



redhat.

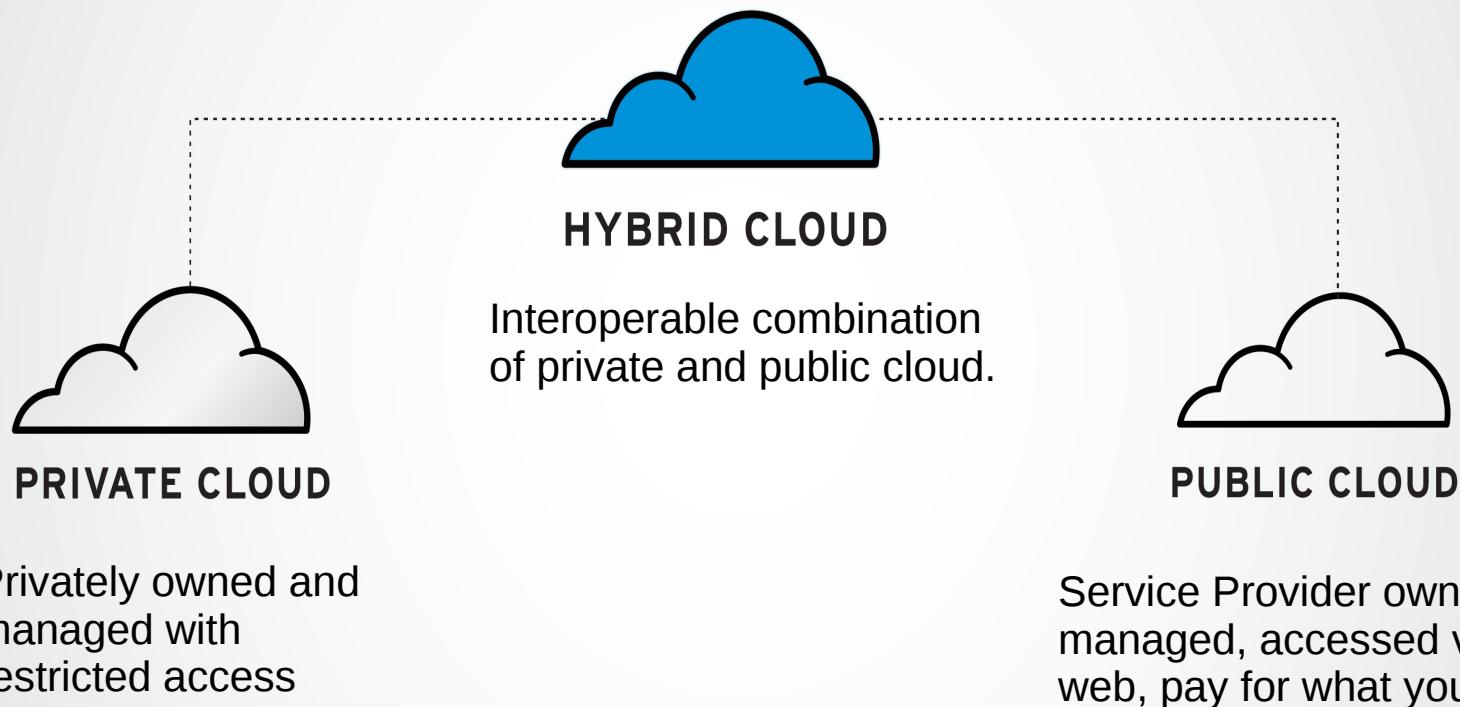
# Hands on Cloud

Arun Eapen  
GLS - INDIA  
28<sup>th</sup> Oct'15

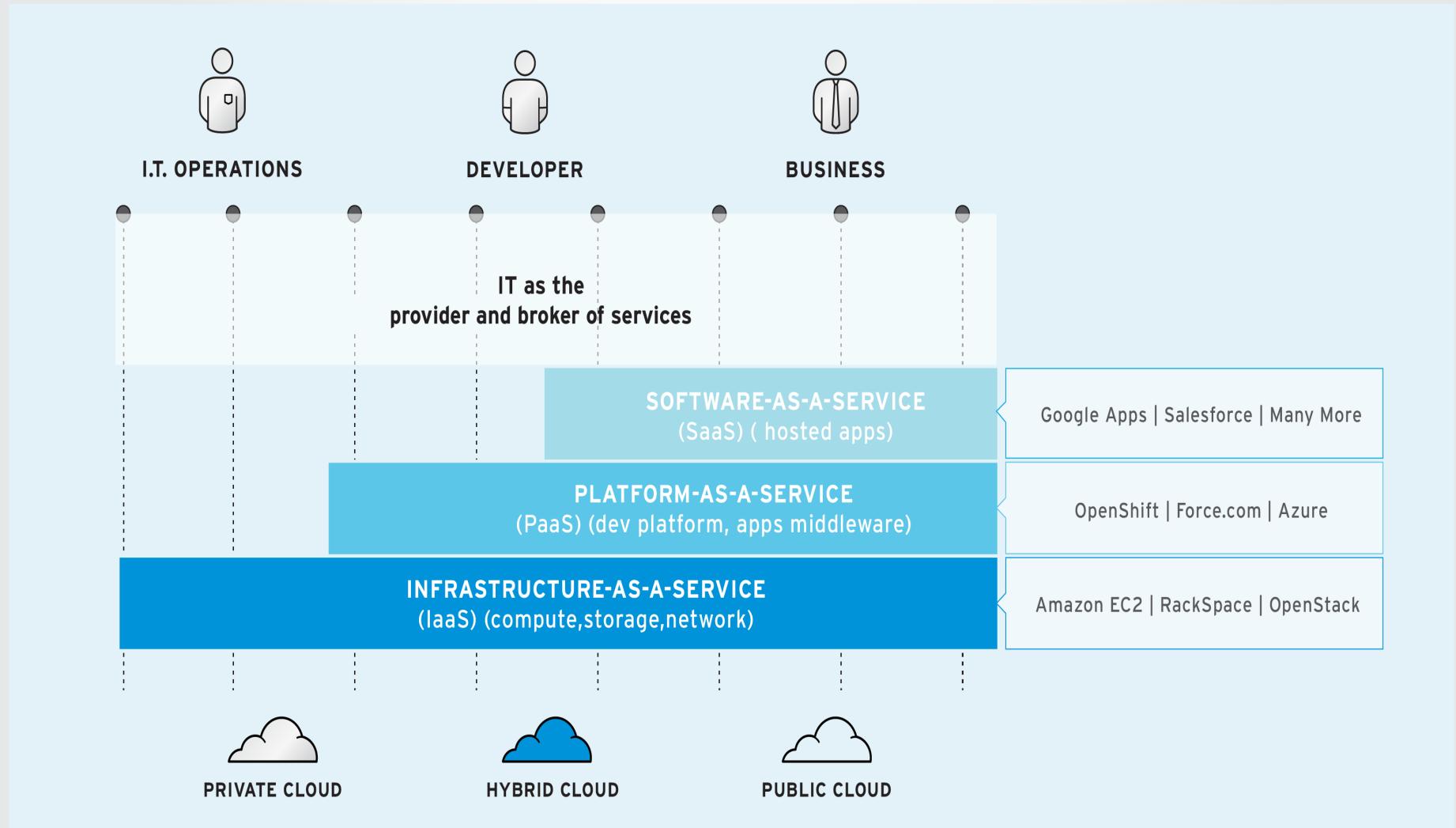
# AGENDA

- Cloud Concepts
- Market Overview
- Evolution to Cloud – Workloads
- Evolution to Cloud – Infrastructure
- Red Hat Cloud Infrastructure
- Red Hat Cloud Training & Certification

