



IT Modernization with Open Management and Containers  
June 14, 2017  
Rochester, New York

# Embrace Multi-Cloud With CloudForms

Laurent Domb  
Principal Cloud Solutions Architect  
June 2017

What is  
*Multi-Cloud*  
?



86%

of enterprises predict they will require a multi-cloud strategy to support their **business goals** within the next two years



**85%**

**Of enterprises will commit to multi-cloud architectures by 2018**

As DevOps Scales up, over

**65%**

Of Enterprises will invest in On - Demand multi  
cloud services for developers

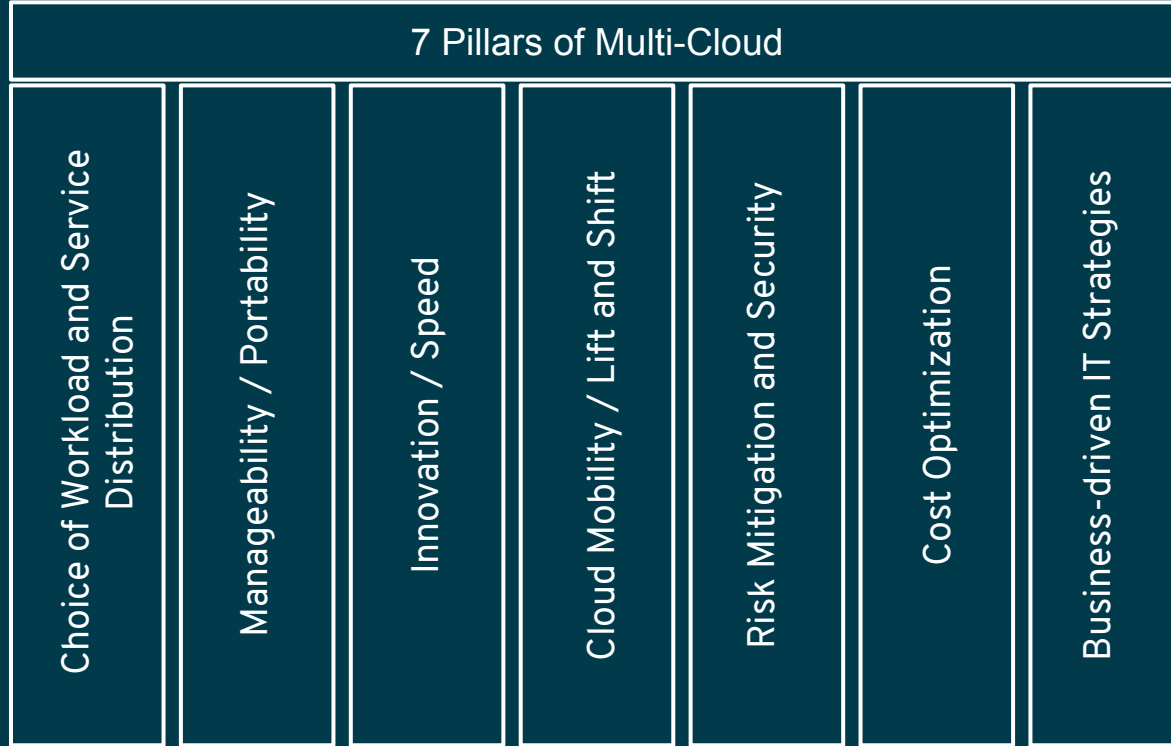
**60%**

**Of enterprise-class businesses will subscribe to more than 10 different public cloud services by 2017**

Why  
*Multi-Cloud*  
?



# Why **Multi-Cloud**?

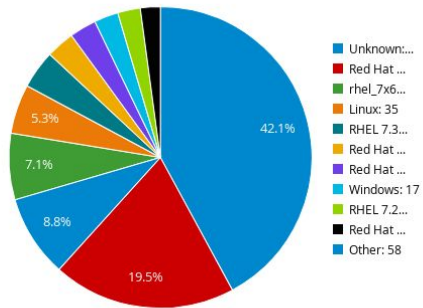


How do we  
*manage*  
Multi-Cloud?

- Cloud Intel
- Red Hat Insights
- Services
- Compute
- Configuration
- Networks
- Middleware
- Storage
- Control
- Automate
- Optimize

Default Dashboard

Guest OS Information



Updated May 29, 2017 00:10 | Next May 30, 2017 00:00

Top Storage Consumers

Name	Cluster Name	Total Used Disk Space
rhgs72		3 TB
rhgs72-1		2 TB
rootfs-dev		1024 GB
CF41_DB	Raleigh	340 GB
OSP-all-in-one	Raleigh	300 GB
Nuage-VSD-4.0.7_124	Raleigh	265 GB
Migration-Server	Raleigh	230 GB
chris-demo-node2		201 GB
chris-demo-node3		201 GB
infoblox.demo.mbu.redhat.com	Raleigh	160 GB

Updated May 29, 2017 00:10 | Next May 30, 2017 00:00

Top CPU Consumers (last hour)

VM Name	CPU Usage	Allocated vCPUs	VM Vendor
manageiq-dev	24.4%	4	redhat
manageiq-euwe-2	24.1%	4	redhat
CF42_vmware1	17.4%	4	redhat
OSP-all-in-one	16.5%	16	vmware
CF42_openstack1	14.9%	4	redhat

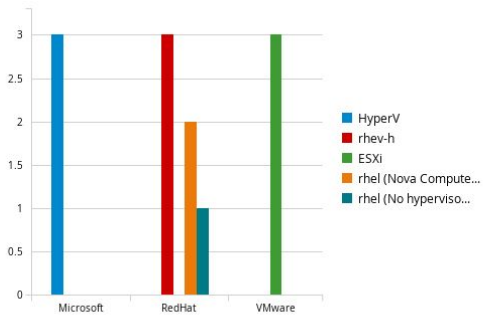
Updated May 17, 2017 20:27 | Next May 29, 2017 18:05

EVM: Recently Discovered VMs

sss1002 on Host esxi3 Date : 2017-05-27 11:37:07 UTC
kmcloudforms45 at RHEV_NFS Date : 2017-05-26 20:48:00 UTC
kmcf45a - location unknown Date : 2017-05-26 20:33:57 UTC
kmcf45 - location unknown Date : 2017-05-26 19:11:15 UTC
kmcf45 at RHEV_NFS Date : 2017-05-26 17:36:58 UTC

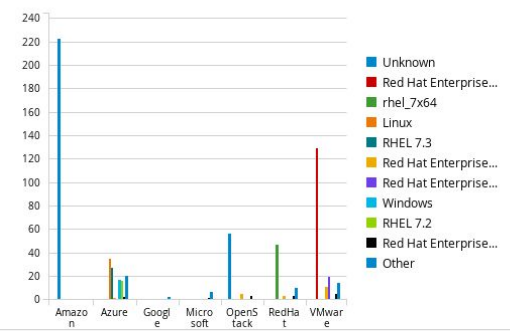
Updated May 29, 2017 09:57 | Next May 29, 2017 18:00

Virtual Infrastructure Platforms



Updated May 29, 2017 00:10 | Next May 30, 2017 00:00

Vendor and Guest OS Chart

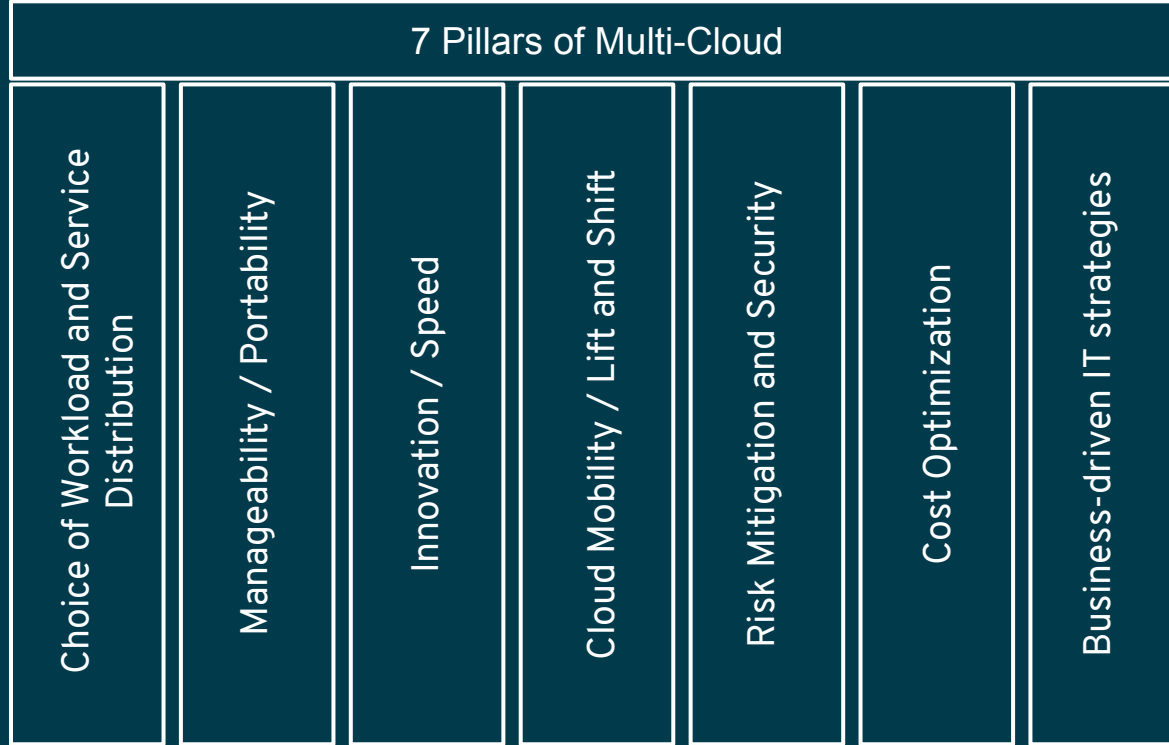


Updated May 29, 2017 00:10 | Next May 30, 2017 00:00

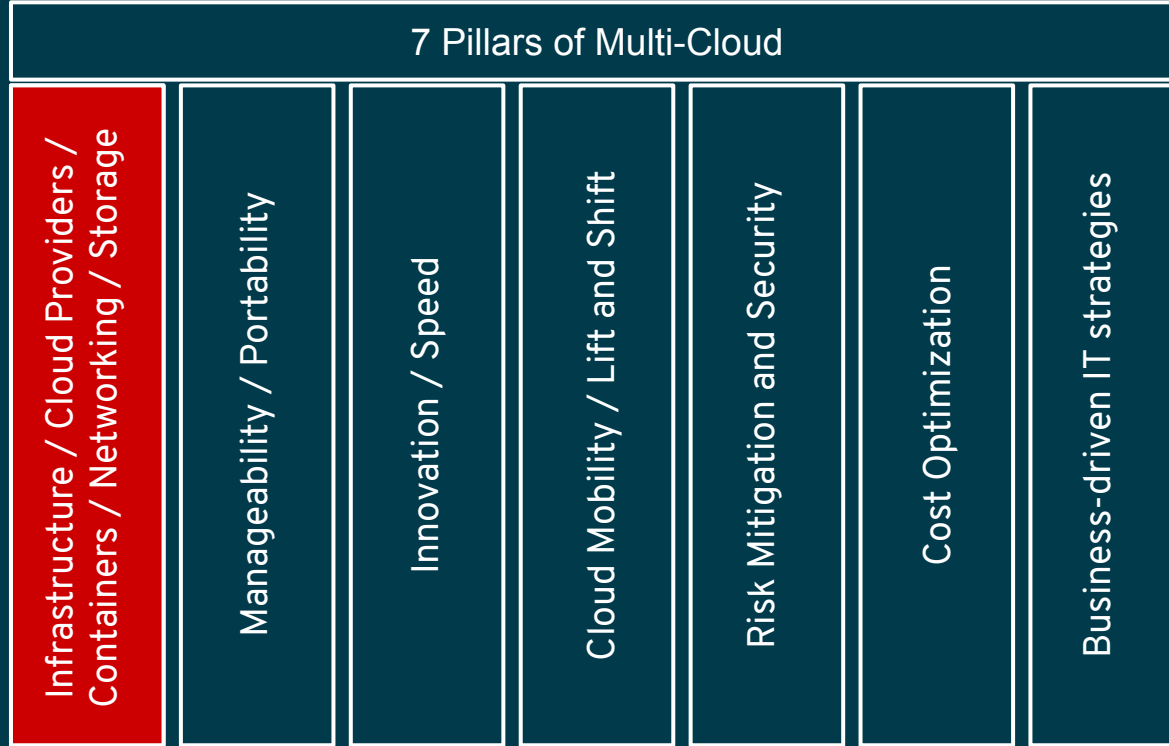
EVM: Recently Discovered Hosts

hyperv2.demo.mbu.redhat.com, hostname: hyperv2.demo.mbu.redhat.com, running Microsoft VMM Date : 2017-01-11 06:00:05 UTC
---

