
RED HAT
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Choose Your Own Path to the Cloud with Red Hat

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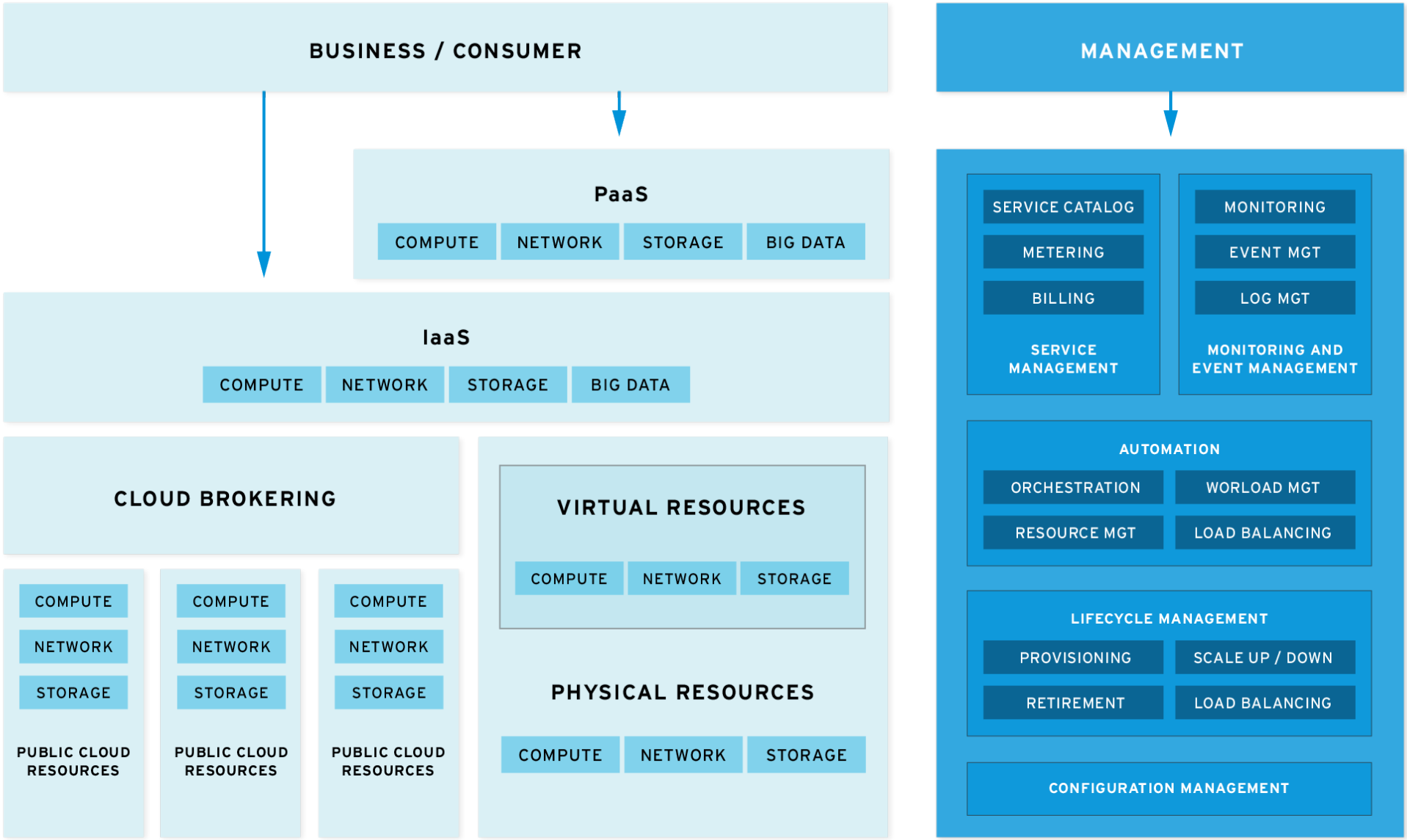
NEXT GENERATION I.T. INFRASTRUCTURES

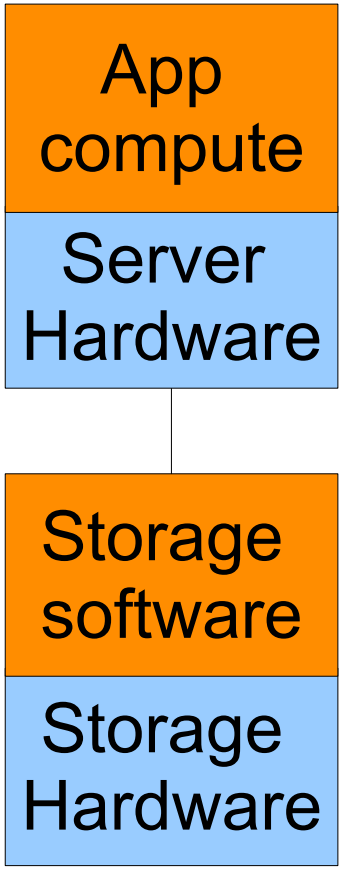


Agenda

- 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

Connected through a wire (SAN, IP)

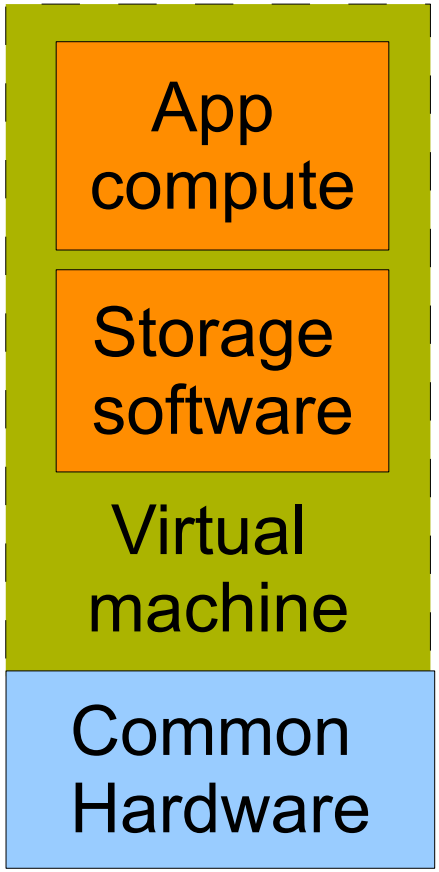


Cloud infrastructure needs:

- 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

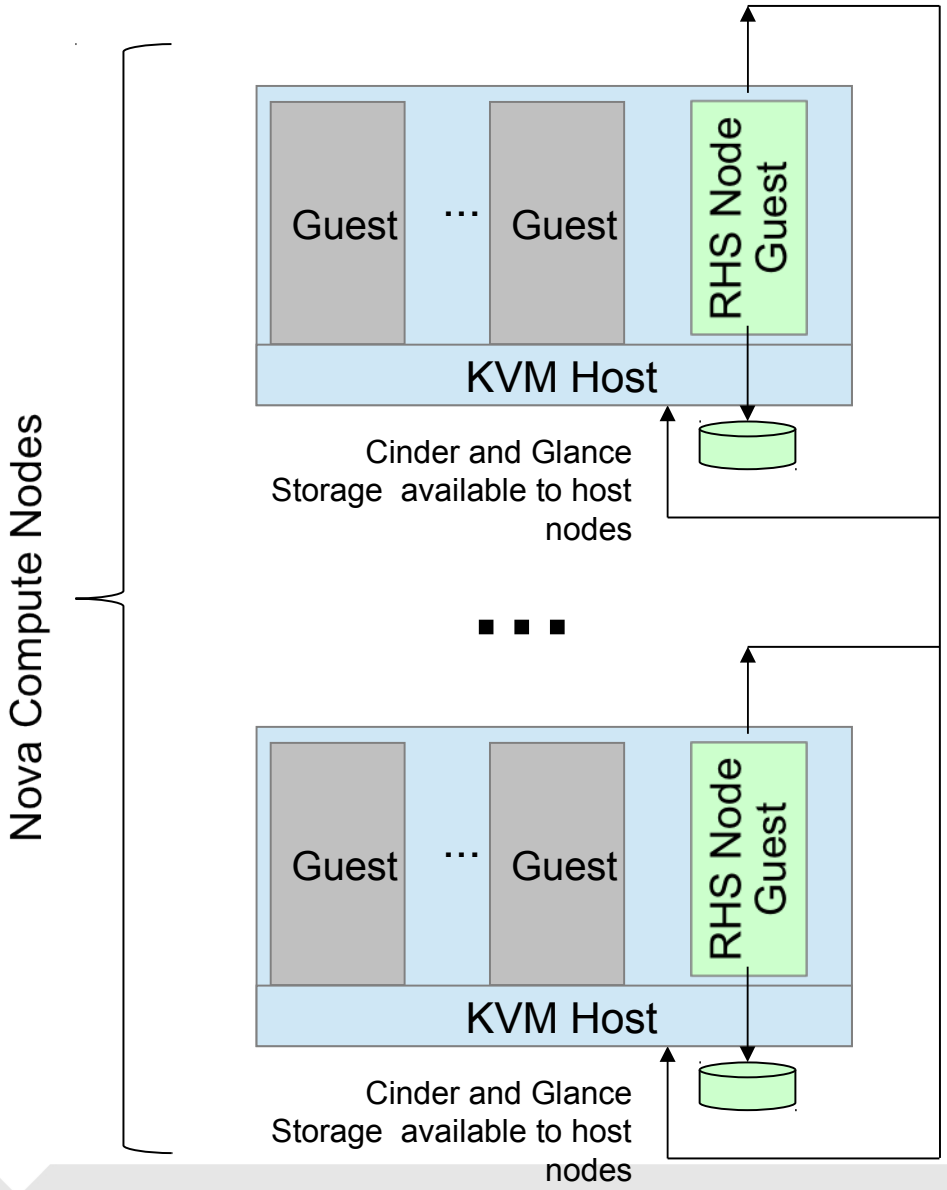
Compute and Storage converged onto a single server



Software-defined storage benefits:

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

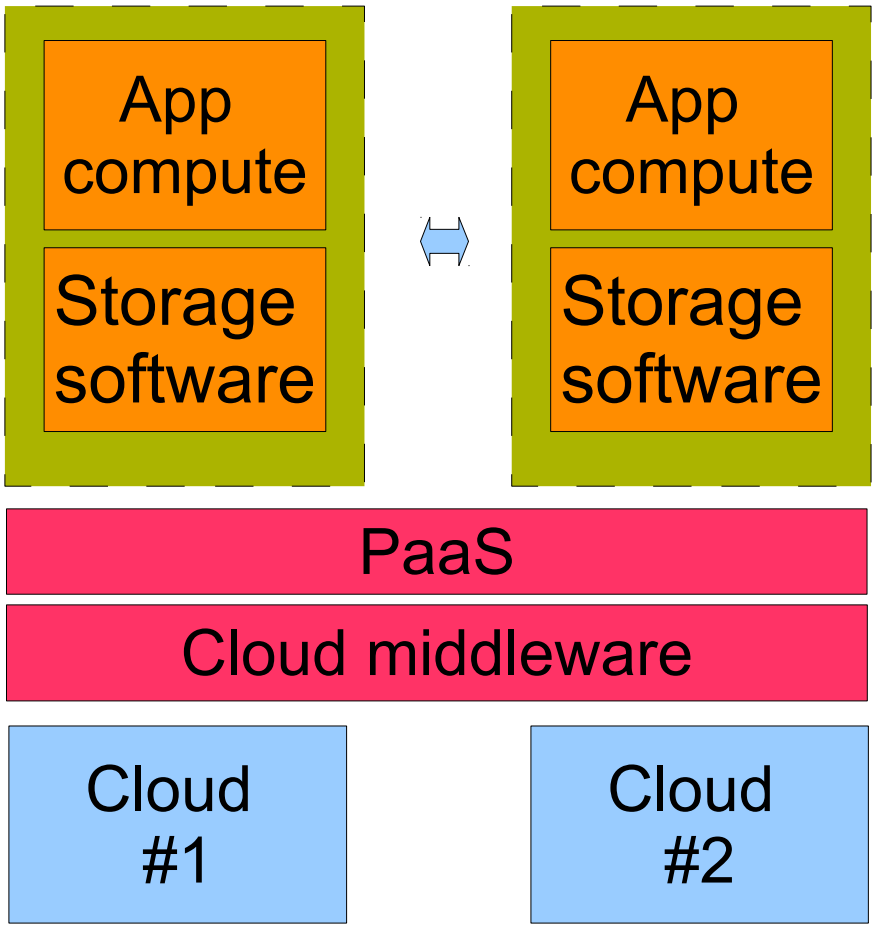
Software-defined storage in OpenStack



Nova compute nodes ARE the storage pool

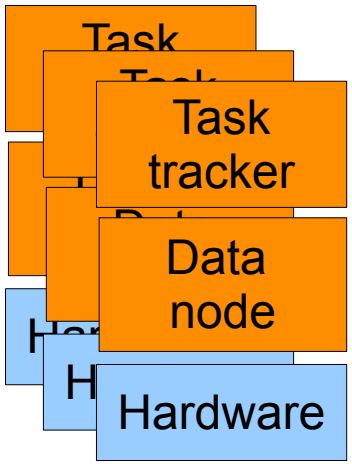
- Red Hat Storage runs as guest consuming 2-4 cores
- Utilizes local DAS storage, shared with Nova instance storage
- Provides storage services for Cinder, Glance and Swift

