AGENDA

- Cloud Concepts
- Market Overview
- Evolution to Cloud – Workloads
- Evolution to Cloud – Infrastructure
CLOUD TYPES AND DEPLOYMENT MODELS

- **I.T. OPERATIONS**
- **DEVELOPER**
- **BUSINESS**

**IT as the provider and broker of services**

**SOFTWARE-AS-A-SERVICE (SaaS) (hosted apps)**
- Google Apps | Salesforce | Many More

**PLATFORM-AS-A-SERVICE (PaaS) (dev platform, apps middleware)**
- OpenShift | Force.com | Azure

**INFRASTRUCTURE-AS-A-SERVICE (IaaS) (compute, storage, network)**
- Amazon EC2 | RackSpace | OpenStack

**PRIVATE CLOUD**

**HYBRID CLOUD**

**PUBLIC CLOUD**
CLOUD BUSINESS BENEFITS

✔ Agility & Control
✔ Cost Savings
✔ Rapid Innovation

TOP 5 BUSINESS DRIVERS

1. Cost Savings
2. Operational Efficiency
3. Open Platform
4. Flexibility of underlying Tech Choices
5. Ability to innovation compete
## Journey to an Open Hybrid Cloud

<table>
<thead>
<tr>
<th>Traditional Datacenter Virtualization</th>
<th>Advanced Virtualization Management</th>
<th>Private IaaS Cloud</th>
<th>Hybrid IaaS Cloud</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server consolidation</td>
<td>Heterogeneous integration and management</td>
<td>Self service, chargeback, many other cloud features</td>
<td>Cloud Bursting</td>
</tr>
<tr>
<td>Scalable, secure, and managed virtualization</td>
<td>Resource optimization</td>
<td>Potential for massive scale</td>
<td>Control/Govern Shadow IT</td>
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<tr>
<td>CapEx reduction</td>
<td></td>
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<td>Full workload portability</td>
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</tbody>
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DECISION CRITERIA
Customers want to.....

- Protect their infrastructure investments
- Avoid lock-in
- Evolve at their own pace
- Work with an experienced partner
- Minimize costs

According to Information Week's 2014 Private Cloud survey, 56% indicated that the number one challenge is to protect and integrate their existing IT products.
OPEN, FLEXIBLE ARCHITECTURES ESSENTIAL FOR SUCCESS

- Proprietary cloud offerings not best option for many--poor cloud architecture decisions can dramatically limit ROI and flexibility

- Desire for flexibility driving strong interest in open cloud technologies

- Greatest innovation is occurring in open source cloud deployments

“Open clouds are important... because they create a flexible, open IT infrastructure that can easily scale.”
- Ramesh Menon, IBM

76% of clouds are built on open source and Linux technologies
- Linux Foundation, Global Survey 2013
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OPEN, FLEXIBLE ARCHITECTURES ESSENTIAL FOR SUCCESS

TRADITIONAL WORKLOADS
- Typically resides on a single, large VM
- Cannot tolerate any downtime
- Need $$ enterprise virtualization tools
- Application scales up, not out

CLOUD WORKLOADS
- Workload resides on multiple VMs
- Tolerates VM failure
- Fault tolerance often built into workload
- Application scales out, not up
## WORKLOAD TYPES

<table>
<thead>
<tr>
<th>Workload Type 1</th>
<th>Workload Type 2</th>
<th>Combination of Traditional and Cloud VMs to provide application. Database may be hosted on traditional workloads, web front-end and logic layers on cloud workloads.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Application → 1 VM</td>
<td>1 Application → Many VMs</td>
<td></td>
</tr>
<tr>
<td>Lifecycle in years</td>
<td>Lifecycle hours to months</td>
<td></td>
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<tr>
<td>Not designed to tolerate failure of VM, so you need features that keep VMs up</td>
<td>If a VM dies, application kills it and creates a new one, app stays up</td>
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</tr>
<tr>
<td>Application SLA requires enterprise virt. features (migration, HA, etc.)</td>
<td>High resiliency features often built into the application itself</td>
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</tr>
<tr>
<td>Scale up (VM gets bigger)</td>
<td>Scale out (add VMs)</td>
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<tr>
<td>Example workloads: Exchange, large commercial applications</td>
<td>Example workloads: Netflix, most mobile phone applications</td>
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RED HAT'S EVOLUTIONARY PATH TO CLOUD
CLOUD SYSTEMS MANAGEMENT

Benefits
- Higher server to admin ratios
- Decreased human error
- Reduced complexity
- Better security
- Faster service delivery
- Increased manageability
CLOUD MANAGEMENT PLATFORM
Transformation to Private Cloud

CMP Capabilities
- Self-Service Automated Provisioning
- Service Catalog
- Chargeback
- Capacity Management
- Performance Management
- Configuration & Change Management
- Life-cycle Management
- Orchestration
- External Cloud Connection
ADDITIONAL VIRTUALIZATION CAPACITY

- Add lower cost virtualization
- Higher performance
- Choice/options remain open
CLOUD ENABLED APPLICATIONS / WORKLOADS

OpenStack

<table>
<thead>
<tr>
<th>CLOUD MANAGEMENT PLATFORM</th>
<th>DISCOVERY</th>
<th>CAPACITY PLANNING</th>
<th>REPORTING</th>
<th>AUDITING COMPLIANCE</th>
<th>ANALYSIS</th>
<th>MONITORING</th>
<th>ORCHESTRATION</th>
<th>POLICY</th>
<th>CHARGEBACK</th>
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<tbody>
<tr>
<td>EXISTING VIRTUALIZATION</td>
<td>VM</td>
<td>VM</td>
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<td>ALTERNATIVE VIRTUALIZATION</td>
<td>VM</td>
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<tr>
<td>TRADITIONAL APPLICATION</td>
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<td>OPENSTACK PLATFORM</td>
<td>VM</td>
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<td>CLOUD ENABLED APPLICATION</td>
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</table>

- Add large scale cloud workloads
- Add application resource self-adapting
- Resource self-adapting
PRIVATE CLOUD
Traditional & Cloud Enabled Applications
TRADITIONAL & CLOUD ENABLED APPLICATIONS
Public Cloud
RED HAT CLOUD INFRASTRUCTURE
Cloud Management – Alternative Virtualization – OpenStack
VALUE OF RED HAT CLOUD INFRASTRUCTURE
An Evolutionary Approach to Cloud

- Only solution to provide Virtualization, OpenStack, CMP, and OS
- Flexible path to the cloud
- Lifecycle management across all layers of private cloud
- Future proofs your investment
- Not a rip and replace solution
- Tightly integrated components
- Cost effective
THANK YOU