Using Red Hat Systems Management Tools in a Hybrid Cloud

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June 24, 2015

Session #13836
INTRODUCTION
Defining Hybrid Cloud

- Concurrent consumption of legacy and next generation IT
- Concurrent consumption of private and public clouds
- Concurrent consumption of IaaS and PaaS clouds
- Concurrent consumption of traditional applications and cloud applications
- Seamless management of private and public, IaaS and PaaS
- Clouds for traditional and cloud applications
“Bimodal IT” (Gartner) and Drivers for Hybrid Cloud

“MODE 1”
- Scale-up
- Proprietary
- Operator-deployed
- Integration via middle-ware
- Resilience in platform
- Built for efficiency
- C, Java, .Net
- Examples:
  - ERP's, Anything > 10 Years Old, Oracle

“MODE 2”
- Scale-out
- Open source
- Developer-deployed
- Integration via API
- Resilience in application
- Built for change, agility, and speed
- Java, Ruby, Go, Python
- Examples:
  - Mobile back-ends, web apps

http://www.gartner.com/it-glossary/bimodal
Mix of Mode 1 and Mode 2 is a Good Place to Start

• “I'm Here.”
  – On-premise physical and virtual systems
  – Stable, known, trusted implementations for (investments in) systems management

• “I Want to Get Here.”
  – Leverage existing investments and systems management
  – Use cloud technology when appropriate
  – Maintain consistent configuration management process across on-premise and public cloud environments
Red Hat Technology for Systems Management

IaaS

Trusted Platform for Enterprise Workloads On-Premise and In-Cloud

Hybrid Cloud Management

Active Configuration and Content Management

App Dev/Ops

1M+ projects*

RED HAT ENTERPRISE LINUX (aka “RHEL”)

RED HAT ENTERPRISE VIRTUALIZATION

RED HAT STORAGE

RED HAT SATELLITE

RED HAT ENTERPRISE LINUX

OPENSTACK PLATFORM

RED HAT CLOUDFORMS

RED HAT JBOSS MIDDLEWARE

Apache

openstack

KVM

oVirt

ceph

GLUSTER

SPACEWALK

RDO

fedora

ManageIQ

JBoss Community

FuseSource

OPENSIFT

origin

OPENSIFT

Origin

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A Common First Step for Red Hat Systems Management Technology

• “I'm Here.”
  - Red Hat Satellite for provisioning, content, and configuration management

• “I Want to Get Here.”
  - Extend on-premise Red Hat Satellite environment to public cloud instances and hosted IaaS

![Diagram showing Red Hat Satellite Server with connections to RHEL Physical System, RHEL VM, and Red Hat Certified Hypervisor.]

“MODE 1”

![Diagram showing Red Hat Satellite Server with connections to RHEL Cloud Instance.]

“MODE 2”
Red Hat CloudForms Addresses Additional Hybrid Cloud Challenges

- Red Hat CloudForms provides:
  - Governance across traditional infrastructure and cloud services
  - Dashboard with role-based access control (RBAC)
  - Service catalog
  - IT process orchestration
  - Monitoring and alerting
  - Analytics
  - Quota enforcement
  - Metering
Red Hat Systems Management Feature Mapping for Hybrid Cloud
Agenda

- Considerations for integrating on-premise Red Hat Satellite with public cloud instances
- Red Hat Satellite technical walk-through on AWS
  - What's been tested by Red Hat, what's not
- Introduction to Red Hat CloudForms architecture for hybrid cloud
- Summary and take-aways
Considerations for Integrating On-premise Red Hat Satellite with Cloud Instances
Cost and Technical Considerations

Do I need a Red Hat subscription for cloud instances?

Can I use any cloud or managed service provider?

Do I need to modify cloud instances?

Per Instance?

Per Bandwidth?

Per Instance?