# Red Hat CloudForms Multi-Cloud Management



# Red Hat CloudForms Multi-Cloud Management



# Red Hat CloudForms Multi-Cloud Management

## Infrastructure Providers

3 3 3 3



HyperV OSP Director RHV VMware

## Cloud Providers

14 2 72 16 2 772 20 7



Amazon EC2 Azure...t US) Google Cloud OpenStack

## Containers



OpenS...t 3.5

## Block Storage Managers

		Name
<input type="checkbox"/>		AWS East NV EBS Storage Manager
<input type="checkbox"/>		osembu Cinder Manager

## Network Managers











		Name
<input type="checkbox"/>		AWS East NV Network Manager
<input type="checkbox"/>		Azure US East Network Manager
<input type="checkbox"/>		GCP Network Manager

# Red Hat CloudForms **Multi-Cloud** Management



## AWS East NV (Summary)

Properties	
Region	US East (Northern Virginia)
Type	Amazon EC2
Management Engine GUID	240015e8-4bbd-11e7-9a48-001a4a160190
Region	us-east-1

Status	
Default Credentials	Valid
Last Refresh	Success - 15 Minutes Ago





Relationships	
Network Manager	 AWS East NV Network Manager
Availability zones	 5
Host aggregates	 0
Cloud tenants	 0
Flavors	 76
Security Groups	 28
Instances	 17
Images	 147
Orchestration stacks	 4
Storage Managers	 1

Overview	
Topology	

Smart Management	
Managed by Zone	 cloud
Redhat Tags	 No Redhat Tags have been assigned
















# Red Hat CloudForms **Multi-Cloud** Management

Instance "cfmerhsummit"

Properties	
Name	cfmerhsummit
IP Addresses	172.31.160.123, 54.83.150.56
MAC Address	12:81:0b:c1:12:70
Container	 amazon: 2 CPUs (2 sockets x 1 core), 7680 MB
Platform Tools	N/A
Operating System	 linux_generic
Architecture	64 bit
Snapshots	 None
Advanced Settings	 0
Resources	Available
Management Engine GUID	adbe2a4c-4bbb-11e7-b666-001a4a160194
Virtualization Type	hvm
Root Device Type	ebs
ID within Provider	i-02771c2f25b240d08




# Red Hat CloudForms **Multi-Cloud** Management



Relationships	
Cloud Provider	 AWS East NV
Availability Zone	 us-east-1b
Cloud Tenants	 None
Flavor	 m3.large
VM Template	 cfme57131
Drift History	 None
Analysis History	 None
Service	 None
Virtual Private Cloud	East VPC
Cloud Subnet	subnet-fd5b9bd6
Stack	 None
Cloud Networks	 1
Cloud Subnets	 1
Network Routers	 0
Security Groups	 1
Floating IPs	 1
Network Ports	 1
Load Balancers	 0
Cloud Volumes	 1

Compliance	
Status	Never Verified
History	Not Available




  

Power Management	
Power State	 on
Last Boot Time	Thu, 08 Jun 2017 12:44:18 +0000
State Changed On	Thu, 08 Jun 2017 14:17:21 +0000



  

Security	
Users	 0
Groups	 0
Key Pairs	Idomb


  

Configuration	
Packages	 0
Init Processes	 0
Files	 0

Diagnostics	
Running Processes	 Not Available
Event Logs	 Not Available






Smart Management	
Redhat Tags	 No Redhat Tags have been assigned

# Red Hat CloudForms **Multi-Cloud** Management

## East VPC (Summary)

Properties	
Name	East VPC
Type	Cloud Network (Amazon)
Status	inactive







  


Relationships	
Parent ems cloud	 AWS East NV
Ems network	 AWS East NV Network Manager
Instances	 17
Cloud subnets	 1
Network routers	 0

# Red Hat CloudForms **Multi-Cloud** Management

## subnet-fd5b9bd6 (Summary)

Properties	
Name	subnet-fd5b9bd6
Type	Cloud Subnet (Amazon)
Cidr	172.31.0.0/16

Relationships	
Parent ems cloud	 AWS East NV
Ems network	 AWS East NV Network Manager
Availability zone	 us-east-1b
Instances	 16
Cloud network	 East VPC
Managed Subnets	 0









Smart Management	
Redhat Tags	 No Redhat Tags have been assigned

# Red Hat CloudForms **Multi-Cloud** Management

vol-084b820e006b99aaf (Summary)

Properties	
Name	vol-084b820e006b99aaf
Size	41 GB





  


Relationships	
Parent Cloud Provider	 AWS East NV
Storage Manager	 AWS East NV EBS Storage Manager
Availability Zone	 us-east-1b
Cloud Tenants	 None
Base Snapshot	 snap-0236d2dc82bd1efbd
Cloud Volume Backups	 0
Cloud Volume Snapshots	 0
Instances	 1

# Red Hat CloudForms **Multi-Cloud** Management

## snap-0236d2dc82bd1efbd (Summary)

Properties	
Name	snap-0236d2dc82bd1efbd
Size	41 GB
Description	Copied for DestinationAmi ami-d3c269c5 from SourceAmi ami-cfca61d9 for Source Snapshot snap-044f161e94a344b18. Task created on 1,489,689,969,206.

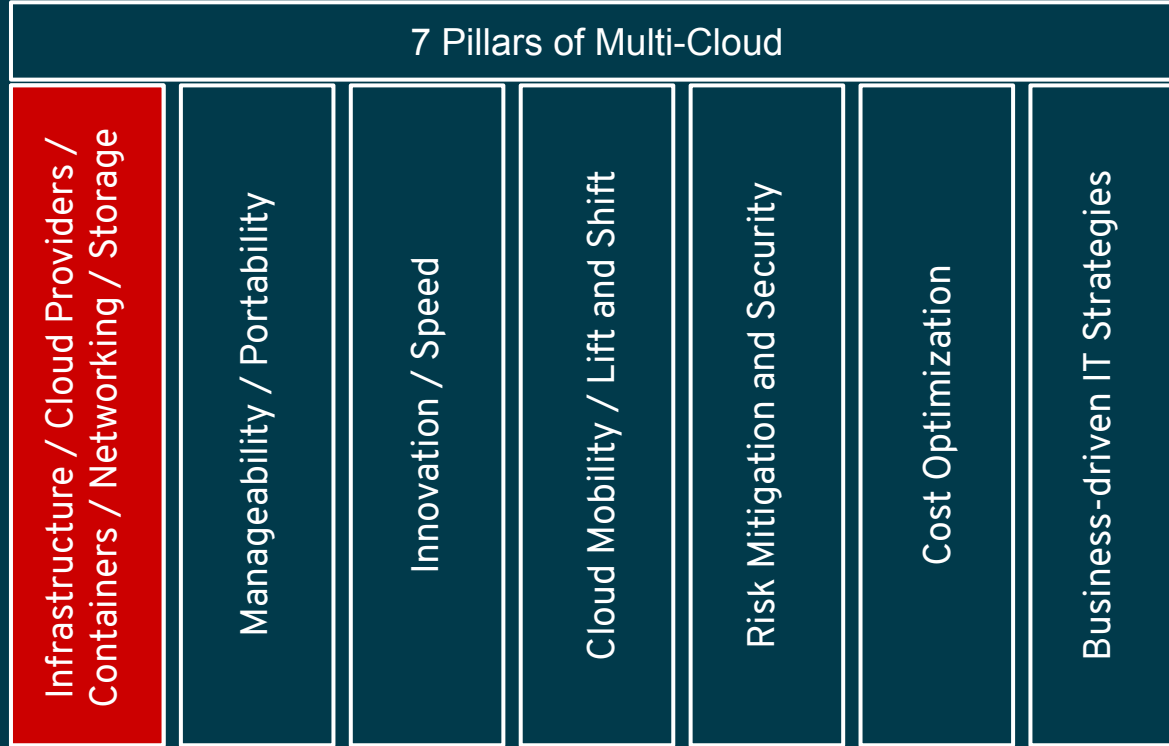
Relationships	
Parent Cloud Provider	 AWS East NV
Storage Manager	 AWS East NV EBS Storage Manager
Cloud Volumes Based on Snapshot	 1
Cloud Tenants	 None

Smart Management	
Redhat Tags	 No Redhat Tags have been assigned

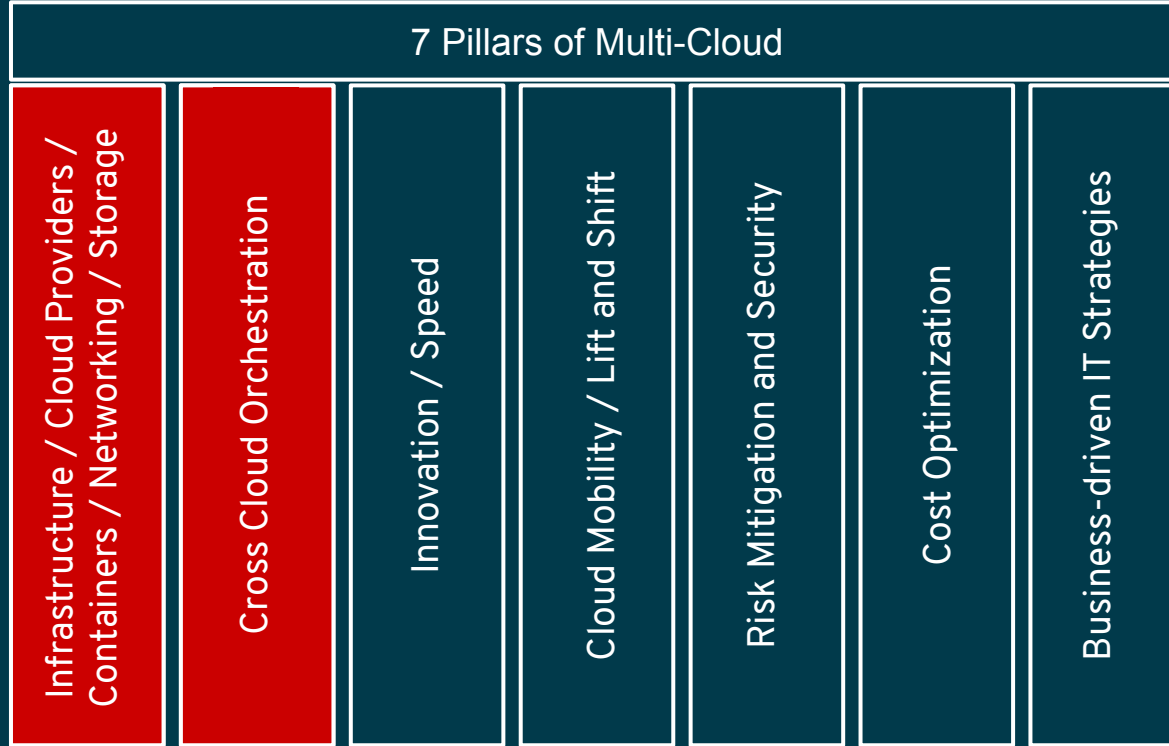
# Red Hat CloudForms **Multi-Cloud** Management



# Red Hat CloudForms **Manageability, Portability**



# Red Hat CloudForms **Manageability, Portability**

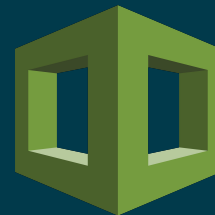




# Red Hat CloudForms **Manageability, Portability**



CloudFormations



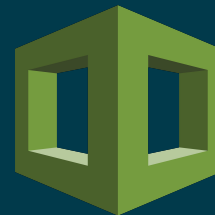
ARM



Deployment Manager



# Red Hat CloudForms Manageability, Portability



# Red Hat CloudForms **Manageability, Portability**



You added  
what inside of  
CloudForms?