# CLOUD DEPLOYMENT MODELS



# CLOUD TYPES AND DEPLOYMENT MODELS



# CLOUD BUSINESS BENEFITS

✓ Agility & Control

✓ Cost Savings

✓ Rapid Innovation

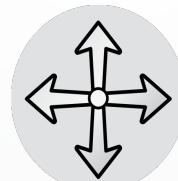
## TOP 5 BUSINESS DRIVERS



1. Cost Savings



2. Operational Efficiency



3. Open Platform



4. Flexibility of underlying  
Tech Choices



5. Ability to innovate  
compete

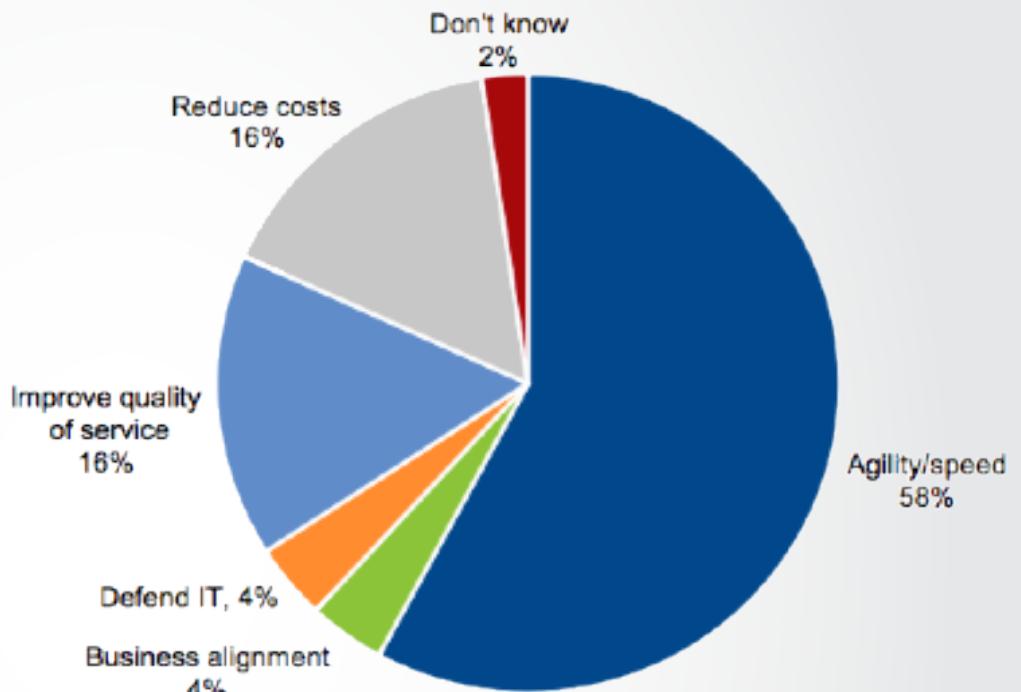


Figure 1 – Gartner Data Center Pool on Private Cloud Computing Drivers, Gartner, Private Cloud Matures, Hybrid Cloud Is Next, Thomas Bittman, September 6, 2013

Figure 2 - "OpenStack Foundation User Survey" -  
<http://www.openstack.org/blog/2013/11/openstack-user-survey-october-2013/>, October, 2013

# BUSINESS AND INFRASTRUCTURE PRIORITIES

## Infrastructure as a Service (IaaS)

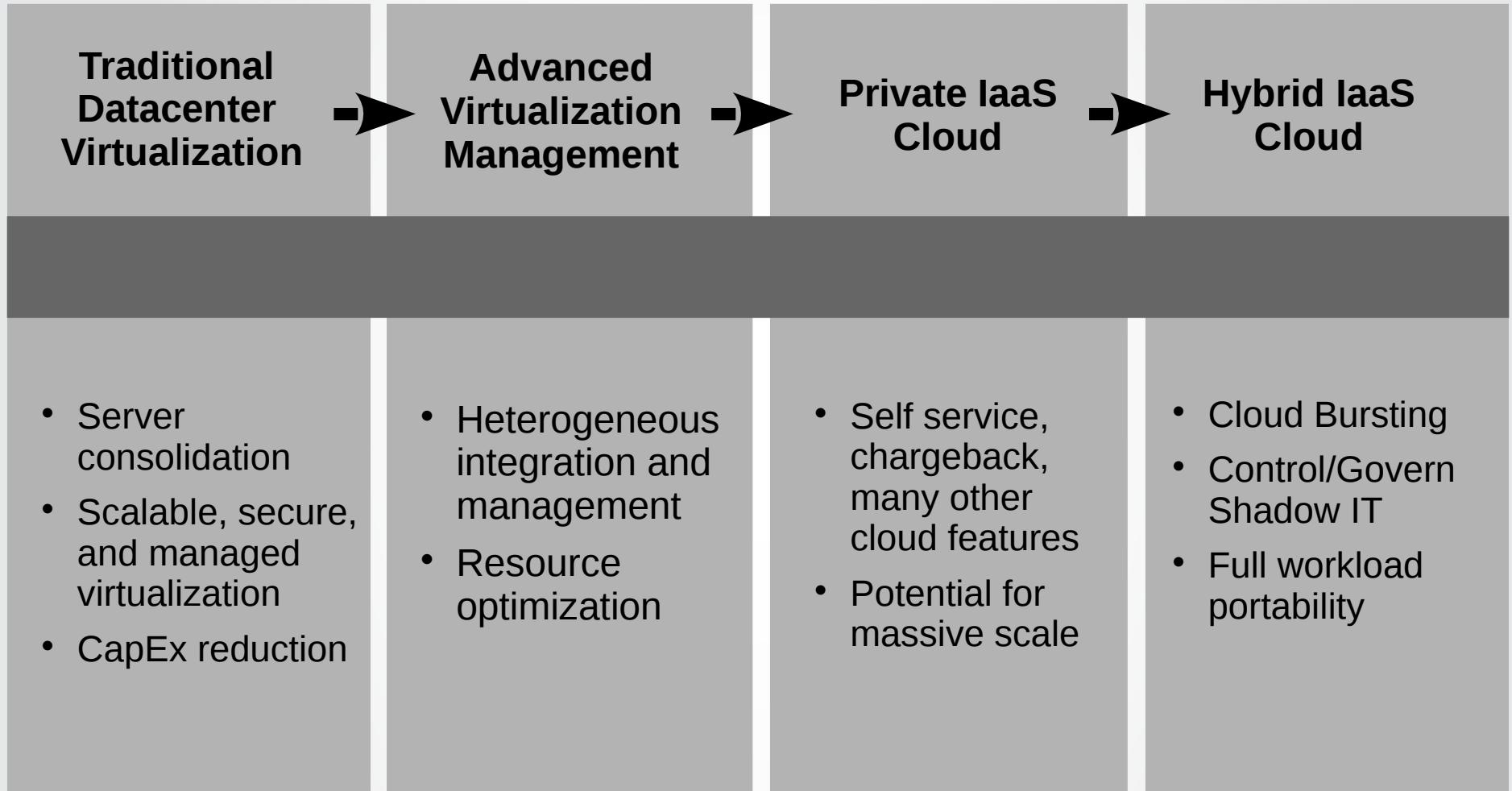
- **Lines of Business want:**

- Rapidly create and update applications
- IT to act as a service, not a bottleneck
- Turning to public cloud IaaS when infrastructure can't meet needs

- **Infrastructure team priorities:**

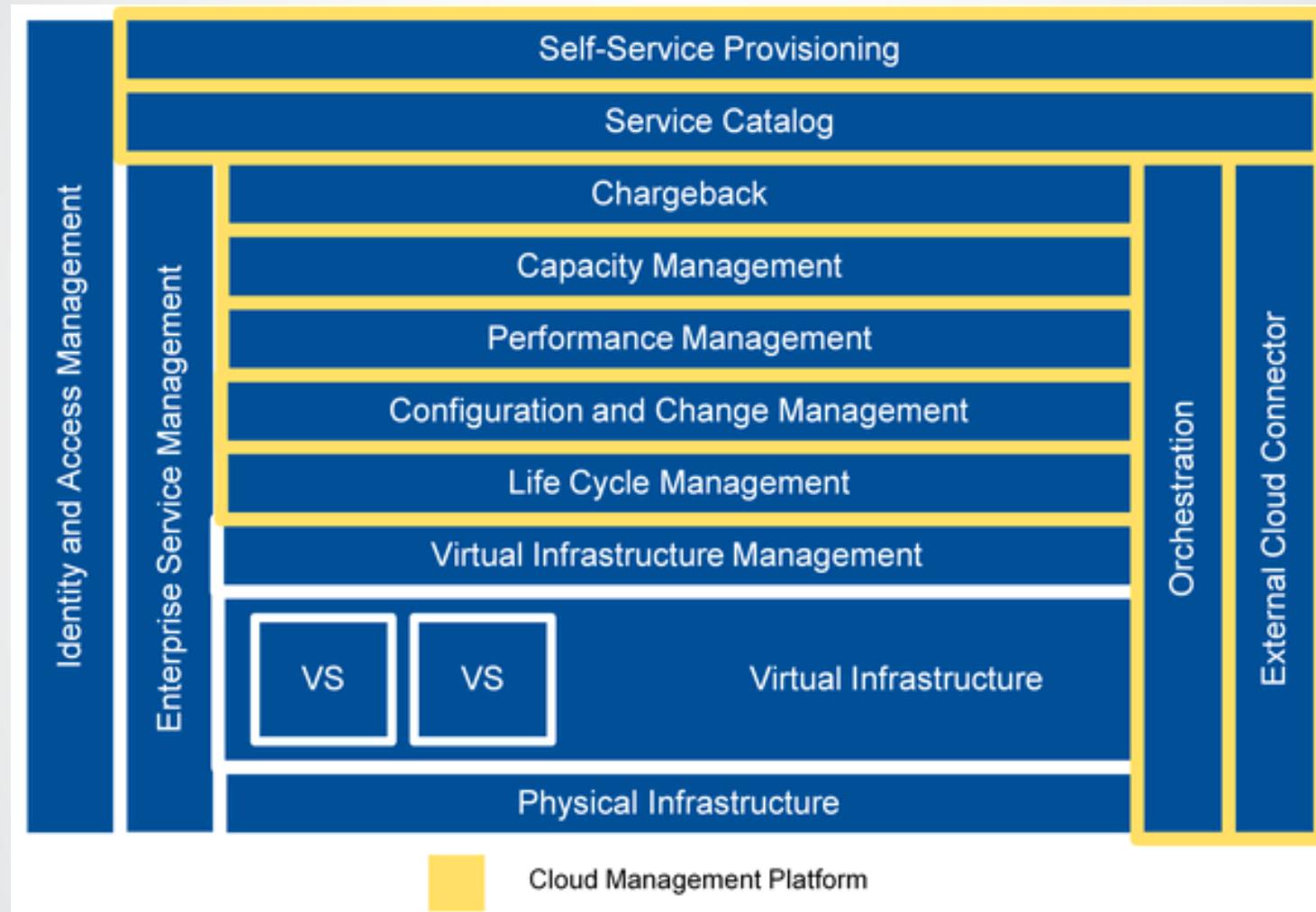
- Meet demands of business users faster
- Attain governance over entire infrastructure
- Gain insight into utilization
- Considering hybrid IaaS cloud to achieve these results

