RED HAT
FORUM
Europe, Middle East & Africa

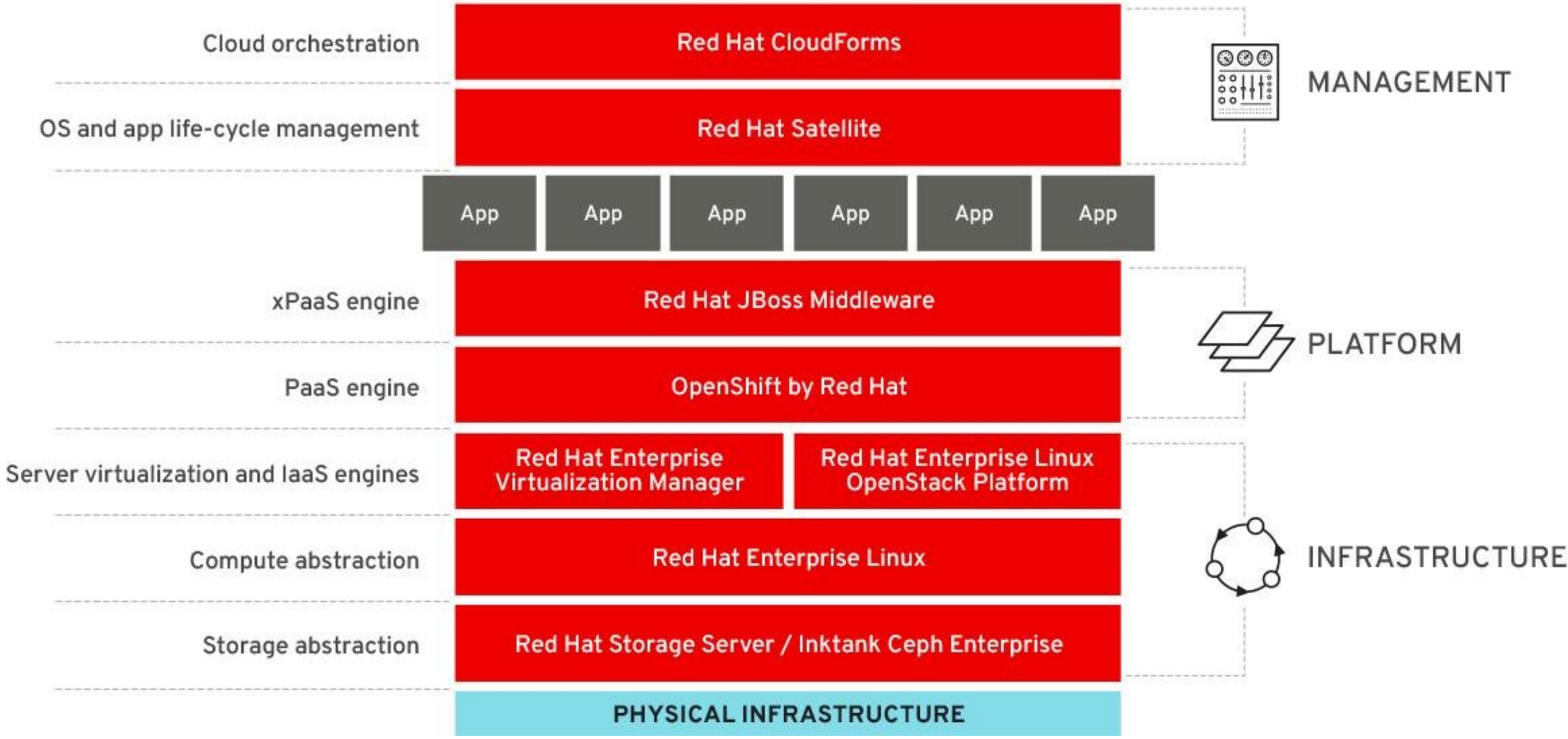
redhat.