Hybrid clouds require even more of storage

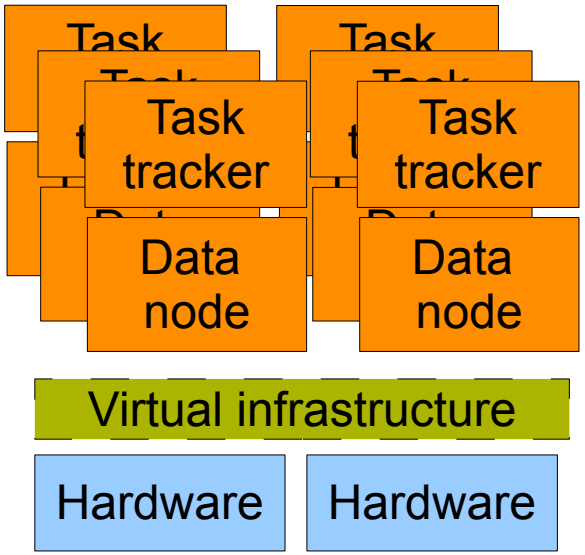


- Geographically distributed, common global file system
- High performance, eventually consistent replication
- Runs in all types of clouds
- Interoperates with open cloud middleware & PaaS

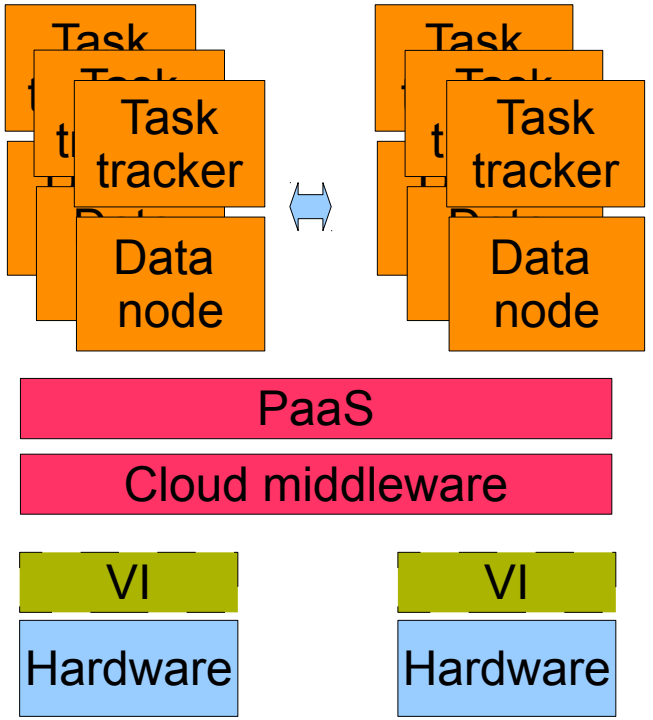
Big data evolution to open hybrid cloud



Traditional approach