# Red Hat CloudForms **Manageability, Portability**

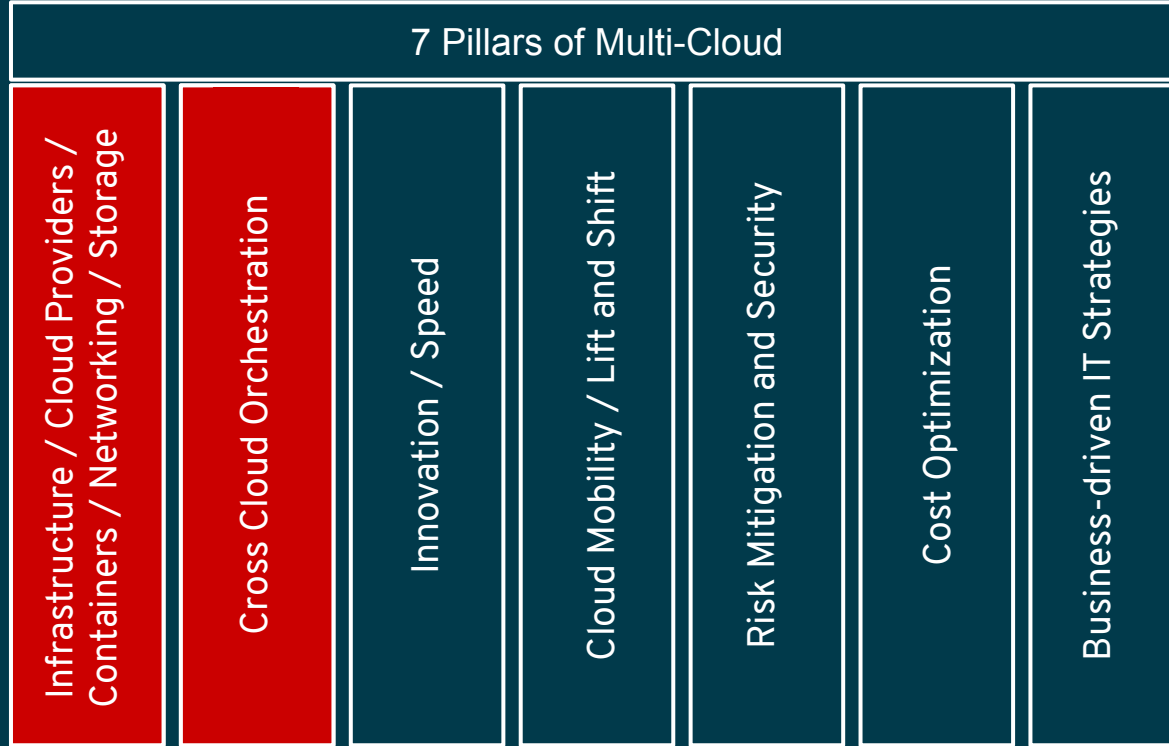


Ansible Automation is  
Inside.

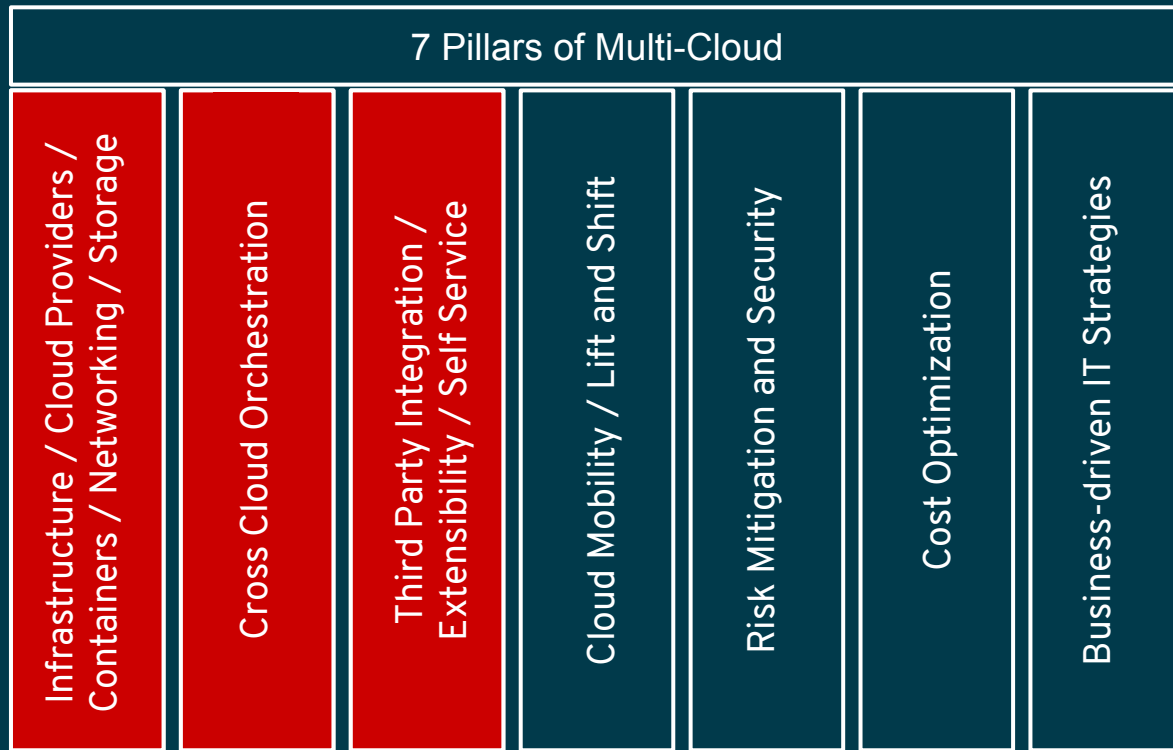


You added  
what inside of  
CloudForms?

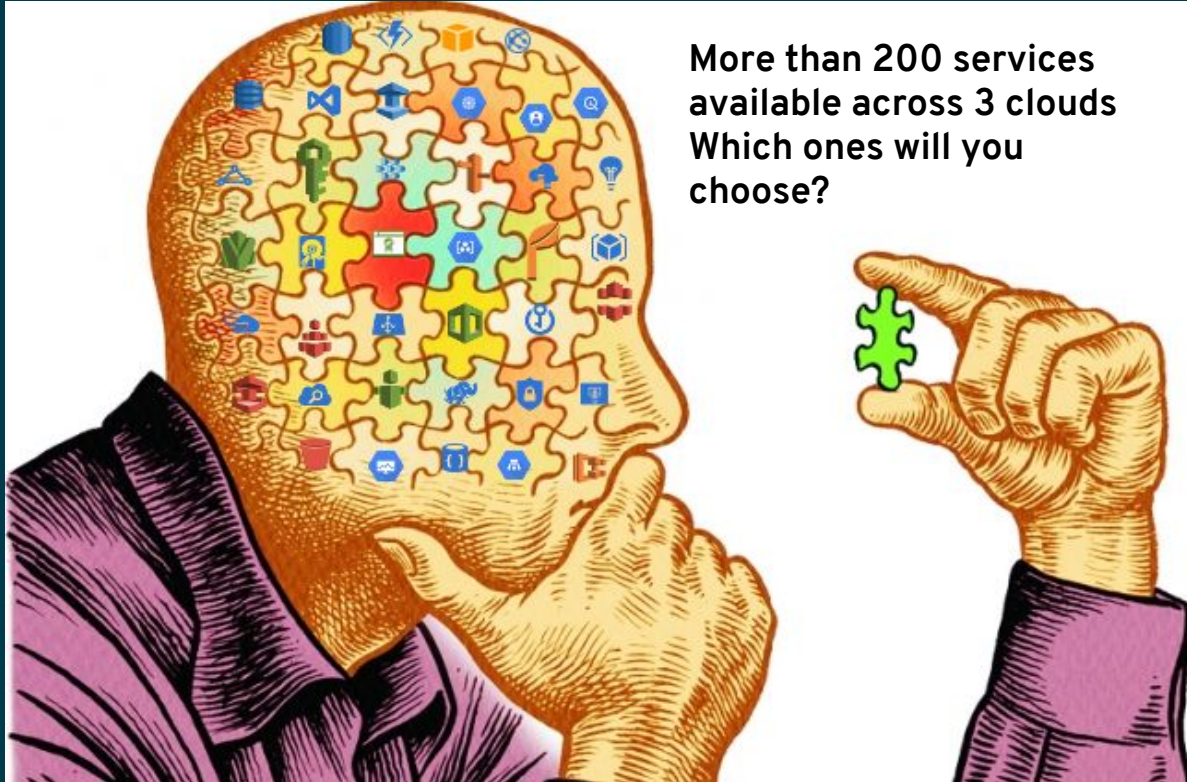
# Red Hat CloudForms **Integrations, Self Service**



# Red Hat CloudForms **Integrations, Self Service**



# Red Hat CloudForms **Integrations, Self Service**



# Red Hat CloudForms Integrations, Self Service

The screenshot displays the Red Hat CloudForms Management Engine interface. The top navigation bar includes a hamburger menu, the text "RED HAT CLOUDFORMS MANAGEMENT ENGINE", and a user profile icon. A left sidebar contains navigation options: "Dashboard", "My Services" (7), "Orders" (7), and "Service Catalog" (10). The main content area is titled "Service Catalog" and features a search bar with "Name" and "Filter by Name" options, and a dropdown menu set to "Name" with a sort icon. Below the search bar, it indicates "10 Results". The results are presented in a grid of ten service cards, each with a title, an icon, and a "Description" link. The services shown are: AWS - Create S3 Bucket, AWS - Lambda, AWS - RDS, Azure - Blob Storage, Azure - Securitygroup, Azure Virtualnetwork, GCP - Gluster, GCP - Load Balancer, GCP - Persistent Disk, and Multi Cloud Application.






Service Name	Icon	Description Link
AWS - Create S3 Bucket		Description
AWS - Lambda		Description
AWS - RDS		Description
Azure - Blob Storage		Description
Azure - Securitygroup		Description
Azure Virtualnetwork		Description
GCP - Gluster		Description
GCP - Load Balancer		Description
GCP - Persistent Disk		Description
Multi Cloud Application		Description



How do we create a  
*Catalog item?*

# Red Hat CloudForms **Integrations, Self Service**

## Credentials

		Name ▲	Type	User	Created On	Updated On
<input type="checkbox"/>		AWS	Credential (Machine)		05/29/17 19:01:22 UTC	05/29/17 19:01:22 UTC
<input type="checkbox"/>		Azure	Credential (Machine)		05/29/17 19:00:05 UTC	05/29/17 19:00:05 UTC
<input type="checkbox"/>		CFME Default Credential	Credential (Machine)		05/28/17 16:04:56 UTC	05/28/17 16:04:56 UTC
<input type="checkbox"/>		GCP	Credential (Machine)	GCP-Project-128	05/29/17 18:59:12 UTC	05/29/17 18:59:12 UTC
<input type="checkbox"/>		ovirt	Credential (Machine)	root	05/28/17 16:29:15 UTC	05/28/17 16:29:15 UTC





















# Red Hat CloudForms **Integrations, Self Service**

## Repositories

		Name ▲	Description	Playbooks	Created On	Updated On
<input type="checkbox"/>		AWS	Amazon Web Services	64	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>		Azure	Microsoft Azure	2	05/29/17 18:40:37 UTC	05/29/17 18:40:37 UTC
<input type="checkbox"/>		GCP	Google Compute Platform	5	05/29/17 18:35:57 UTC	05/29/17 18:36:40 UTC
<input type="checkbox"/>		RHV	Red Hat Virtualization	6	05/28/17 16:08:19 UTC	05/30/17 15:19:24 UTC

# Red Hat CloudForms Integrations, Self Service

## Playbooks (Embedded Ansible)

	Name	Description	Repository	Created On	Updated On
<input type="checkbox"/>	 ami_create.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 ami_delete.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 azure_rm_inventory.yml		Azure	05/29/17 18:40:37 UTC	05/29/17 18:40:37 UTC
<input type="checkbox"/>	 azure_rm.yml		Azure	05/29/17 18:40:37 UTC	05/29/17 18:40:37 UTC
<input type="checkbox"/>	 cleanup.yml		GCP	05/29/17 18:35:57 UTC	05/29/17 18:35:57 UTC
<input type="checkbox"/>	 dbsg_create.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 dbsg_delete.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 dhcp_options.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 ec2_check_name.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 ec2_profile.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 ec2_start_1.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 ec2_start.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 ec2_stop.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 ec2_vol_1.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 ec2_vol_2.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 ec2_vpc_db_create.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 ec2_vpc_jumpbox.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 ec2_vpc_openvpn.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 ec2_vpc_web_create.yml		AWS	05/29/17 18:38:03 UTC	05/29/17 18:38:03 UTC
<input type="checkbox"/>	 gce-instances.yml		GCP	05/29/17 18:35:57 UTC	05/29/17 18:35:57 UTC

# Red Hat CloudForms Integrations, Self Service

Editing Service Catalog Item "AWS - mysql\_rds\_create"

Name

Description

Display in Catalog  Yes

Catalog

Provisioning

Retirement

Repository

Playbook

Machine Credential

Cloud Type

Hosts

Escalate Privilege  No

Variables & Default Values

Variable  Default value

Variable	Default value	Actions
instance_name	changeme	
db_engine	MariaDB	
engine_version	10	

Dialog

Use Existing

Create New

# Red Hat CloudForms Integrations, Self Service

Editing Service Catalog Item "AWS - mysql\_rds\_create"

Name

Description

Display in Catalog  Yes

Catalog

Provisioning

Retirement

Copy from Provisioning

Repository

Playbook

Machine Credential

Cloud Type

Hosts

Escalate Privilege  No

Remove resources?

