.6
ruby-dbus	0.14.1
rufus-scheduler	3.1.10.2
sass	3.4.25
sass-rails	5.0.7
savon	2.11.2
sexp_processor	4.10.0
signet	0.8.1
sprockets-rails	3.2.1
sys-proctable	1.1.5
thor	0.20.0
tilt	2.0.8

Ruby Gem	Version in Red Hat CloudForms 4.6.0
tzinfo	1.2.4
useragent	0.16.9
wasabi	3.5.0
websocket	1.2.5
websocket-extensions	0.1.3
winrm-fs	1.2.0
xclarity_client	0.5.9

9.1.3. Removed Ruby Gems in Red Hat CloudForms 4.6.0

The following Ruby gems have been removed:

Table 4. Removed Ruby Gems in Red Hat CloudForms 4.6.0

Ruby Gem
acts_as_list
daemons
hashie
log4r
multi_xml
oauth2
omniauth
omniauth-google-oauth2
omniauth-oauth2
rails-controller-testing
ruby_parser
rubywbem

Ruby Gem

zip-zip

9.2. Red Hat CloudForms 4.6.1

This section outlines the changes to the core set of Ruby gems included in this release.

9.2.1. New Ruby Gems in Red Hat CloudForms 4.6.1

No Ruby gems were added to the appliance in Red Hat CloudForms 4.6.1.

9.2.2. Updated Ruby Gems in Red Hat CloudForms 4.6.1

No Ruby gems were updated in Red Hat CloudForms 4.6.1.

9.2.3. Removed Ruby Gems in Red Hat CloudForms 4.6.1

No Ruby gems were removed from the appliance in Red Hat CloudForms 4.6.1.

9.3. Red Hat CloudForms 4.6.2

This section outlines the changes to the core set of Ruby gems included in this release.

9.3.1. New Ruby Gems in Red Hat CloudForms 4.6.2

The following Ruby gems have been added:

Table 5. New Ruby Gems in Red Hat CloudForms 4.6.2

Ruby Gem	Version in Red Hat CloudForms 4.6.2
public_suffix	3.0.2

9.3.2. Updated Ruby Gems in Red Hat CloudForms 4.6.2

The following Ruby gems have been updated:

Table 6. Updated Ruby Gems in Red Hat CloudForms 4.6.2

Ruby Gem	Version in Red Hat CloudForms 4.6.2
addressable	2.5.2
ansible_tower_client	0.13.0
azure-armrest	0.9.10
fog-openstack	0.1.25

Ruby Gem	Version in Red Hat CloudForms 4.6.2
fog-vcloud-director	0.1.10
http	2.2.2
kubeclient	2.5.2
linux_admin	1.2.1
manageiq-api-client	0.3.0
manageiq-appliance_console	2.0.0
manageiq-smartstate	0.2.10
more_core_extensions	3.6.0
vmware_web_service	0.2.8

9.3.3. Removed Ruby Gems in Red Hat CloudForms 4.6.2

The following Ruby gems have been removed:

Table 7. Removed Ruby Gems in Red Hat CloudForms 4.6.2

Ruby Gem
manageiq-network_discovery

9.4. Red Hat CloudForms 4.6.3

This section outlines the changes to the core set of Ruby gems included in this release.

9.4.1. New Ruby Gems in Red Hat CloudForms 4.6.3

The following Ruby gems have been added:

Table 8. New Ruby Gems in Red Hat CloudForms 4.6.3

Ruby Gem	Version in Red Hat CloudForms 4.6.3
declarative	0.0.10
declarative-option	0.1.0
miq_v2v_ui	0.0.1

Ruby Gem	Version in Red Hat CloudForms 4.6.3
representable	3.0.4
uber	0.1.0

9.4.2. Updated Ruby Gems in Red Hat CloudForms 4.6.3

The following Ruby gems have been updated:

Table 9. Updated Ruby Gems in Red Hat CloudForms 4.6.3

Ruby Gem	Version in Red Hat CloudForms 4.6.3
fog-google	1.5.0
fog-vcloud-director	0.2.2
google-api-client	0.23.0
manageiq-appliance_console	2.0.3
mime-types	3.0.0
retriable	3.1.1
vmware_web_service	0.2.9

9.4.3. Removed Ruby Gems in Red Hat CloudForms 4.6.3

The following Ruby gems have been removed:

Table 10. Removed Ruby Gems in Red Hat CloudForms 4.6.3

Ruby Gem
autoparse
extlib
launchy

9.5. Red Hat CloudForms 4.6.4

This section outlines the changes to the core set of Ruby gems included in this release.

