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RED HAT  
FORUM

# RED HAT CLOUDFORMS

*Path to Hybrid cloud*

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Enterprise Cloud Support

# BUSINESS HAS CHANGED – IN RESPONSE, IT OPERATIONS NEEDS TO CHANGE



## LINE OF BUSINESS

Challenged to deliver services faster, at scale, and more efficiently



## DEVELOPERS

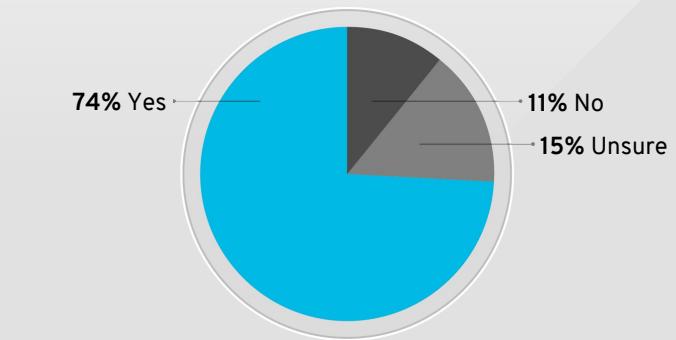
Need to develop applications faster with greater productivity



## IT OPERATIONS

Must provide infrastructure on-demand that scales as needed

74% expect to buy new management solutions to support open hybrid clouds and next-generation application architectures.



N=201

Do you believe you will need to purchase new management software solutions between now and 2017?

IDC

# CLOUD CAPABILITIES



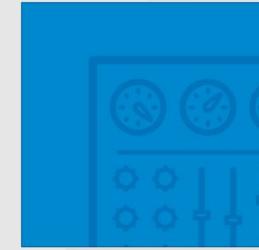
## EFFICIENCY AND OPTIMIZATION

Improve resource utilization and operational efficiency.



## COMPLIANCE AND GOVERNANCE

Responsibly enabling users and developers, without being in the way.

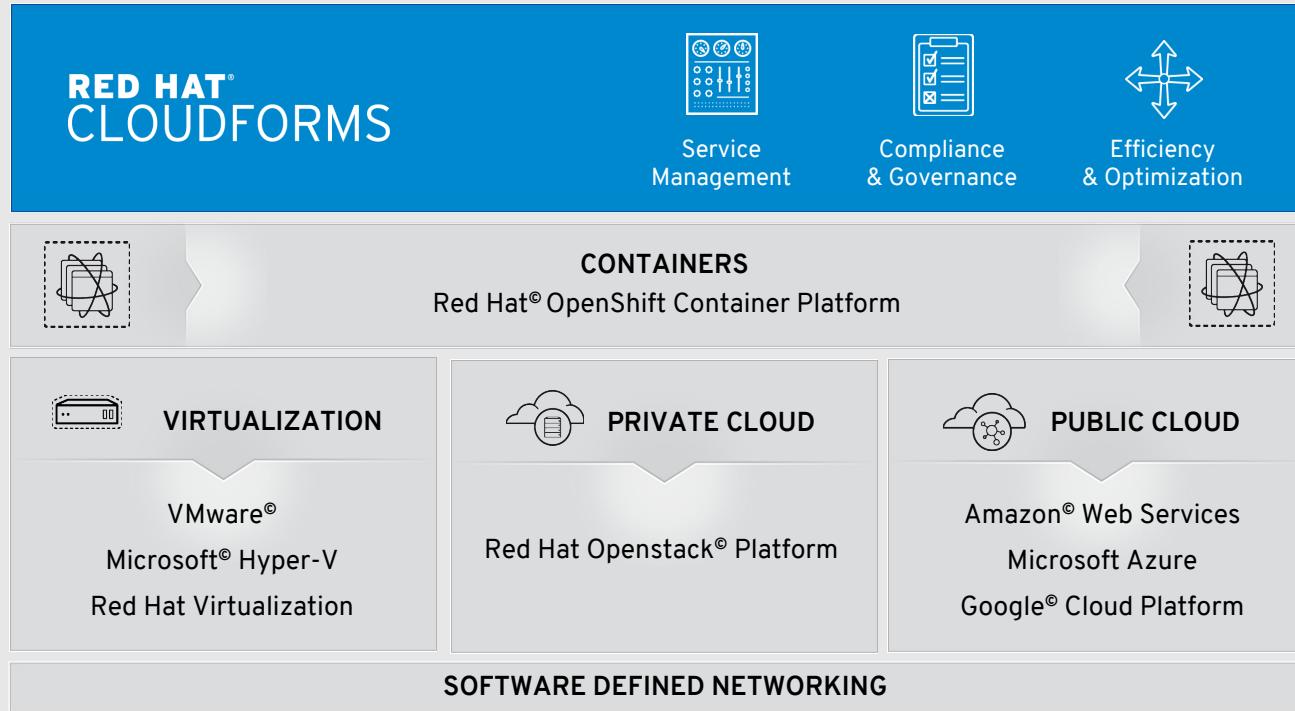


## SERVICE MANAGEMENT AND SELF SERVICE

Automate and delegate service delivery processes, saving time and money.