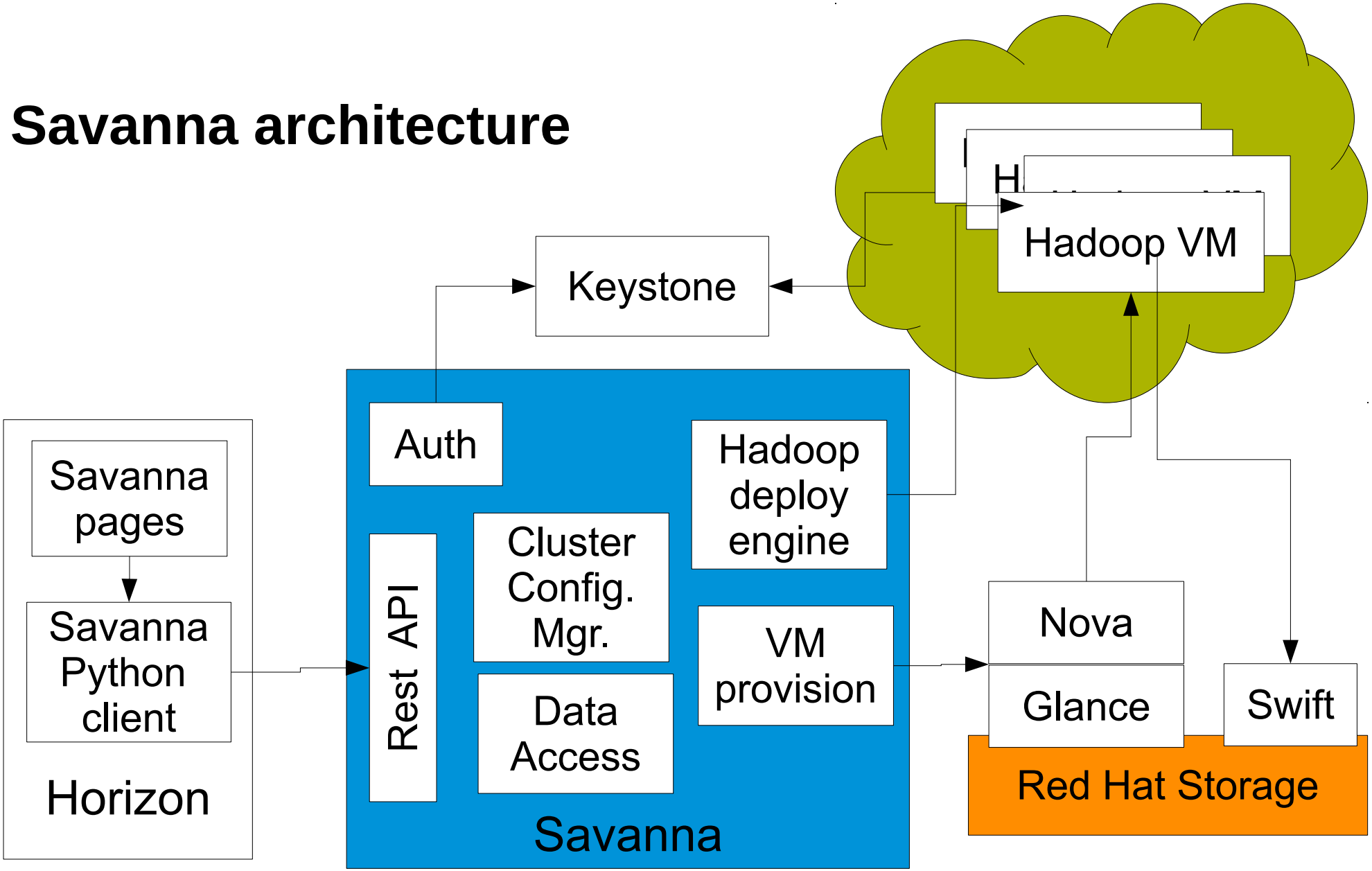


Software defined Hadoop compatible storage enables elastic Hadoop on Savanna

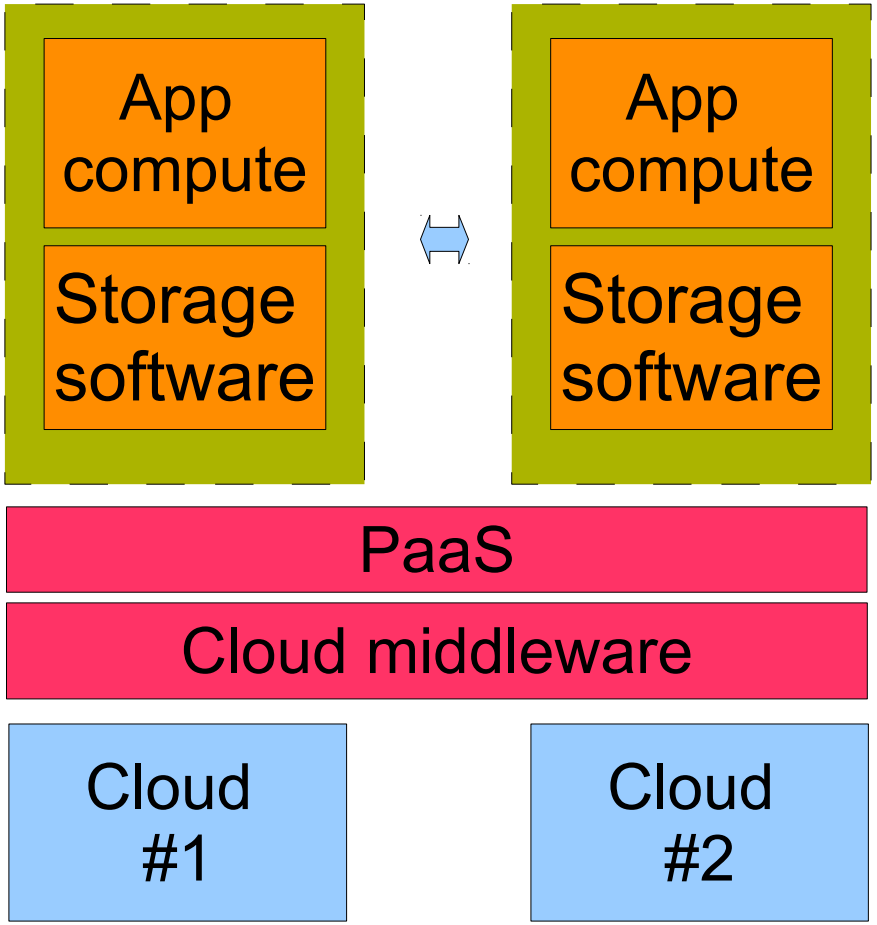


Hybrid cloud enables portability & bursting between different clouds with Heat

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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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