9.5.1. New Ruby Gems in Red Hat CloudForms 4.6.4

No Ruby gems were added to the appliance in Red Hat CloudForms 4.6.4.

9.5.2. Updated Ruby Gems in Red Hat CloudForms 4.6.4

The following Ruby gems have been updated:

Table 11. Updated Ruby Gems in Red Hat CloudForms 4.6.4

Ruby Gem	Version in Red Hat CloudForms 4.6.4
ansible_tower_client	0.17.0
fog-openstack	0.1.27
manageiq-smartstate	0.2.13
rbvmomi	1.13.0
sprockets	3.7.2
vmware_web_service	0.3.0

9.5.3. Removed Ruby Gems in Red Hat CloudForms 4.6.4

No Ruby gems were removed from the appliance in Red Hat CloudForms 4.6.4.

9.6. Red Hat CloudForms 4.6.5

This section outlines the changes to the core set of Ruby gems included in this release.

9.6.1. New Ruby Gems in Red Hat CloudForms 4.6.5

No Ruby gems were added to the appliance in Red Hat CloudForms 4.6.5.

9.6.2. Updated Ruby Gems in Red Hat CloudForms 4.6.5

The following Ruby gems have been updated:

Table 12. Updated Ruby Gems in Red Hat CloudForms 4.6.5

Ruby Gem	Version in Red Hat CloudForms 4.6.5
azure-armrest	0.9.13
rubyzip	1.2.2

9.6.3. Removed Ruby Gems in Red Hat CloudForms 4.6.5

No Ruby gems were removed from the appliance in Red Hat CloudForms 4.6.5.

9.7. Red Hat CloudForms 4.6.6

This section outlines the changes to the core set of Ruby gems included in this release.

9.7.1. New Ruby Gems in Red Hat CloudForms 4.6.6

No Ruby gems were added to the appliance in Red Hat CloudForms 4.6.6.

9.7.2. Updated Ruby Gems in Red Hat CloudForms 4.6.6

The following Ruby gems have been updated:

Table 13. Updated Ruby Gems in Red Hat CloudForms 4.6.6

Ruby Gem	Version in Red Hat CloudForms 4.6.6
fog-openstack	0.1.28

9.7.3. Removed Ruby Gems in Red Hat CloudForms 4.6.6

No Ruby gems were removed from the appliance in Red Hat CloudForms 4.6.6.

9.8. Red Hat CloudForms 4.6.7

This section outlines the changes to the core set of Ruby gems included in this release.

9.8.1. New Ruby Gems in Red Hat CloudForms 4.6.7

No Ruby gems were added to the appliance in Red Hat CloudForms 4.6.7.

9.8.2. Updated Ruby Gems in Red Hat CloudForms 4.6.7

The following Ruby gems have been updated:

Table 14. Updated Ruby Gems in Red Hat CloudForms 4.6.7

Ruby Gem	Version in Red Hat CloudForms 4.6.7
fog-openstack	0.1.29
manageiq-smartstate	0.2.18

9.8.3. Removed Ruby Gems in Red Hat CloudForms 4.6.7

No Ruby gems were removed from the appliance in Red Hat CloudForms 4.6.7.

10. TECHNICAL NOTES

This chapter contains the summary text for bug fixes and enhancements in Red Hat CloudForms errata advisories. The information and procedures in this chapter are relevant to Red Hat CloudForms administrators.

10.1. Red Hat CloudForms 4.6.0

10.1.1. RHSA-2018-0380: Moderate: Red Hat CloudForms security, bug fix, and enhancement update

The bugs contained in this section are addressed by advisory RHSA-2018:0380. Further information about this advisory is available at <https://access.redhat.com/errata/RHSA-2018:0380.html>.

10.1.2. RHBA-2018-0381: CloudForms 4.6 Amazon EC2 SmartState Client

The bugs contained in this section are addressed by advisory RHBA-2018:0381. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:0381.html>.

10.1.3. RHBA-2018-0382: CloudForms 4.6 images for OpenShift

The bugs contained in this section are addressed by advisory RHBA-2018:0382. Information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:0382.html>.