# AN EVOLUTIONARY PATH TO HYBRID CLOUD



# CLOUDFORMS FEATURES

AGENTLESS



EASY DEPLOYMENT

ANSIBLE AUTOMATION



ANSIBLE

SIMPLE, POWERFUL, AGENTLESS

MULTI-TENANCY  
AND RBAC



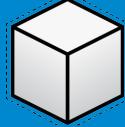
SEGMENT USER ACCESS,  
FINE GRAINED ACCESS CONTROL

CONTINUOUS DISCOVERY



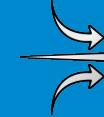
BROWN-FIELD MANAGEMENT,  
INTEROPERATES WITH OTHER MGMT

VIRTUAL APPLIANCE



EASY INSTALL, EASY MAINTENANCE

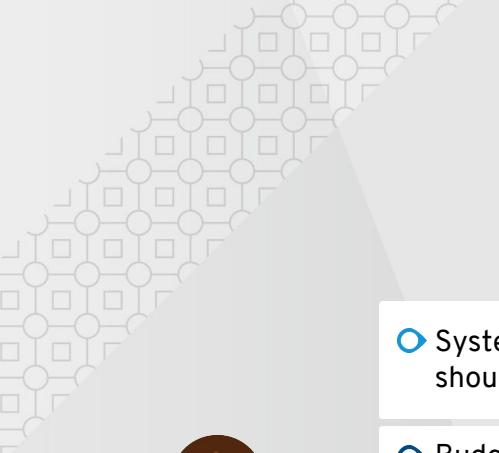
FEDERATED GLOBAL  
DEPLOYMENTS



HIGHLY SCALABLE, HIGHLY AVAILABLE  
MULTI-REGION DEPLOYMENTS



# EFFICIENCY AND OPTIMIZATION



# HYBRID CLOUD VISIBILITY



- Systems that are not being utilized should be retired to reclaim resources.
- Budgets are tight. We have to make sure that we are utilizing our systems efficiently.
- Tracking problems across infrastructure layers can be a challenge.
- I've got to project infrastructure usage into the future for planning purposes.



# OPERATIONAL VISIBILITY WITH CLOUDFORMS

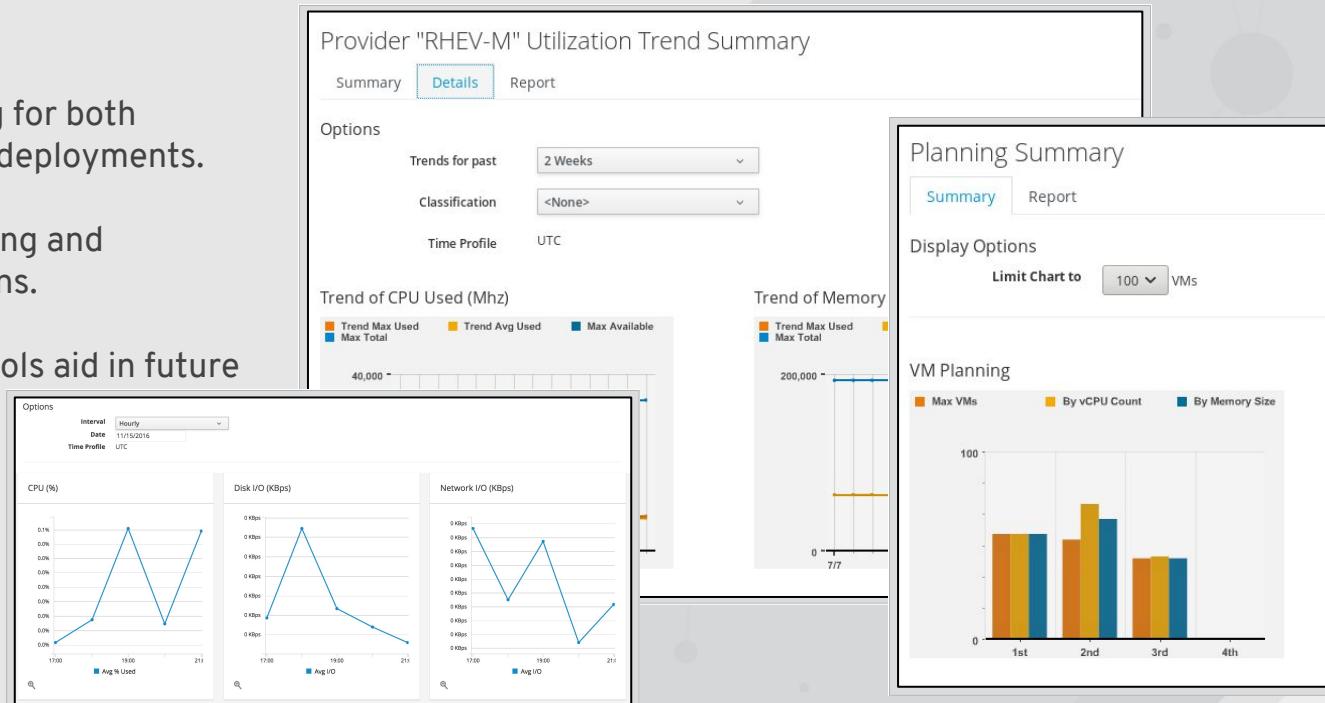


- Find unused resources and reclaim them. Assign ownership to resources.
- Automatic resource optimization intelligently places VMs and offers right-sizing recommendations.
- I can drill-down through infrastructure layers to determine the root cause.
- Resource tracking and trending aids in capacity and what-if scenario planning.



# PERFORMANCE AND CAPACITY MANAGEMENT

- Continuous data gathering for both greenfield and brownfield deployments.
- Resource utilization tracking and right-size recommendations.
- Projection and “what if” tools aid in future planning.

