

**RED HAT
SUMMIT**

**LEARN. NETWORK.
EXPERIENCE OPEN SOURCE.**

June 11-14, 2013
Boston, MA



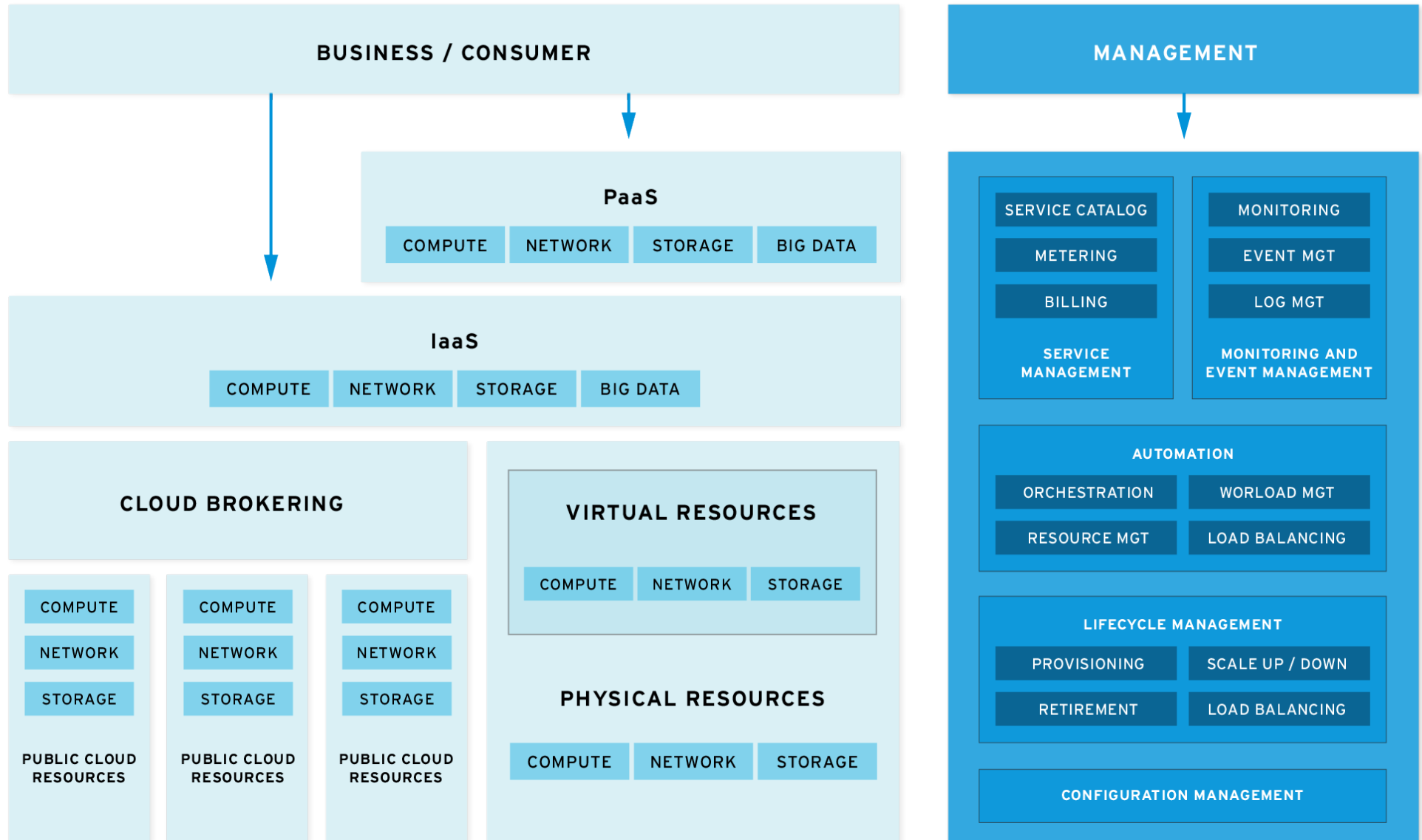


Choose Your Own Path to the Cloud with Red Hat

Gordon Haff
Greg Kleiman
James Labocki

06.12.13

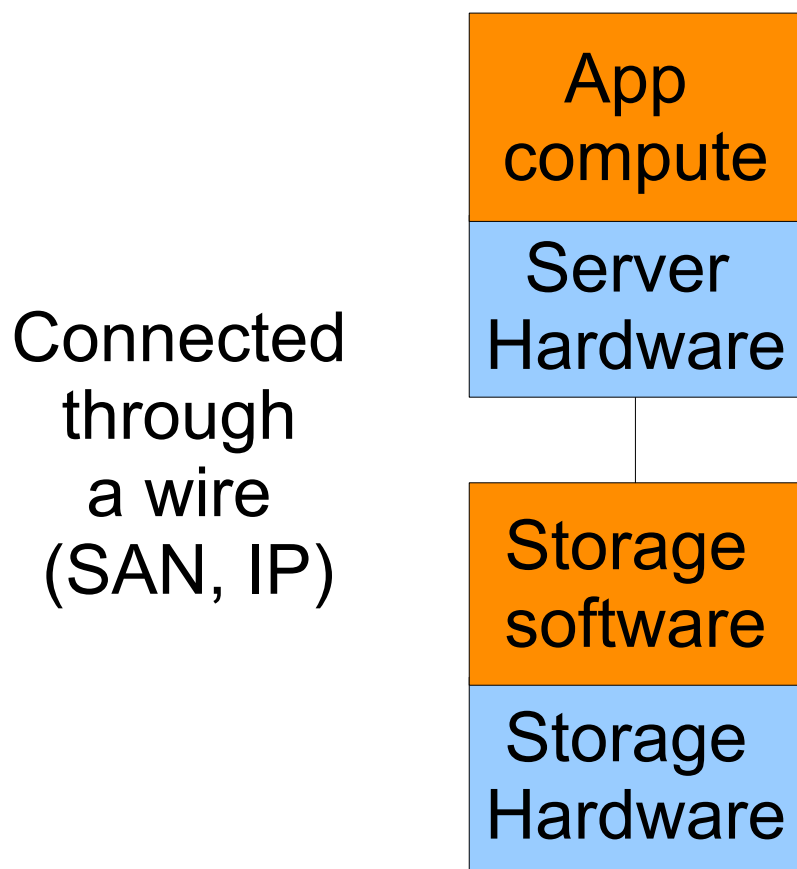
NEXT GENERATION I.T. INFRASTRUCTURES



Agenda

- Convergence of compute & storage into a single entity
- Big data as a specific convergence use case
- Building and managing a unified self-service resource pool for IaaS and PaaS