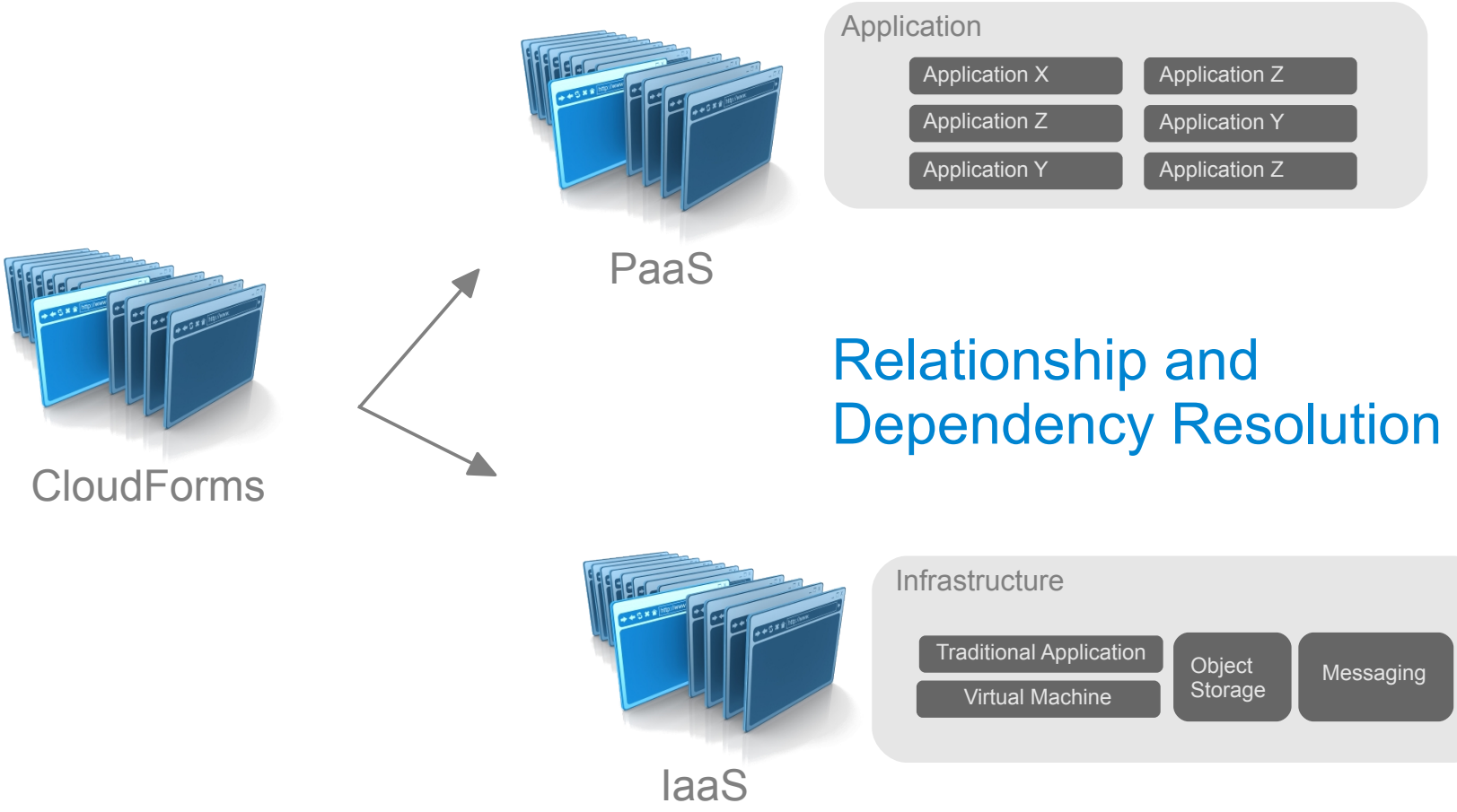
IaaS

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

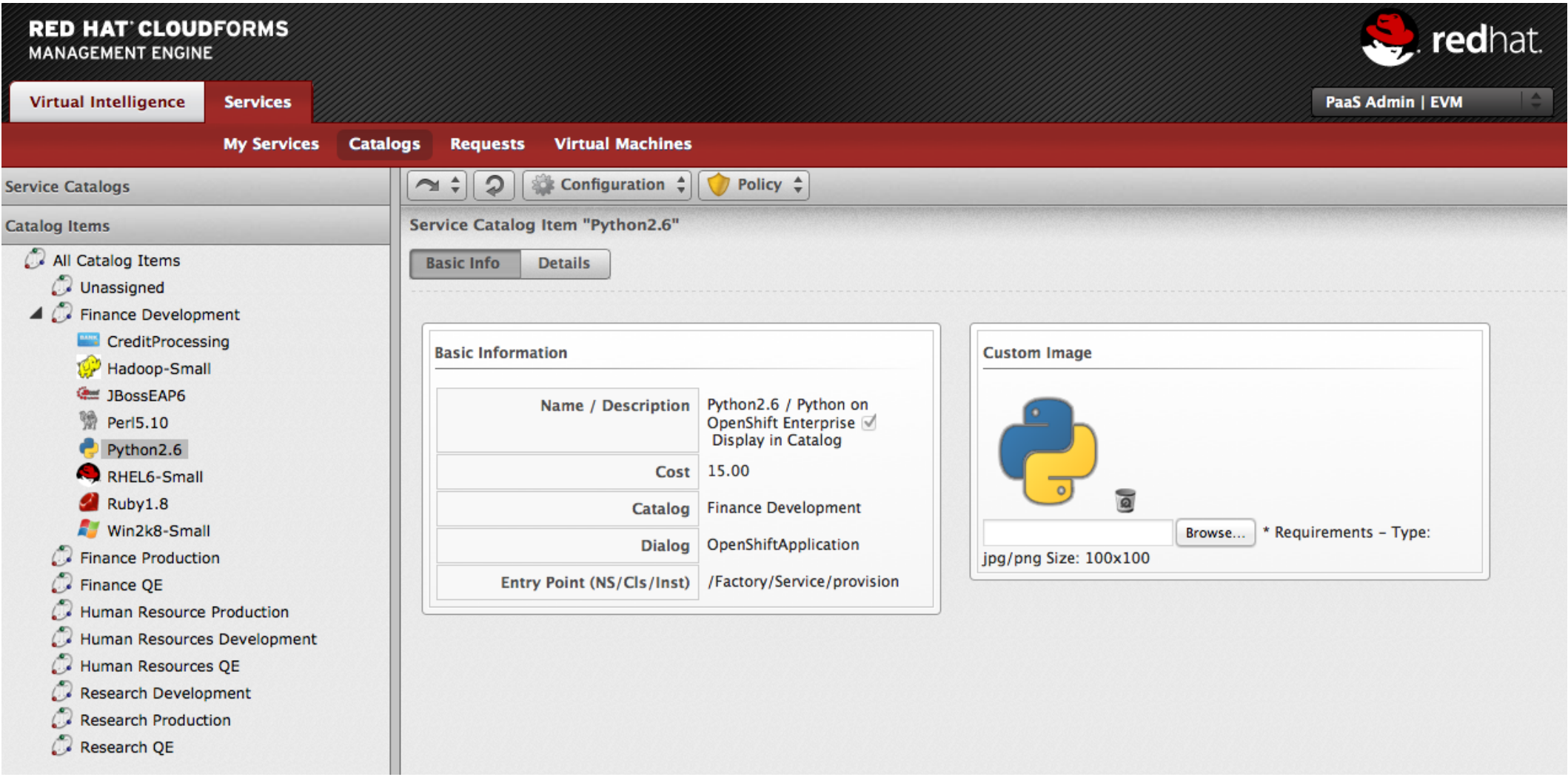
The goal