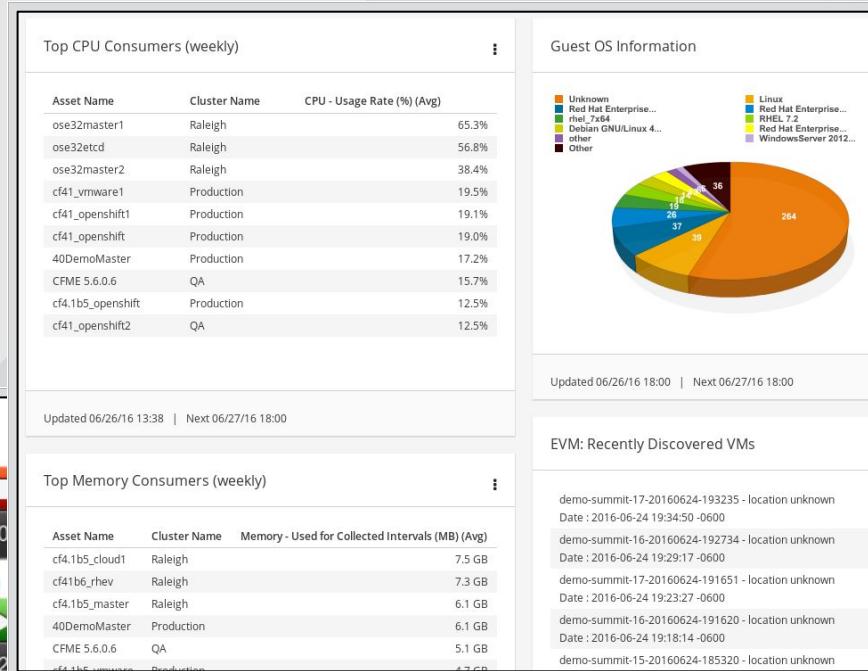


# VIRTUALIZATION MANAGEMENT

- Provision from clone of existing VM instance or template.
- View VM genealogy and track VM drift from established configurations.
- Execute VM power operations and retire VM instances.

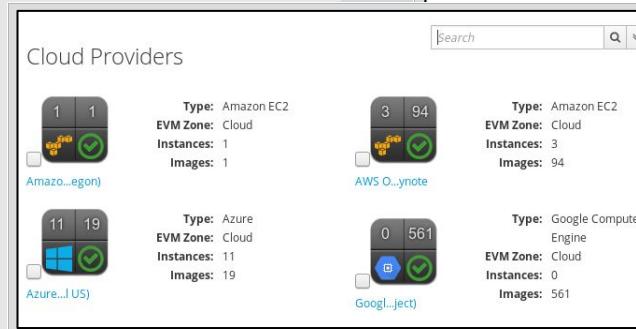
### All VMs & Templates

32DemoMaster	40DemoMaster	alpha-dsl1	Analytics VM	ansib...tower	bdprd001
1	0	T	0	1	2



# PUBLIC CLOUD MANAGEMENT

- View virtual instance inventory and manage across regions and availability zones.
- Provision virtual instances, storage and networking.
- Monitor and respond to events.

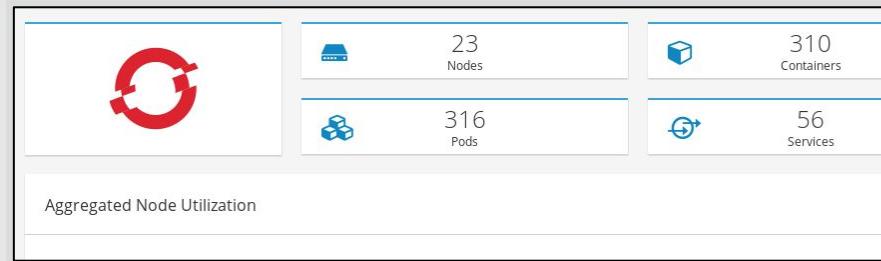


Cloud Providers > Azure (Central US) (Summary)	
Azure (Central US) (Summary)	
<b>Properties</b>	
Region	Central US
Discovered IP Address	
Type	Azure
Management Engine GUID	4d627c04-2752-11e6-998a-001a4b6702
<b>Status</b>	
Default Credentials	Valid
Last Refresh	Success - 27 Minutes Ago

Google Cloud Engine (mbu-project) (Summary)	
<b>Properties</b>	
Preferred Region	Central US
Discovered IP Address	
Type	Google Compute Engine
Management Engine GUID	e355e06-2d82-11e6-99ae-001a4b6702
<b>Status</b>	
Default Credentials	Valid
Last Refresh	Success - 8 Minutes Ago
<b>Relationships</b>	
Availability zones	13
Cloud tenants	0
Flavors	18
Security groups	1
Instances	0
Images	530
Orchestration stacks	0
Cloud volumes	0
Cloud Object Stores	0
<b>Smart Management</b>	
Managed by Zone	Cloud
Red Hat Tags	No Red Hat Tags have been assigned

# CONTAINER MANAGEMENT

- View connections from the container all the way down through the underlying infrastructure in one interface.
- Apply automation rules and enforce policies for deployed containers.
- Scan containers for known vulnerabilities with OpenSCAP.



### OpenSCAP Evaluation Report

Automatically generated XCCDF from OVAL file: com.redhat.rhsa-RHEL6.xml  
This file has been generated automatically from oval definitions file.

#### Evaluation Characteristics

Target machine	manageiq-img-scan-dfae7
Benchmark URL	/tmp/com.redhat.rhsa-RHEL6.ds.xml.bz2
Benchmark ID	xccdf_com.redhat.rhsa_benchmark_generated-xccdf
Started at	2016-06-20T22:01:09
Finished at	2016-06-20T22:01:12
Performed by	

#### CPE Platforms

Addresses
• IPv4 127.0.0.1
• IPv4 10.5.0.8
• IPv4 0.0.0.0.0:0
• IPv4 fe80::0:0:42:afffe05:8
• MAC 00:00:00:00:00:00
• MAC 02:42:0A:05:00:08

#### Compliance and Scoring

The target system did not satisfy the conditions of 2 rules! Please review rule results and consider applying remediation.