 - For the developer
 - For operations

Traditional approach to compute & storage has limitations in a cloud infrastructure

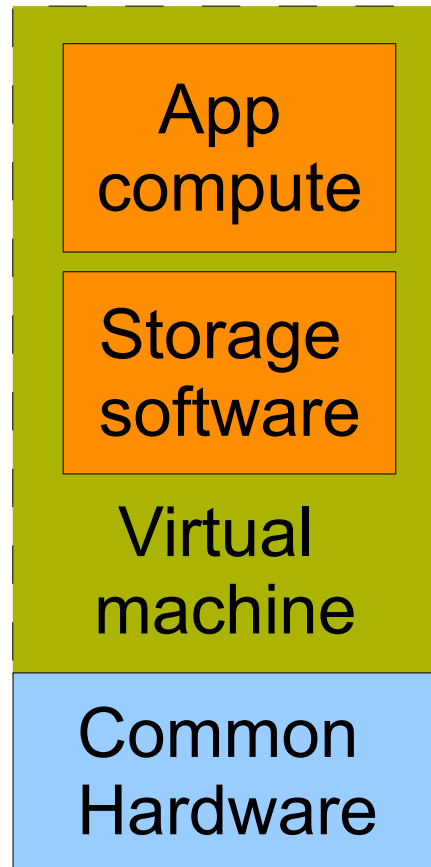


Cloud infrastructure needs:

- Deploy compute and storage as a single virtual entity
- Scale out, share nothing storage
- Storage supports all protocols (file, block, object)

Cloud infrastructure best served by open software-defined storage

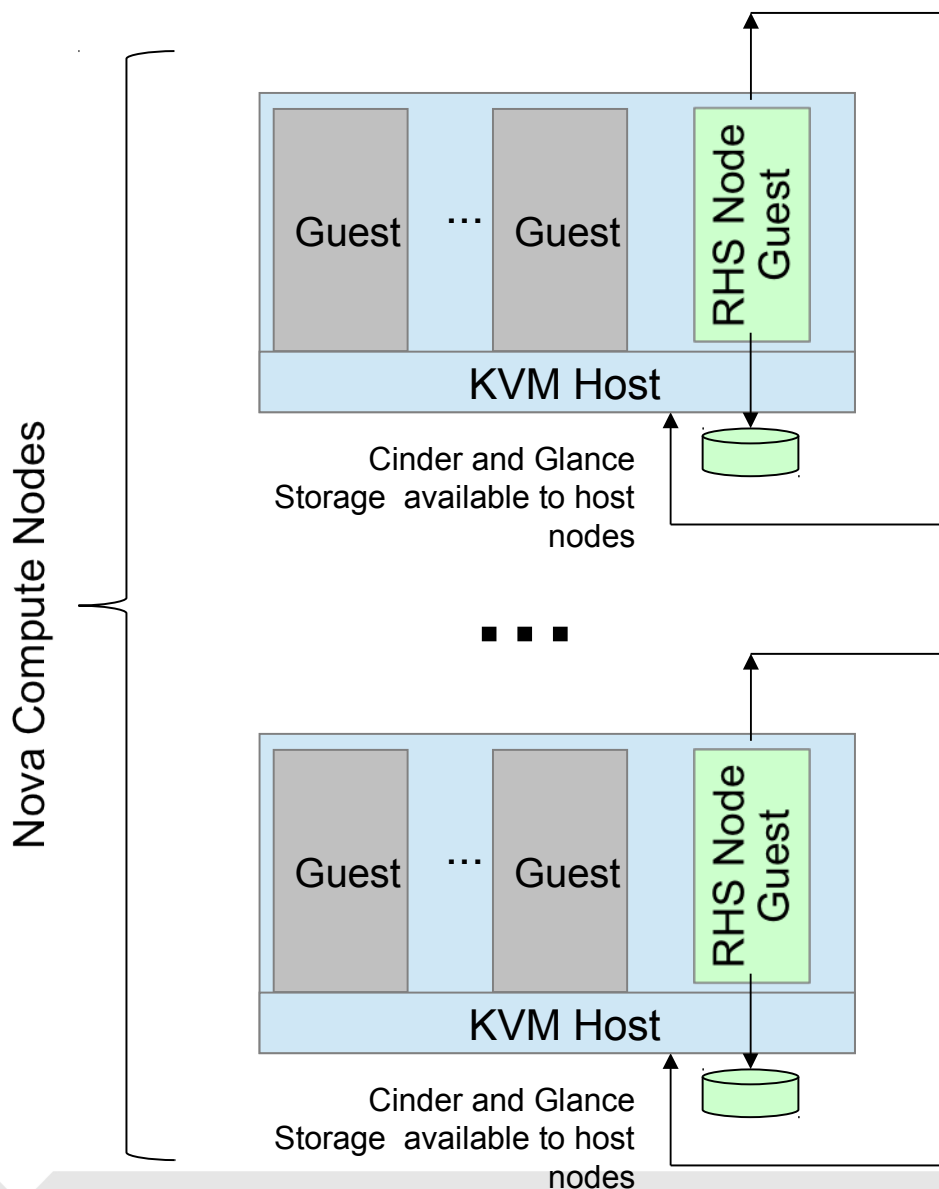
Compute
and
Storage
converged
onto a
single
server