10.2. Red Hat CloudForms 4.6.1

10.2.1. RHBA-2018-0554: CloudForms 4.6 Amazon EC2 SmartState Client

The bugs contained in this section are addressed by advisory RHBA-2018:0554. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:0554.html>.

10.2.2. RHBA-2018-0555: CloudForms 4.6 Images for OpenShift

The bugs contained in this section are addressed by advisory RHBA-2018:0555. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:0555.html>.

10.2.3. RHBA-2018-0556: CloudForms 4.6.1 Bug Fix Update

The bugs contained in this section are addressed by advisory RHBA-2018:0556. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:0556.html>.

10.2.3.1. Appliance

BZ#[1560578](#)

This update corrects an issue when upgrading rh-ruby from 2.3.1 to 2.3.6, including its dependent packages. The error was caused when an unexpected, newer version of rubygem-psych was picked up by CloudForms Management Engine.

10.3. Red Hat CloudForms 4.6.2

10.3.1. RHSA-2018-1328: Important: Red Hat CloudForms 4.6.2 Bug Fix and Enhancement Update

The bugs contained in this section are addressed by advisory RHSA-2018:1328. Further information about this advisory is available at <https://access.redhat.com/errata/RHSA-2018:1328.html>.

10.3.1.1. Appliance

BZ#[1562777](#)

This release of Red Hat CloudForms corrects restrictions for Request visibility when the role is set to "Only User or Group Owned" or "Only User Owned".

10.3.2. RHBA-2018-1329: CloudForms 4.6.2 Images for OpenShift Bug Fix and Enhancement Update

The bugs contained in this section are addressed by advisory RHBA-2018:1329. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:1329.html>.

10.3.3. RHBA-2018-1330: CloudForms 4.6.2 Amazon EC2 SmartState Client Bug Fix Update

The bugs contained in this section are addressed by advisory RHBA-2018:1330. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:1330.html>.

10.3.4. RHBA-2018-1371: Red Hat CloudForms 4.6.2 App and App UI OpenShift Images Bug Fix Update

The bugs contained in this section are addressed by advisory RHBA-2018:1371. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:1371.html>.

10.4. Red Hat CloudForms 4.6.3

10.4.1. RHSA-2018-2184: Moderate: Red Hat CloudForms 4.6.3 bug fix, and enhancement update

The bugs contained in this section are addressed by advisory RHSA-2018:2184. Further information about this advisory is available at <https://access.redhat.com/errata/RHSA-2018:2184.html>.

10.4.1.1. Vulnerability

BZ#[1588855](#)

Ansible 2.5 prior to 2.5.5, and 2.4 prior to 2.4.5, do not honor the `no_log` task flag for failed tasks. When the `no_log` flag has been used to protect sensitive data passed to a task from being logged, and that task does not run successfully, Ansible will expose sensitive data in log files and on the terminal of the user running Ansible.

10.4.2. RHBA-2018-2183: CloudForms 4.6.3 images for OpenShift

The bugs contained in this section are addressed by advisory RHBA-2018:2183. Information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:2183.html>.

10.4.3. RHBA-2018-2182: CloudForms 4.6.3 Amazon EC2 SmartState Client

The bugs contained in this section are addressed by advisory RHBA-2018:2182. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:2182.html>.

10.5. Red Hat CloudForms 4.6.4

10.5.1. RHSA-2018-2561: Moderate: Red Hat CloudForms 4.6.4 bug fix, and enhancement update

The bugs contained in this section are addressed by advisory RHSA-2018:2561. Further information about this advisory is available at <https://access.redhat.com/errata/RHSA-2018:2561.html>.

10.5.1.1. Vulnerability

BZ#[1602190](#)

CloudForms Management Engine has a vulnerability that allows local users to execute arbitrary commands as root. An attacker with SSH access to the system can use the dRuby (DRb) module installed on the system to execute arbitrary shell commands using ``instance_eval()``.

10.5.2. RHBA-2018-2560: CloudForms 4.6.4 Images for OpenShift

The bugs contained in this section are addressed by advisory RHBA-2018:2560. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:2560.html>.

10.5.3. RHBA-2018-2559: CloudForms 4.6.4 Amazon EC2 SmartState Client

The bugs contained in this section are addressed by advisory RHBA-2018:2559. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:2559.html>.

10.6. Red Hat CloudForms 4.6.5

10.6.1. RHSA-2018-3466: Moderate: Red Hat CloudForms 4.6.5 security, bug fix, and enhancement update

The bugs contained in this section are addressed by advisory RHSA-2018:3466. Further information about this advisory is available at <https://access.redhat.com/errata/RHSA-2018:3466.html>.