OpenStack – The ultimate IAAS

Guy Carmin
RHCE, RHCI, RHCVA, RHCSA
Cloud & infra Solution Architect - Israel Greece & Cyprus

Red Hat

OPEN HYBRID CLOUD



IT Operations is Being Challenged By New Demands

BUSINESS CHALLENGES

- Faster time to market
- Elastic, scalable, high performance
- Flexibility without lock-in, pay as you go

I.T. OPERATIONS CHALLENGES

- Increase operation efficiency
- Maximize resource utilization
- Reliable, secure, compliant

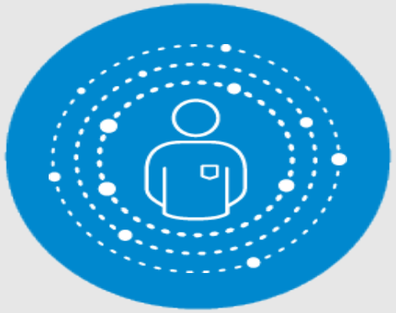
DEVELOPER CHALLENGES

- Reduce time to provision and develop, improve productivity
- Test new features and update applications faster
- Improve availability of platforms and resources

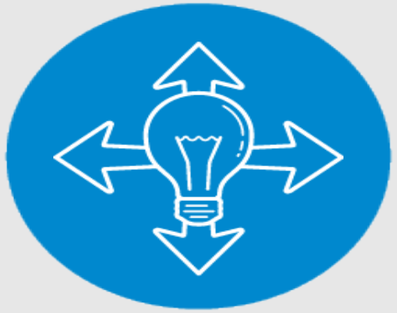
These New Demands Are Forcing a Shift in Application Design

Application demands are becoming more complex

IMMEDIATE



PERVASIVE

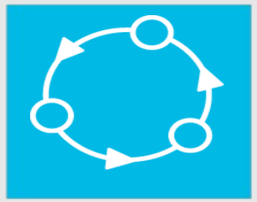


AWARE

Application requirements are becoming more diverse

CLOUD

MOBILE



INTERNET OF THINGS

BIG DATA

AUTOMATION

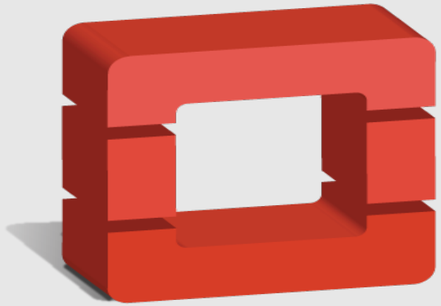
ABSTRACTION

IT Operations Must Adapt

Existing infrastructure is not designed to do this!

- Data has become too large
  - We're producing vast amounts of data, exponentially!
  - Way past the ability of traditional systems & applications
  - Scaling UP no longer works. Scaling OUT is a necessity
- Service requests are too large
  - More and more client devices coming online
    - Mobile phones, tablets, etc.
  - Much harder to maintain service to customers
- Traditional applications and infrastructure were not written to cope with this level of demand

What is OpenStack?

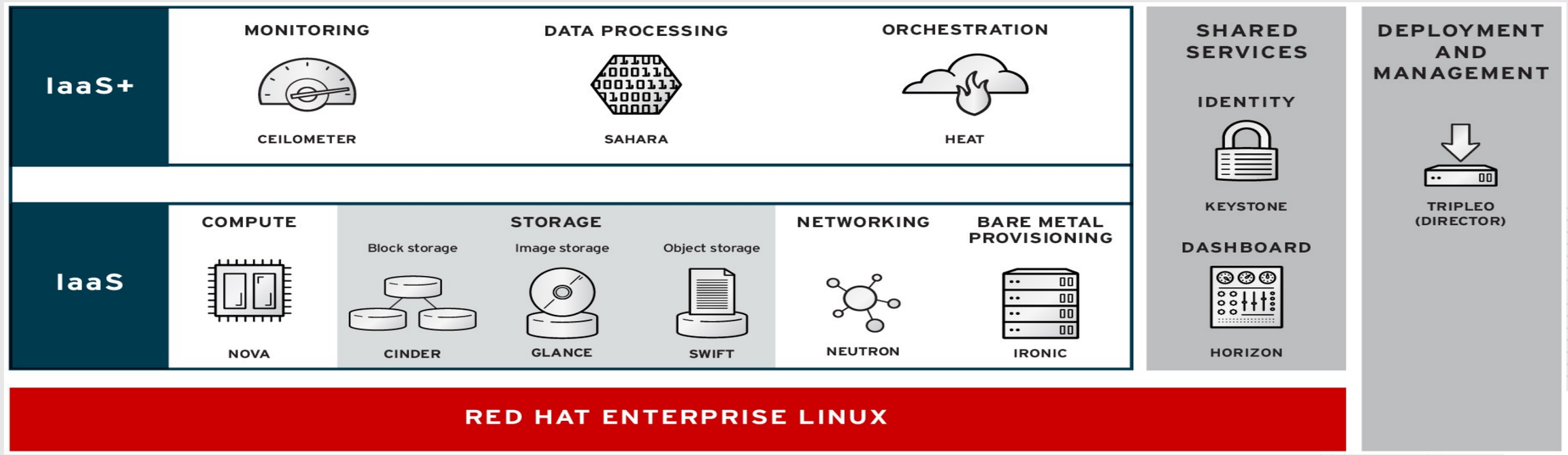


openstack™

CLOUD SOFTWARE

Cloud Infrastructure for Cloud Workloads

- Modular architecture
- Designed to easily scale out
- Based on (growing) set of core services



Why OpenStack?