Software-defined storage benefits:

- Easier to scale out, deploy and manage
- Higher performance without network latency
- Lower operating costs with less hardware

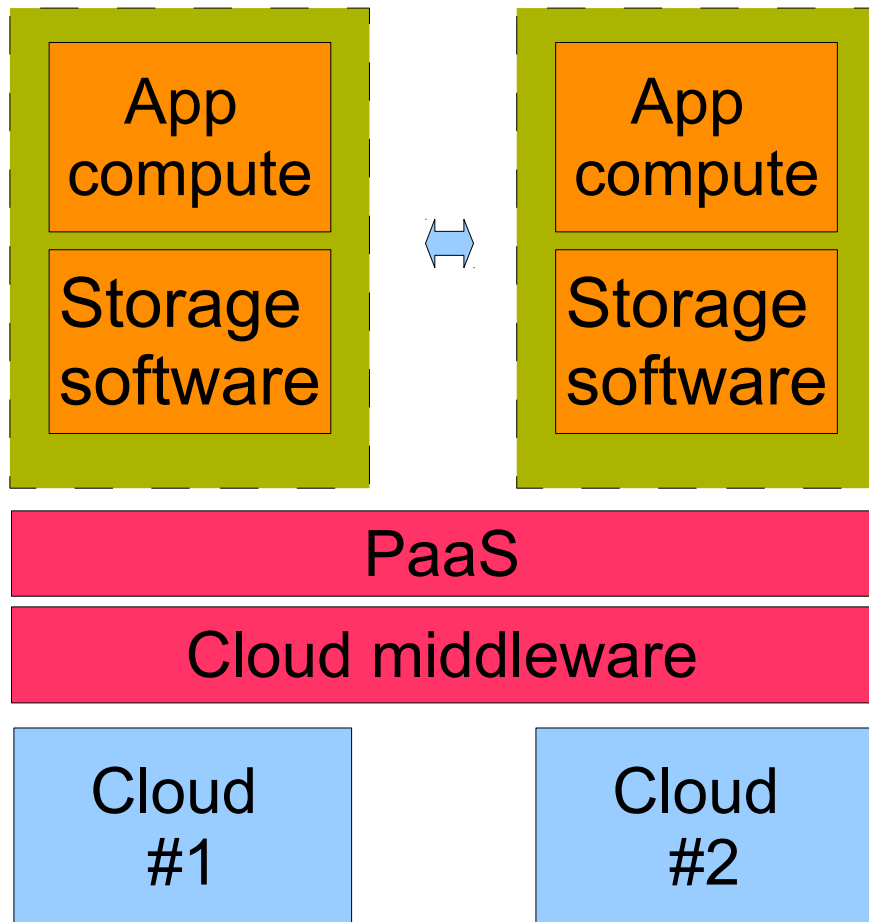
Software-defined storage in OpenStack



Nova compute nodes
ARE the storage pool

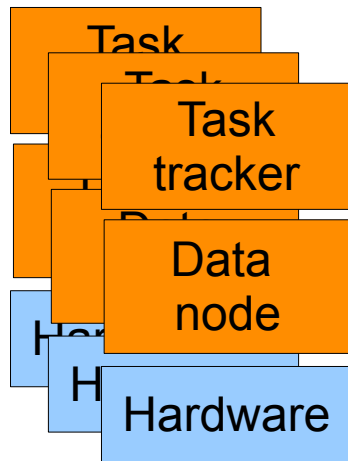
- Red Hat Storage runs as guest consuming 2-4 cores
- Utilizes local DAS storage, shared with Nova instance storage
- Provides storage services for Cinder, Glance and Swift