10.6.1.1. Provisioning

BZ#[1621449](#)

This release of CloudForms corrects an issue where all VMs were provisioned as dependent. Now, when a user selects the "preallocated" storage type the VM will be provisioned as "clone/independent".

10.6.1.2. Vulnerability

BZ#[1593001](#)

A directory and symbolic link traversal flaw was found in the way rubyzip gem extracts zip files. An attacker, with access to a privileged application capable of extracting zip files, could use this flaw to write new files to arbitrary paths, accessible by the aforementioned privileged application.

10.6.2. RHBA-2018-3467: CloudForms 4.6.5 Images for OpenShift bug fix

The bugs contained in this section are addressed by advisory RHBA-2018:3467. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:3467.html>.

10.6.3. RHBA-2018-3468: CloudForms 4.6.5 Amazon EC2 SmartState Client

The bugs contained in this section are addressed by advisory RHBA-2018:3468. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:3468.html>.

10.7. Red Hat CloudForms 4.6.6

10.7.1. RHSA-2018-3816: Moderate: Red Hat CloudForms 4.6.6 security, bug fix, and enhancement update

The bugs contained in this section are addressed by advisory RHSA-2018:3816. Further information about this advisory is available at <https://access.redhat.com/errata/RHSA-2018:3816.html>.

10.7.1.1. Vulnerability

BZ#1609891

A vulnerability was found in libpq, the default PostgreSQL client library where libpq failed to properly reset its internal state between connections. If an affected version of libpq were used with "host" or "hostaddr" connection parameters from untrusted input, attackers could bypass client-side connection security features, obtain access to higher privileged connections or potentially cause other impact through SQL injection, by causing the PQescape() functions to malfunction.

BZ#1612619

It was discovered that PostgreSQL failed to properly check authorization on certain statements involved with "INSERT ... ON CONFLICT DO UPDATE". An attacker with "CREATE TABLE" privileges could exploit this to read arbitrary bytes server memory. If the attacker also had certain "INSERT" and limited "UPDATE" privileges to a particular table, they could exploit this to update other columns in the same table.

BZ#1539619

This release of CloudForms corrects an issue invoked when running pg_upgrade by which attackers could read or modify the output of `pg_dumpall -g` in the current working directory. With this release, any attack is rendered infeasible as the directory mode blocks an intruder from searching the current working directory, and the prevailing umask prevents attackers from opening the file.

BZ#1547044

A flaw was found in the way Postgresql allowed a user to modify the behavior of a query for other users. An attacker with a user account could use this flaw to execute code with the permissions of superuser in the database.

10.7.2. RHBA-2018-3514: CloudForms 4.6.6 Images for OpenShift bug fix

The bugs contained in this section are addressed by advisory RHBA-2018:3514. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:3514.html>.

10.7.3. RHBA-2018-3518: CloudForms 4.6.6 Amazon EC2 SmartState Client

The bugs contained in this section are addressed by advisory RHBA-2018:3518. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2018:3518.html>.

10.8. Red Hat CloudForms 4.6.7

10.8.1. RHBA-2019-0110: CloudForms 4.6.7 Bug Fix and Enhancement Update

The bugs contained in this section are addressed by advisory RHBA-2019:0110. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2019:0110.html>.

10.8.2. RHBA-2019-0111: CloudForms 4.6.7 images for OpenShift bug fix

The bugs contained in this section are addressed by advisory RHBA-2019:0111. Information about this advisory is available at <https://access.redhat.com/errata/RHBA-2019:0111.html>.

10.8.3. RHBA-2019-0112: CloudForms 4.6.7 Amazon EC2 SmartState Client

The bugs contained in this section are addressed by advisory RHBA-2019:0112. Further information about this advisory is available at <https://access.redhat.com/errata/RHBA-2019:0112.html>.

11. CHANGES IN THE DEFAULT ROLES

This section outlines the changes to the default roles included in Red Hat CloudForms with each release.

11.1. Red Hat CloudForms 4.6.0

This section outlines the changes to the default roles included in Red Hat CloudForms in comparison to those included in Red Hat CloudForms 4.5.3. This is the latest version of Red Hat CloudForms 4.5 as of the release of Red Hat CloudForms 4.6.