OpenStack meets the needs of new “scale-out” applications

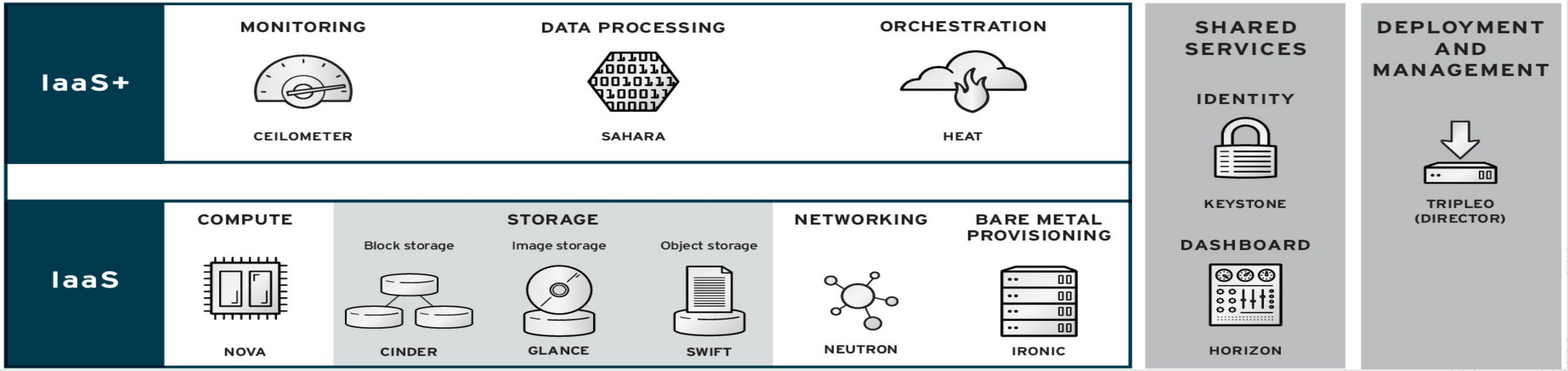
- Brings public cloud-like capabilities into your datacenter
- Provides massive on-demand (scale-out) capacity
  1,000's → 10,000's → 100k's of VMs
- Removes vendor lock-in
  - Open source provides high-degree of flexibility to customize and interoperate
- Community development = higher “feature velocity”
  - Features and functions you need, faster to market over proprietary software
- Greater automation, resource provisioning, and scaling

Am I Ready for OpenStack?

TRADITIONAL: SCALE UP (RHEV)	CLOUD: SCALE OUT (OpenStack)	MIXED/HYBRID
Big stateful VM	Small stateless VMs	Combination of traditional scale-up and cloud scale-out workloads.
1 Application → 1 VM	1 Application → Many VMs	
Lifecycle in years	Lifecycle hours to months	For example: Database may be hosted on traditional workloads, web front-end and logic layers on cloud workloads.
Scale up (VM gets bigger)	Scale out (add VMs)	
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 virtualization features (migration, HA, etc.) to keep applications available	Application SLA requires adding/removing VM instances to application cloud to maintain application availability	