# JOURNEY TO AN OPEN HYBRID CLOUD



# GARTNER REFERENCE ARCHITECTURE FOR IAAS

## And the Role of a CMP Solution



<http://www.gartner.com/it-glossary/cloud-management-platforms>

Source: "Evaluation Criteria for Cloud Management Platforms," 19 July 2012 (refreshed 10 February 2014), By Alessandro Perilli, Gartner

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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

# CLOUD LEADERS RELY ON OPEN SOURCE



AMAZON

- Linux
- Xen



RACKSPACE

- Linux
- Xen & KVM
- OpenStack



GOOGLE

- Linux
- KVM



SALESFORCE.COM

- Linux
- Joined OpenStack
- SaaS available on OpenStack



FACEBOOK

- Linux
- KVM
- OpenStack

Proprietary cloud technologies are  
too expensive and inhibit scaling

# MANY MAINSTREAM ORGANIZATIONS FOLLOWING SUIT



DREAMWORKS

- Linux
- KVM



BEST BUY

- Linux
- KVM
- OpenStack



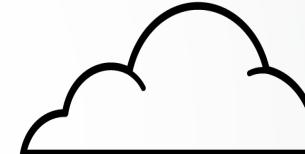
PAYPAL

- Linux
- KVM
- OpenStack
- OpenShift



COMCAST

- Linux
- KVM
- OpenStack



HARVARD/MIT

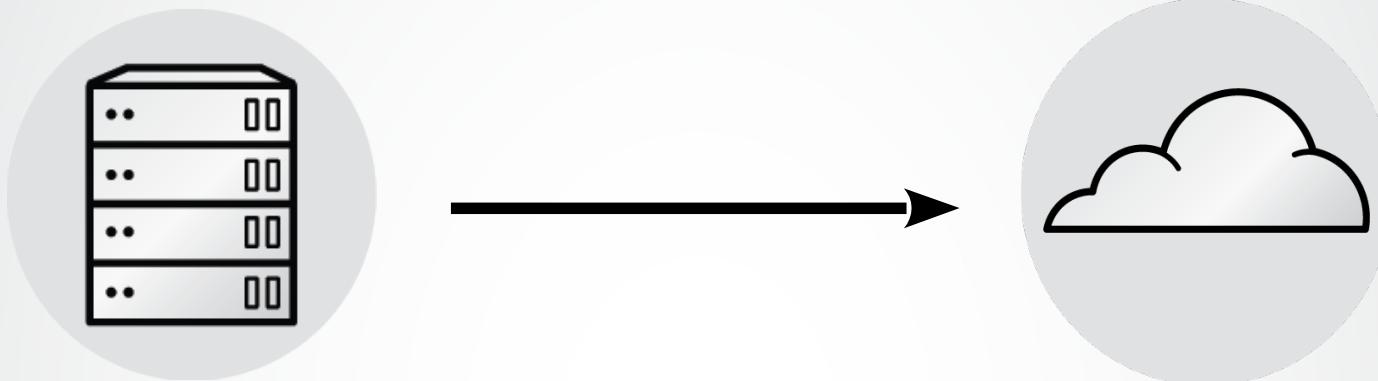
- Linux
- KVM
- OpenStack

**Open Source-based Clouds are just as cost effective and scalable for mainstream**

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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

# CLOUD-ENABLED WORKLOADS

- Highly probable that your developers have turned to public cloud
  - Expensive and ungoverned
- OpenStack required to gain control over workloads, run them in-house
- OpenStack provides numerous cost and security benefits

## FACTS



Virtually every F1000 company running workloads beyond test dev stage in Amazon's public cloud.

BARB DARROW, GIGAOM



Amazon's EC2 service is 380% more expensive than running our own hardware.

DEEPMONKEY.COM



84% of IT decision makers considering OpenStack for future deployment.

IDG CONNECT

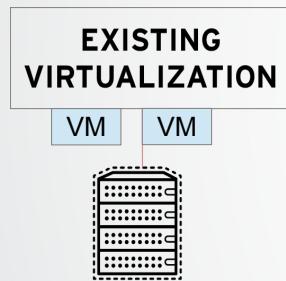
# WORKLOAD TYPES

TRADITIONAL	CLOUD	MIXED/HYBRID
1 Application → 1 VM	1 Application → Many VMs	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.
Lifecycle in years	Lifecycle hours to months	
Not designed to tolerate failure of VM, so you need features that keep VMs up	If a VM dies, application kills it and creates a new one, app stays up	
Application SLA requires enterprise virt. features (migration, HA, etc.)	High resiliency features often built into the application itself	
Scale up (VM gets bigger)	Scale out (add VMs)	
Example workloads: Exchange, large commercial applications	Example workloads: Netflix, most mobile phone applications	

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# RED HAT'S EVOLUTIONARY PATH TO CLOUD



