



ManageIQ

# INTRODUCTION TO MANAGEIQ

Satyajit Bulage & Niladri Roy

ManageIQ Enthusiasts

# Why ManageIQ is used for

- Can I manage all my clouds from a single place ?
- How to navigate the information and performance of all servers?
- How well can I implement existing operational policies across my hybrid cloud ?
- Can I have unified monitoring, management and automation ?
- Can I plan consumption levels and create showbacks for resource usage ?

# ABOUT MANAGEIQ



ManageIQ

## *Continuous Discovery*

- Connect ManageIQ to your virtualization, container, network, and storage management systems, where it will discover inventory, map relationships, and listen for changes.
- The result is a rich, up-to-date and cross-referenced dataset that forms the basis for our advanced management capabilities.

## *Compliance*

- Scan the contents of your VMs, hosts, and containers, and combine with auto discovery data to create advanced security and compliance policies.

# ABOUT MANAGEIQ CONTD...



ManageIQ

## *Optimization*

- Capture metrics for your VMs, containers, and hosts to understand current utilization and normal operating ranges.
- Then use this data to find unused systems, get right-sizing recommendations, do capacity planning, and run what-if scenarios.

## *Self-Service*

- Define bundles of resources and publish them in a service catalog, from where they can be ordered by end users.
- Once provisioned, you can manage the full life cycle of a service, including policy, compliance, delegated operations, chargeback/showback, and retirement.

# FEATURES MANAGEIQ



ManageIQ

## Agentless

- ManageIQ does not depend on agents, and is therefore extremely easy to install and operate.

## SmartState Analysis

- SmartState analysis allows ManageIQ to peek inside virtual machines, containers and hosts to discover their contents.

## Virtual Appliance

- ManageIQ is distributed as a single virtual appliance that is available for a wide variety of platforms.

## Scalable Architecture

- The ManageIQ virtual appliance can be deployed standalone, or as part of a federated global deployment.

IT'S TIME FOR  
DEMO



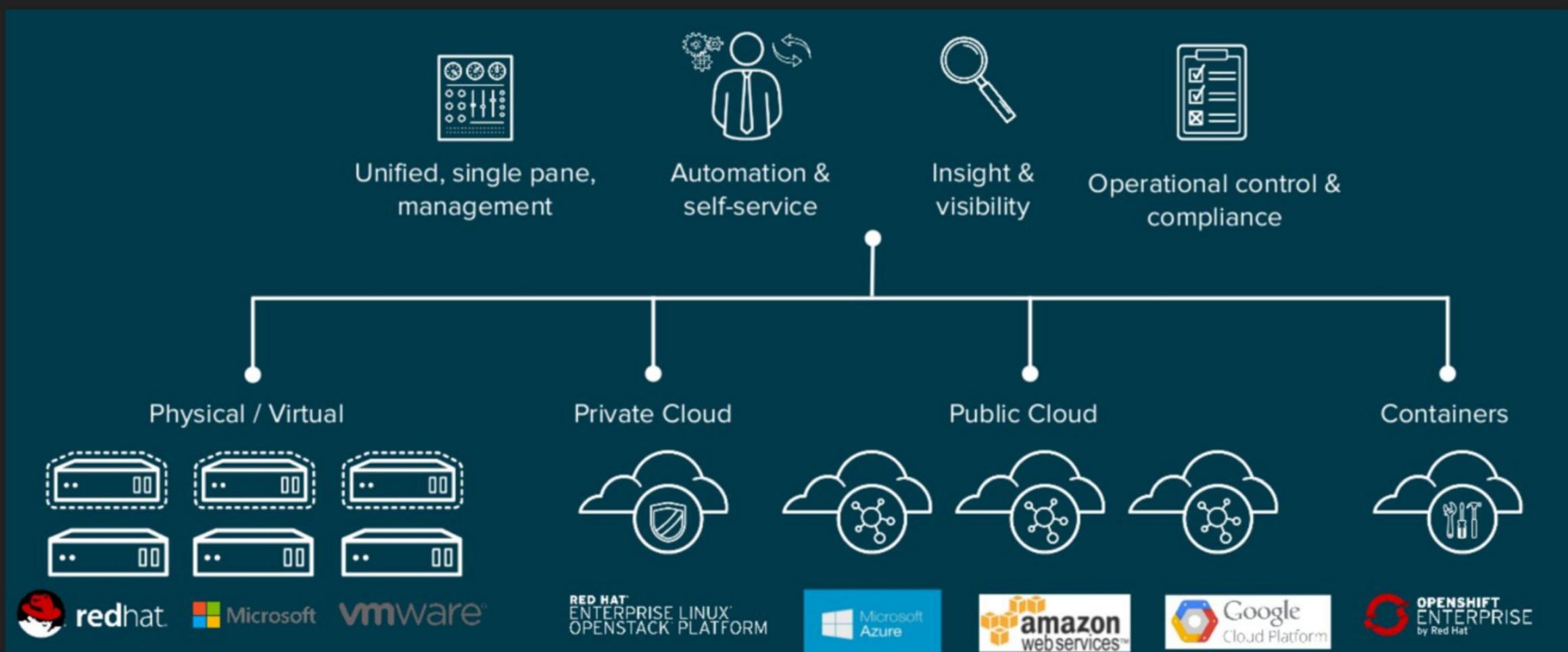
# Turning pain points to business benefits