11.1.1. EvmRole-administrator

Added

- `ems_infra_admin_ui`
- `physical_server`
- `physical_infra_topology`
- `sui_services`

Removed

- `ontap_storage_system`
- `ontap_logical_disk`

- cim_base_storage_extent
- ontap_storage_volume
- job_all_smartproxy
- job_my_smartproxy
- storage_manager
- ontap_file_share
- snia_local_file_system

11.1.2. EvmRole-approver

Added

- control_explorer
- ems_physical_infra_console
- ems_physical_infra_view
- physical_infra_topology_view
- physical_server_view
- service_view
- sui_services_view
- sui_vm_details_view
- sui_vm_console
- sui_vm_web_console
- sui_vm_tags
- sui_orders_view

Removed

- cim_base_storage_extent_show
- cim_base_storage_extent_show_list
- cim_base_storage_extent_tag
- ontap_storage_system_show
- ontap_storage_system_show_list
- ontap_storage_system_tag
- ontap_logical_disk_show

- `ontap_logical_disk_show_list`
- `ontap_logical_disk_tag`
- `cim_storage_extent_show`
- `cim_storage_extent_show_list`
- `cim_storage_extent_tag`
- `ontap_storage_volume_show`
- `ontap_storage_volume_show_list`
- `ontap_storage_volume_tag`
- `control_explorer_view`
- `ems_physical_infra_show`
- `ems_physical_infra_show_list`
- `ems_physical_infra_timeline`
- `job_my_smartproxy`
- `storage_manager_new`
- `storage_manager_edit`
- `storage_manager_refresh_inventory`
- `storage_manager_refresh_status`
- `storage_manager_show`
- `storage_manager_show_list`
- `service_show`
- `service_show_list`
- `ontap_file_share_show`
- `ontap_file_share_show_list`
- `ontap_file_share_tag`
- `snia_local_file_system_show`
- `snia_local_file_system_show_list`
- `snia_local_file_system_tag`

11.1.3. EvmRole-auditor

Added

- control_explorer
- ems_physical_infra_console
- ems_physical_infra_view
- physical_infra_topology_view
- physical_server_view
- service_view
- sui_services_view
- sui_vm_details_view
- sui_vm_console
- sui_vm_web_console
- sui_vm_tags

Removed

- cim_base_storage_extent_show
- cim_base_storage_extent_show_list
- cim_base_storage_extent_tag
- ontap_storage_system_show
- ontap_storage_system_show_list
- ontap_storage_system_tag
- ontap_logical_disk_show
- ontap_logical_disk_show_list
- ontap_logical_disk_tag
- cim_storage_extent_show
- cim_storage_extent_show_list
- cim_storage_extent_tag
- ontap_storage_volume_show
- ontap_storage_volume_show_list
- ontap_storage_volume_tag
- control_explorer_view
- ems_physical_infra_show

- `ems_physical_infra_show_list`
- `ems_physical_infra_timeline`
- `job_my_smartproxy`
- `storage_manager_new`
- `storage_manager_edit`
- `storage_manager_refresh_inventory`
- `storage_manager_refresh_status`
- `storage_manager_show`
- `storage_manager_show_list`
- `service_show`
- `service_show_list`
- `ontap_file_share_show`
- `ontap_file_share_show_list`
- `ontap_file_share_tag`
- `snia_local_file_system_show`
- `snia_local_file_system_show_list`
- `snia_local_file_system_tag`

11.1.4. EvmRole-desktop

Added

- `ems_physical_infra`
- `physical_server`
- `physical_infra_topology`
- `physical_server_view`
- `sui_services_view`
- `sui_vm_details_view`
- `sui_vm_console`
- `sui_vm_web_console`
- `sui_vm_start`
- `sui_vm_stop`

- sui_vm_suspend
- sui_orders_view
- sui_orders_operations

11.1.5. EvmRole-operator

Added

- ems_physical_infra_console
- ems_physical_infra_discover
- ems_physical_infra_view
- physical_server_timeline
- service_view
- sui_services_view
- sui_vm_details_view
- sui_vm_console
- sui_vm_web_console
- sui_vm_tags
- sui_vm_start
- sui_vm_stop
- sui_vm_suspend

Removed

- cim_base_storage_extent_show
- cim_base_storage_extent_show_list
- cim_base_storage_extent_tag
- ontap_storage_system_show
- ontap_storage_system_show_list
- ontap_storage_system_tag
- ontap_logical_disk_show
- ontap_logical_disk_show_list
- ontap_logical_disk_tag
- cim_storage_extent_show