Variables & Default Values

Variable	Default value	
instance_name	changeme	 


# Red Hat CloudForms Integrations, Self Service

The screenshot displays the Red Hat CloudForms Management Engine interface. The top navigation bar includes a hamburger menu, the text "RED HAT CLOUDFORMS MANAGEMENT ENGINE", and a user profile icon. A left sidebar contains navigation options: "Dashboard", "My Services" (7), "Orders" (7), and "Service Catalog" (10). The main content area is titled "Service Catalog" and features a search bar with "Name" and "Filter by Name" options, and a dropdown menu set to "Name" with a sort icon. Below the search bar, it indicates "10 Results" and displays a grid of 10 service cards. Each card includes a title, an icon, and a "Description" link.

Service Name	Icon	Description Link
AWS - Create S3 Bucket	Blue bucket icon	Description
AWS - Lambda	Orange Lambda icon	Description
AWS - RDS	Purple cylinder icon	Description
Azure - Blob Storage	Blue hexagon with '10 01' icon	Description
Azure - Securitygroup	Blue shield with lock icon	Description
Azure Virtualnetwork	Blue double-headed arrow icon	Description
GCP - Gluster	Yellow bee icon	Description
GCP - Load Balancer	Blue hexagon with server rack icon	Description
GCP - Persistent Disk	Blue hexagon with 'S' icon	Description
Multi Cloud Application	Multi-colored cubes icon	Description

# Red Hat CloudForms Integrations, Self Service

Service Catalogs > AWS - RDS



AWS - RDS  
mysql\_rds\_create

[Add to Shopping Cart](#)

### Mysql\_rds

Basic Information

**Options**

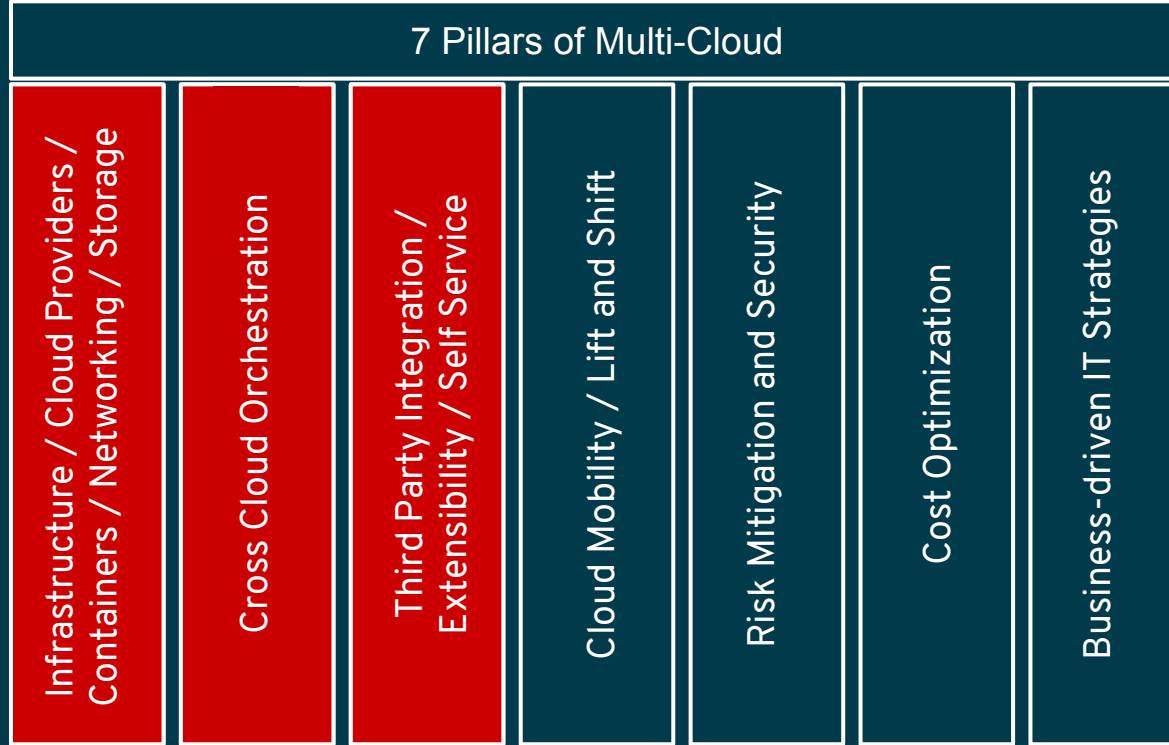
Machine Credential	<input type="text" value="AWS"/>
Hosts	<input type="text" value="localhost"/>

**Variables**

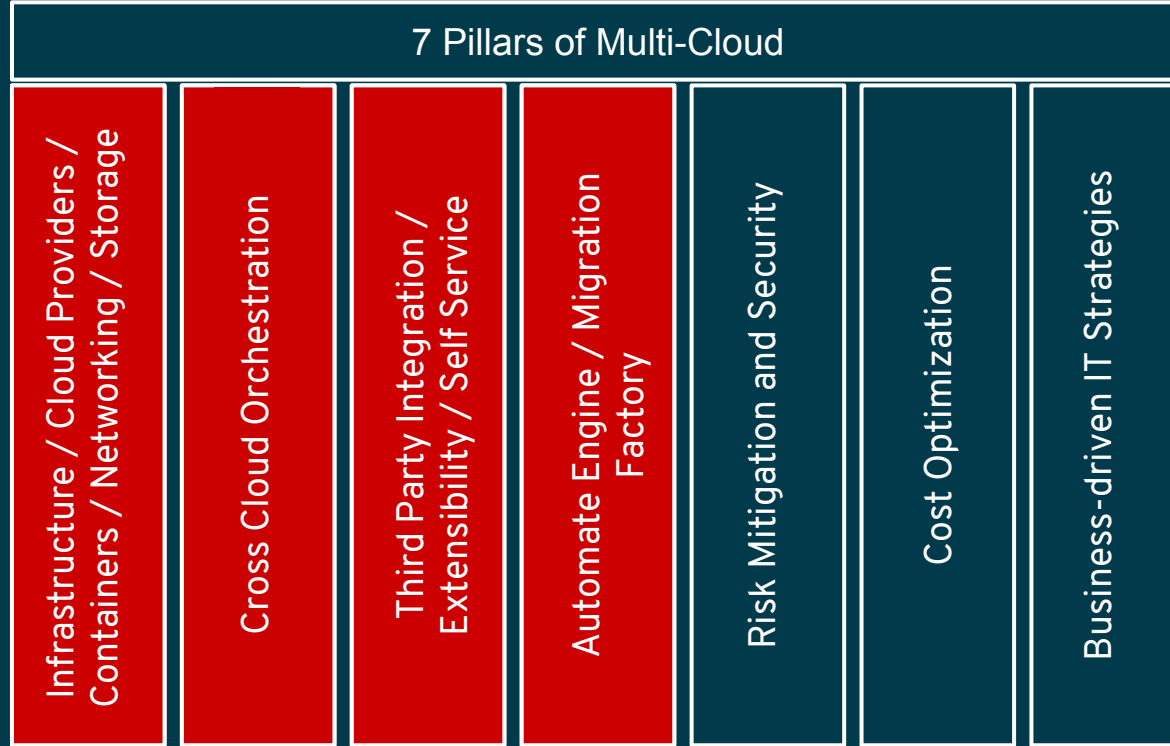
instance_name	<input type="text" value="changeme"/>
db_engine	<input type="text" value="MariaDB"/>
engine_version	<input type="text" value="10"/>