Hybrid clouds require even more of storage

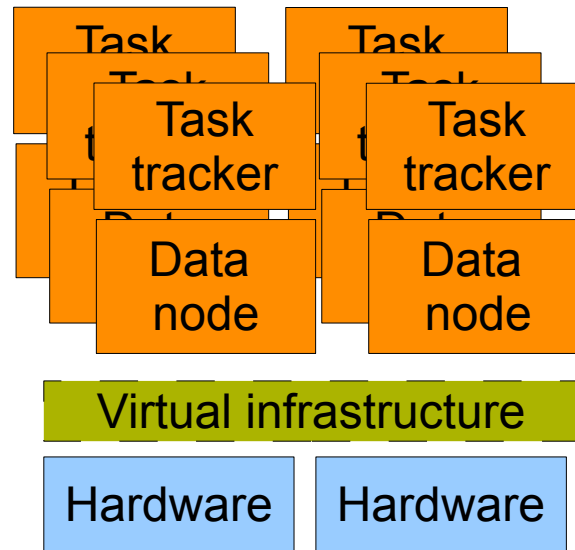


- Geographically distributed, common global file system
- High performance, eventually consistent replication
- Runs in all types of clouds
- Interoperates with open cloud middleware & PaaS

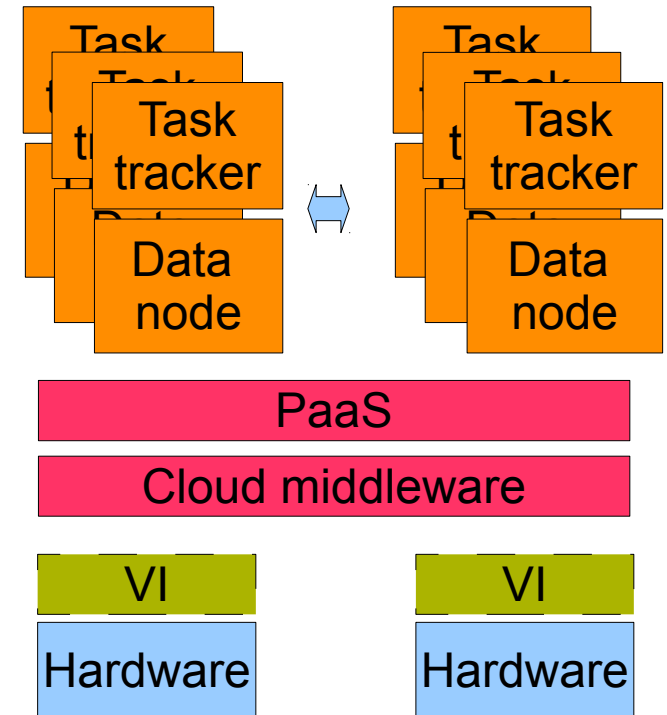
Big data evolution to open hybrid cloud



Traditional approach

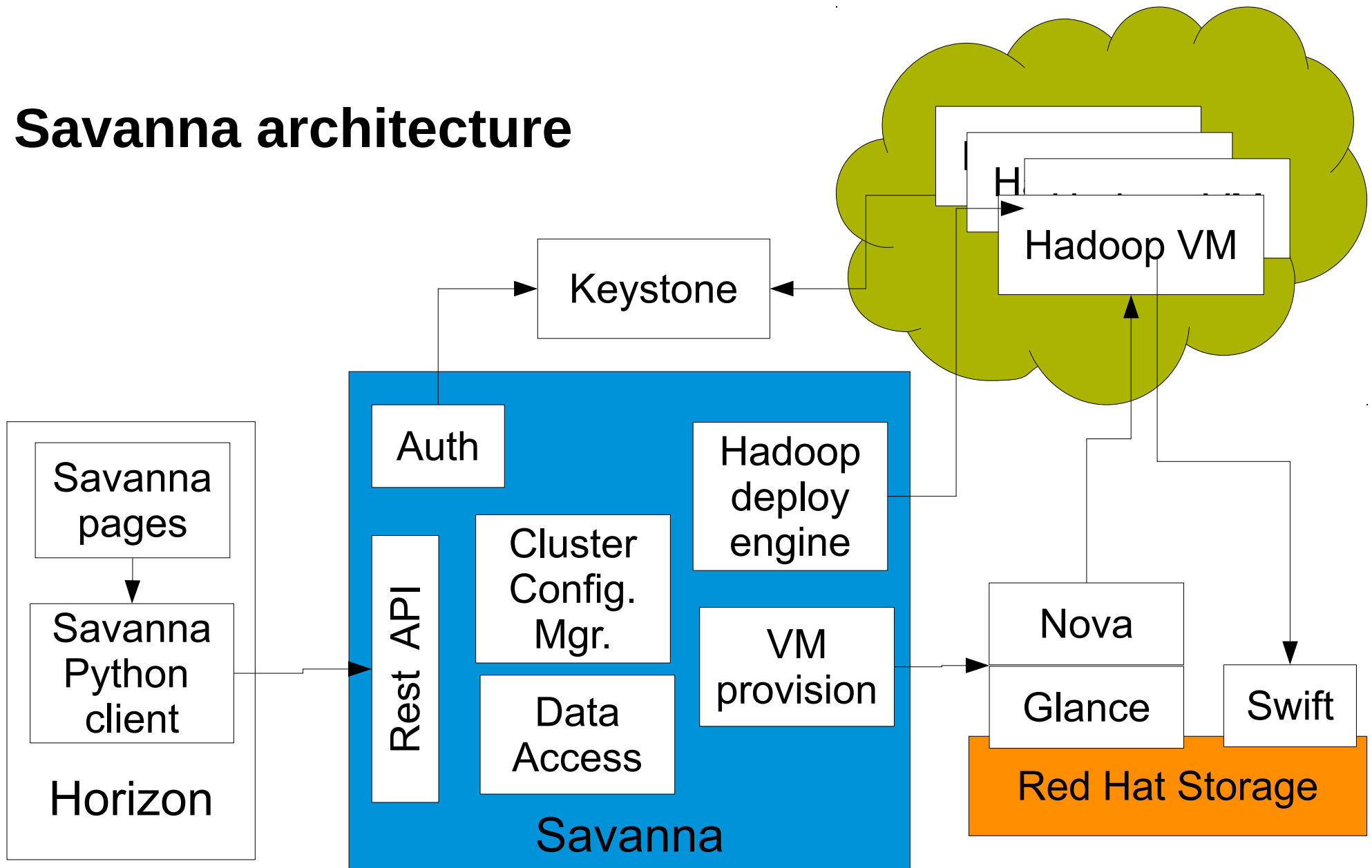


Software defined
Hadoop compatible storage
enables elastic Hadoop
on Savanna

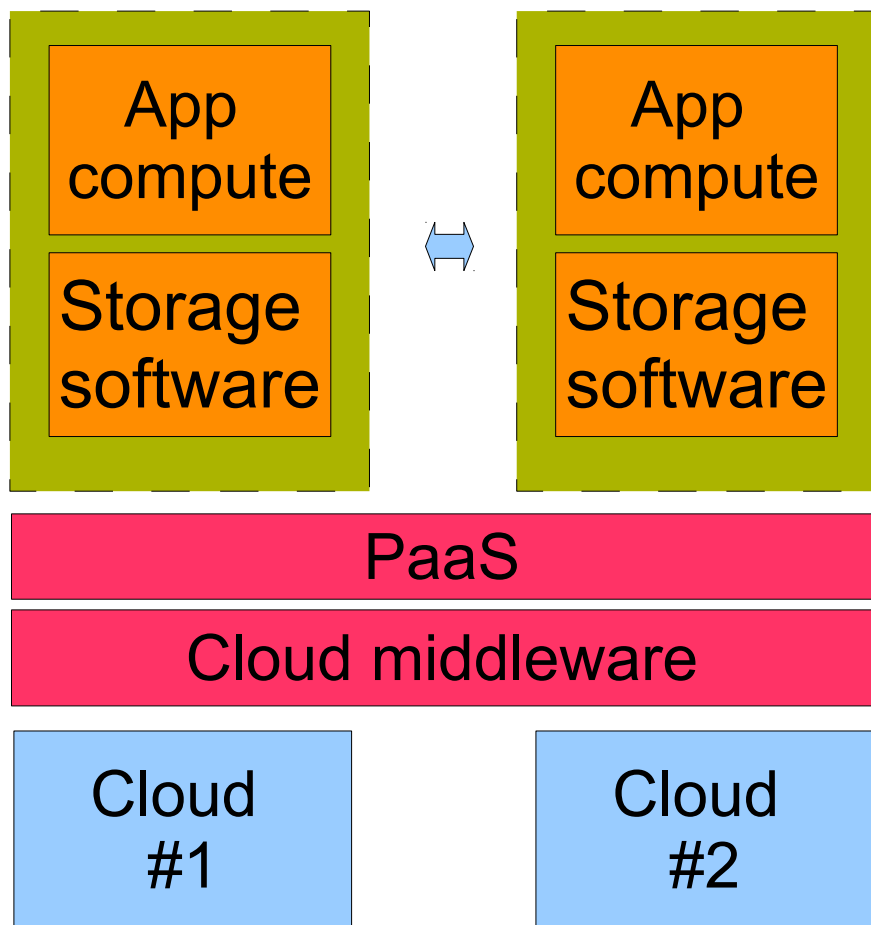


Hybrid cloud enables
portability & bursting
between different clouds
with Heat

Savanna architecture



Open hybrid cloud best served by open software-defined storage



Open software-defined storage benefits:

- Leverage public cloud efficiency when desired
- Seamless workload movement between clouds
- Open source community innovation and flexibility

Integrating IaaS and PaaS: Cloud addresses many different use cases

Developers



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Self-Service Portals

Service Catalogs

Automated Provisioning

Role-based Delegation

Operations



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Resource Management
Configuration Management
Capacity & Utilization
Dashboards & Timelines
Change & Drift Tracking

Management



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<http://www.flickr.com/photos/76029035@N02/6829465065/>