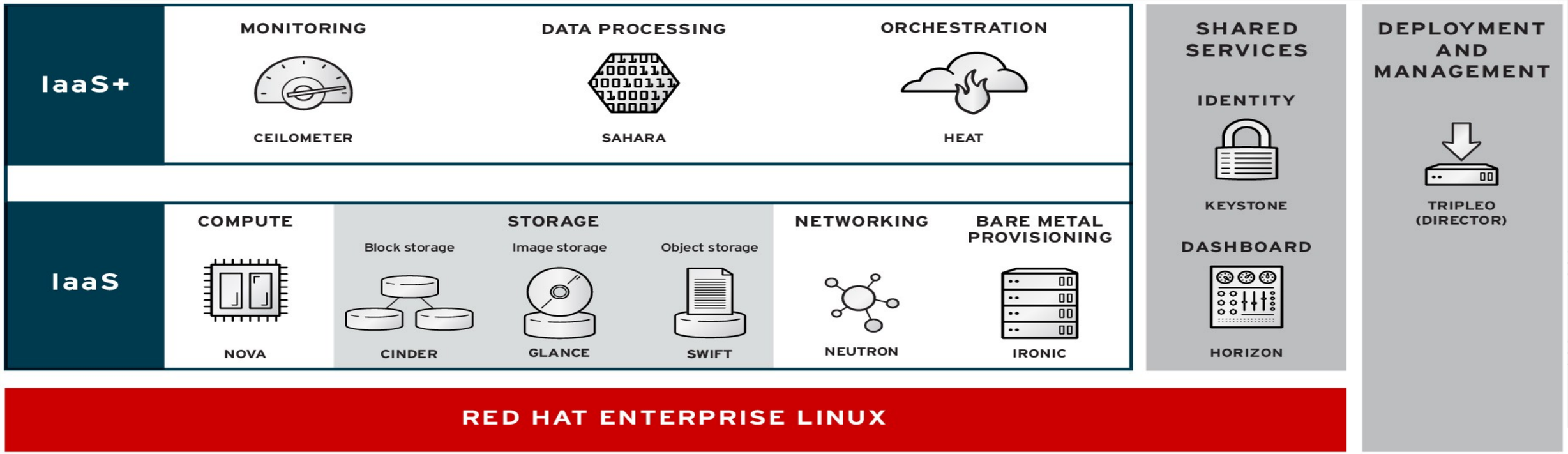
Why Red Hat?

OpenStack: Framework for the Cloud



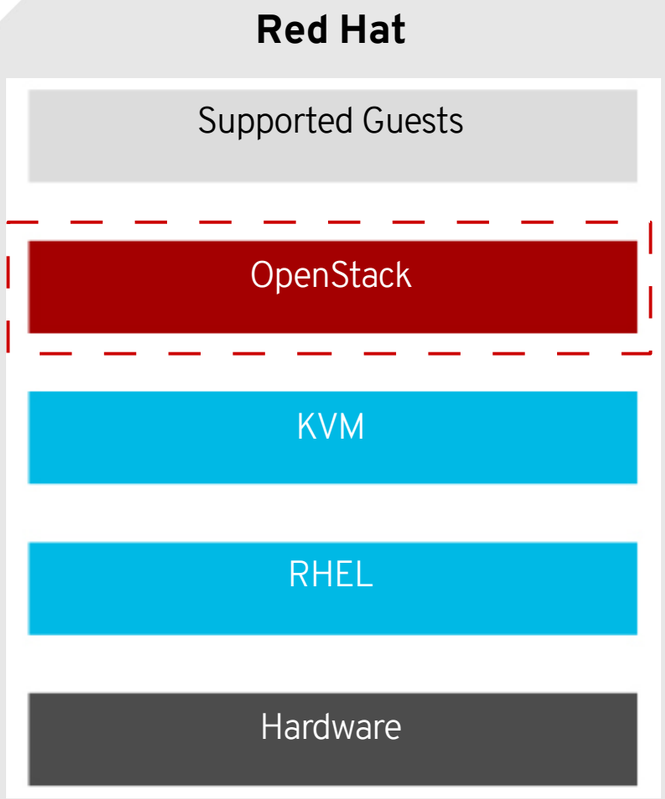
- Needs to access x86 hardware resources
- Needs an operating environment, hypervisor, services
- Leverages existing code libraries for functionality

Red Hat Enterprise Linux OpenStack Platform



- It *is dependent* on the underlying Linux
- Optimized and co-engineered with Red Hat Enterprise Linux