Red Hat Satellite Server

RHEL Physical System

RHEL VM

RHEL VM

RHEL Cloud Instance

RHEL Cloud Instance

Red Hat Certified Hypervisor
Use Traditional Subscriptions with Red Hat Cloud Access

- **Q:** Do I need a RHEL subscription for cloud instances?
  - **A:** To use Satellite, yes. Red Hat Cloud Access should be used.
- Enables use of traditional RHEL subscriptions in the cloud
- Satellite certificate created as usual
  - Avoid “double charge” for instances

**With Cloud Access, the Red Hat Support relationship is still with Red Hat.**
  - With OnDemand instances, both content/updates and support are through the service provider

**Current Cloud Access providers:**
  - AWS, GCE, Nifty Cloud (Japan)
Use a Red Hat Certified Cloud & Service Provider (CCSP)

- Can I use any cloud or managed service provider?
  - No. Use a Red Hat CCSP
- Red Hat CCSP's provide:
  - A trusted destination for RHEL workloads.
  - Fully supported, certified infrastructure
Configure Cloud Instances for Use with Red Hat Satellite

Q: Do I need to modify cloud instances?
A: For most RH CCSP's, yes.

Disconnect from the default, in-cloud Red Hat Update Infrastructure (RHUI) as needed, then register with the Satellite server.

- RHUI provides lightweight content/patches only (pull model) in-cloud.
- Satellite provides complete configuration management (push model).
Technical Walk-through: Using On-premise Red Hat Satellite with Amazon Web Services (AWS) Instances
Walk-through: Red Hat Satellite with Cloud Instances

1. Prepare RHEL subscriptions using Red Hat Cloud Access
2. Create cloud instances
3. Disconnect instances from RHUI, then register with Satellite
Assumptions

- An adequate quantity of RHEL with Smart Management subscriptions has been acquired and is accessible in a Red Hat Customer Portal account.
- An AWS account has already been created.
- Proper networking has been configured to enable DNS resolution between the Satellite server and cloud instances – i.e. Virtual Private Cloud (VPC) in AWS
- Adequate bandwidth/latency between the on-premise Satellite server and cloud instances
Step #1: Prepare RHEL subscriptions using Red Hat Cloud Access

• Latest RHEL subscriptions (2013 and later) are Cloud Access enabled.

• Visit the Cloud Access website to register your RHEL subscriptions for use in the cloud.
  – Option 1: Import an existing RHEL OS image to your cloud service provider
    • Called “Cloud Access Image Import”
  – Option 2: For AWS, Cloud Access AMI’s are already available
    • No additional AWS charge for RHEL

Registering Subscriptions for Cloud Access Image Import

• Required for most providers
  – Exception: AWS has pre-existing Cloud Access RHEL AMI's
• Stand-alone images avoid double paying for RHEL
  – OnDemand instances are typically charged automatically by the service provider
• Good use case is when a standard corporate image is already in use, may differ from providers standard image

https://access.redhat.com/cloude/manager/image_imports/new
Cloud Access Image Import Provider Examples

- Google Compute Engine
  - https://cloud.google.com/compute/docs/tutorials/building-images
- Amazon (for Custom Images)
Step #2: Create Cloud Instances

- After registering RHEL subscriptions for Cloud Access, create instances.
  - AWS: Use AMI's with the 'Access' string included, which indicates Cloud Access AMI's (fee for compute/memory/storage only)

- Demo of this in the Red Hat booth, Public Cloud pod
Step #3: Disconnect instances from RHUI, then register with Satellite