- cim_storage_extent_show_list
- cim_storage_extent_tag
- ontap_storage_volume_show
- ontap_storage_volume_show_list
- ontap_storage_volume_tag
- ontap_storage_volume_tag
- ems_physical_infra_show
- ems_physical_infra_show_list
- ems_physical_infra_timeline
- job_my_smartproxy
- storage_manager_new
- storage_manager_edit
- storage_manager_refresh_inventory
- storage_manager_refresh_status
- storage_manager_show
- storage_manager_show_list
- service_show
- service_show_list
- ontap_file_share_show
- ontap_file_share_show_list
- ontap_file_share_tag
- snia_local_file_system_show
- snia_local_file_system_show_list
- snia_local_file_system_tag

11.1.6. EvmRole-security

Added

- control_explorer
- ems_physical_infra_view
- physical_server_timeline

- service_view
- sui_services_view
- sui_vm_details_view
- sui_vm_snapshot_create
- sui_vm_snapshot_delete
- sui_vm_tags

Removed

- cim_base_storage_extent_show
- cim_base_storage_extent_show_list
- ontap_storage_system_show
- ontap_storage_system_show_list
- ontap_logical_disk_show
- ontap_logical_disk_show_list
- cim_storage_extent_show
- cim_storage_extent_show_list
- cim_storage_extent_tag
- ontap_storage_volume_show
- ontap_storage_volume_show_list
- ontap_storage_volume_tag
- control_explorer_view
- ems_physical_infra_show
- ems_physical_infra_show_list
- ems_physical_infra_timeline
- job_my_smartproxy
- storage_manager_show
- storage_manager_show_list
- service_show
- service_show_list
- ontap_file_share_show

- `ontap_file_share_show_list`
- `ontap_file_share_tag`
- `snia_local_file_system_show`
- `snia_local_file_system_show_list`
- `snia_local_file_system_tag`

11.1.7. EvmRole-support

Added

- `control_explorer`
- `ems_physical_infra_console`
- `ems_physical_infra_view`
- `physical_infra_topology_view`
- `physical_server_view`
- `service_view`
- `sui_services_view`
- `sui_vm_details_view`
- `sui_vm_console`
- `sui_vm_web_console`
- `sui_vm_tags`

Removed

- `cim_base_storage_extent_show`
- `cim_base_storage_extent_show_list`
- `ontap_storage_system_show`
- `ontap_storage_system_show_list`
- `ontap_logical_disk_show`
- `ontap_logical_disk_show_list`
- `cim_storage_extent_show`
- `cim_storage_extent_show_list`
- `ontap_storage_volume_show`
- `ontap_storage_volume_show_list`

- control_explorer_view
- ems_physical_infra_show
- ems_physical_infra_show_list
- ems_physical_infra_timeline
- job_my_smartproxy
- storage_manager_show
- storage_manager_show_list
- service_show
- service_show_list
- ontap_file_share_show
- ontap_file_share_show_list
- snia_local_file_system_show
- snia_local_file_system_show_list

11.1.8. EvmRole-user

Added

- ems_physical_infra_console
- physical_infra_topology_view
- physical_server_view
- service_view
- sui_services_view
- sui_vm_details_view
- sui_vm_console
- sui_vm_web_console
- sui_vm_tags
- sui_orders_view
- sui_orders_operations

Removed

- cim_base_storage_extent_show
- cim_base_storage_extent_show_list

- `ontap_storage_system_show`
- `ontap_storage_system_show_list`
- `ontap_logical_disk_show`
- `ontap_logical_disk_show_list`
- `cim_storage_extent_show`
- `cim_storage_extent_show_list`
- `ontap_storage_volume_show`
- `ontap_storage_volume_show_list`
- `job_my_smartproxy`
- `storage_manager_show`
- `storage_manager_show_list`
- `service_show`
- `service_show_list`
- `ontap_file_share_show`
- `ontap_file_share_show_list`
- `snia_local_file_system_show`
- `snia_local_file_system_show_list`

11.1.9. EvmRole-user_limited_self_service

Added

- `sui_core`
- `sui_services`
- `sui_vm`
- `sui_orders`
- `sui_svc_catalog_view`
- `sui_svc_catalog_cart`
- `sui_cart`