Financial Management

Governance & Compliance

Forecasting & Planning

Health & Availability

Chargeback

Unifying IaaS and PaaS to the benefit of developers *and* operations



PaaS

Application

Application X	Application Z
Application Z	Application Y
Application Y	Application Z

No Awareness
No Relationship



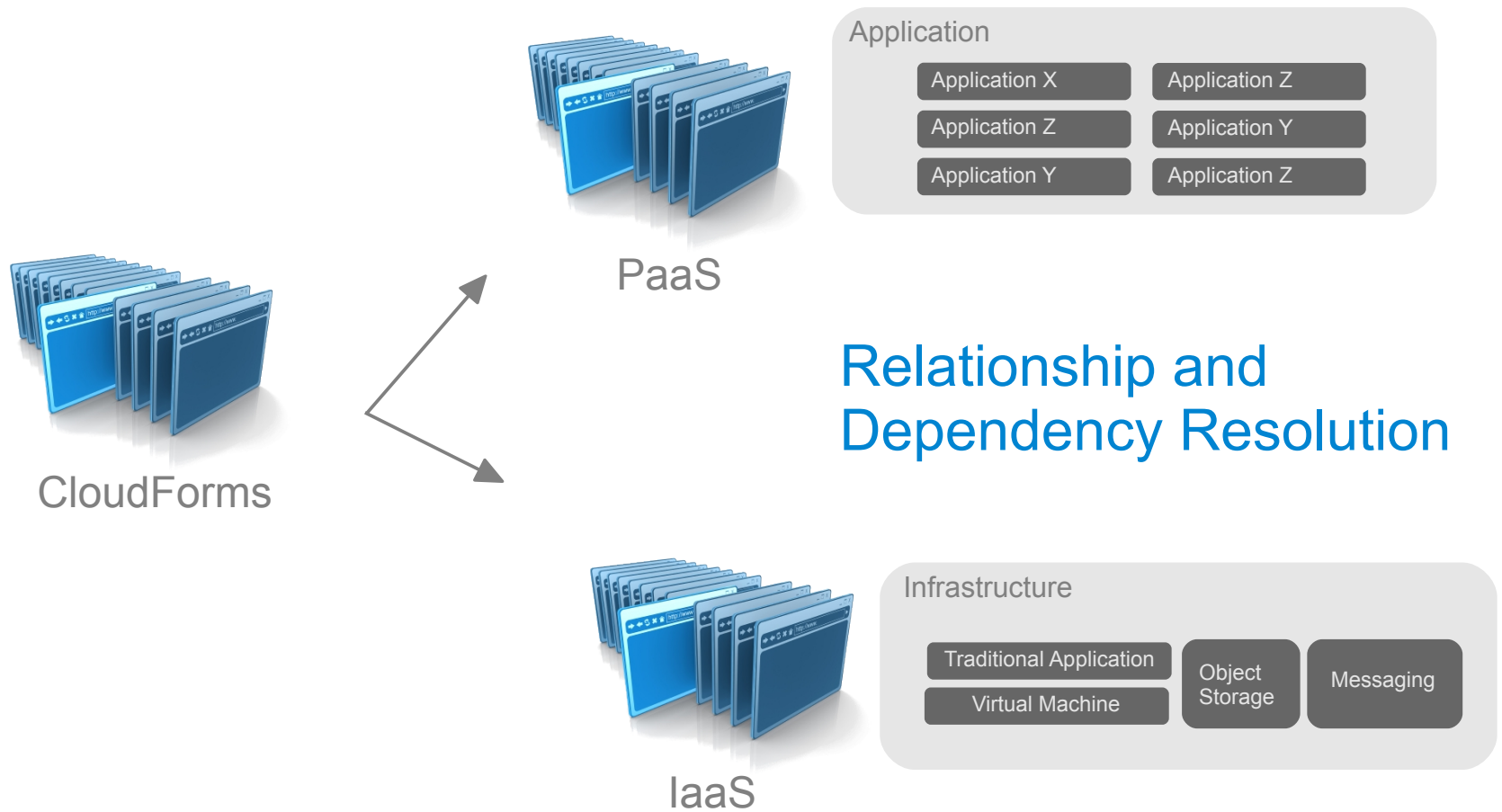
IaaS

Infrastructure

Traditional Application	Object Storage	Messaging
Virtual Machine		

- Slow service delivery
 - Developer requires operations team
 - Manual configuration leads to higher error rates
- Loss of flexibility
 - Two self-service portals, tightly tied to implementation

The goal



Result

- Faster delivery of services
 - DevOps now possible
 - Automation removes human error
- Increase in flexibility
 - Developer utilizing a single self-service portals not tightly coupled to underlying resource provider

Developer Experience (Compose)

RED HAT CLOUDFORMS
MANAGEMENT ENGINE

Virtual Intelligence

Services

PaaS Admin | EVM

My Services

Catalogs

Requests

Virtual Machines

Service Catalogs

Catalog Items

All Catalog Items

Unassigned

Finance Development

- CreditProcessing
- Hadoop-Small
- JBossEAP6
- Perl5.10
- Python2.6
- RHEL6-Small
- Ruby1.8
- Win2k8-Small

Finance Production

Finance QE

Human Resource Production

Human Resources Development

Human Resources QE

Research Development

Research Production

Research QE

Configuration

Policy

Service Catalog Item "Python2.6"


Basic Info

Details

Basic Information

Name / Description	Python2.6 / Python on OpenShift Enterprise <input checked="" type="checkbox"/> Display in Catalog
Cost	15.00
Catalog	Finance Development
Dialog	OpenShiftApplication
Entry Point (NS/CIs/Inst)	/Factory/Service/provision

Custom Image



Browse...