- Remove the RHUI configuration rpm and clean-up repo data:

  ```bash
  [root@ip-172-31-18-123 ec2-user]# rpm -qa | grep rhui
  rh-amazon-rhui-client-2.2.117-1.el6.noarch

  [root@ip-172-31-18-123 ec2-user]# rpm -e rh-amazon-rhui-client-2.2.117-1.el6.noarch
  warning: /etc/yum/pluginconf.d/rhui-lb.conf saved as /etc/yum.pluginconf.d/rhui-lb.conf.rpmsave
  warning: /etc/yum.repos.d/rhui-load-balancers.conf saved as /etc/yum.repos.d/rhui-load-balancers.conf.rpmsave
  warning: /etc/yum.repos.d/redhat-rhui.repo saved as /etc/yum.repos.d/redhat-rhui.repo.rpmsave
  warning: /etc/yum.repos.d/redhat-rhui-client-config.repo saved as /etc/yum.repos.d/redhat-rhui-client-config.repo.rpmsave

  [root@ip-172-31-18-123 ec2-user]# subscription-manager

  [root@ip-172-31-18-123 ec2-user]# yum clean all
  Loaded plugins: security
  Cleaning repos:
  Cleaning up Everything

  [root@ip-172-31-18-123 ec2-user]# yum repolist
  Loaded plugins: security
  repolist: 0
  ```
Step #3: Disconnect instances from RHUI, then register with Satellite (cont.)

- Now register with the Satellite server

```
[root@ip-172-31-18-123 ec2-user]# yum localinstall -y --nogpgcheck install http://172.31.18.123/pub/katello-ca-consumer-latest.noarch.rpm
[root@ip-172-31-18-123 ec2-user]# subscription-manager register --org="CCSP" --activationkey="rhel7Latest"
[root@ip-172-31-18-123 ec2-user]# subscription-manager repos --enable rhel-6-server-rpms --enable rhel-server-rhscl-6-rpms --enable rhel-server-6-satellite-6-beta-rpms
[root@ip-172-31-18-123 ec2-user]# yum install katello-agent
```

- See also [http://docs.redhat.com](http://docs.redhat.com) → Red Hat Satellite for additional instructions on Activation Key creation.
Cloud Use Case Summary for Red Hat Satellite

1. On-premise Satellite with cloud instances

2. On-premise Satellite with cloud proxy and instances

3. Satellite and instances in the cloud

4. Multi-region cloud with proxy
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Discuss with Your Red Hat Team

Red Hat Tested
Introduction to Red Hat CloudForms Architecture for Hybrid Cloud Management
Red Hat CloudForms Provider Support

PRIVATE CLOUD

HYBRID CLOUD

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Red Hat CloudForms Architecture for Providers with Native API Support

- Red Hat CloudForms provides native API support for OpenStack and AWS
  - Additional providers TBD
  - Can leverage the ManageIQ upstream community project
    - [http://manageiq.org/](http://manageiq.org/)

- Q: Does this mean Amazon is the only Service Provider (SP) I can use???
  - A: No. (See next slide)
Red Hat CloudForms Architecture for Managed Service Providers (MSP's)

- CloudForms uses a distributed architecture and can scale to remote datacenters, such as Managed Service Providers (MSP's).
- Requires MSP is using a Red Hat supported provider
  - RHEV
  - RHEL OpenStack Platform
  - VMware vCenter
- As discussed previously, use a Red Hat Certified Cloud & Service Provider (CCSP)
Take-Aways

- Existing on-premise Red Hat Satellite can be extended to manage public cloud instances and achieve a hybrid cloud architecture
  - Work with Red Hat to validate your hybrid cloud design: http://access.redhat.com/support

- Deploy Red Hat CloudForms to provide a complete cloud management platform (CMP)
  - Provides governance, orchestration, self-service, metering and other capabilities
  - By using CloudForms distributed worker architecture, not limited to AWS-only

- Leverage your existing RHEL subscriptions in the cloud using Red Hat Cloud Access
  - Required for Red Hat Satellite integration

- Leverage the Red Hat Certified Cloud & Service Provider (CCSP) ecosystem when choosing a cloud service provider: http://access.redhat.com/certifications
For More Information

• Red Hat Cloud Access:
• List of Red Hat Certified Cloud & Service Providers (CCSP's):
  – https://access.redhat.com/certifications
• Red Hat Support
  – https://access.redhat.com/certifications

• @RHSummit
  – Visit the Certified Cloud & Service Provider Booth
    • Cloud Access and Satellite Demo's
  – Get the slides
    • This session and “Including the public cloud in your hybrid cloud strategy”
THANK YOU!!!

- Please complete a survey
  - Session #13836
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