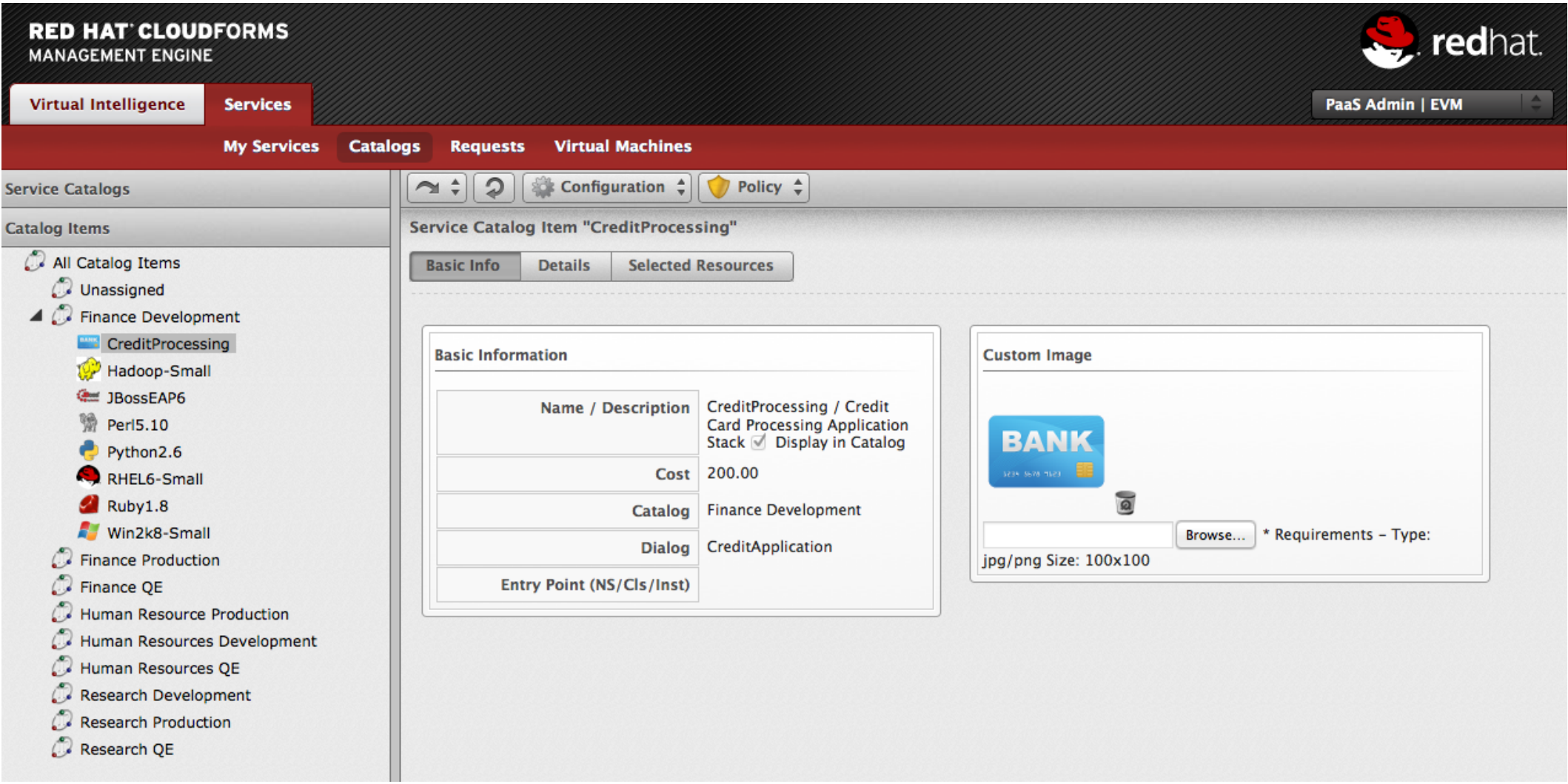
Result

- 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

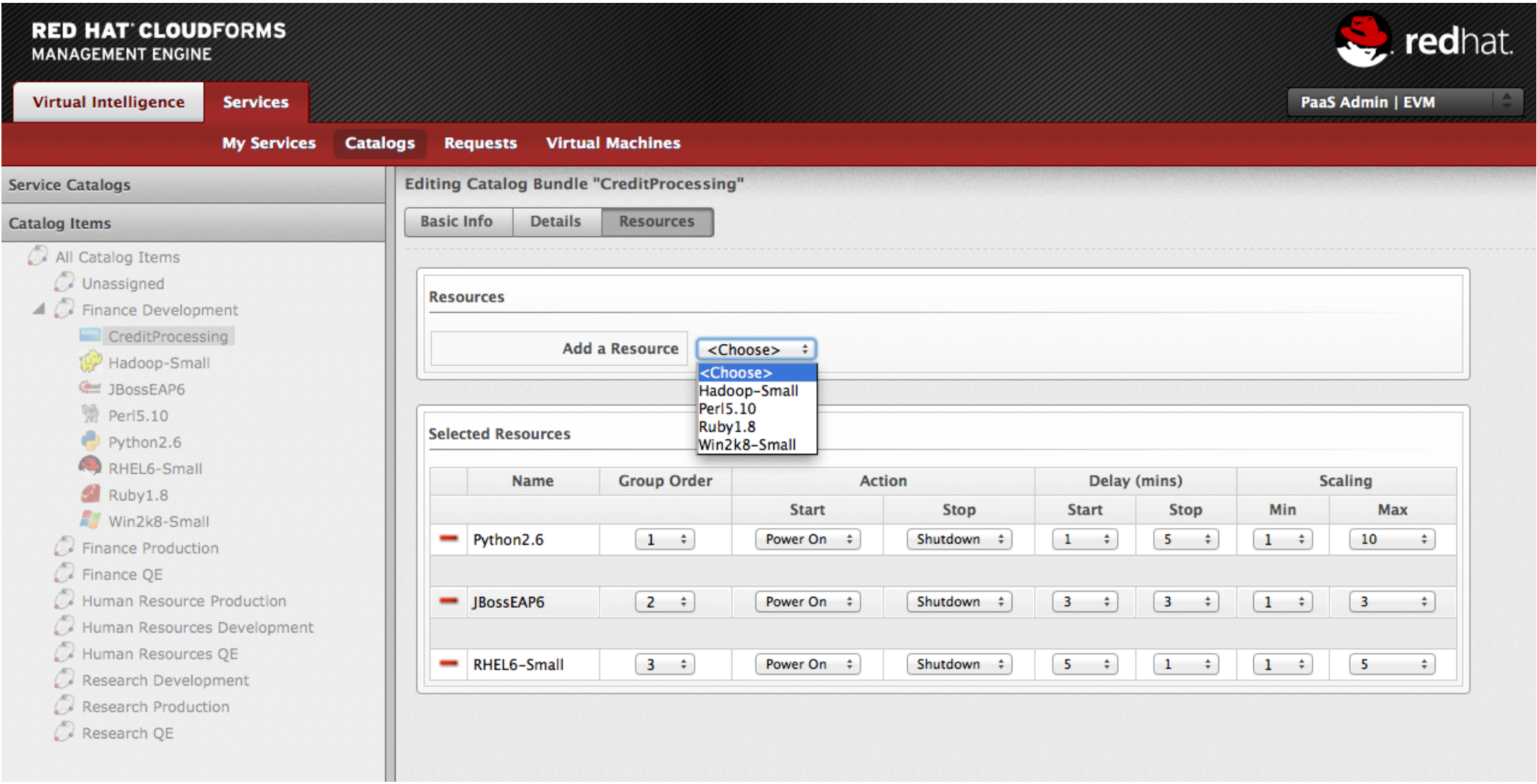
Developer Experience (Compose)