# CLOUD SYSTEMS MANAGEMENT

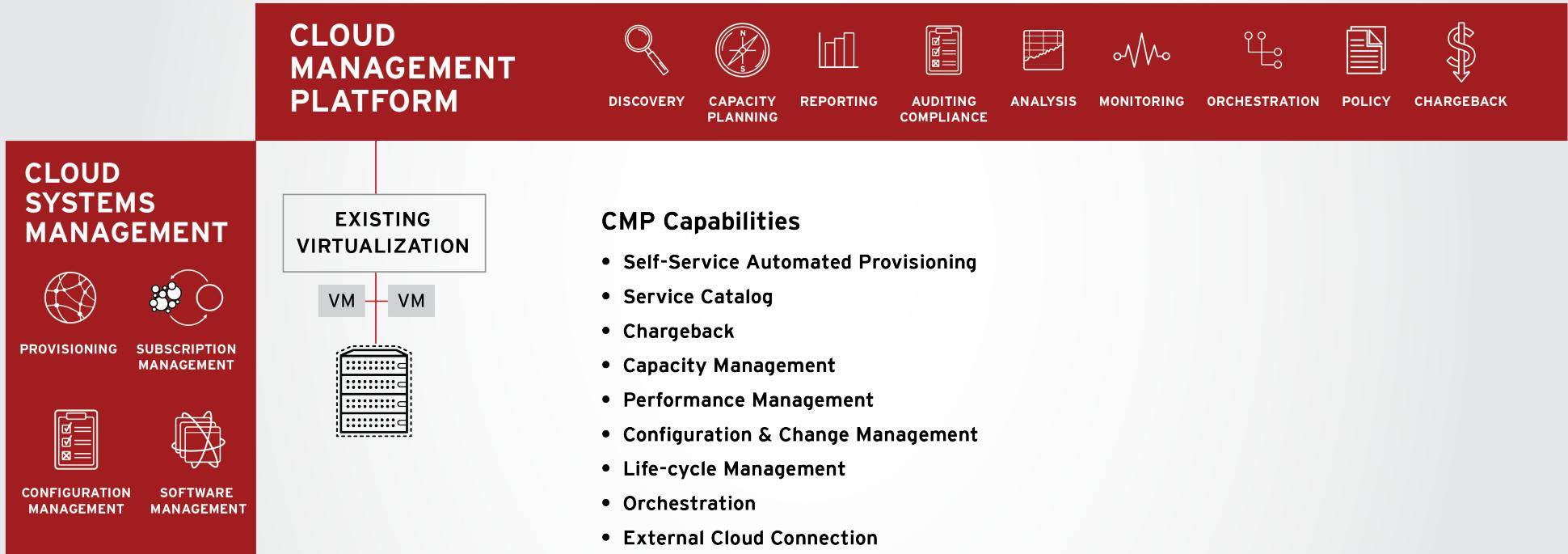


## Benefits

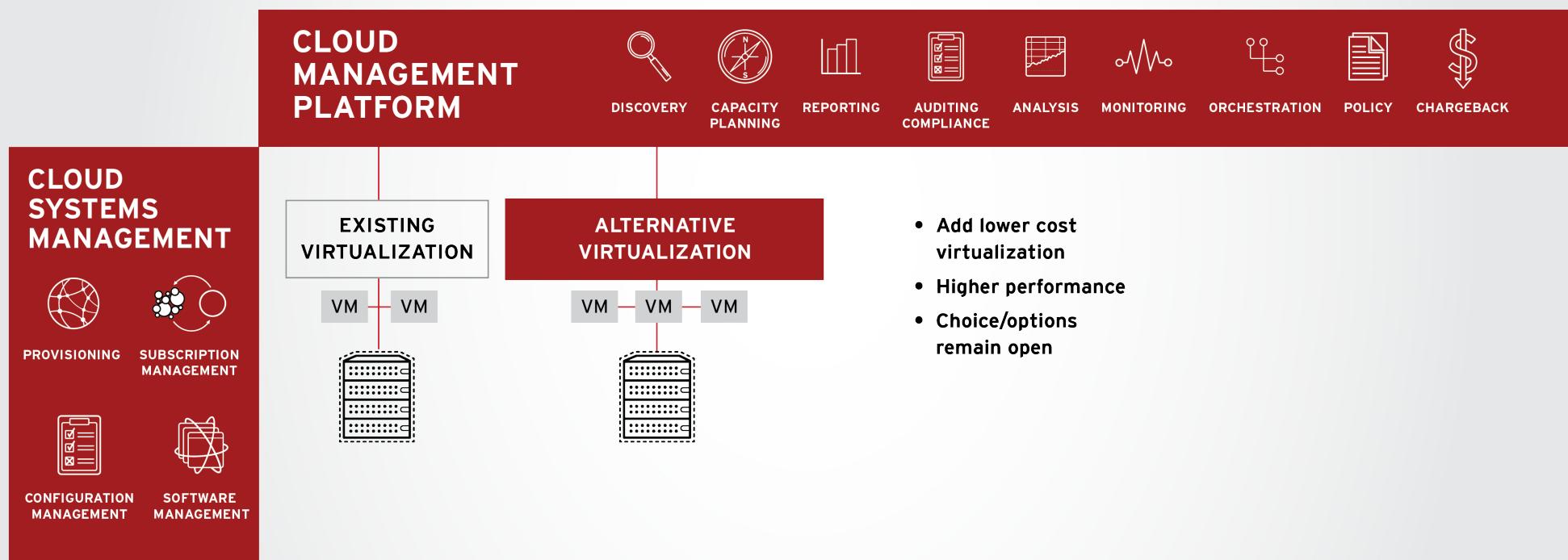
- Higher server to admin ratios
- Decreased human error
- Reduced complexity
- Better security
- Faster service delivery
- Increased manageability

# CLOUD MANAGEMENT PLATFORM

## Transformation to Private Cloud

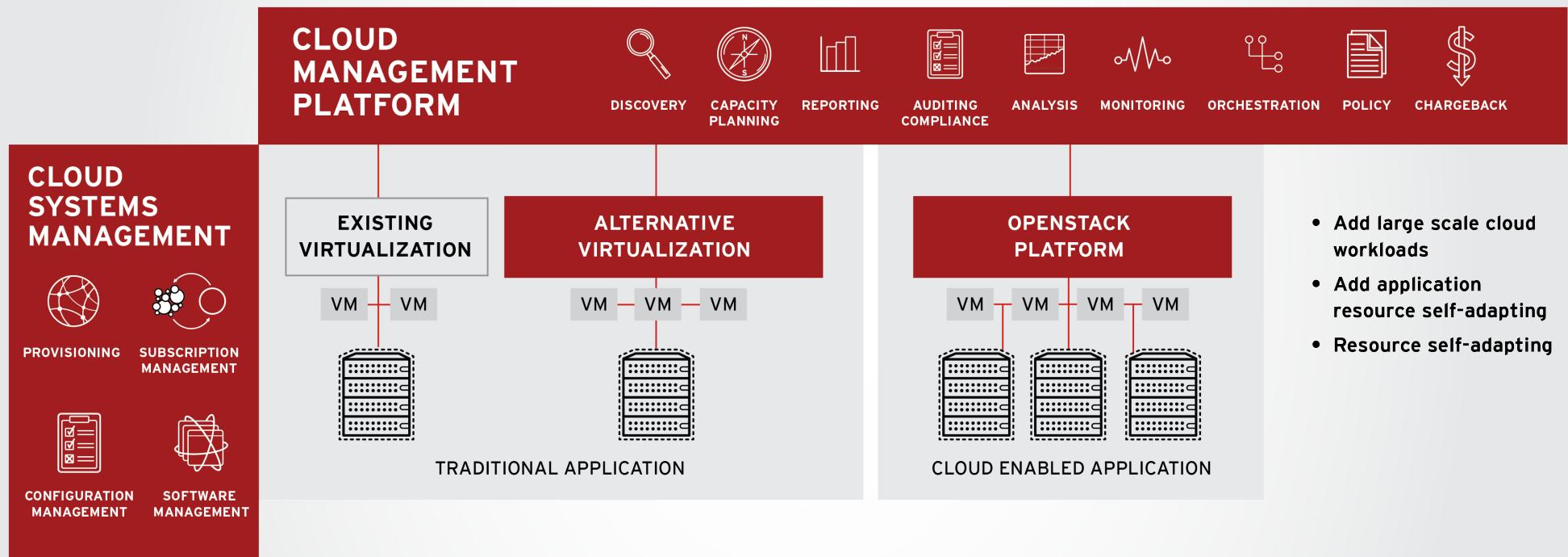


# ADDITIONAL VIRTUALIZATION CAPACITY



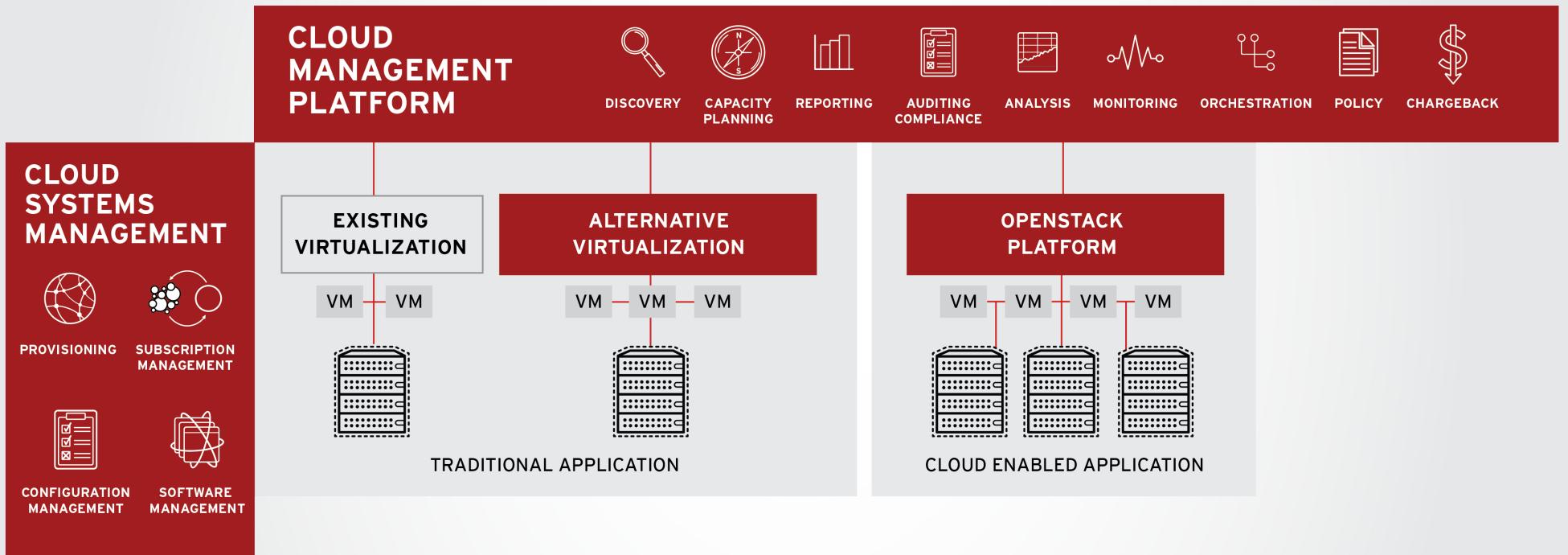
# CLOUD ENABLED APPLICATIONS / WORKLOADS