- 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.

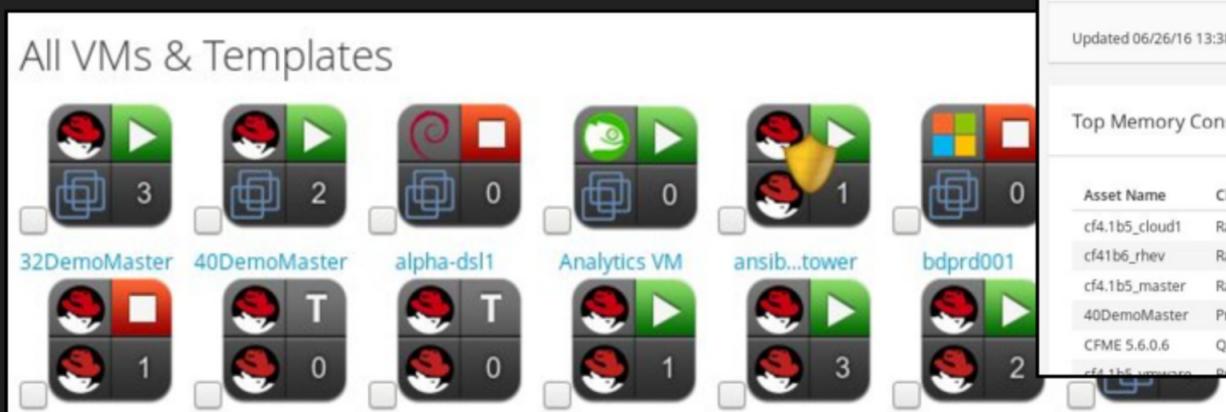


# Unified Cloud Management



# Virtualization Management

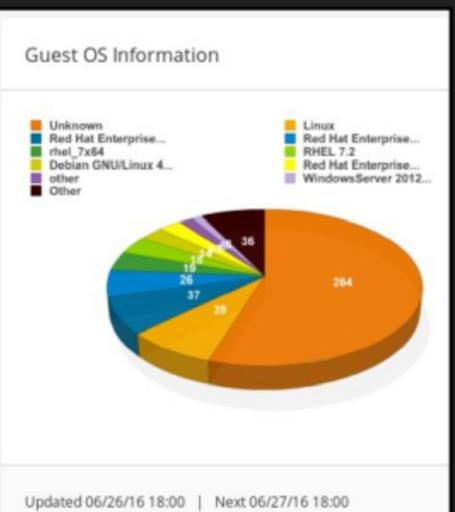
- Provision from clone of existing VM instance or template.
- View VM genealogy and track VM drift from established configurations.
- Execute VM power operations and retire VM instances.



Top CPU Consumers (weekly)		
Asset Name	Cluster Name	CPU - Usage Rate (%) (Avg)
ose32master1	Raleigh	65.3%
ose32etcd	Raleigh	56.8%
ose32master2	Raleigh	38.4%
cf41_vmwre1	Production	19.5%
cf41_openshift1	Production	19.1%
cf41_openshift	Production	19.0%
40DemoMaster	Production	17.2%
CFME 5.6.0.6	QA	15.7%
cf41b5_openshift	Production	12.5%
cf41_openshift2	QA	12.5%

Updated 06/26/16 13:38 | Next 06/27/16 18:00

Top Memory Consumers (weekly)		
Asset Name	Cluster Name	Memory - Used for Collected Intervals (MB) (Avg)
cf41b5_cloud1	Raleigh	7.5 GB
cf41b6_rhev	Raleigh	7.3 GB
cf41b5_master	Raleigh	6.1 GB
40DemoMaster	Production	6.1 GB
CFME 5.6.0.6	QA	5.1 GB
cf41b5_upstream	Production	4.7 GB