# Red Hat CloudForms Multi-Cloud Mobility

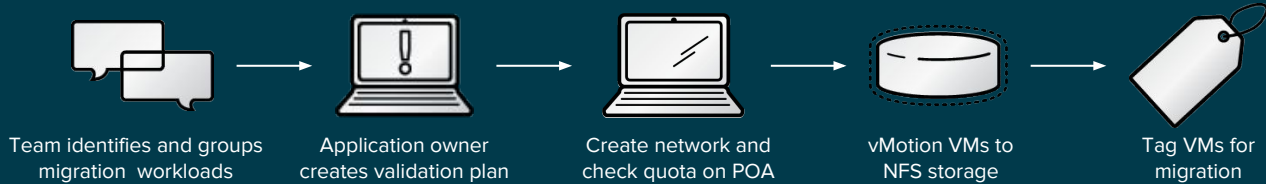


# Red Hat CloudForms Multi-Cloud Mobility

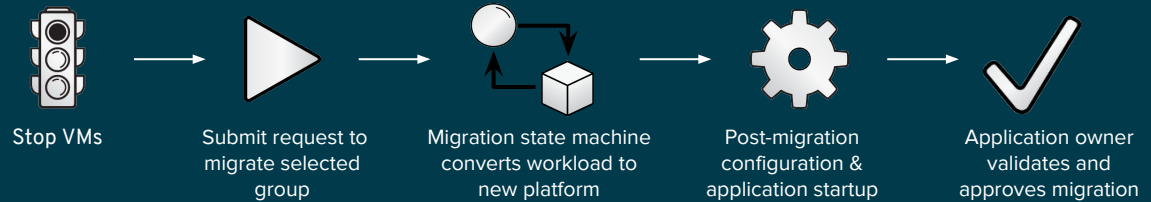


# Red Hat CloudForms Multi-Cloud Mobility

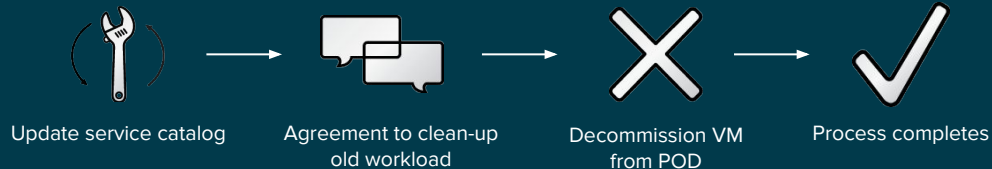
## Pre-Migration



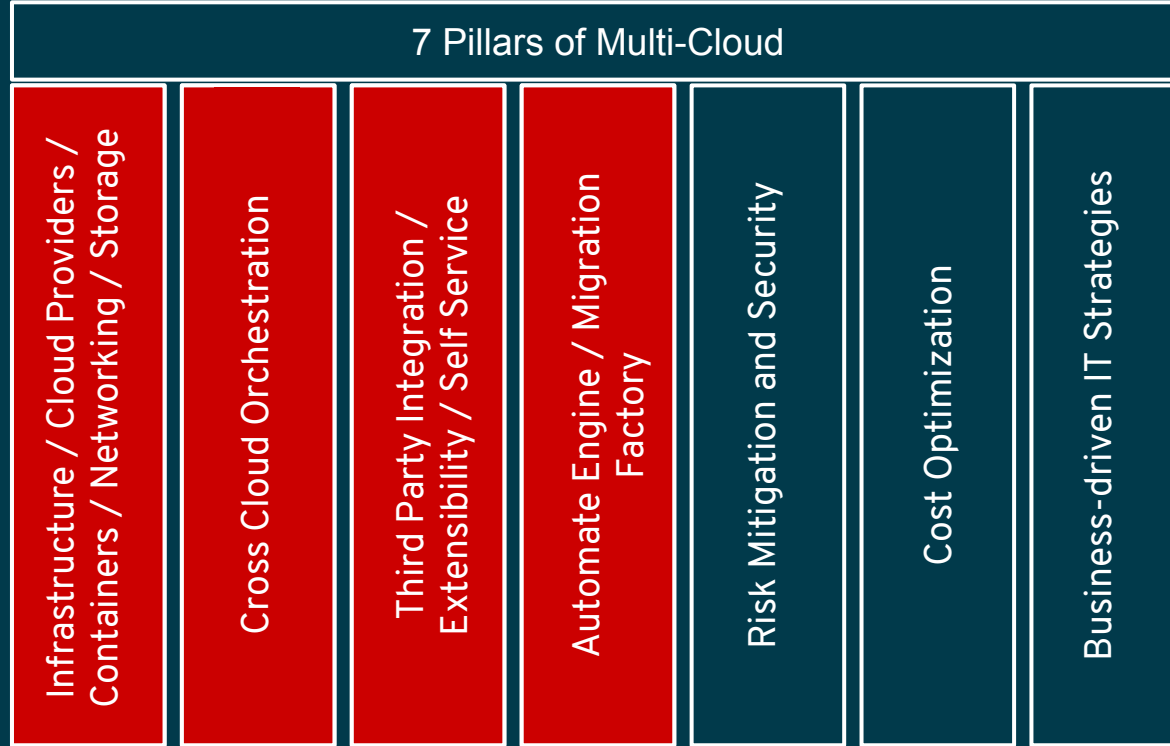
## Migration Day



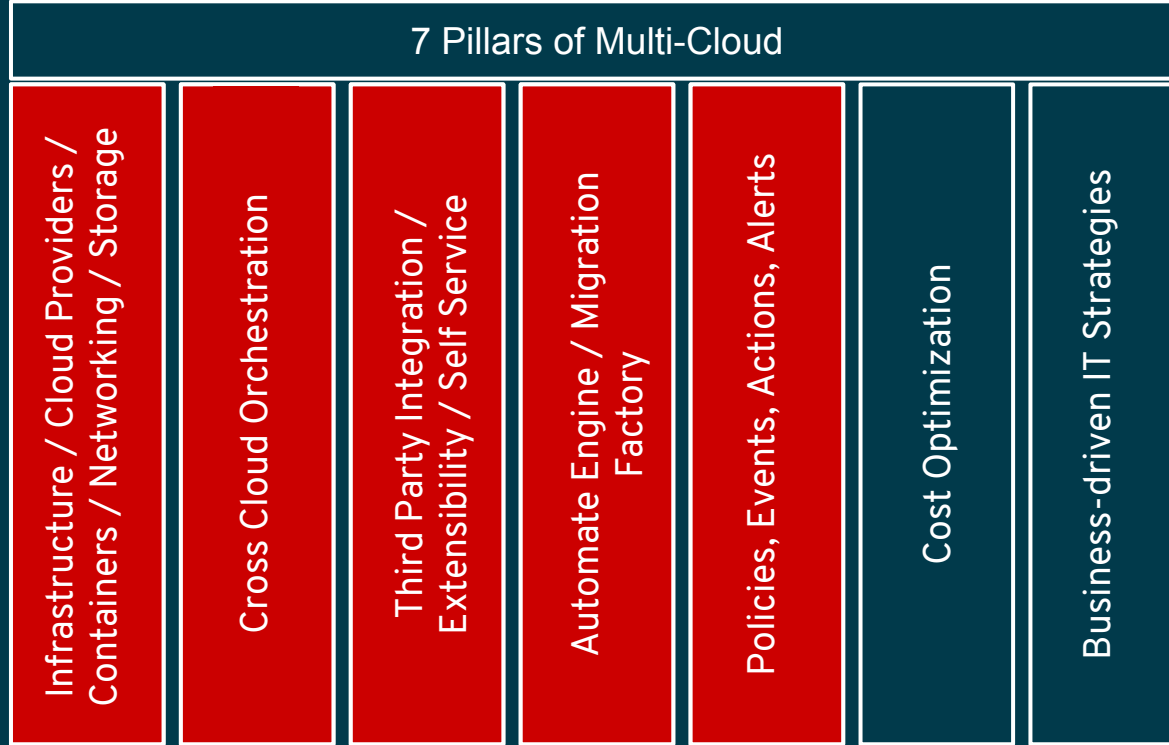
## Post-Migration



# Red Hat CloudForms Risk and Security



# Red Hat CloudForms Risk and Security



# Red Hat CloudForms **Risk** and **Security**

Multi - Cloud Introspection



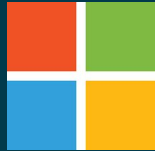
# Red Hat CloudForms **Risk** and **Security**

Multi - Cloud Introspection



# Red Hat CloudForms Risk and Security

Multi - Cloud Introspection



Software

Processes






Files



# Red Hat CloudForms Risk and Security

Multi - Cloud Compliance

VM and Instance "demo-rhel7"

Properties	
Name	demo-rhel7
Hostname	demo-rhel7.demo.mbu.redhat.com
IP Address	10.9.62.106
Container	 vmware: 1 CPU (1 socket x 1 core), 1024 MB
Parent Host / Node Platform	ESXi
Platform Tools	toolsOk
Operating System	 Red Hat Enterprise Linux Server release 7.2 (Maipo)
Devices	 5
CPU Affinity	
Snapshots	 None
Advanced Settings	 46
Resources	Available
Management Engine GUID	a01c656e-c341-11e6-a036-001a4a16017c

Compliance	
Status	  Non-Compliant as of 5 Months Ago
History	 Available

Power Management	
Power State	 on
Last Boot Time	Fri, 28 Apr 2017 00:33:15 +0000
State Changed On	Fri, 28 Apr 2017 00:33:51 +0000





Security	
Users	 21
Groups	 40

Configuration	
Packages	 343
Init Processes	 149
Files	 32

# Red Hat CloudForms Risk and Security

Multi - Cloud Compliance



Instance "demo-rhel7"

Properties	
Name	demo-rhel7
IP Addresses	192.168.201.3, 10.9.60.148
MAC Address	fa:16:3e:80:88:b6
Container	 openstack: 2 CPUs (2 sockets x 1 core), 12288 MB
Platform Tools	N/A
Operating System	 Red Hat Enterprise Linux Server release 7.2 (Maipo)
Snapshots	 None
Advanced Settings	 0
Resources	Available
Management Engine GUID	47b00894-de9f-11e6-8407-001a4a16017f
ID within Provider	4dc9d126-5305-439a-a8cd-4c3bc69e0318

Lifecycle	
Discovered	 Thu, 19 Jan 2017 23:30:36 +0000

Compliance	
Status	  Non-Compliant as of 2 Months Ago
History	 Available

Power Management	
Power State	 on
Last Boot Time	N/A
State Changed On	Thu, 19 Jan 2017 23:30:36 +0000

Security	
Users	 28
Groups	 47
Key Pairs	undercloud



Configuration	
Packages	 339
Init Processes	  158
Files	 33

# Red Hat CloudForms Risk and Security


Multi - Cloud Compliance

policyworks/testme (Summary) (Names with "testme")

Properties	
Name	policyworks/testme
Tag	latest
Image Id	docker-pullable://172.30.94.61:5000/policyworks/testme@sha256:04bbe933626ad63ccb2bffeecdfe64cdb9da68a67ebc037976f5c6efc810bc25
Full Name	172.30.94.61:5000/policyworks/testme:latest@sha256:04bbe933626ad63ccb2bffeecdfe64cdb9da68a67ebc037976f5c6efc810bc25
Operating System Distribution	redhat
Product Type	Linux
Product Name	Red Hat Enterprise Linux Server release 7.2 (Maipo)
Architecture	amd64
Author	
Command	/usr/local/s2i/run
Entrypoint	
Docker Version	1.12.5
Exposed Ports	8778/tcp
Size	567710435

Compliance	
Status	  Non-Compliant as of About 1 Hour Ago
History	 Available

Relationships	
Containers Provider	 ose3
Image Registry	 172.30.94.61
Projects	 1
Pods	 1
Containers	 1
Nodes	 1

Smart Management	
Redhat Tags	 No Redhat Tags have been assigned





Configuration	
Packages	 346
OpenSCAP Results	 416
OpenSCAP HTML	Available
Last scan	Fri, 10 Feb 2017 01:29:12 +0000

OpenSCAP Failed Rules Summary	
Low	4
Medium	12
High	12

# Red Hat CloudForms Risk and Security


Multi - Cloud Compliance

Instance "afield-rhel7-master"

Properties	
Name	afield-rhel7-master
IP Addresses	10.0.1.4, afield-rhel7-master
MAC Addresses	
Container	 azure: 4 CPUs (1 socket x 0 cores), 7168 MB
Platform Tools	N/A
Operating System	 Red Hat Enterprise Linux Server release 7.2 (Maipo)
Snapshots	 None
Advanced Settings	 0
Resources	Available
Management Engine GUID	00a83ac4-c73a-11e6-b20e-001a4a160181
ID within Provider	2586c64b-38b4-4527-a140-012d49dfc02c\jdg\microsoft.compute\virtualmachines\afield-rhel7-master

Lifecycle












Compliance	
Status	  Non-Compliant as of 5 Months Ago
History	 Available

Power Management	
Power State	 off
Last Boot Time	N/A
State Changed On	Wed, 19 Apr 2017 20:26:02 +0000

Security	
Users	 29
Groups	 49
Key Pairs	N/A

Configuration	
Packages	 451
Init Processes	 160
Files	 33





















# Red Hat CloudForms Risk and Security

	Name ^	Vendor	Version	Release	Description	Architecture
	acl		2.2.51	12.el7	This package contains the getfacl and setfacl utilities needed for manipulating access control lists.	x86_64
	aic94xx-firmware		30	6.el7	Adaptec SAS 44300, 48300, 58300 Sequencer Firmware for Open-Source AIC94xx Driver.	noarch
	alsa-firmware		1.0.28	2.el7	This package contains the firmware binaries for a number of sound cards. Some (but not all of these) require firmware loaders which are included in the alsa-tools-firmware package.	noarch
	alsa-lib		1.1.1	1.el7	The Advanced Linux Sound Architecture (ALSA) provides audio and MIDI functionality to the Linux operating system. This package includes the ALSA runtime libraries to simplify application programming and provide higher level functionality as well as support for the older OSS API, providing binary compatibility for most OSS programs.	x86_64
	alsa-tools-firmware		1.1.0	1.el7	This package contains tools for flashing firmware into certain sound cards. The following tools are available: * hdsploder - for RME Hammerfall DSP cards * mixartloader - for Digigram miXart soundcards * vxloader - for Digigram VX soundcards * usx2yloader - second phase firmware loader for Tascam USX2Y USB soundcards	x86_64
	ansible		2.2.1.0	1.el7	Ansible is a radically simple model-driven configuration management, multi-node deployment, and remote task execution system. Ansible works over SSH and does not require any software or daemons to be installed on remote nodes. Extension modules can be written in any language and are transferred to managed machines automatically.	noarch
	ansible-tower		3.1.2	1.el7.centos	REST api, server, plugins, Web UI, & CLI client for ansible.	x86_64
	ansible-tower-server		3.1.2	1.el7.centos	Ansible Tower Server and REST API	x86_64
	ansible-tower-ui		3.1.2	1.el7.centos	UI for Ansible Tower	x86_64
	apr		1.4.8	3.el7	The mission of the Apache Portable Runtime (APR) is to provide a free library of C data structures and routines, forming a system portability layer to as many operating systems as possible, including Unices, MS Win32, BeOS and OS/2.	x86_64
	apr-util		1.5.2	6.el7	The mission of the Apache Portable Runtime (APR) is to provide a free library of C data structures and routines. This library contains additional utility interfaces for APR; including support for XML, LDAP, database interfaces, URI parsing and more	x86_64