## OpenStack



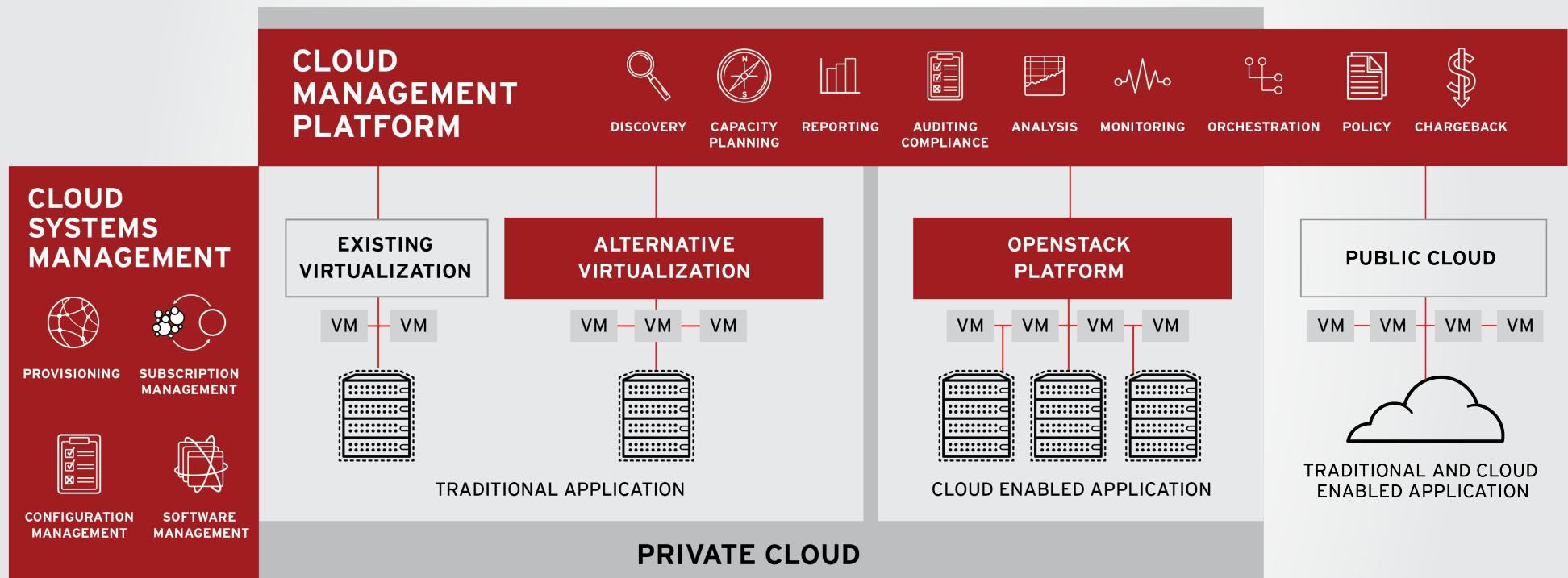
# PRIVATE CLOUD

## Traditional & Cloud Enabled Applications



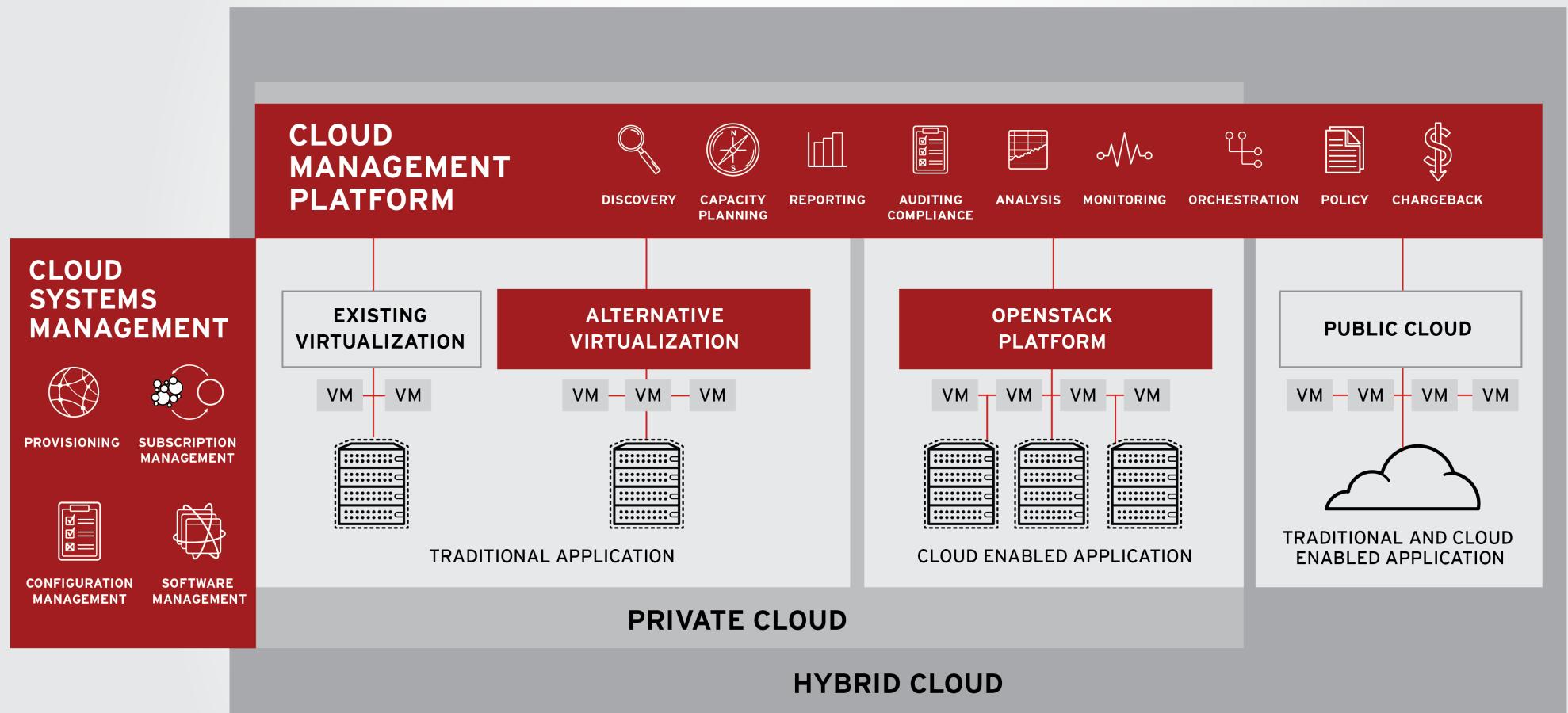
# TRADITIONAL & CLOUD ENABLED APPLICATIONS