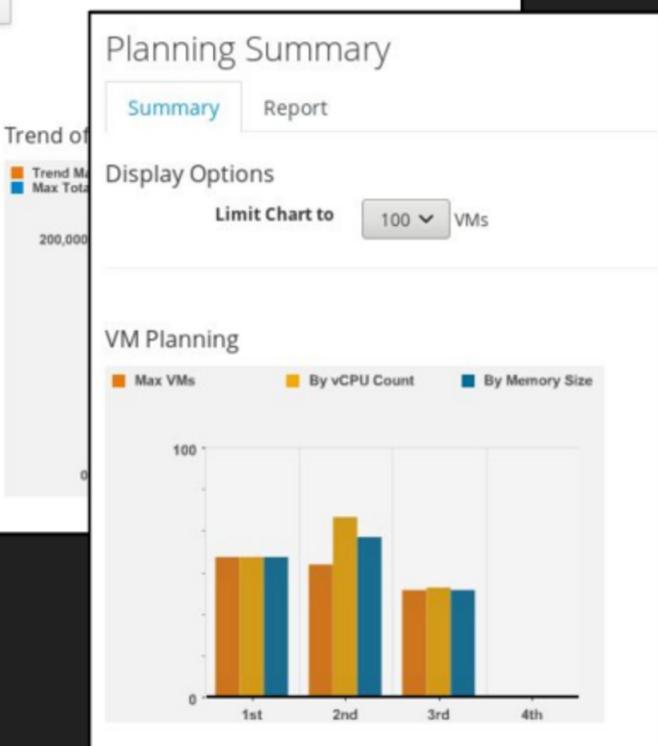
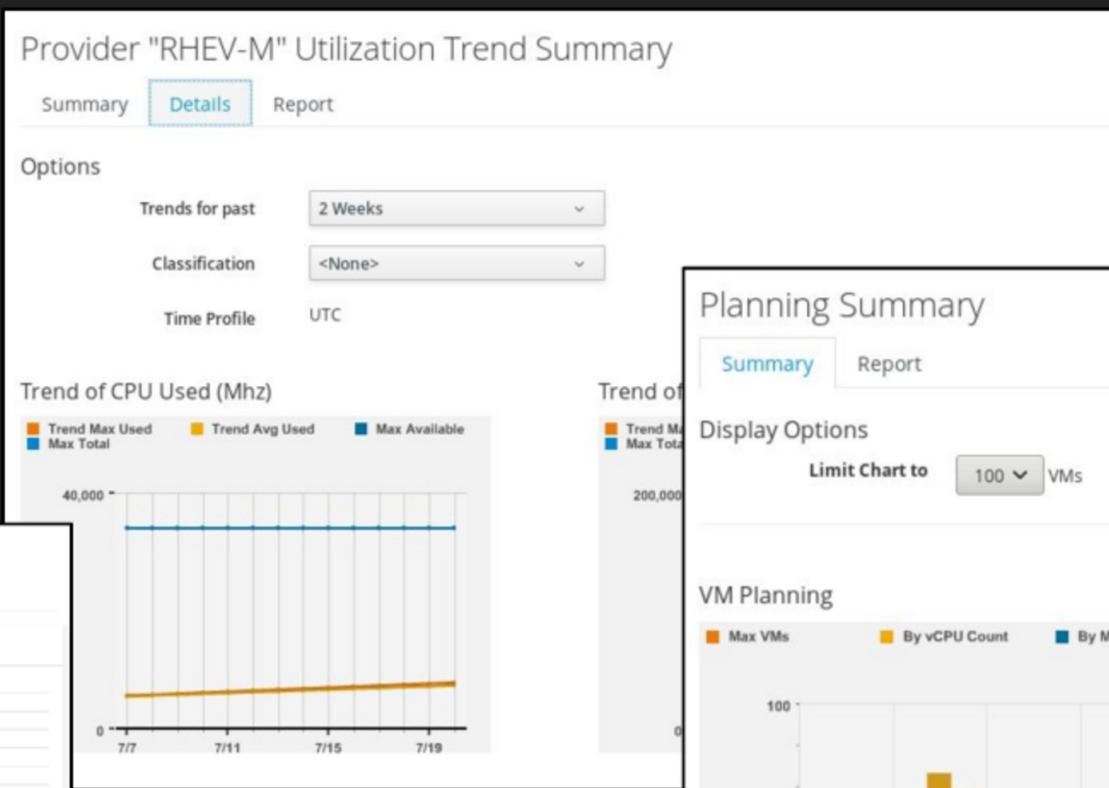
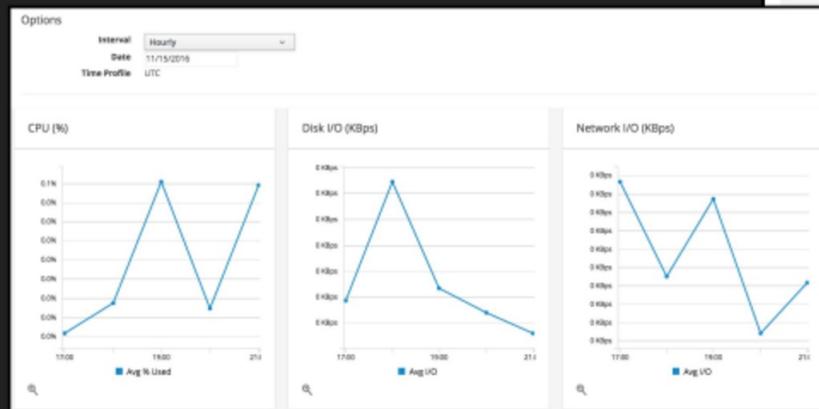