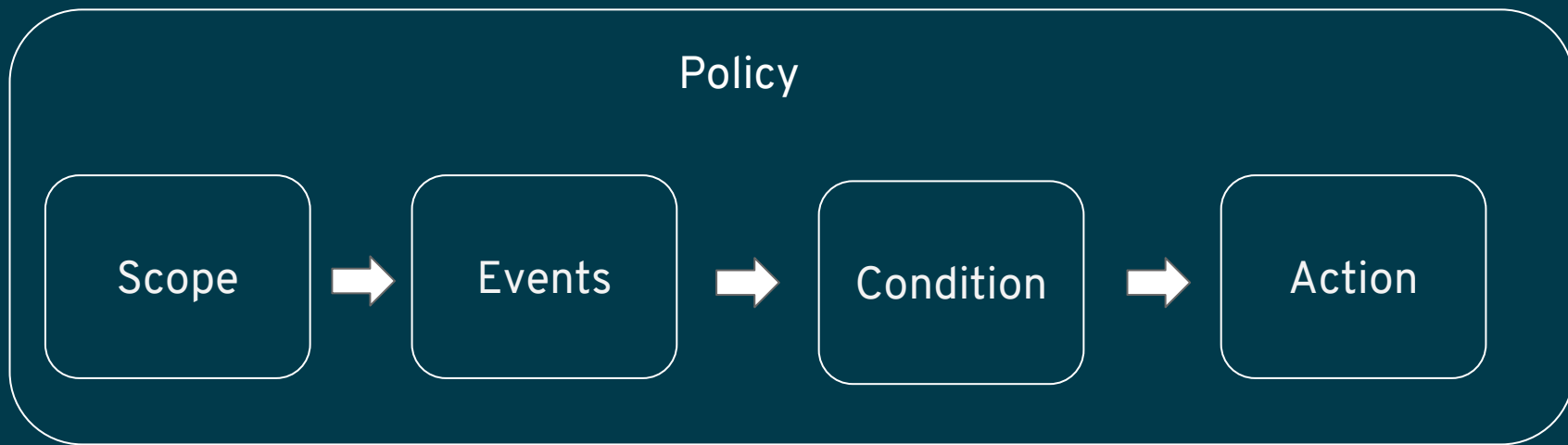
# Red Hat CloudForms Risk and Security

	Name	Image Path	Display Name	Description
⚙️	arp-ethers	/usr/lib/systemd/system/arp-ethers.service		Load static arp entries
⚙️	auditd	/usr/lib/systemd/system/auditd.service		Security Auditing Service
⚙️	autovt@	/usr/lib/systemd/system/autovt@.service		Getty on %!
⚙️	blk-availability	/usr/lib/systemd/system/blk-availability.service		Availability of block devices
⚙️	brandbot	/usr/lib/systemd/system/brandbot.service		Flexible Branding Service
⚙️	cgconfig	/usr/lib/systemd/system/cgconfig.service		Control Group configuration service
⚙️	cgred	/usr/lib/systemd/system/cgred.service		CGroups Rules Engine Daemon
⚙️	console-getty	/usr/lib/systemd/system/console-getty.service		Console Getty
⚙️	console-shell	/usr/lib/systemd/system/console-shell.service		Console Shell
⚙️	container-getty@	/usr/lib/systemd/system/container-getty@.service		Container Getty on /dev/pts/%!
⚙️	cpupower	/usr/lib/systemd/system/cpupower.service		Configure CPU power related settings
⚙️	crond	/usr/lib/systemd/system/crond.service		Command Scheduler
⚙️	dbus	/usr/lib/systemd/system/dbus.service		D-Bus System Message Bus
⚙️	dbus-org.fedoraproject.FirewallD1	/etc/systemd/system/dbus-org.fedoraproject.FirewallD1.service		firewalld - dynamic firewall daemon
⚙️	dbus-org.freedesktop.hostname1	/usr/lib/systemd/system/dbus-org.freedesktop.hostname1.service		Hostname Service
⚙️	dbus-org.freedesktop.import1	/usr/lib/systemd/system/dbus-org.freedesktop.import1.service		Virtual Machine and Container Download Service
⚙️	dbus-org.freedesktop.locale1	/usr/lib/systemd/system/dbus-org.freedesktop.locale1.service		Locale Service
⚙️	dbus-org.freedesktop.login1	/usr/lib/systemd/system/dbus-org.freedesktop.login1.service		Login Service
⚙️	dbus-org.freedesktop.machine1	/usr/lib/systemd/system/dbus-org.freedesktop.machine1.service		Virtual Machine and Container Registration Service
⚙️	dbus-org.freedesktop.NetworkManager	/etc/systemd/system/dbus-org.freedesktop.NetworkManager.service		Network Manager

# Red Hat CloudForms Risk and Security




	Name	File Name	Size	Contents Available	Collected On	Last Modified
	/etc/asound.conf	asound.conf	55 Bytes	False	02/16/17 19:55:40 UTC	06/06/16 13:58:37 UTC
	/etc/cgconfig.conf	cgconfig.conf	676 Bytes	False	02/16/17 19:55:40 UTC	06/23/16 12:08:26 UTC
	/etc/cgrules.conf	cgrules.conf	234 Bytes	False	02/16/17 19:55:40 UTC	06/23/16 12:08:26 UTC
	/etc/cgsnapshot_blacklist.conf	cgsnapshot_blacklist.conf	131 Bytes	False	02/16/17 19:55:40 UTC	06/23/16 12:08:26 UTC
	/etc/dnsmasq.conf	dnsmasq.conf	24.6 KB	False	02/16/17 19:55:40 UTC	09/13/16 10:19:59 UTC
	/etc/dracut.conf	dracut.conf	1.3 KB	False	06/09/17 12:10:59 UTC	10/05/16 15:45:04 UTC
	/etc/e2fsck.conf	e2fsck.conf	112 Bytes	False	02/16/17 19:55:40 UTC	06/13/16 15:14:37 UTC
	/etc/fuse.conf	fuse.conf	38 Bytes	False	02/16/17 19:55:40 UTC	05/19/16 10:58:40 UTC
	/etc/GeoIP.conf	GeoIP.conf	842 Bytes	False	02/16/17 19:55:40 UTC	06/29/16 13:36:29 UTC
	/etc/host.conf	host.conf	9 Bytes	False	06/09/17 12:10:59 UTC	06/07/13 14:31:32 UTC
	/etc/hosts	hosts	236 Bytes	False	06/09/17 12:11:00 UTC	02/07/17 18:48:59 UTC
	/etc/kdump.conf	kdump.conf	6.8 KB	False	06/09/17 12:10:59 UTC	11/08/16 03:32:46 UTC
	/etc/krb5.conf	krb5.conf	590 Bytes	False	06/09/17 12:10:59 UTC	11/02/16 18:23:04 UTC
	/etc/ld.so.conf	ld.so.conf	28 Bytes	False	06/09/17 12:10:59 UTC	02/27/13 20:29:02 UTC
	/etc/libaudit.conf	libaudit.conf	191 Bytes	False	06/09/17 12:10:59 UTC	07/14/16 15:53:40 UTC
	/etc/libuser.conf	libuser.conf	2.3 KB	False	06/09/17 12:10:59 UTC	10/12/13 21:56:07 UTC
	/etc/locale.conf	locale.conf	19 Bytes	False	06/09/17 12:10:59 UTC	07/15/16 15:32:37 UTC
	/etc/logrotate.conf	logrotate.conf	662 Bytes	False	06/09/17 12:10:59 UTC	07/31/13 11:46:23 UTC
	/etc/man_db.conf	man_db.conf	5 KB	False	06/09/17 12:10:59 UTC	03/17/14 16:22:38 UTC
	/etc/mke2fs.conf	mke2fs.conf	936 Bytes	False	02/16/17 19:55:40 UTC	06/13/16 15:18:51 UTC

# Red Hat CloudForms **Risk and Security**





# Red Hat CloudForms Risk and Security

- ▼  Vm Compliance Policies
  - ▼  DROWN OpenSSL Vulnerability
    - ◆ Vulnerable DROWN openssl packages (RHEL5/6/7)
    - ▼  VM Compliance Check
      - ✔ Generate log message
      - ✔ Mark as Non-Compliant
      - ✔ Patch Me

## Editing Action "Patch Me"

### Basic Information

Description

Action Type

### Run an Ansible Playbook

Playbook Catalog Item

Inventory  Localhost  Target Machine  Specific Hosts

# Red Hat CloudForms **Risk** and **Security**

cis-security



Description ⓘ

stig



Description ⓘ

# Red Hat CloudForms Risk and Security

## Compliance

Activity Sample - Timestamp (Day/Time)	Compliant	Date Updated	Event Type	Region Description	Region Number	Resource Type	Detail Asset Name	Detail Condition Desc	Detail Condition Result	Detail Date Created	Detail Date Updated	Detail Miq Policy Desc	Detail Miq Policy Result	Detail Region Description	Detail Region Number
12/28/16 18:06:21 UTC	False	12/28/16 18:06:21 UTC	host_compliance_check	Region 20	20	Host / Node	rhev3.demo.mbu.redhat.com	Valid Outgoing TCP Ports	True	12/28/16 18:06:21 UTC	12/28/16 18:06:21 UTC	Firewall - Outgoing Security Level	True	Region 20	20
12/28/16 18:06:21 UTC	False	12/28/16 18:06:21 UTC	host_compliance_check	Region 20	20	Host / Node	rhev3.demo.mbu.redhat.com	Only members of wheel group can execute su command	False	12/28/16 18:06:21 UTC	12/28/16 18:06:21 UTC	Limit su Access to root Account	False	Region 20	20
12/28/16 18:06:21 UTC	False	12/28/16 18:06:21 UTC	host_compliance_check	Region 20	20	Host / Node	rhev3.demo.mbu.redhat.com	Verify NTP is Running	False	12/28/16 18:06:21 UTC	12/28/16 18:06:21 UTC	Timekeeping - NTP Service Running	False	Region 20	20
12/28/16 19:48:51 UTC	False	12/28/16 19:48:51 UTC	vm_compliance_check	Region 20	20	VM or Template	web01	Log Size Limit <= 100KB	False	12/28/16 19:48:51 UTC	12/28/16 19:48:51 UTC	Limit Log Size	False	Region 20	20
12/28/16 19:48:51 UTC	False	12/28/16 19:48:51 UTC	vm_compliance_check	Region 20	20	VM or Template	web01	Number of Log Files to Keep <= 10	False	12/28/16 19:48:51 UTC	12/28/16 19:48:51 UTC	Limit Number of Log Files	False	Region 20	20
12/28/16 19:49:12 UTC	False	12/28/16 19:49:12 UTC	vm_compliance_check	Region 20	20	VM or Template	demo-rhel7	Log Size Limit <= 100KB	False	12/28/16 19:49:12 UTC	12/28/16 19:49:12 UTC	Limit Log Size	False	Region 20	20
12/28/16 19:49:12 UTC	False	12/28/16 19:49:12 UTC	vm_compliance_check	Region 20	20	VM or Template	demo-rhel7	Number of Log Files to Keep <= 10	False	12/28/16 19:49:12 UTC	12/28/16 19:49:12 UTC	Limit Number of Log Files	False	Region 20	20
12/28/16 19:49:48 UTC	False	12/28/16 19:49:48 UTC	vm_compliance_check	Region 20	20	VM or Template	demovm	Log Size Limit <= 100KB	False	12/28/16 19:49:48 UTC	12/28/16 19:49:48 UTC	Limit Log Size	False	Region 20	20

# Red Hat CloudForms **Risk** and **Security**



Based on a infrastructure component

Define **what to evaluate**

Define the **driving event**

Set the **Notification frequency**



**SNMP**

# Red Hat CloudForms Risk and Security

Tag based deployments

Tag Development

Apache, PHP, git, route53

Handling a Web Request



Description ⓘ

Tag Development



AWS East NV

Tag Production



ckell...rnia)



# Red Hat CloudForms Risk and Security

Tag based deployments

Tag Development

Apache, PHP, git, route53

Handling a Web Request



Description ⓘ

Tag Development

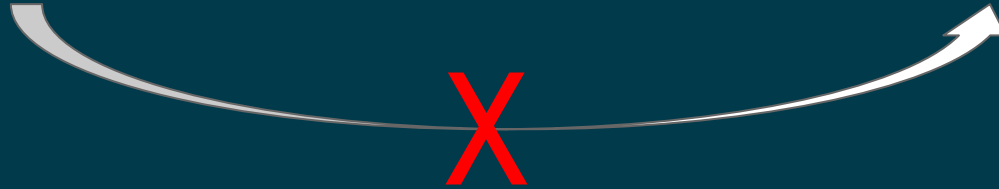


AWS East NV

Tag Production



ckell...rnia)