#### Rule results

1031 passed

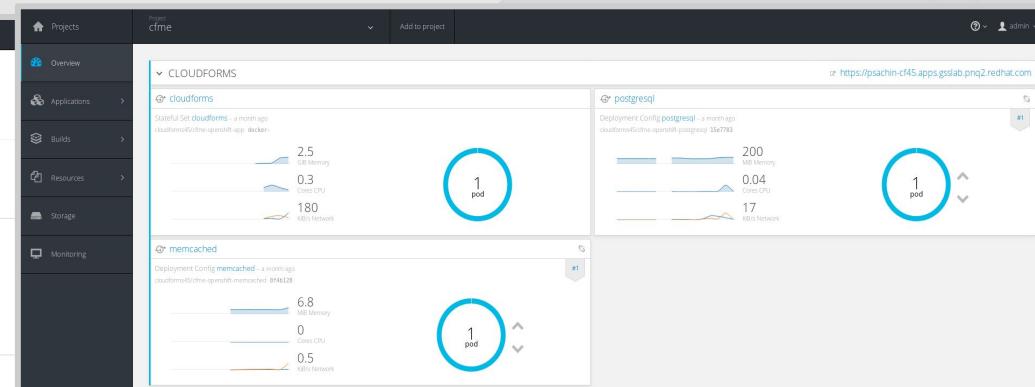
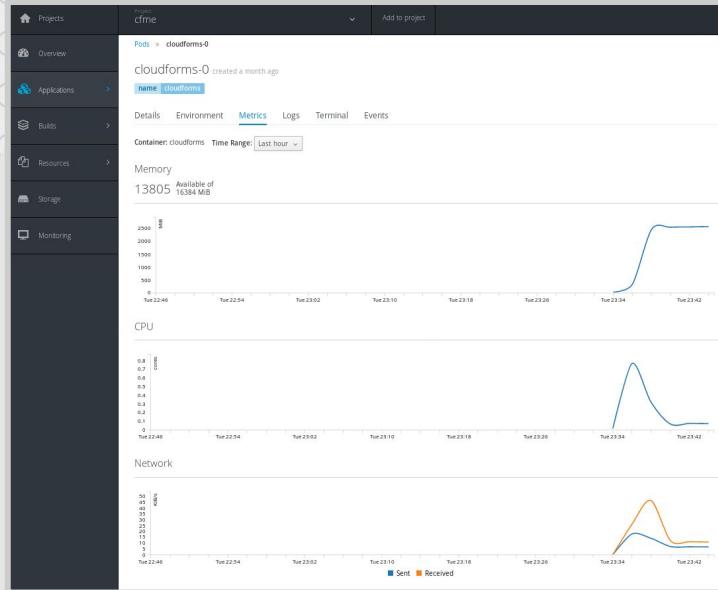
#### Severity of failed rules

1 medium      1 high

#### Score

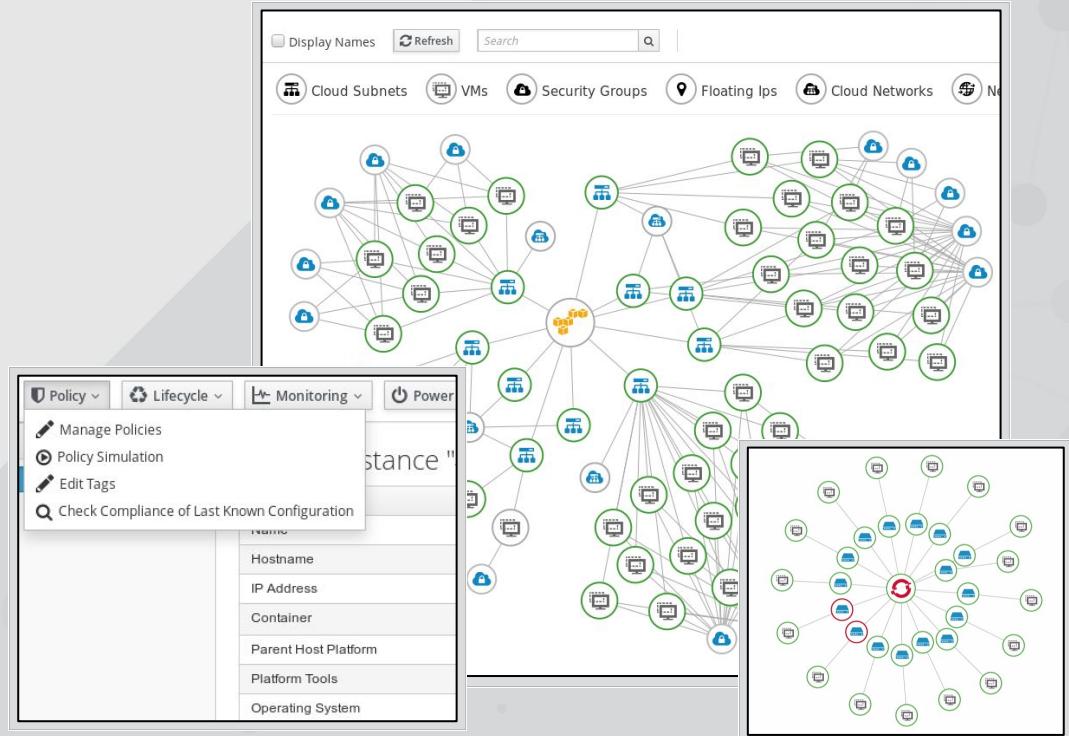
Scoring system	Score	Maximum	Percent

# CLOUDFORMS ON OPENSHIFT



# ROOT CAUSE ANALYSIS

- View instance performance and resource usage over time to pinpoint problem initiation.
- Quickly compare system state against known good state or other systems.
- Navigate across relationships and drill down infrastructure layers to identify underlying causes.





# GOVERNANCE AND COMPLIANCE

# COMPLIANCE AND GOVERNANCE CHALLENGES



- Monitoring systems so that they remain compliant and secure is time consuming.
- With end user self-servicing, how do I know systems are compliant?
- How to check compliance without “being in the way”?
- How do I govern what resources are consumed and where?
- How do I prevent a huge bill from my cloud provider?



# POLICY AND COMPLIANCE WITH CLOUDFORMS



- CloudForms continuously monitors systems so they remain secure.
- Smart State Analysis deeply scans systems to provide policy engine with detailed information.
- Apply policies based on Smart State data without requiring cooperation of users.
- Our automatic provisioning includes automatic placement policies.
- Quotas prevent over-provisioning compute, memory or storage resources.