## EVM: Recently Discovered VMs

demo-summit-17-20160624-193235 - location unknown  
Date : 2016-06-24 19:34:50 -0600  
demo-summit-16-20160624-192734 - location unknown  
Date : 2016-06-24 19:29:17 -0600  
demo-summit-17-20160624-191651 - location unknown  
Date : 2016-06-24 19:23:27 -0600  
demo-summit-16-20160624-191620 - location unknown  
Date : 2016-06-24 19:18:14 -0600  
demo-summit-15-20160624-185320 - location unknown

# 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.



# Public Cloud Management

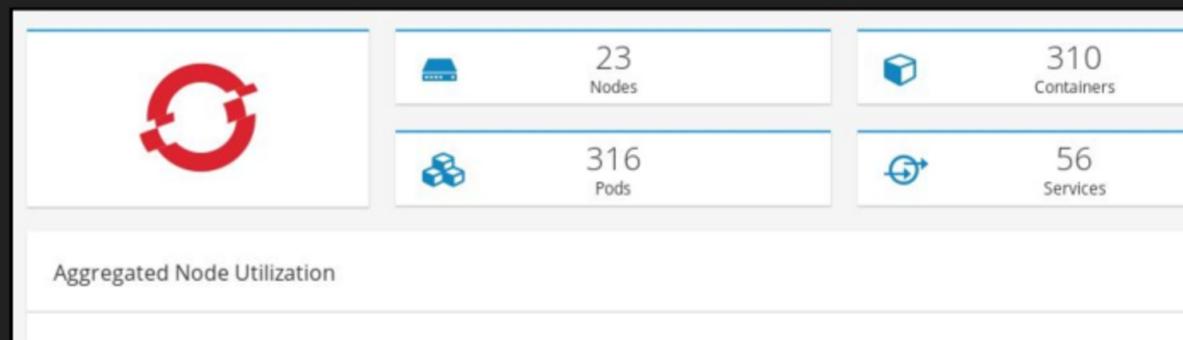
- View virtual instance inventory and manage across regions and availability zones.
- Provision virtual instances, storage and networking.
- Monitor and respond to events.

The screenshot displays three main components of a public cloud management system:

- Cloud Providers:** A dashboard showing four cloud providers: Amazon EC2 (1 instance, 1 image), Azure (11 instances, 19 images), AWS Lambda (3 instances, 94 images), and Google Compute Engine (0 instances, 561 images). Each provider has a small icon and a summary table with Type, EVM Zone, Instances, and Images.
- Azure (Central US) (Summary):** A detailed view of the Azure provider. It shows properties like Region (Central US), Discovered IP Address, Type (Azure), and Management Engine GUID (4d627c04-2752-11e6-998a-001a4a5b6702). It also includes a Status section with Default Credentials (Valid) and Last Refresh (Success - 27 Minutes Ago).
- Google Cloud Engine (mbu-project) (Summary):** A detailed view of the Google Cloud provider. It shows properties like Preferred Region (Central US), Discovered IP Address, Type (Google Compute Engine), and Management Engine GUID (ec355e06-2d82-11e6-94ae-001a4a5b6702). It includes sections for Status (Default Credentials Valid, Last Refresh Success - 8 Minutes Ago), Relationships (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), and Smart Management (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