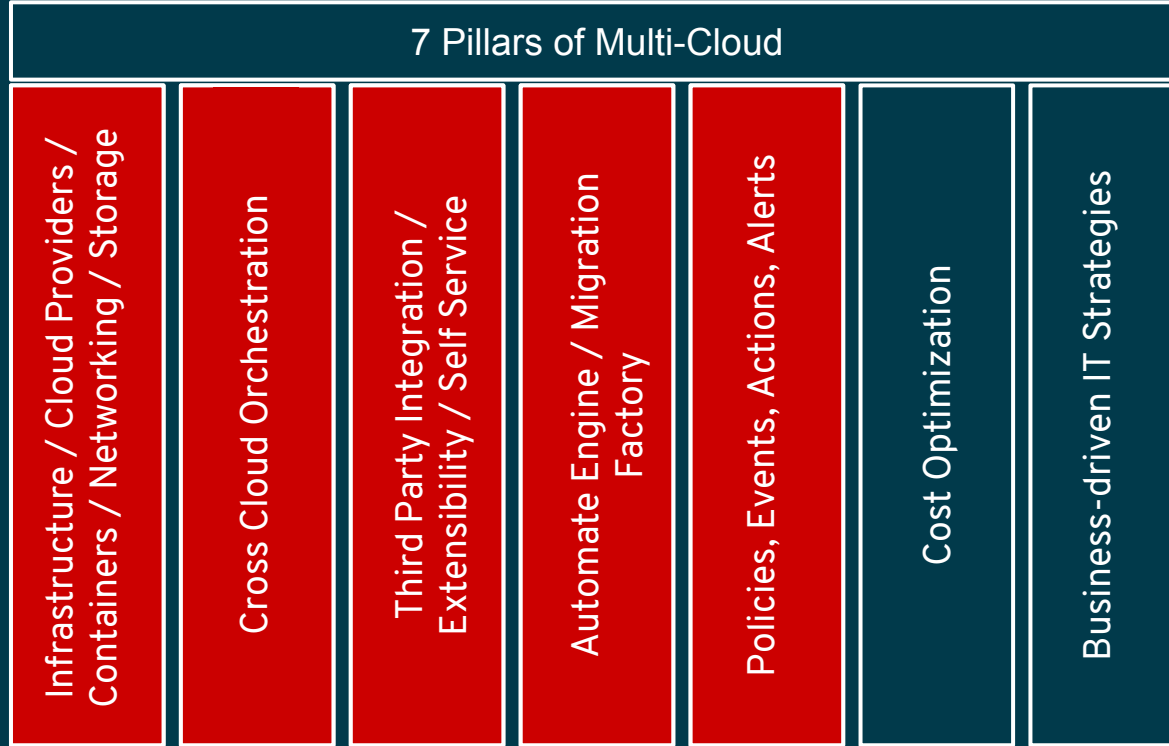


# Red Hat CloudForms **Risk and Security**

AUDITING

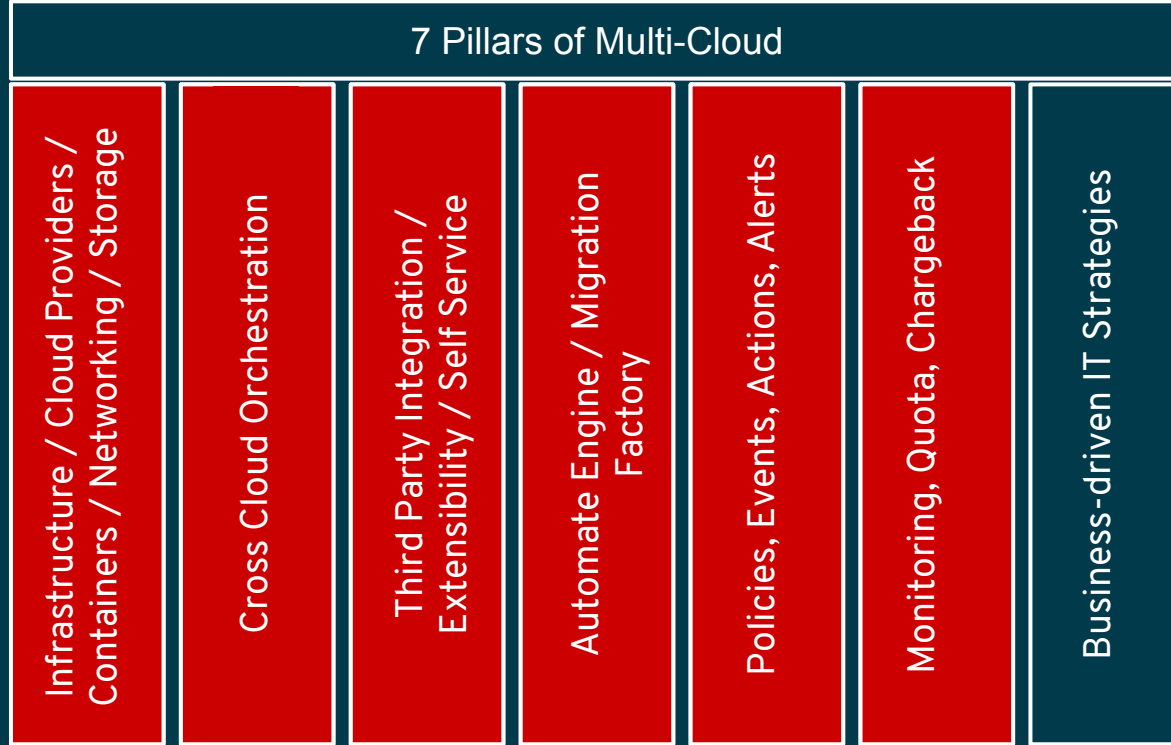
```
[----] I, [2017-06-06T04:47:12.446806 #4207:12ff368] INFO -- Success:  
MIQ(Authenticator.authenticate) userid: [admin] - User admin successfully validated by EVM  
[----] I, [2017-06-06T04:47:12.454506 #4207:12ff368] INFO -- Success:  
MIQ(Authenticator.authenticate) userid: [admin] - Authentication successful for user admin  
[----] I, [2017-06-06T04:47:13.021673 #4159:1294914] INFO -- Success:  
MIQ(Authenticator.authenticate) userid: [admin] - User admin successfully validated by EVM  
[----] I, [2017-06-06T04:47:13.067209 #4159:1294914] INFO -- Success:  
MIQ(Authenticator.authenticate) userid: [admin] - Authentication successful for user admin  
[----] I, [2017-06-06T11:00:41.453352 #4207:12fed14] INFO -- Success:  
MIQ(Authenticator.authenticate) userid: [cloudops] - User cloudops successfully validated by  
EVM  
[----] I, [2017-06-06T11:00:41.513022 #4207:12fed14] INFO -- Success:  
MIQ(Authenticator.authenticate) userid: [cloudops] - Authentication successful for user cloudops
```

# Red Hat CloudForms **Cost Optimization**

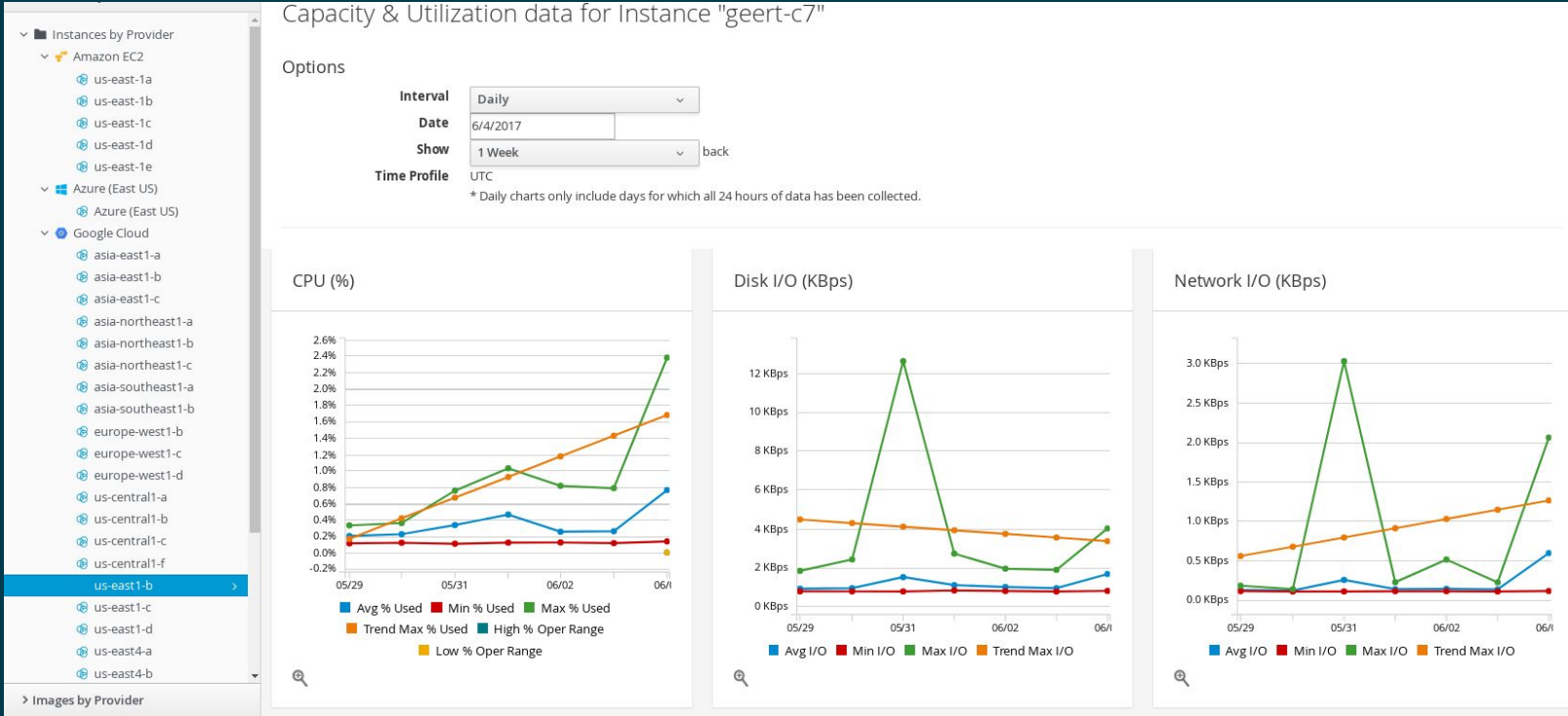




# Red Hat CloudForms Cost Optimization



# Red Hat CloudForms Cost Optimization



# Red Hat CloudForms Cost Optimization

Right Sizing

Parent Cluster	Name	Number of CPUs	Recommended CPU	Memory	Recommended RAM	RAM Savings	% Disk Used
Default	CF42_DB	1	3	12 GB	10.2 GB	1.8 GB	15.0%
Default	CF42_UI1	2	7	14 GB	13.9 GB	140 MB	34.7%
Default	CF42_openshift1	1	3	12 GB	11.8 GB	244 MB	19.8%
Default	chicago-lab-01	1	2	8 GB	7.7 GB	324 MB	25.0%
Default	Satellite6	4	3	16 GB	7.5 GB	8.5 GB	20.8%
Default	manageiq-dev	1	2	6 GB	5.6 GB	428 MB	49.7%
Default	windows2012	2	1	4 GB	32 MB	4 GB	0.0%
Default	CF42_google1	1	2	12 GB	11.9 GB	120 MB	19.1%
Default	CF42_aws1	1	2	12 GB	11.8 GB	244 MB	14.3%
Default	CF42_config1	1	2	12 GB	11.8 GB	244 MB	16.2%
Default	CF42_hyperv1	1	2	12 GB	10.9 GB	1.1 GB	8.7%
Default	CF42_UI2	2	7	14 GB	13.9 GB	140 MB	33.5%
Default	CF42_LB	2	1	2 GB	32 MB	2 GB	27.3%
Default	CF42_rhv1	1	2	12 GB	11.8 GB	244 MB	13.7%
Default	chicago-lab-20	1	2	8 GB	7.8 GB	244 MB	31.8%
Default	CF42_azure1	1	2	12 GB	11.8 GB	244 MB	11.1%
[" Parent Cluster "]: Default							
	Totals:	23	43	168 GB	148.2 GB	19.8 GB	
Raleigh	rmtestvm001	2	1	1 GB	156 MB	868 MB	0.0%

# Red Hat CloudForms Cost Optimization

QUOTA

## Tenant Quota

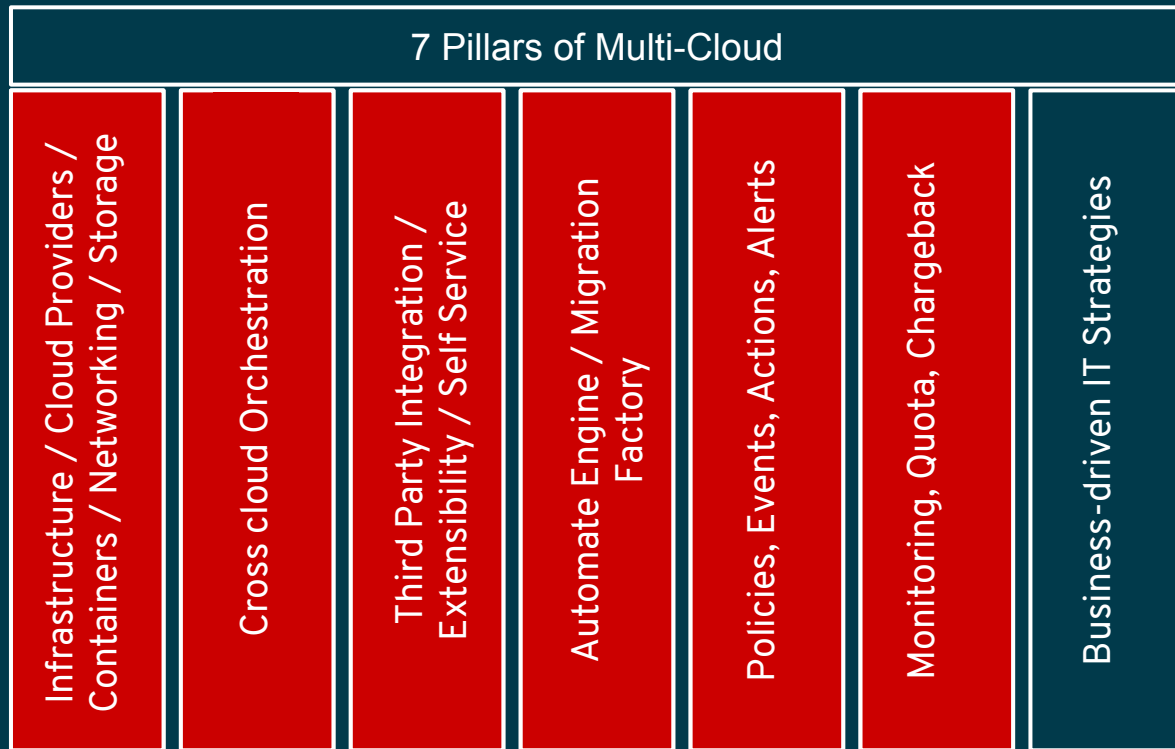
Name	Total Quota	In Use	Allocated	Available
Allocated Virtual CPUs	500 Count	486 Count	0 Count	14 Count
Allocated Memory in GB	6000.0 GB	5071.1875 GB	0.0 GB	928.8125 GB
Allocated Storage in GB	10000.0 GB	6685.435976028442 GB	0.0 GB	3314.5640239715576 GB
Allocated Number of Virtual Machines	1000 Count	124 Count	0 Count	876 Count
Allocated Number of Templates	1000 Count	934 Count	0 Count	66 Count