## Public Cloud



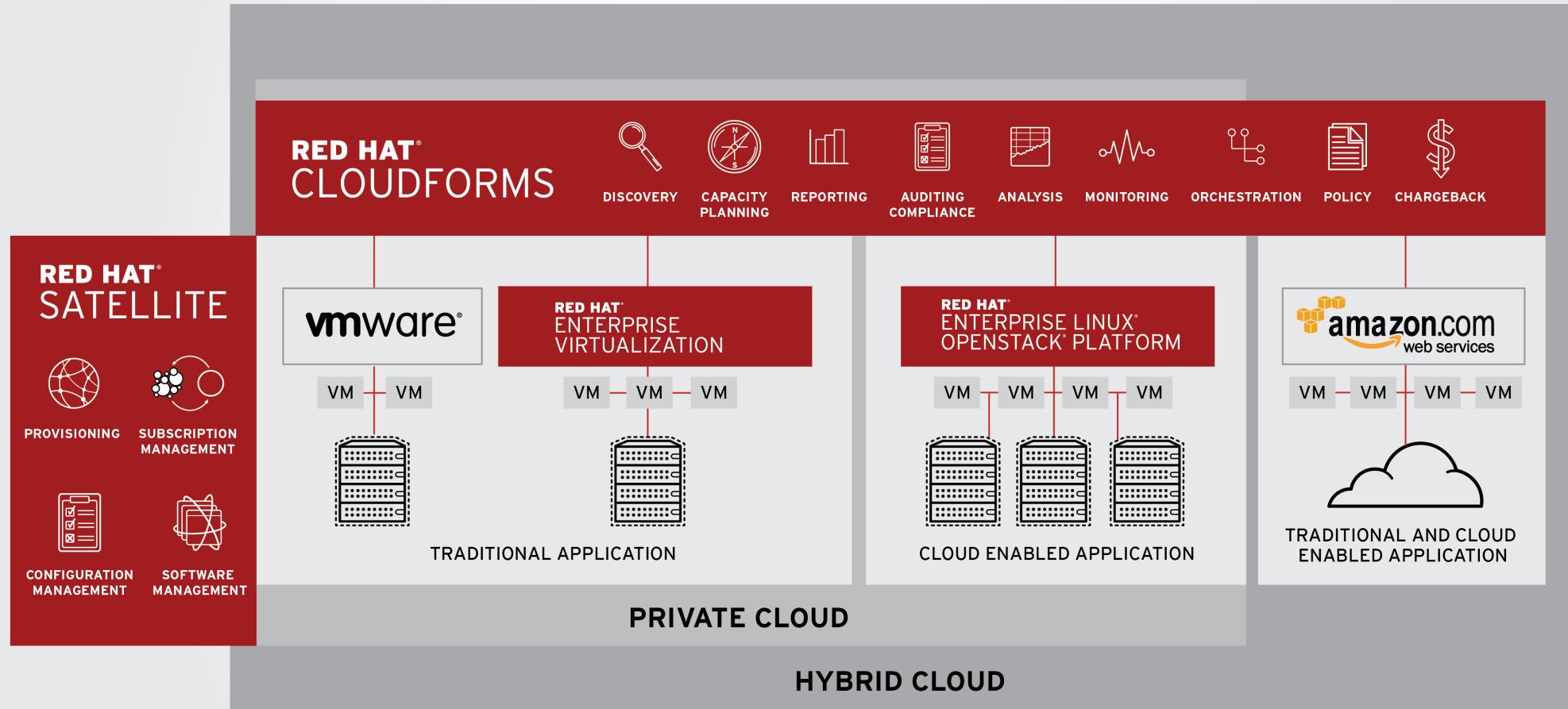
# HYBRID CLOUD

## Private Cloud + Public Cloud



# RED HAT CLOUD INFRASTRUCTURE

Cloud Management – Alternative Virtualization – OpenStack

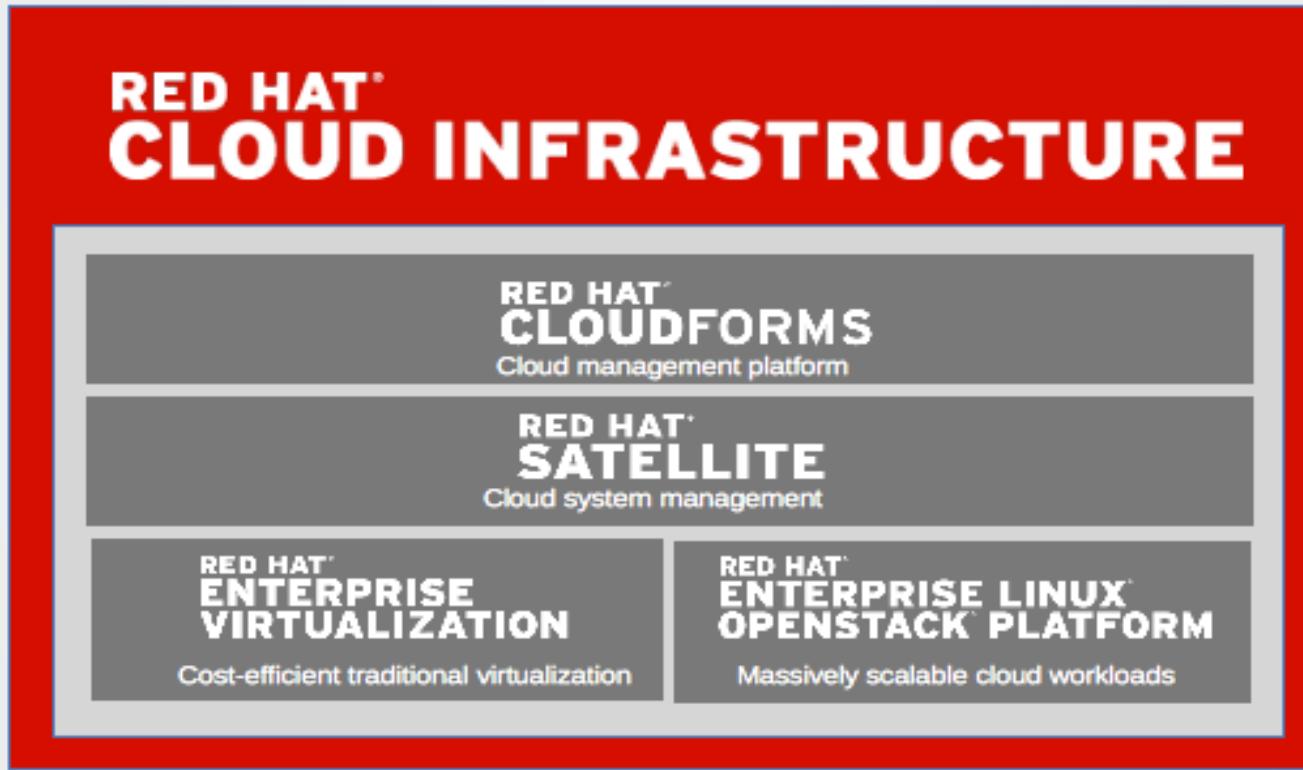


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# RED HAT CLOUD INFRASTRUCTURE

## Virtualization to Private/Hybrid Cloud



The slide features a red header with the text "RED HAT® CLOUD INFRASTRUCTURE". Below it is a white rectangular area containing four product boxes. The top-left box is for "RED HAT® CLOUDFORMS" (Cloud management platform). The top-right box is for "RED HAT® SATELLITE" (Cloud system management). The bottom-left box is for "RED HAT® ENTERPRISE VIRTUALIZATION" (Cost-efficient traditional virtualization). The bottom-right box is for "RED HAT® ENTERPRISE LINUX® OPENSTACK® PLATFORM" (Massively scalable cloud workloads).

**RED HAT® CLOUD INFRASTRUCTURE**

**RED HAT® CLOUDFORMS**  
Cloud management platform

**RED HAT® SATELLITE**  
Cloud system management

**RED HAT® ENTERPRISE VIRTUALIZATION**  
Cost-efficient traditional virtualization

**RED HAT® ENTERPRISE LINUX® OPENSTACK® PLATFORM**  
Massively scalable cloud workloads



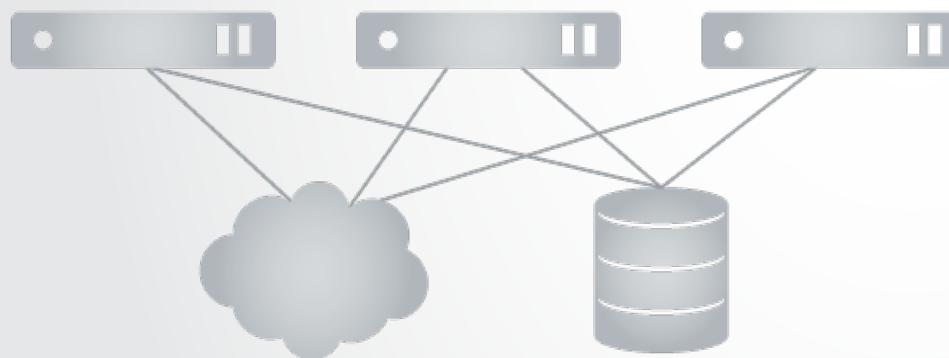
IaaS/PaaS  
Product of the Year  
November 2013