IPv4	127.0.0.1
IPv4	10.5.0.8
IPv4	0.0.0.0.0:0.0:1
IPv6	fe80:0:0:0:42:aff:fe05:8
MAC	00:00:00:00:00:00
MAC	02:42:0A:05:00:08

Addresses

#### 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

# 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 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

**All Policy Profiles**

	Analysis: Exclude Specially Tagged VMs
	Analysis: On VM Reconfiguration
	Compliance Hosts: November 2012
	Compliance: DISA STIG
	Compliance: DMZ Configuration
	Compliance: Hosts
	Compliance: RHEL Host (KVM)

**All Alerts**

	Description
	Cluster DRS not enabled
	Cluster HA not enabled
	CPU Ready > 4000 ms for more than 10 min
	Datacenter VMs > 10
	Host Datastore < 5% of Free Space
	Host CPU Usage > 80% for more than 10 min

**All Actions**

	Description
	Alert - CPU Reservation > 500Mhz
	Cancel vCenter Task
	Check Host or VM Compliance
	Collect Running Processes on VM Guest OS
	Connect All CD-ROM Drives for Virtual Machine
	Disconnect All CD-ROM Drives for Virtual Machine

# 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.

Manage quotas for Tenant "Red Hat"

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

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 Start
CPU	Allocated CPU Count	Hourly		0.0
CPU	Used CPU	Hourly	MHz	0.0
Cpu Cores	Used CPU Cores	Hourly		0.0
Disk I/O	Used Disk I/O	Hourly	Kbps	0.0
Fixed	Fixed Compute Cost 1	Hourly		0.0
Fixed	Fixed Compute Cost 2	Hourly		0.0
Memory	Allocated Memory	Hourly	MB	0.0
Memory	Used Memory	Hourly	MB	0.0

Default Dashboard

Accounting Chargeback

Application Group	My Company Tag Environment	Total Cost
Ecosys	Production	\$658.05
Ecosys	Development	\$663.22
Hyperion	Production	\$431.26
Hyperion	Development	\$436.90
SAP	Production	\$492.48

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

# 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

# ManageIQ Ansible Automation

- Instead of ruby, just use the simpler Ansible
- Import your already existing playbooks
- Manage any provider of your wish

The screenshot displays three main components of the ManageIQ Ansible Automation interface:

- Playbooks (Embedded Ansible):** A table listing embedded Ansible playbooks. The columns include Name, Description, Repository, Created On, and Updated On. The table contains 15 entries, mostly starting with 'ManageIQ' or 'vmware/' followed by a specific playbook name like 'create\_user.yml' or 'Install\_Apache.yml'. All playbooks were created and updated on 09/07/17 at 12:34:52 UTC.
- Ansible Tower Jobs:** A table listing Ansible Tower jobs. The columns include Template Name, Type, Id, Status, Created On, and Updated On. The table contains 15 entries, mostly named 'Aws Demo' or 'fisherUser', with various status outcomes like failed, successful, or pending.
- All Ansible Tower Providers:** A table listing Ansible Tower providers. The columns include Provider Name, URL, Type, Zone, Description, and Systems. The table shows one provider: 'AnsITower Automation Manager' located at 'https://10.74.253.231/api/v1', categorized as an 'Automation Manager (Ansible Tower)', in the 'default' zone, with a description of 'Region 1', valid status, and 45 systems.

# Embedded Ansible in ManageIQ

The screenshot shows the ManageIQ Settings Server interface for the "EVM [5000000000000001]" server. The left sidebar includes sections for Settings, CFME Region, Analysis Profiles, Zones, Schedules, Access Control, Diagnostics, and Database. The main area displays "Basic Information" with fields for Hostname (192.168.1.71), IP Address (192.168.1.71), Resides on VM (Not Available), Company Name (My Company), Appliance Name (EVM), Zone (default), Appliance Time Zone (GMT+00:00 UTC), and Default Locale (Client Browser Setting). A note states: "\* Changing the Zone will reset all of this Server's priorities to secondary." Below this is the "Server Control" section, which lists Server Roles: Automation Engine (On), Capacity & Utilization Coordinator (On), Capacity & Utilization Data Collector (On), Capacity & Utilization Data Processor (On), Embedded Ansible (On, highlighted with a red box), Git Repositories Owner (Off), and Notifier (On). At the bottom are buttons for Pointer, Settings, and EXIT.