* Requirements - Type:

jpg/png Size: 100x100

Developer Experience (Compose)

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MANAGEMENT ENGINE

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Services

PaaS Admin | EVM

My ServicesCatalogsRequestsVirtual Machines

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CreditProcessing

Hadoop-Small

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Python2.6

RHEL6-Small

Ruby1.8

Win2k8-Small

Finance Production

Finance QE

Human Resource Production

Human Resources Development

Human Resources QE

Research Development

Research Production

Research QE

ConfigurationPolicy


Service Catalog Item "CreditProcessing"

Basic InfoDetailsSelected Resources

Basic Information

Name / Description	CreditProcessing / Credit Card Processing Application Stack <input checked="" type="checkbox"/> Display in Catalog
Cost	200.00
Catalog	Finance Development
Dialog	CreditApplication
Entry Point (NS/CI/Inst)	

Custom Image



Browse...

* Requirements - Type:

jpg/png Size: 100x100

Developer Experience (Compose)

RED HAT' CLOUDFORMS
MANAGEMENT ENGINE

Virtual Intelligence

Services

PaaS Admin | EVM

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Finance Development

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Finance Production

Finance QE

Human Resource Production

Human Resources Development

Human Resources QE

Research Development

Research Production

Research QE

Editing Catalog Bundle "CreditProcessing"

Basic InfoDetailsResources

Resources

Add a Resource<Choose>

Selected Resources

	Name	Group Order	Action		Delay (mins)		Scaling	
			Start	Stop	Start	Stop	Min	Max
	Python2.6	1	Power On	Shutdown	1	5	1	10
	JBossEAP6	2	Power On	Shutdown	3	3	1	3
	RHEL6-Small	3	Power On	Shutdown	5	1	1	5

#redhat #rhsummit

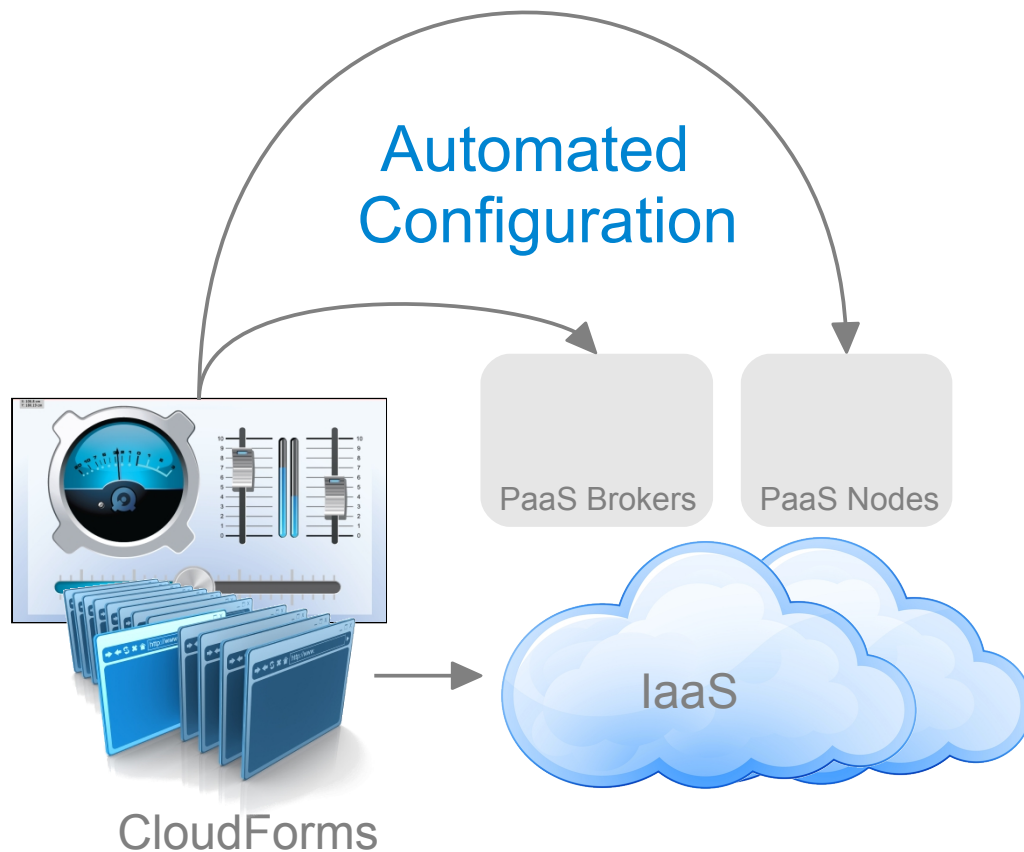
Developer Experience (Self-Service)

The screenshot displays the Red Hat CloudForms Management Engine interface. The top navigation bar includes 'Virtual Intelligence' and 'Services' tabs. The 'Services' tab is active, showing a list of service catalogs on the left and the details of the 'CreditProcessing' service on the right. The 'CreditProcessing' service is highlighted in the catalog list. The service details panel shows a 'BANK' icon, a green status message 'Service Order was cancelled by the user', and a table with the following information:

Name	Description	Cost	Long Description
CreditProcessing	Credit Card Processing Application Stack	200.00	Credit Processing Application Stack (10) Python 2.6 Gear (4) JBoss EAP 6 Gear (2) RHEL6-Small with Postgres

An 'Order' button is visible below the table.