# POLICY ENFORCEMENT

- Continuous discovery and deep SmartState inspection of virtual instances.
- Policy violations can raise alerts or be remediated automatically.
- Policy can be applied uniformly or based on virtual instance criteria.

Scope

No Policy scope defined, the scope of this policy includes all elements.

Conditions

Description	Scopes / Expressions
Permit Root Login Disabled	ExpressionFIND VM and Instance.Files : Contents Available = "true" CHECK ALL

Events

Description	Actions
VM Compliance Check	<input checked="" type="checkbox"/> Mark as Non-Compliant <input checked="" type="checkbox"/> Generate log message <input checked="" type="checkbox"/> Generate Audit Event <input checked="" type="checkbox"/> Send Email to Security Team

All Policy Profiles		All Alerts		All Actions	
	Description		Description		Description
	Analysis: Exclude Specially Tagged VMs		Cluster DRS not enabled		Alert - CPU Reservation > 500Mhz
	Analysis: On VM Reconfiguration		Cluster HA not enabled		Cancel vCenter Task
	Compliance Hosts: November 2012		CPU Ready > 4000 ms for more than 10 min		Check Host or VM Compliance
	Compliance: DISA STIG		Datacenter VMs > 10		Collect Running Processes on VM Guest OS
	Compliance: DMZ Configuration		Host Datastore < 5% of Free Space		Connect All CD-ROM Drives for Virtual Machine
	Compliance: Hosts				
	Compliance: RHEL Host (KVM)				

# QUOTAS AND CHARGEBACK

- Rate schedules per platform and per tenant with multi-tiered and multi-currency support.
- Quota set by user, role and tenant and apply to compute, memory and storage resources.
- Monitor resource usage and report based on workload or tenant.

Currencies

Select currency: \$ [United States Dollars]

Rate Details

\* Caution: The value Range end will not be included in the tier.

Group	Description	Per Time	Per Unit	Range
CPU	Allocated CPU Count	Hourly		Start
CPU	Used CPU	Hourly	MHz	
Cpu Cores	Used CPU Cores	Hourly		
Disk I/O	Used Disk I/O	Hourly	Kbps	
Fixed	Fixed Compute Cost 1	Hourly		
Fixed	Fixed Compute Cost 2	Hourly		
Memory	Allocated Memory	Hourly	MB	

Rate Details

Group	Description	Range	Rate		
		Start	Finish	Fixed	Variable
CPU	Allocated CPU Count	0.0	Infinity	1.0	0.0
CPU	Used CPU	0.0	Infinity	0.0	0.02
Cpu Cores	Used CPU Cores	0.0	Infinity	1.0	0.02
Disk I/O	Used Disk I/O	0.0	Infinity	0.0	0.005
Fixed	Fixed Compute Cost 1	0.0	Infinity	0.0	0.0
Fixed	Fixed Compute Cost 2	0.0	Infinity	0.0	0.0
Memory	Allocated Memory	0.0	Infinity	0.0	0.0
Memory	Used Memory	0.0	Infinity	0.0	0.02
Network I/O	Used Network I/O	0.0	100.0	0.5	0.0
		100.0	Infinity	0.5	0.005

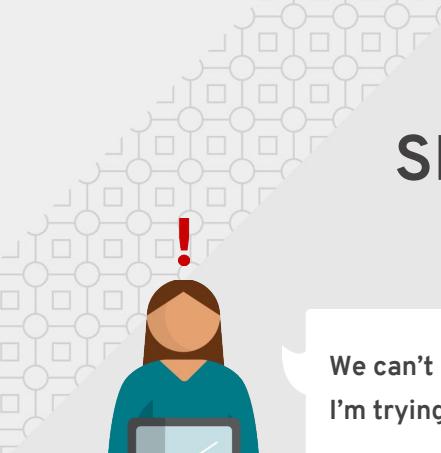
Manage quotas for Tenant "Red Hat"

Enforced	Description	Value
ON	Allocated Virtual CPUs	64
ON	Allocated Memory in GB	32
ON	Allocated Storage in GB	10240
ON	Allocated Number of Virtual Machines	32
ON	Allocated Number of Templates	12

Lookup Save Reset Cancel



# SERVICE MANAGEMENT AND SELF SERVICE



# SERVICE AUTOMATION CHALLENGES



We can't get systems fast enough!  
I'm trying to help the business. IT just slows me down.