**Notifications**

**Events**  
2 New

**The role Embedded Ansible has started activation on server EVM**  
11/08/2017 | 6:05:30 AM

**The role Embedded Ansible has been activated on server EVM**  
11/08/2017 | 6:05:39 AM

**Mark All Read** **Clear All**

**Services**

C&U Metrics Collector for OpenstackInfra	started	9488	9529	openstack_infra
C&U Metrics Collector for RHEV	started	14238	14257	redhat
C&U Metrics Collector for RHEV	started	14243	14258	redhat
C&U Metrics Collector for vCenter	started	9540	9566	vmware
C&U Metrics Collector for vCenter	started	9548	9567	vmware
C&U Metrics Processor	started	27229	27261	ems_metrics_pro
C&U Metrics Processor	started	27224	27262	ems_metrics_pro
Cockpit Worker	started	15657	15667	
<b>Embedded Ansible Worker</b>	started		9559	

# Use Case: 1

ManageIQ and Ansible combo can be used to deploy application on any provider

Below is link for deploying a multi-tier application on AWS

[Github Link](https://github.com/jeromemarc/workflow-demo/tree/master/plays)

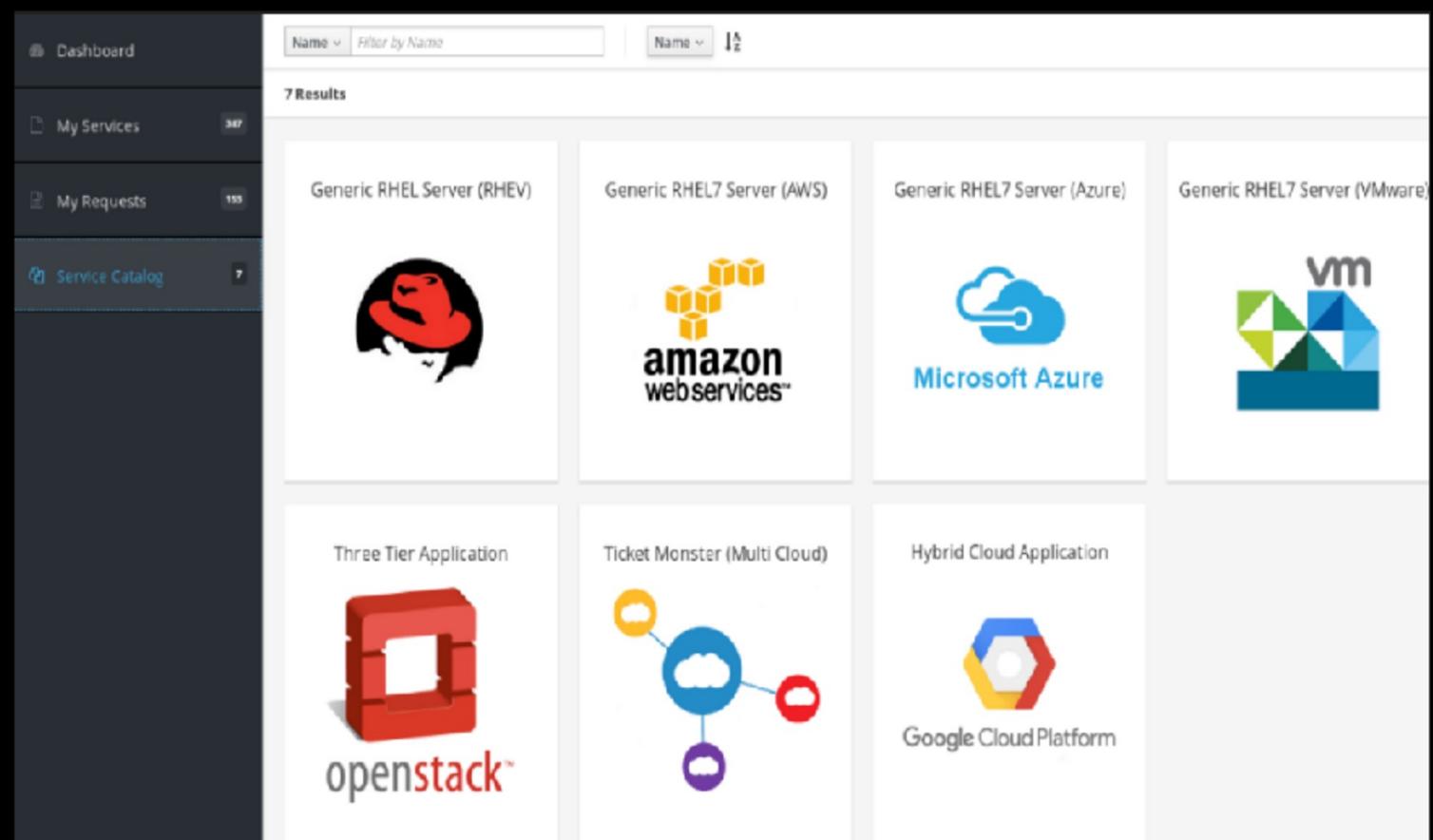
Below are prerequisites:

- Embedded Ansible role is enabled
- Amazon provider is configured in ManageIQ
- Ansible Credentials created for your Amazon environment.
- ELB must be present in Amazon (e.g. type: classic, name: ticketmonster, port forwarding: 80, 8080, health check: HTTP:8080/index.html).
- Experience in creating and ordering ManageIQ Services.

# Use Case 2: Self Service

Provision a multi-tier application using Self service catalog

- Use Catalog Bundles
- The bundle consists of individual catalog items
- service requests can be routed for approval



# Use Case: 3

## Combining Pre-Provision, Ruby and Post-Provision Playbooks

1. Deploy a Red Hat Enterprise Linux Virtual Machine.
2. Allow the User to choose between Test and Development networks.
3. Obtain the IP address for the VM from the corporate IPAM system.
4. Allow the User to choose if they want SSH access to their VM.
5. Allow the User to choose if they want additional software, choices are
  - a. Apache Web Server
  - b. FTP Server
  - c. PostgreSQL
6. Send an email with details on how to access the VM
7. Register the VM with the corporate CMDB

# Use Case: 3 User Inputs in dialog

The screenshot shows a configuration dialog with three main sections:

- Environment**: A dropdown menu labeled "Choose the destination environment".
- Optional Software**: Three checkboxes for selecting software: "Apache Web Server", "PostgreSQL Database Engine", and "FTP Server".
- Secure**: A radio button group for "Allow SSH Access" with options "No" (selected) and "Yes".

# Use Case 3: Obtain IP from IPAM

## Authenticate to IPAM

```
- name: Call to get token
  uri:
    url: "{{ token_url }}"
    method: POST
    user: "{{ username }}"
    password: "{{ password }}"
    force_basic_auth: yes
    validate_certs: no
    headers:
      Content-Type:
        "application/json"
    body_format: json
    return_content: yes
  register: token_output
```

## Get Free IP Address from IPAM

```
- name: Call to first IP address
  uri:
    url: "http://{{ ipam_server }}{{ subnet_href }}first_free/"
    method: GET
    validate_certs: no
    headers:
      Content-Type:
        "application/json"
    token: "{{ token }}"
    body_format: json
    return_content: yes
  register: free_ip
```

# Use Case: 3 Methods for Apache/FTP/PostgreSQL

Create METHOD execution STATES for our 3 playbooks.

  Install_Apache	METHOD::install_apache_true
  Install_FTP	METHOD::install_ftp_true
  Install_PostgreSQL	METHOD::install_postgresql_true

Create the STATE METHODS - Set the Playbook, Credentials to access the VM, the Hosts to the VM IP address variable, turn on & up the logging, and I also set the manageiq\_validate\_certs to false.

Data		Data		Data	
Repository	myRepo	Repository	myRepo	Repository	myRepo
Playbook	install_apache.yml	Playbook	install_postgresql.yml	Playbook	install_ftp.yml
Machine Credential	Red Hat	Machine Credential	Red Hat	Machine Credential	Red Hat
Cloud Credential		Cloud Credential		Cloud Credential	
Escalate Privilege	No	Escalate Privilege	No	Escalate Privilege	No
Max TTL		Max TTL		Max TTL	
Hosts	#{miq_provision.destination.ipaddresses.first}	Hosts	#{miq_provision.destination.ipaddresses.first}	Hosts	#{miq_provision.destination.ipaddresses.first}
Logging Output	Always	Logging Output	Always	Logging Output	Always
Verbosity	3 (Debug)	Verbosity	3 (Debug)	Verbosity	3 (Debug)