# Red Hat CloudForms Cost Optimization

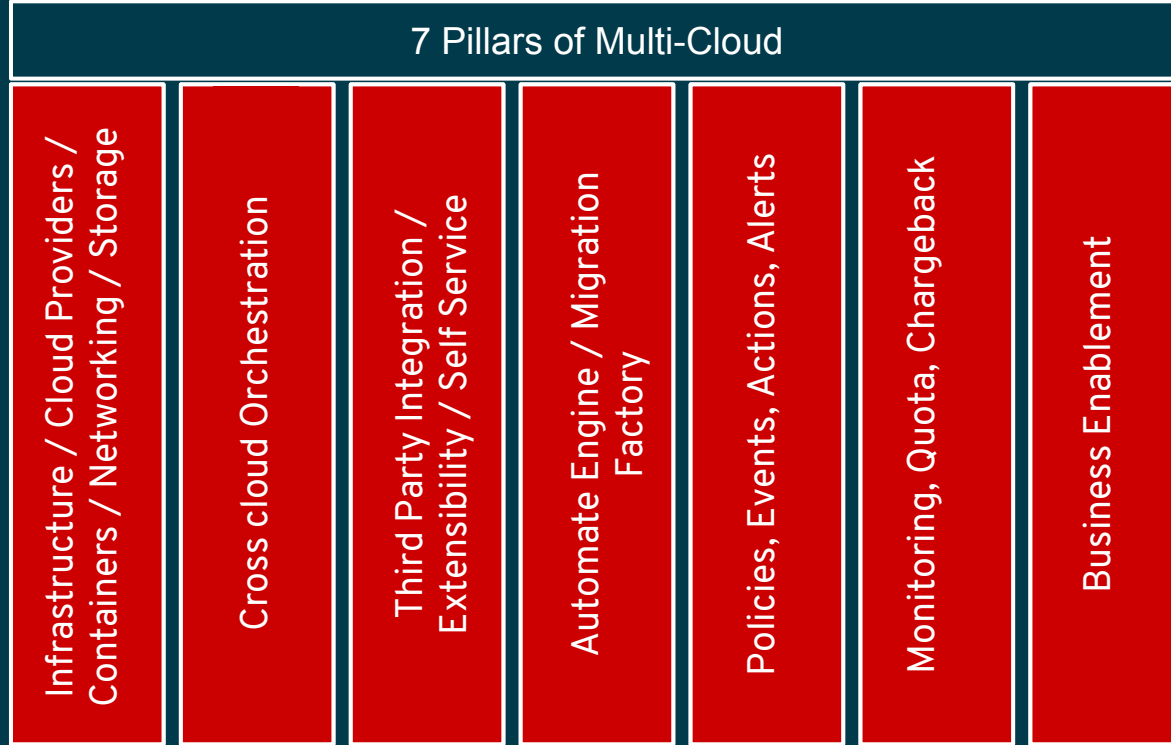
CHARGEBACK

Owner	Provider	Vm	CPU Total Cost	Memory Total Cost	Storage Total Cost	Total Cost
Cloud Operators	VMware	9f6d999e-c341-11e6-a036-001a4a16017c	\$778.19	\$125.69	\$8,264.00	\$9,539.93
Cloud Operators	VMware	9f7a6bc4-c341-11e6-a036-001a4a16017c	\$744.00	\$0.00	\$2,984.00	\$4,100.00
Cloud Operators	VMware	9f84605c-c341-11e6-a036-001a4a16017c	\$744.00	\$0.00	\$2,984.00	\$4,100.00
Cloud Operators	VMware	9f8f19a2-c341-11e6-a036-001a4a16017c	\$744.00	\$0.00	\$2,984.00	\$4,100.00
Cloud Operators	VMware	9f99e27e-c341-11e6-a036-001a4a16017c	\$779.17	\$132.21	\$8,264.00	\$9,547.38
Cloud Operators	VMware	9fa51504-c341-11e6-a036-001a4a16017c	\$765.90	\$147.03	\$8,264.00	\$9,548.94
Cloud Operators	VMware	9fb1e9dc-c341-11e6-a036-001a4a16017c	\$744.00	\$0.00	\$2,984.00	\$4,100.00
Cloud Operators	VMware	9fbf946a-c341-11e6-a036-001a4a16017c	\$744.00	\$0.00	\$16,763.61	\$17,879.61
Cloud Operators	VMware	9fd58b94-c341-11e6-a036-001a4a16017c	\$780.04	\$138.05	\$8,264.00	\$9,554.09
Cloud Operators	VMware	9fe584a4-c341-11e6-a036-001a4a16017c	\$786.76	\$126.74	\$8,264.00	\$9,549.49
Cloud Operators	VMware	9ff07652-c341-11e6-a036-001a4a16017c	\$744.00	\$0.00	\$10,064.00	\$11,180.00
Cloud Operators	VMware	9ffb6a44-c341-11e6-a036-001a4a16017c	\$786.72	\$124.85	\$8,264.00	\$9,547.56
Cloud Operators	VMware	a0069b1c-c341-11e6-a036-001a4a16017c	\$787.28	\$130.05	\$8,264.00	\$9,553.33
Cloud Operators	VMware	a0115f3e-c341-11e6-a036-001a4a16017c	\$786.64	\$125.23	\$8,264.00	\$9,547.87
Cloud Operators	Azure (East US)	00f37796-c73a-11e6-b20e-001a4a160181	\$744.00	\$11.48	\$748.00	\$1,887.27
Cloud Operators	Azure (East US)	01ce738c-c73a-11e6-b20e-001a4a160181	\$744.00	\$815.33	\$99,047.91	\$162,571.63
Cloud Operators	Amazon EC2	5fc0ea68-cd36-11e6-9ea1-001a4a160178	\$744.00	\$0.00	\$744.00	\$1,860.00

# Red Hat CloudForms **Data Integrity**

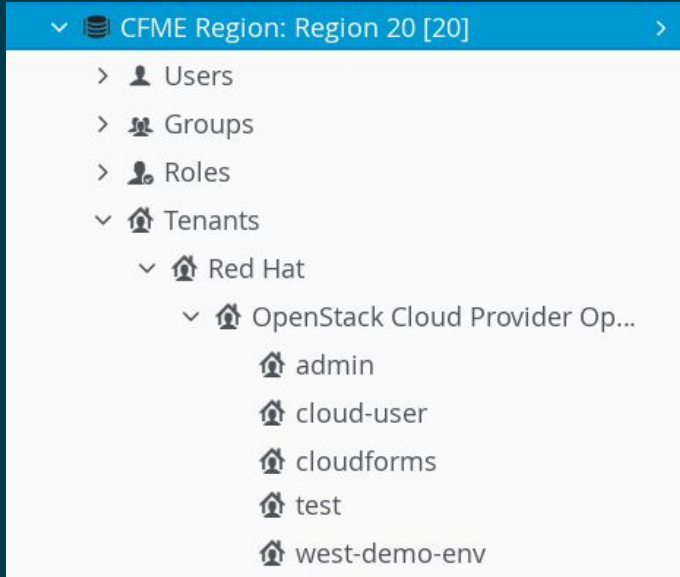


# Red Hat CloudForms **Business Enablement**



# Red Hat CloudForms **Business Enablement**

Multi - Tenancy



Admins per tenant  
Catalog and catalog Items per tenant  
Quota per tenant  
Asset view per tenant  
Chargeback reports per tenant

...



# Red Hat CloudForms **Business Enablement**

RBAC
















- Roles
  - Cloud-Operators
  - Cloud-Users
  - EvmRole-administrator
  - EvmRole-approver
  - EvmRole-auditor
  - EvmRole-consumption\_administrator
  - EvmRole-desktop
  - EvmRole-operator
  - EvmRole-security
  - EvmRole-super\_administrator
  - EvmRole-support
  - EvmRole-tenant\_administrator
  - EvmRole-tenant\_quota\_administrator
  - EvmRole-user
  - EvmRole-user\_limited\_self\_service
  - EvmRole-user\_self\_service
  - EvmRole-vm\_user

- Product Features (Read Only)
  - Everything
    - Cloud Intel
    - Red Hat Insights
    - Services
    - Compute
    - Configuration
    - Networks
    - Middleware
    - Storage
    - Control
    - Automation
    - Optimize
    - Settings
    - Access Rules for all Virtual Machines

# CloudForms

# *Recap*

# Red Hat CloudForms Recap

<p>Bare Metal</p> 	<p>Middleware</p> 	<p>Containers</p> 	<p>Lifecycle Mgmt Intelligence</p>  	<p>Orchestration</p>  	<p>Single Pane Of Glass</p> 
<p>Virtual Machines</p>   	<p>Private/Public Cloud</p>    				

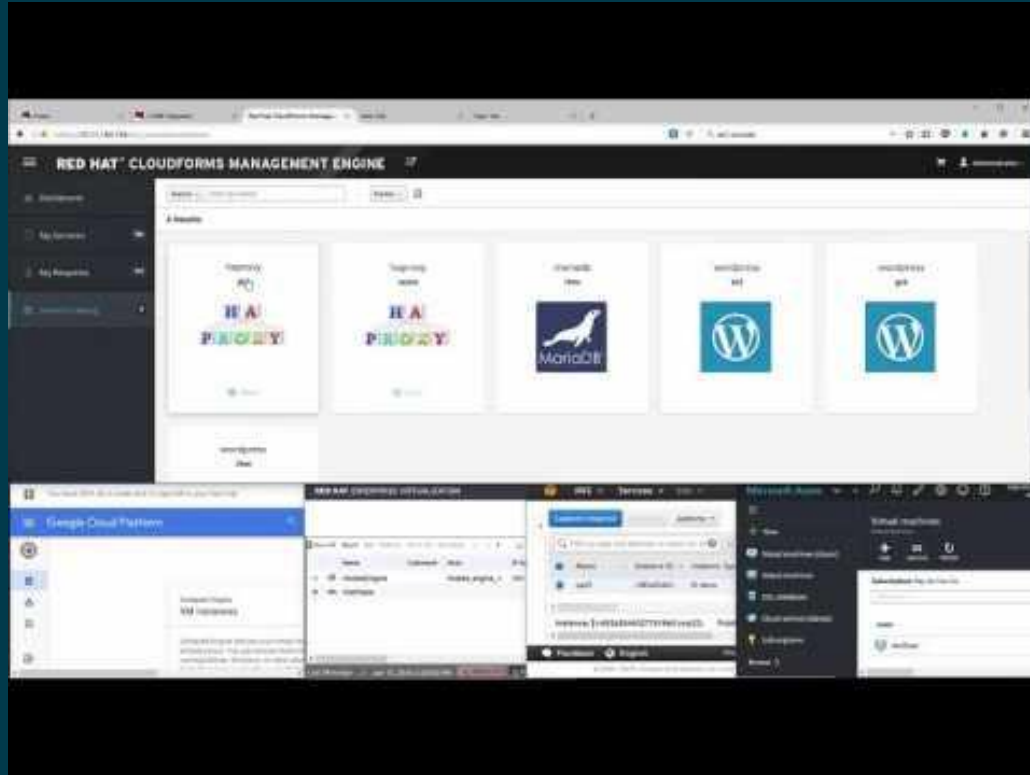
Unified Management

Operational Visibility

Self Service

Policy & Compliance

# Red Hat CloudForms Multi Cloud Management



# THANK YOU

[plus.google.com/+RedHat](https://plus.google.com/+RedHat)

[facebook.com/redhatinc](https://facebook.com/redhatinc)

[linkedin.com/company/red-hat](https://linkedin.com/company/red-hat)

[twitter.com/RedHatNews](https://twitter.com/RedHatNews)

[youtube.com/user/RedHatVideos](https://youtube.com/user/RedHatVideos)

# Red Hat CloudForms Multi Cloud Management