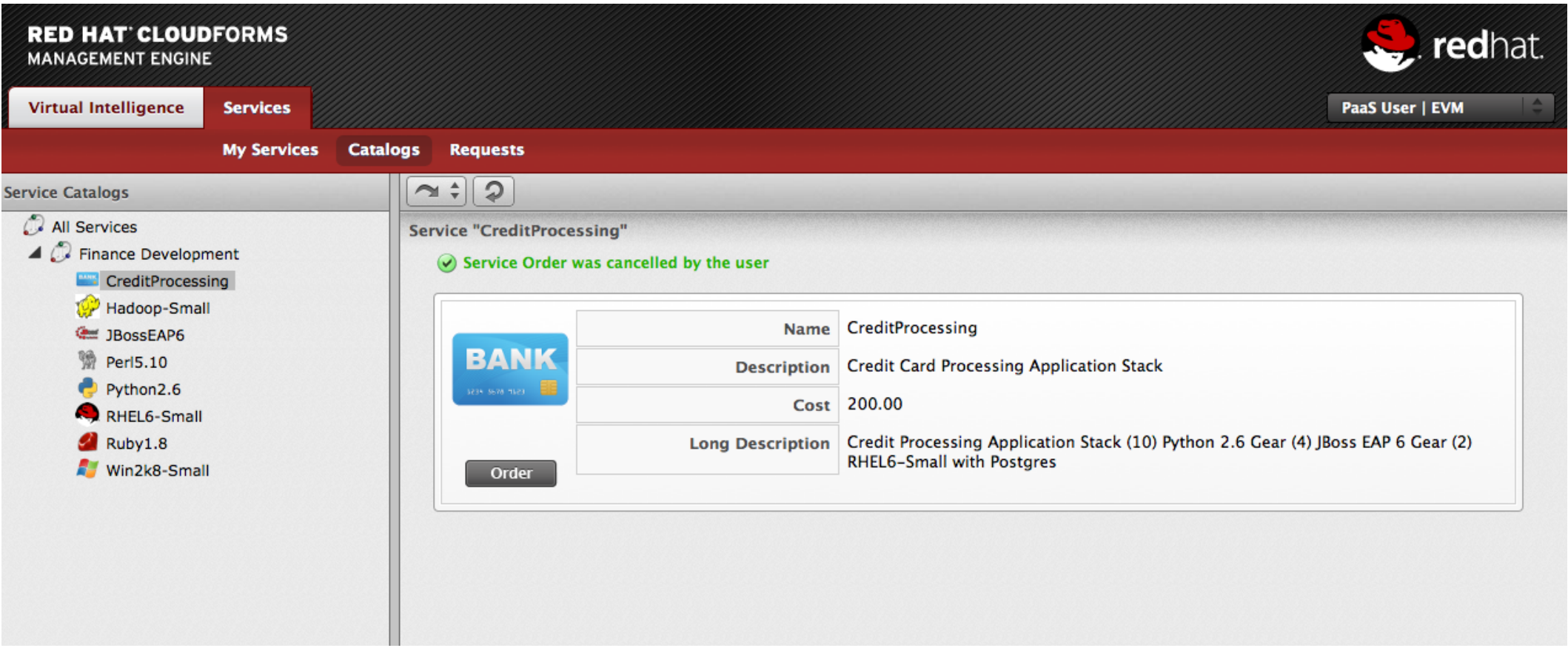
Developer Experience (Compose)



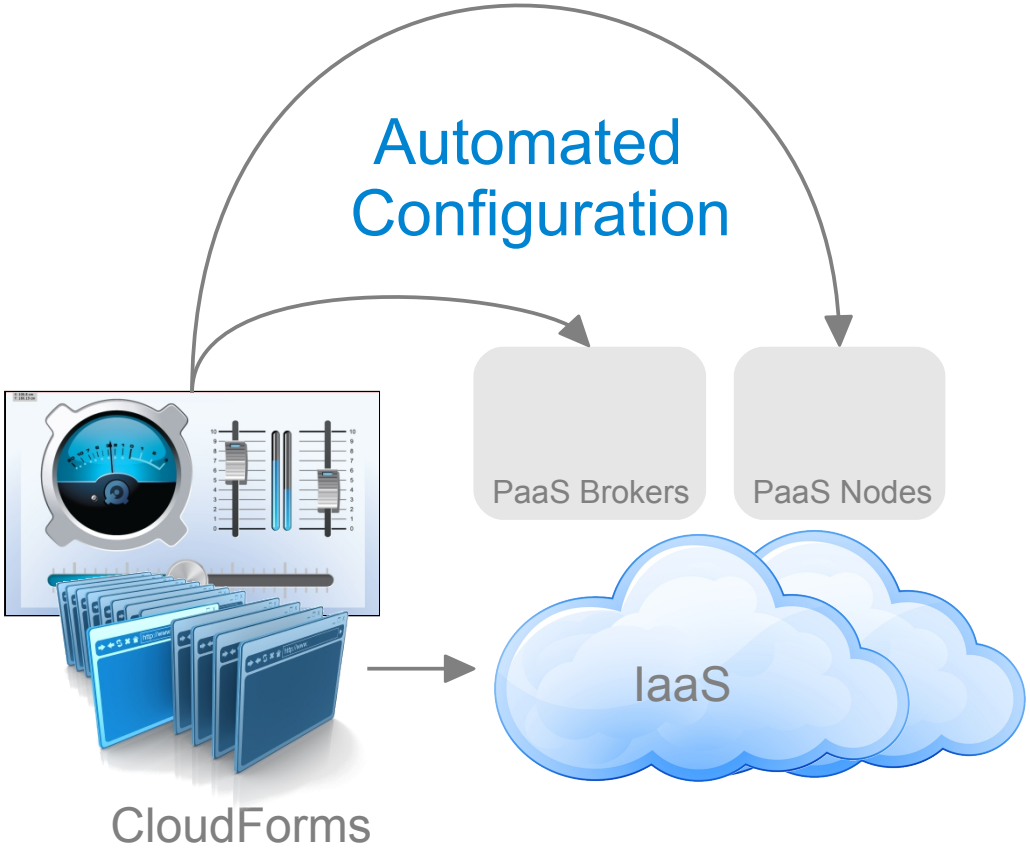
Developer Experience (Compose)