# Use Case 4: ManageIQ v2v

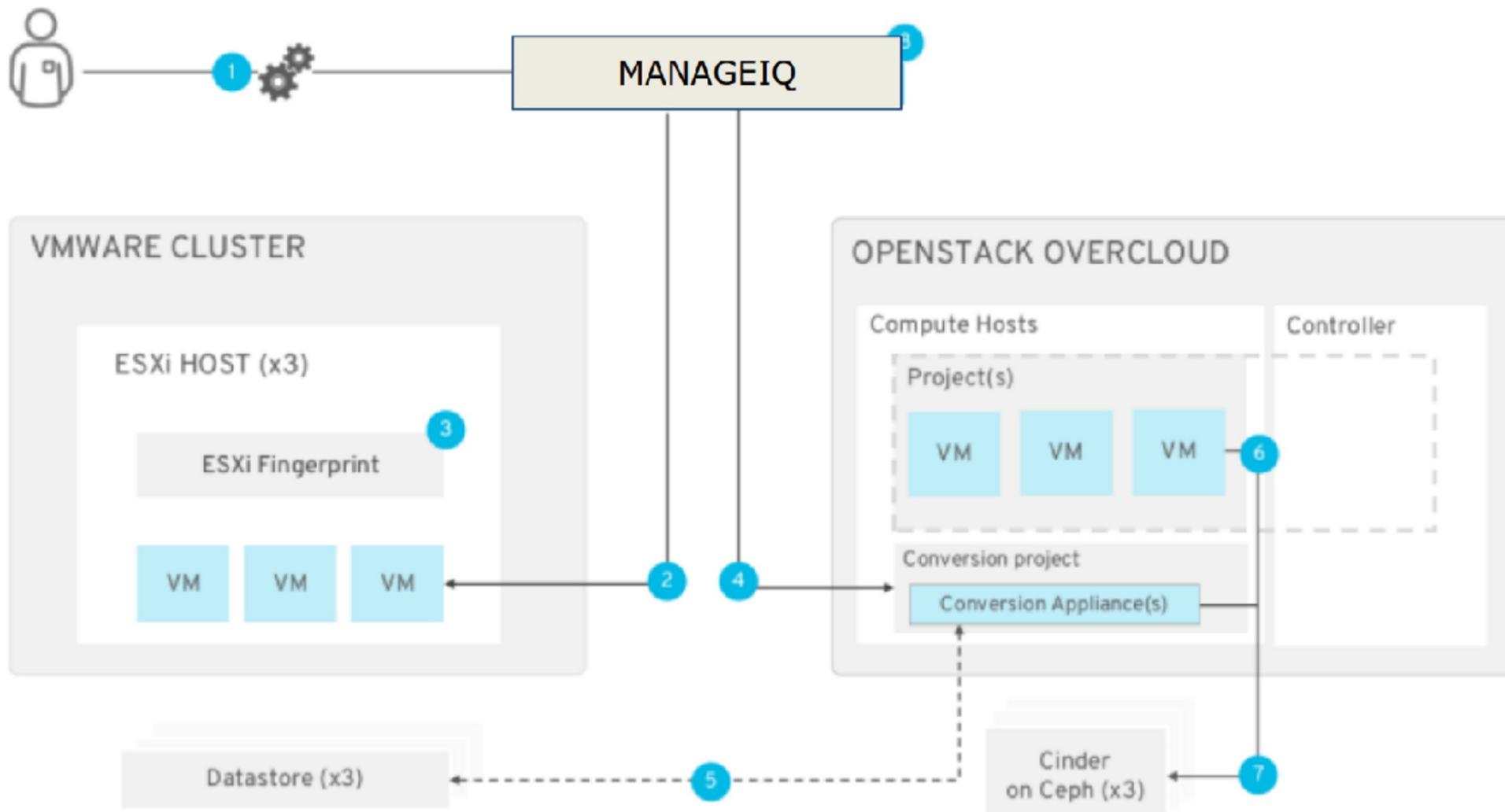
Migrate VM from VMware to RHV or OpenStack

What ManageIQ helps in:

- To automate a solution
- Present a graphical UI
- Integrate components
- Workflow management
- Scalability of the solution
- New service offer

# Use Case 4: ManageIQ v2v

## DATA FLOW DURING A MIGRATION



# Use Case 5: Use policies to trigger action

## Control and Compliance Policies

### Examples:

- Prevent virtual machines from running without an administrator account.
- Prevent virtual machines from starting if certain patches are not applied.
- Configure the behavior of a production virtual machine to only start if it is running on a production host.
- Force a SmartState Analysis when a host is added or removed from a cluster.

# Few Demo Videos

# Q & A



ManageIQ

THANK YOU!