# RED HAT ENTERPRISE VIRTUALIZATION

## TRADITIONAL VIRTUAL INFRASTRUCTURE



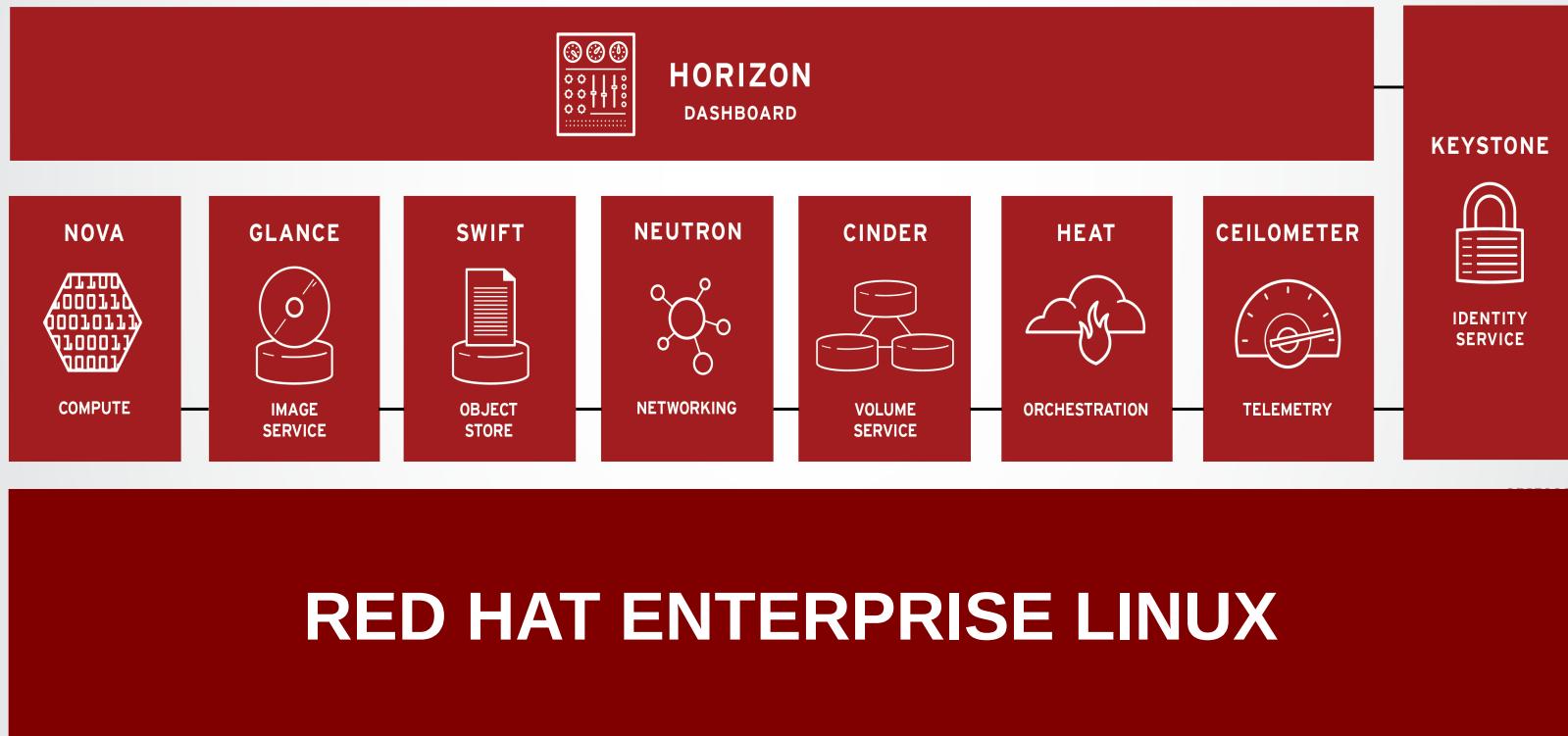
## RED HAT ENTERPRISE VIRTUALIZATION



- Leading performance
- Cost-effective
- Military-grade security
- Enterprise-ready
- Cross-platform

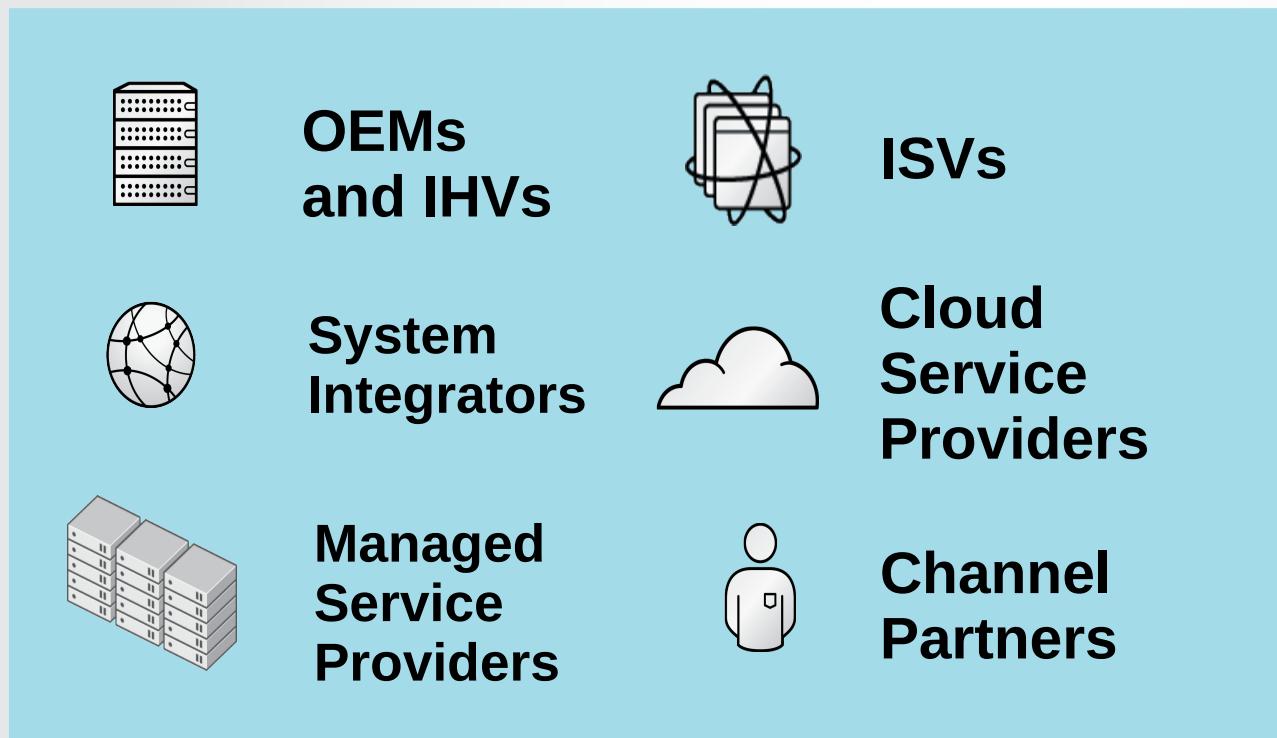
# RED HAT ENTERPRISE LINUX OPENSTACK PLATFORM

- Massively scalable AWS-like infrastructure
- Three year lifecycle
- Unbeatable combination of Red Hat OpenStack technology, a KVM-based Red Hat Enterprise Virtualization hypervisor, and RHEL



# LARGEST OPENSTACK PARTNER ECOSYSTEM

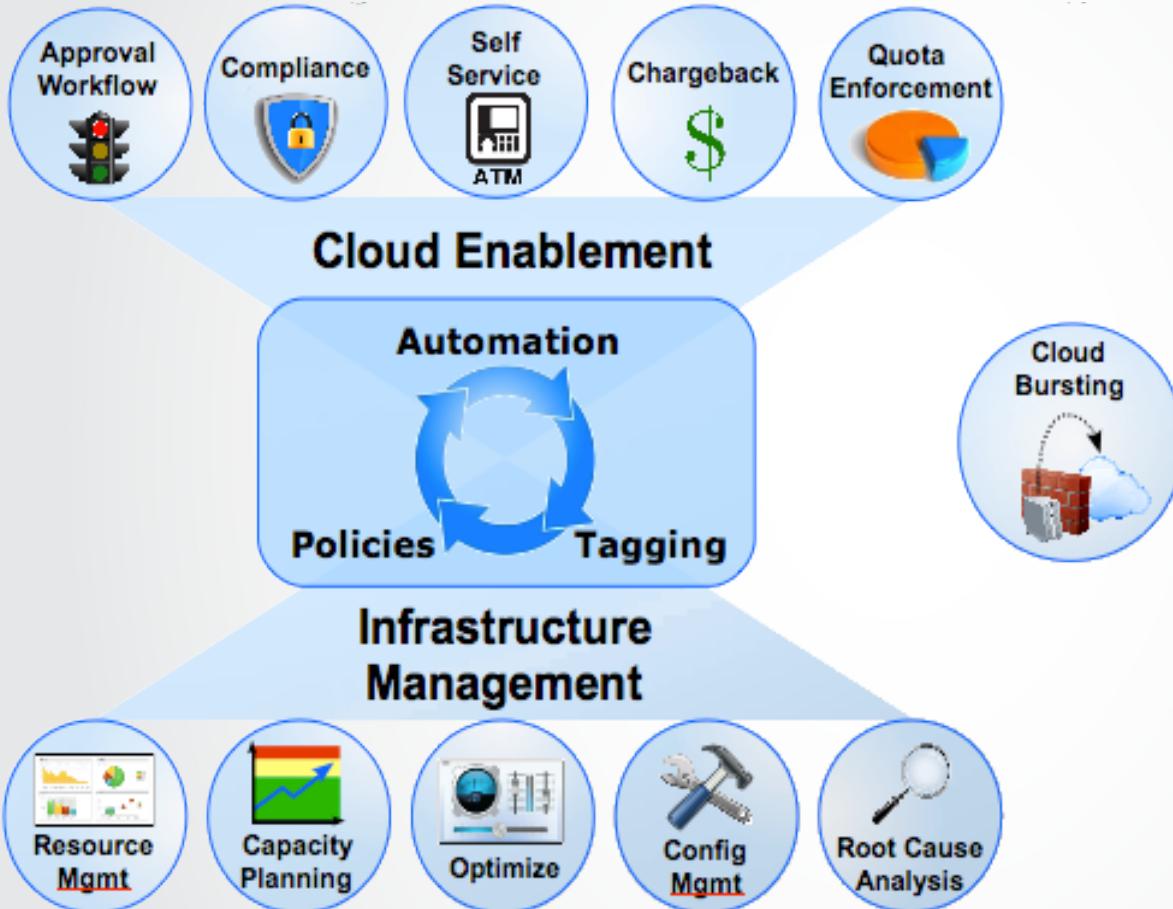
## *Red Hat OpenStack Cloud Infrastructure Partner Network*