Developer Experience (Self-Service)

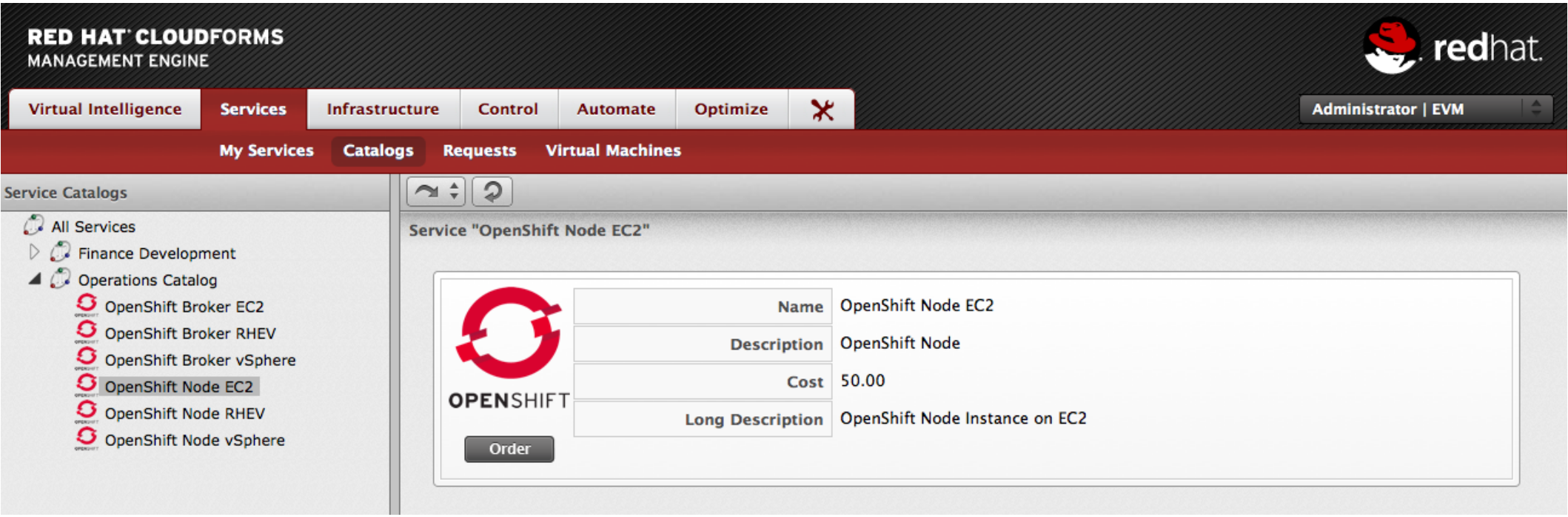


How about operations?

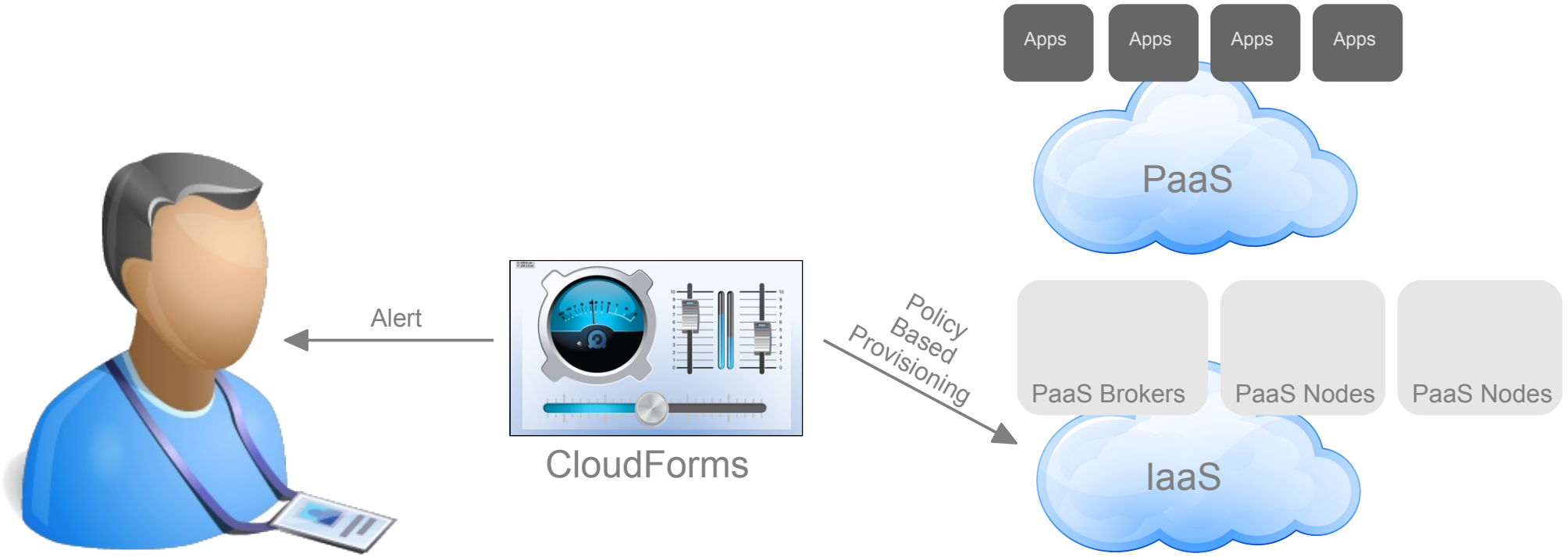


- Faster delivery of services
  - Automated deployment results in faster availability of PaaS infrastructure
- Reduce human error
  - Automation leads to decrease in errors
- Choice of infrastructure

Operations Experience



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?