How about operations?



- Faster delivery of services
 - Automated deployment results in faster availability of PaaS infrastructure
- Reduce human error
 - Automation leads to decrease in errors
- Choice of infrastructure

Operations Experience

RED HAT CLOUDFORMS
MANAGEMENT ENGINE

 **redhat.**

Administrator | EVM


Virtual Intelligence | **Services** | Infrastructure | Control | Automate | Optimize

My Services | **Catalogs** | Requests | Virtual Machines

Service Catalogs

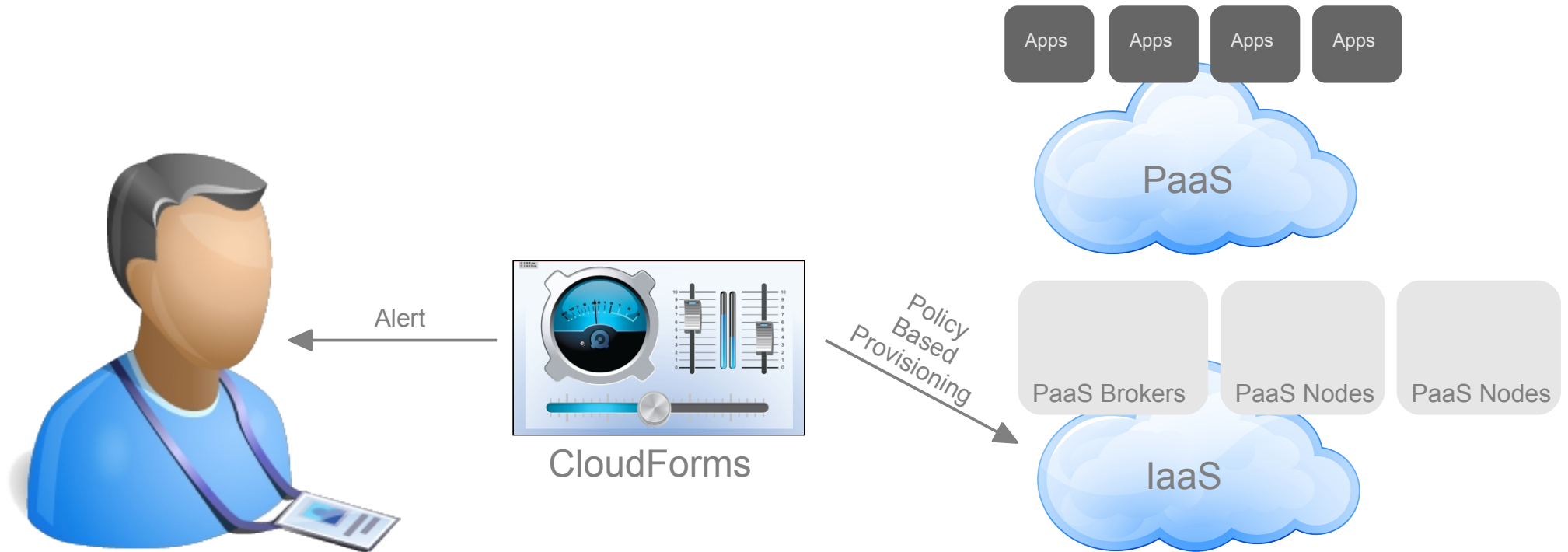
- All Services
- Finance Development
- Operations Catalog
 - OpenShift Broker EC2
 - OpenShift Broker RHEV
 - OpenShift Broker vSphere
 - OpenShift Node EC2**
 - OpenShift Node RHEV
 - OpenShift Node vSphere

Service "OpenShift Node EC2"


OPENSHIFT
Order

Name	OpenShift Node EC2
Description	OpenShift Node
Cost	50.00
Long Description	OpenShift Node Instance on EC2

Also enables auto-scaling of OpenShift nodes



- Reduced cost of ownership
 - Single tool for monitoring and scaling
- Maximum utilization of resources
 - PaaS scaled appropriate for load

Integrating IaaS and PaaS gets you



- Empowered Developers
- Automated Deployment
- Dynamic Resource Allocation
- Happy management



Hybrid cloud solutions in support of the big trends

- Converged IaaS and PaaS
 - Interoperable: catalogs, autoscaling, composite services
- Big data
 - Deploy, manage, and optimize
- Developer operations (DevOps)
 - Toolchain integration: CMDB, PMDB, repos, build systems
- Cloud storage
 - Hybrid software-only storage configuration and management
- OpenStack Enterprise
 - Mature, robust, and enterprise-ready

Thank you.

Questions?