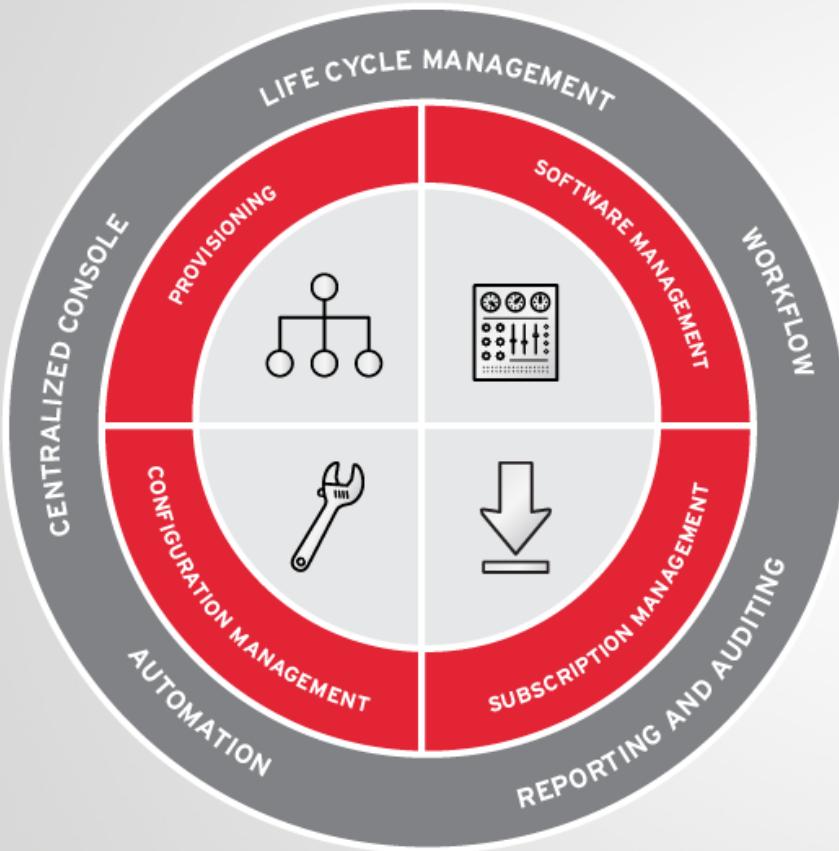
- Over 200 members since launch in April 2013
- Over 900 certified solutions in Partner Network Marketplace
- Over 4,000 RHEL certified compute servers

# RED HAT CLOUDFORMS

## Cloud Management Capabilities



# RED HAT SATELLITE



- Provision to bare metal, private, and public clouds
- Declarative configuration management
- Automated software distribution
- Life cycle management
- Drift remediation
- Simplified content management
- Federated services and management

# 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

# RED HAT CLOUD SERVICES

A Valued Partner

## Red Hat Consulting & Training

15 years expertise in open source solutions to help you:

- ✓ Accelerate project completion and time to value
- ✓ Make smart architectural decisions
- ✓ Reduce complexity and maximize product performance
- ✓ Mitigate transformation risk
- ✓ Reduce internal support requirements and overhead

*"We benefited greatly from Red Hat Consulting as they provided valuable input and assistance in helping us migrate to Red Hat technology and dramatically improved our ability to achieve our goals."*

**MOK CHOE**  
CTO, Union Bank

*"The standards that Sprint has created with Red Hat Consulting have provided our applications with the fundamental enterprise framework that will allow them to have more flexibility and less dependency on expensive closed-source technologies in the future."*

**JAMIE WILLIAMS**  
Director of IT middleware, Sprint

# RED HAT OPEN HYBRID CLOUD ENABLEMENT

- Red Hat Training
  - Red Hat Gluster Storage administration (RH236)
  - Red Hat Enterprise Virtualization Administration (RH318)
  - Red Hat OpenStack Administration II (CL210)
  - Red Hat OpenStack Administration III (CL310)
  - OpenShift Enterprise Administration (CL280)
  - Red Hat CloudForms Hybrid Cloud Management (CL220)
  - Red Hat Enterprise Deployment and Systems Management (RH401)
- Certification
  - Red Hat Certified Virtualization Administrator (EX318)
  - Red Hat Certificate of Expertise in Hybrid Cloud Storage (EX236)
  - Red Hat Certified System Administrator in Red Hat OpenStack (EX210)
  - Red Hat Certified Engineer in Red Hat OpenStack (EX310)
  - Red Hat Certificate of Expertise in Platform-as-a-Service (EX280)
  - Red Hat Certificate of Expertise in Hybrid Cloud Management (EX220)
  - Red Hat Certificate of Expertise in Deployment and Systems Management (EX401)

# RED HAT TRAINED & CERTIFIED PROFESSIONALS ARE PROVEN



**RAFAEL GUIMARÃES**

SYSTEMS ANALYST, PETROBRAS  
RHCE, RHCJA

"I applied my Red Hat skills to create a secure, optimized, and efficient JBoss installation."



**CESAR RYAN MINDANA**

SYSTEMS PLANNING MANAGER  
RHCA

"To be certified in the most recognized and challenging Linux certification in the industry today is one of my biggest professional achievements which I am proud to have."



**DR. S.P.T KRISHNAN**

SCIENTIST  
RHCE

"Red Hat Training is the pinnacle of all Linux training currently available, thanks to its emphasis on a hands-on syllabus and walk-the-talk culture."



**SEAN MILLICHAMP**

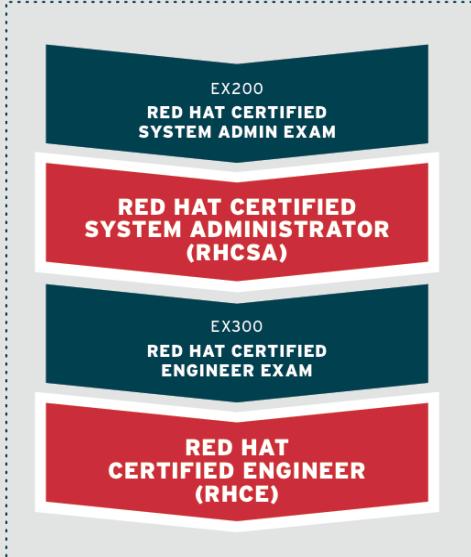
ENTERPRISE ARCHITECT, SECURE-24  
RHCE

"We look for candidates with Red Hat certifications because they have proven they will meet our technical requirements."

Source: [redhat.com/training/certifications/#proven](http://redhat.com/training/certifications/#proven)

# RED HAT CERTIFIED ARCHITECT (RHCA)

RHCA can be acquired by earning RHCE plus any five of the following Red Hat Certificates of Expertise or certifications.



Red Hat Certificate of Expertise in Hybrid Cloud Administration	Red Hat Certificate of Expertise in Platform-as-a-Service
Red Hat Certificate of Expertise in Hybrid Cloud Storage	Red Hat Certificate of Expertise in Deployment and Systems Management
Red Hat Certified Virtualization Administrator	Red Hat Certificate of Expertise in Server Hardening
Red Hat Certified System Administrator in Red Hat OpenStack	Red Hat Certificate of Expertise in Security: Networking Services »
Red Hat Certified JBoss Administrator	Red Hat Certificate of Expertise in Directory Services and Authentication »
Red Hat Certificate of Expertise in Clustering and Storage Management	Red Hat Certificate of Expertise in SELinux Policy Administration »
Red Hat Certificate of Expertise in Performance Tuning	Red Hat Certificate of Expertise in Data Virtualization

» Coming soon

« Retired but may be applied to obtaining RHCA

RED HAT CERTIFIED ARCHITECT (RHCA)



redhat.

# THANK YOU

arun@redhat.com



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# WHY RED HAT?

## An Established Global Leader



- Global development and support - 70+ offices in more than 30 countries
- 92% of the Fortune 500 use Red Hat products and solutions
- Largest open-source company in the world – First to over a \$1 Billion
- Extensive partnerships with leading enterprise hardware and software vendors
- Comprehensive product portfolio for enterprise environments