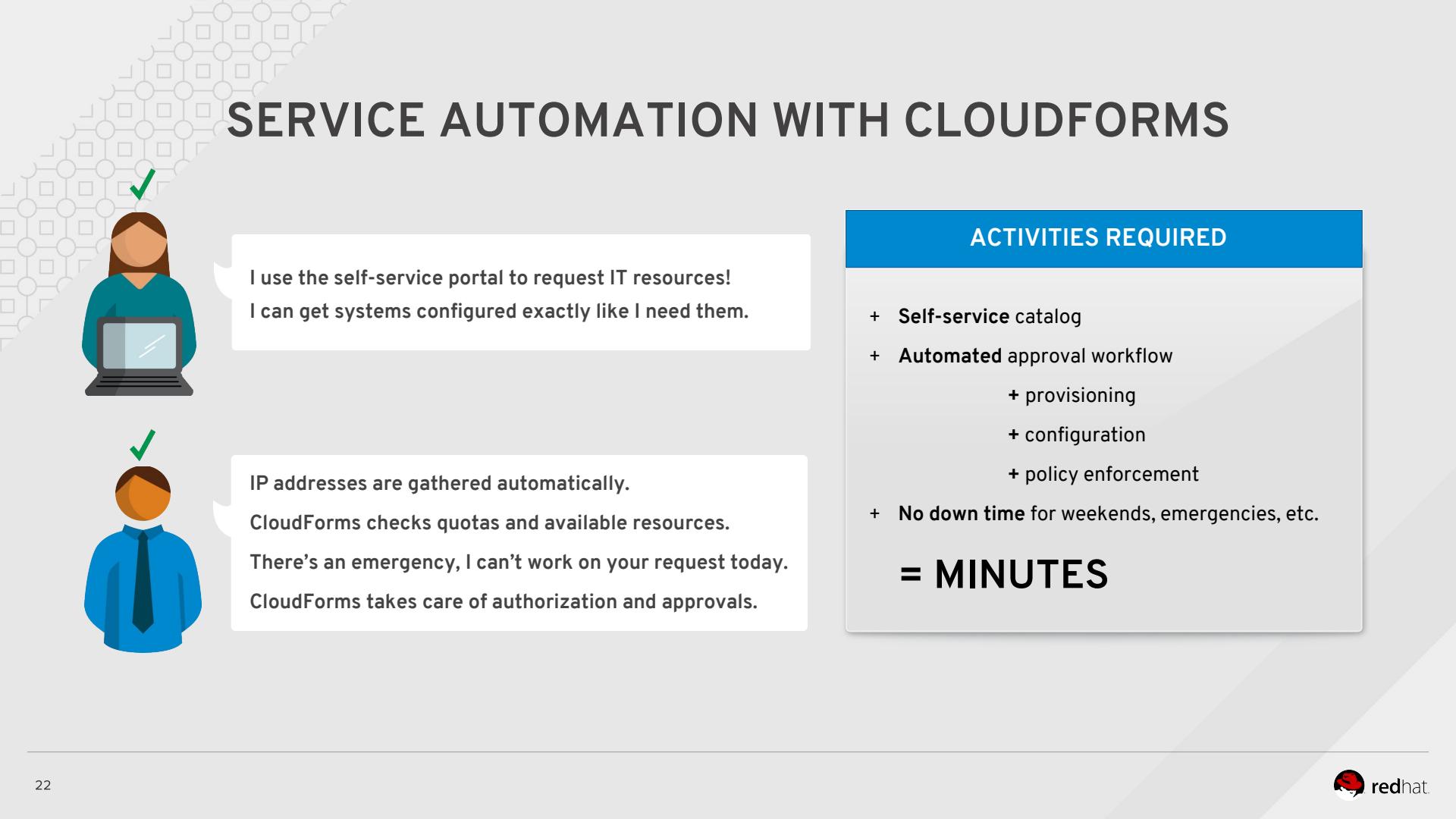


Do we have an IP address for this system?  
Do we have the resources available for this request?  
There's an emergency, I can't work on your request today.  
Are you authorized to request these systems?

## ACTIVITIES REQUIRED

- + **Process requests** for IT resource
- + **Clarify request** and collect needed information
- + **VM creation** from template
- + **Configuration** to desired state
- + **Security** and compliance process
- + **Non-work time** for weekends, emergencies, etc.

= WEEKS OR MONTHS



# SERVICE AUTOMATION WITH CLOUDFORMS



I use the self-service portal to request IT resources!  
I can get systems configured exactly like I need them.



IP addresses are gathered automatically.  
CloudForms checks quotas and available resources.  
There's an emergency, I can't work on your request today.  
CloudForms takes care of authorization and approvals.

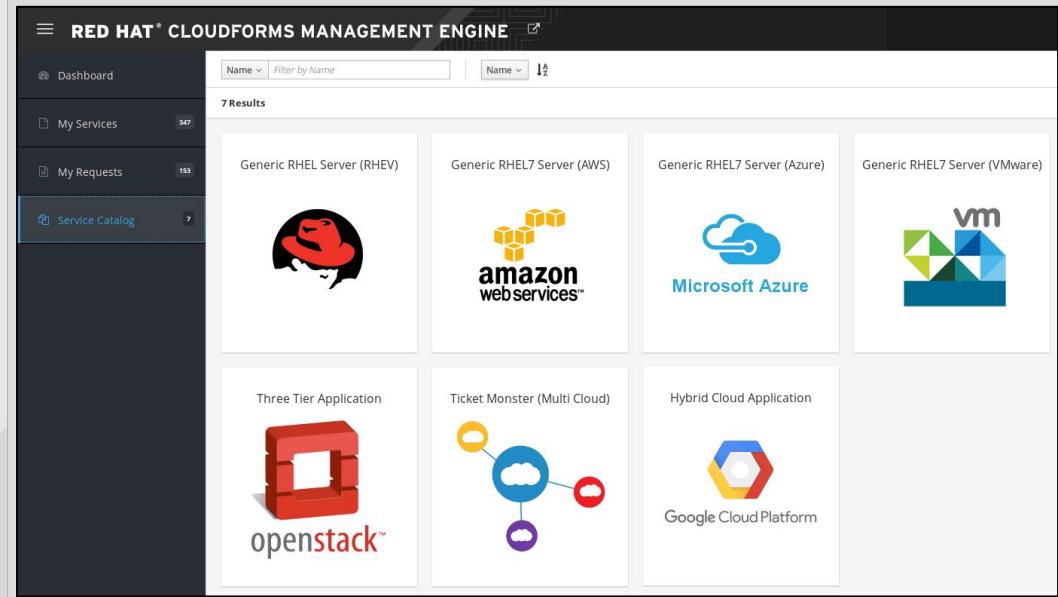
## ACTIVITIES REQUIRED

- + Self-service catalog
- + Automated approval workflow
  - + provisioning
  - + configuration
  - + policy enforcement
- + No down time for weekends, emergencies, etc.

= MINUTES

# SELF-SERVICE DELIVERY

- Create service delivery catalogs for users to choose the services the services that they need to deploy.
- Shopping cart functionality allows multiple services to be requested at one time.
- Service requests can be routed for approval.



# AUTOMATED PROVISIONING

- Automatically deploys and configures requested services on any infrastructure platform.
- Automation steps can be codified in Ansible playbooks or natively in CloudForms.
- Integration to external IT systems allows CloudForms to automate all process steps.