11.1.10. EvmRole-user_self_service

Added

- `ems_physical_infra_console`
- `sui`

11.1.11. EvmRole-vm_user

- `sui_vm_details_view`
- `sui_vm_console`
- `sui_vm_web_console`
- `sui_vm_tags`
- `sui_vm_retire`
- `sui_vm_start`
- `sui_vm_stop`
- `sui_vm_suspend`
- `sui_orders_view`
- `sui_orders_operations`

11.1.12. EvmRole-tenant_administrator

Added

- `sui_services`

Removed

- `ontap_storage_system`
- `ontap_logical_disk`
- `cim_base_storage_extent`
- `ontap_storage_volume`
- `job_all_smartproxy`
- `job_my_smartproxy`
- `storage_manager`
- `ontap_file_share`
- `snia_local_file_system`

11.1.13. EvmRole-tenant_quota_administrator

Added

- sui_services

Removed

- ontap_storage_system
- ontap_logical_disk
- cim_base_storage_extent
- ontap_storage_volume
- job_all_smartproxy
- job_my_smartproxy
- storage_manager
- ontap_file_share
- snia_local_file_system

11.1.14. EvmRole-consumption_administrator

Added

- storage
- generic_object
- generic_object_definition
- monitor
- monitor_alerts
- alert_status
- alert_action
- ems_infra
- rbac_user
- ops_settings

Removed

- generic_object_explorer
- ontap_storage_system
- ontap_storage_volume
- ontap_logical_disk
- cim_base_storage_extent

- `ontap_file_share`
- `snia_local_file_system`
- `storage_manager`
- `blueprint`

11.1.15. EvmRole-container_operator

Added

- `monitor`
- `monitor_alerts`
- `alert_status`
- `alert_action`
- `ems_infra`
- `rbac_user`
- `ops_settings`

11.1.16. EvmRole-reader

Added

- `ems_physical_infra_view`

11.2. Red Hat CloudForms 4.6.1

This section outlines the changes to the default roles included in Red Hat CloudForms with this release.

11.2.1. EvmRole-super_administrator

Added

- `sui_notifications`

11.2.2. EvmRole-approver

Added

- `ems_physical_infra_tag`
- `sui_notifications`

11.2.3. EvmRole-auditor

Added

- `ems_cluster_view`
- `ems_infra_view`
- `ems_infra_check_compliance`
- `infra_networking_view`
- `infra_networking_tag`
- `instance_view`
- `instance_check_compliance`
- `instance_policy_sim`
- `instance_tag`
- `image_view`
- `image_check_compliance`
- `image_policy_sim`
- `image_tag`
- `iso_datastore_view`
- `host_view`
- `host_check_compliance`
- `miq_template_view`
- `miq_template_snapshot_view`
- `vm_view`
- `vm_compare`
- `vm_drift`
- `sui_notifications`

Removed

- `all_vm_rules`
- `ems_cluster_show`
- `ems_cluster_show_list`
- `ems_cluster_perf`
- `ems_cluster_timeline`

- `ems_infra_show`
- `ems_infra_show_list`
- `ems_infra_timeline`
- `host_timeline`
- `miq_template_perf`
- `miq_template_show`
- `miq_template_show_list`
- `miq_template_snapshot`
- `miq_template_timeline`

11.2.4. EvmRole-desktop

Added

- `sui_notifications`

11.2.5. EvmRole-operator

Added

- `physical_server_view`
- `physical_infra_topology_view`
- `sui_notifications`

Removed

- `physical_server_timeline`

11.2.6. EvmRole-security

Added

- `sui_notifications`

11.2.7. EvmRole-support

Added

- `sui_notifications`

11.2.8. EvmRole-user

Added

- sui_notifications

11.2.9. EvmRole-user_limited_self_service

Added

- sui_notifications

11.2.10. EvmRole-tenant_administrator

Added

- sui_notifications

11.2.11. EvmRole-tenant_quota_administrator

Added

- sui_notifications

11.2.12. EvmRole-consumption_administrator

Added

- sui_notifications

11.3. Red Hat CloudForms 4.6.2

There were no changes to the default roles with this release.

11.4. Red Hat CloudForms 4.6.3

There were no changes to the default roles with this release.

11.5. Red Hat CloudForms 4.6.4

There were no changes to the default roles with this release.

11.6. Red Hat CloudForms 4.6.7

There were no changes to the default roles with this release.