Service Catalog Item "JBoss Deployment (Ansible)"

Basic Information

Name / Description	JBoss Deployment (Ansible) / JBoss Deployment	<input type="checkbox"/> Display in Catalog
Dialog	No Dialog	

Ansible Tower Job Template

JBoss Deployment	/ConfigurationManagement/AnsibleTower/Service/Provisioning/StateMachine
------------------	---

Provisioning Entry Point

State Machine (NS/Cl/Inst)	
----------------------------	--

Custom Image

The diagram illustrates the integration of Ansible with virtual machines. A central box labeled "SERVICE" is connected to two separate boxes, each labeled "VM". Each "VM" box contains an "ANSIBLE" icon, representing the automation layer between the service and the virtual machine.



# ANSIBLE AUTOMATION

Playbooks (Embedded Ansible)

Name	Description	Report
ManageIQ/create_user.yml		Ansible Tower
ManageIQ/delete_user.yml		Ansible Tower
vmware/Create_VM_from_ISO.yml		Ansible Tower
vmware/Create_VM_from_Template.yml		Ansible Tower
vmware/create_vms.yml		Ansible Tower
vmware/install_Apache.yml		Ansible Tower
vmware_rename_vm.yml		Ansible Tower
vmware/tester2.yml		Ansible Tower
vmware/tester.yml		Ansible Tower
vmware/var_test.yml		Ansible Tower
vmware/vmware_get_facts.yml		Ansible Tower
vmware/vmware_reconfigure_vm.yml		Ansible Tower
vmware/vmware_rename_vm.yml		Ansible Tower

Ansible Tower Jobs

Template Name	Type	ID	Status	Created On	Updated On
Aws Demo	Ansible Tower Job	65	failed	09/07/17 10:00:09 UTC	09/07/17 10:01:21 UTC
Aws Demo	Ansible Tower Job	41	successful	09/07/17 08:46:53 UTC	09/07/17 08:50:11 UTC
Aws Demo	Ansible Tower Job	45	failed	09/07/17 09:02:45 UTC	09/07/17 09:05:03 UTC
Aws Demo	Ansible Tower Job	49	failed	09/07/17 09:16:27 UTC	09/07/17 09:17:39 UTC
Aws Demo	Ansible Tower Job	52	failed	09/07/17 09:25:51 UTC	09/07/17 09:27:03 UTC
fisherUser	Ansible Tower Job	71	failed	09/07/17 10:47:05 UTC	09/07/17 10:48:18 UTC
fisherUser	Ansible Tower Job	62	failed	09/07/17 09:54:25 UTC	09/07/17 09:55:29 UTC
fisherUser	Ansible Tower Job	56	failed	09/07/17 09:35:00 UTC	09/07/17 09:36:10 UTC
fisherUser	Ansible Tower Job	59	failed	09/07/17 09:46:55 UTC	09/07/17 09:48:00 UTC
fisherUser	Ansible Tower Job	68	failed	09/07/17 10:43:24 UTC	09/07/17 10:44:35 UTC
testUser	Ansible Tower Job	75	failed	09/07/17 10:55:56 UTC	09/07/17 10:57:07 UTC
testUser	Ansible Tower Job	81	failed	09/07/17 11:04:33 UTC	09/07/17 11:05:42 UTC
testUser	Ansible Tower Job	78	failed	09/07/17 11:00:52 UTC	09/07/17 11:02:03 UTC

Providers

All Ansible Tower Providers

Provider Name	URL	Type	Zone	Last Refresh Date	Region Description	Status	Total Configured Systems
AnsiTower Automation Manager	https://10.74.250.146/api/v1	Automation Manager (Ansible Tower)	default	09/08/17 06:19:36 UTC	Region 1	Valid	45

# How Cloudforms Automation and Ansible are Different?

	Ansible Tower	Cloudforms
<b>Primary buyers and people involved in the sales cycle</b>	<ul style="list-style-type: none"><li>• Development leadership</li><li>• IT operators and leaders</li><li>• Systems Administrators</li><li>• Enterprise architects</li><li>• Cyber operations and information security</li></ul>	<ul style="list-style-type: none"><li>• Directors/VPs of IT Operations.</li><li>• Enterprise Architects</li></ul>
<b>Primary users in customer organization</b>	<ul style="list-style-type: none"><li>• Developers</li><li>• IT operators</li><li>• Systems administrators</li><li>• Network engineers</li><li>• Application owners</li><li>• Cloud engineers</li></ul>	<ul style="list-style-type: none"><li>• Development and test teams via self-service</li><li>• Systems administrators</li><li>• Service owners</li><li>• Lines of Business</li><li>• Security teams</li></ul>
<b>Who is doing the automating</b>	<ul style="list-style-type: none"><li>• Systems admins</li><li>• Application owners</li><li>• Developers</li><li>• Network admins</li><li>• Network engineers</li><li>• Virtualization admins</li><li>• Site reliability engineers</li><li>• Cloud engineers</li></ul>	<ul style="list-style-type: none"><li>• IT infrastructure owners</li><li>• Service owners.</li></ul>
<b>What is being automated</b>	<ul style="list-style-type: none"><li>• Any IT process and/or application regardless of platform (Linux, Windows, Unix)</li><li>• Bare-metal servers</li><li>• Virtual and cloud servers</li><li>• Infrastructure deployment</li><li>• Application deployment and configuration</li><li>• Network devices</li></ul>	<ul style="list-style-type: none"><li>• IT service lifecycle management through a self service interface w/ policy based approvals, quotas, and business rules.</li></ul>
<b>Typical sales cycle</b>	2.5 months	9 - 18 months

# How Cloudforms Automation and Ansible are Different?

	<b>Ansible Tower</b>	<b>Cloudforms</b>
Typical use cases	<ul style="list-style-type: none"><li>• Devops, CI/CD</li><li>• IaaS</li><li>• Application deployment</li><li>• Orchestration (Rolling updates, etc.)</li><li>• Network automation</li><li>• Tower + other config management (Puppet, Chef, etc.)</li><li>• Replacing of legacy tools such (i.e, HP SA, BladeLogic)</li></ul>	<ul style="list-style-type: none"><li>• AAS+ Self Service.</li><li>• Operations Management.</li><li>• IT governance.</li><li>• IT compliance.</li><li>• Service management.</li></ul>
Complementary Technologies - What tools are likely to be used in conjunction with this tool?	<ul style="list-style-type: none"><li>• Jenkins</li><li>• Network hardware (load balancers, routers, firewalls, and switches)</li><li>• GitHub</li><li>• Atlassian suite</li><li>• Splunk and other SIEM tools</li><li>• Other CMPS</li></ul>	<ul style="list-style-type: none"><li>• Enterprise service catalogs like ServiceNow ITSM.</li><li>• CMDBs.</li><li>• IPAM systems,</li><li>• Incident and change management systems.</li><li>• Event monitoring and management systems.</li><li>• IT financial management systems.</li></ul>
Likely competition - What other products is the customer considering?	<ul style="list-style-type: none"><li>• Do-it-yourself (shell scripts, home grown programs)</li><li>• Puppet</li><li>• Chef</li><li>• HPOO/SA</li><li>• BMC BladeLogic</li><li>• Various ARA tools (Electric Cloud, UrbanCode, etc.)</li></ul>	<ul style="list-style-type: none"><li>• Vmware vRealize Suite.</li><li>• Cisco CliQr</li><li>• Scalr</li><li>• RightScale</li><li>• ServiceNow ITOM</li></ul>

# LIFECYCLE MANAGEMENT

- Ongoing tracking of services ensures continual visibility.
- Complete operational control over service resources, including power operations and virtual console access.
- Automated lifecycle policies for scheduled retirement and archiving.

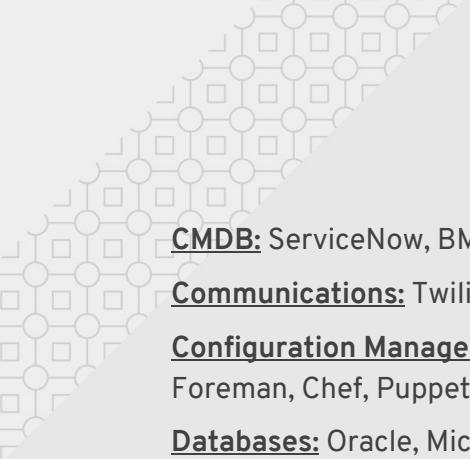
The screenshot displays the Red Hat Satellite interface for managing virtual machines. On the left, a sidebar shows navigation options like Lifecycle, Monitoring, Power, and VM Actions. Under VM Actions, the 'Retire this VM' option is highlighted. The main area shows a list of VMs with columns for Name, IP Address, and Container. A context menu is open over the first VM, listing options: Clone this VM, Publish this VM to a Template, Migrate this VM, Set Retirement Date, and Retire this VM. To the right, a detailed view of a specific VM is shown. The VM name is "40DemoMaster". The Lifecycle panel shows the VM was discovered on May 19, 2016, and last analyzed on May 19, 2016. It has a retirement date set to 'Never' and is part of the 'Tenant My Company access' group. The Relationships panel lists its connections to an Infrastructure Provider (RHEV-M), Cluster (Raleigh), Host (bldr16cc06.core.cmbu.redhat.com), Resource Pool (Default for Cluster Raleigh), Datastores (RHEV-ISCSI), and Service (None). Genealogy shows it's a parent VM with 3 child VMs. Drift History shows 2 drift events. Analysis History shows 3 analysis runs.

Lifecycle	
Discovered	Thu May 19 09:37:43 MDT 2016
Last Analyzed	Thu May 19 13:21:38 MDT 2016
Retirement Date	Never
Group	Tenant My Company access

Relationships	
Infrastructure Provider	RHEV-M
Cluster	Raleigh
Host	bldr16cc06.core.cmbu.redhat.com
Resource Pool	Default for Cluster Raleigh
Datastores	RHEV-ISCSI
Service	None
Genealogy	Show parent and child VMs
Drift History	2
Analysis History	3



# CLOUDFORMS INTEGRATIONS



# CLOUDFORMS INTEGRATIONS

**CMDB:** ServiceNow, BMC Remedy

**Communications:** Twilio, Google Voice

**Configuration Management:** Ansible, Satellite, Foreman, Chef, Puppet, Salt, HP Server Automation

**Databases:** Oracle, Microsoft SQL Server, MySQL, PostgreSQL

**Directories and Identity:** Microsoft Active Directory, Red Hat Identity Management, Centrify, Any LDAP directory

**Disaster Recovery:** VMware SRM, Zerto

**DevOps:** Calm.io, Jenkins

**Firewall:** Juniper, Checkpoint, Cisco, Fortinet, Palo Alto

**Incident/Change Management:** ServiceNow, BMC Remedy, Atlassian JIRA

**IPAM/DDI:** Infoblox, BlueCat, BIND, Microsoft DNS, Microsoft DHCP, SolarWinds, Men and Mice, PHP IPAM

**Load Balancers:** F5 BigIP, Citrix Netscaler, AWS Elastic Load Balancer, Neutron LBaaS

**Logging:** Splunk, Elk Stack

**Networking:** Cisco APIC

**Orchestration:** VMware vRealize Orchestrator, HP Operations Orchestration

**Operations Management:** Microsoft Systems Center Operations Manager, CA Spectrum, HP Operations Manager, Any SNMP enabled system

**Patching:** IBM BigFix, Satellite, Microsoft Systems Center Configuration Manager

**Service Catalogs:** ServiceNow, BMC Remedy

**Source Control:** github

**Storage:** NetApp WFA

**Miscellaneous:** Any Web service enabled system



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# THANK YOU



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