The Importance of Integration with Linux



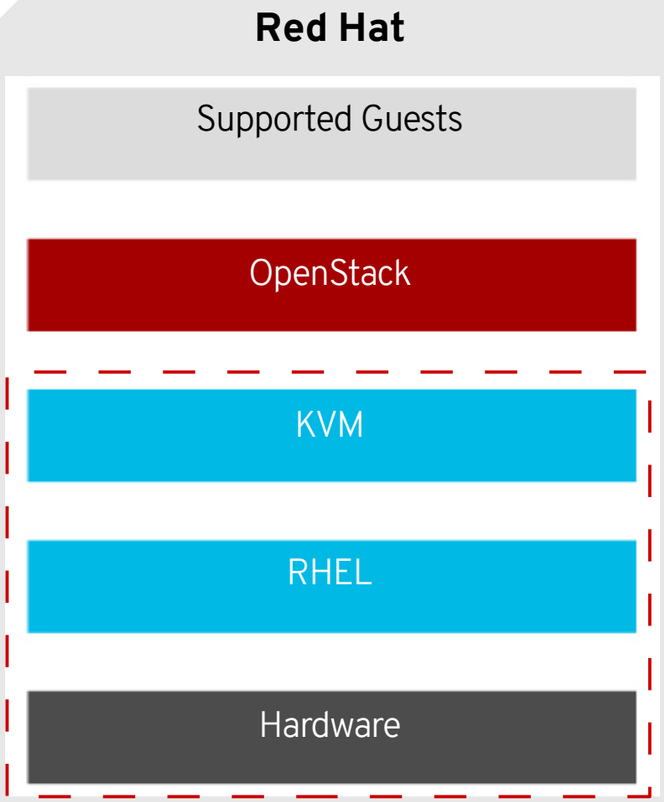
A typical OpenStack cloud is made up of at least 9 core services + plugins to interact with 3rd party systems

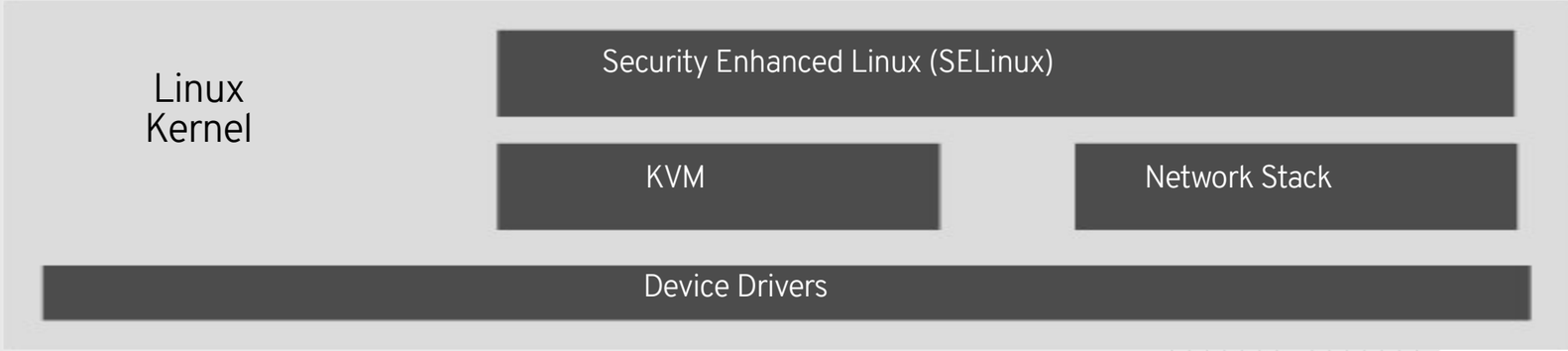
- These services run on top of a Linux distribution with a complex set of user space integration dependencies
- OpenStack cannot be productized as a stand alone layer
- A supported, stable platform requires integration and testing of each of the components

"If your Windows virtual machine hosted by a KVM hypervisor running on an IBM blade, connecting to an EMC storage array through an Emulex HBA has issues with storage corruption, who do you call?"

Red Hat Enterprise Linux

Optimized Enablers for OpenStack



- **Virtualization** – guest performance, reliability and Windows
- **Security** - SELinux enforcing guest isolation
- **Network** – SDN/OVS performance optimized
- **Storage** – vendor plugins, performance, thin provisioning
- 

RHEL OpenStack Platform Director

- Intuitive graphical installer, driven by an API backend
- Ensures a production-ready environment with Automated Health Checks (AHC) during and after installation
- Enables high availability (HA) across controller and compute nodes (including networking in “active-active”)
  - Automatically Utilizes Fencing as containment mechanism
- Includes Red Hat Ceph Storage client and server deployment[1] with integrated director configuration support for storage backends
- Optional partner integration/configuration support
  - NetApp Data ONTAP (incl. 7-mode)
  - Cisco Nexus 1000v

[1] *Red Hat Ceph Storage entitlement and subscription sold separately*

RHEL OpenStack Platform 7

Hypervisor Support

Red Hat Enterprise Virtualization Hypervisor
**Red Hat Enterprise Linux KVM*

- Lightweight / small footprint
  - Less overhead
  - Smaller attack surface
- Cost effective
- Closer to operating system DNA
- Provides massive scale-out capabilities
- Maximum benefit with virtualized Linux

VMware vSphere
**vCenter Driver*

- Co-exist with existing infrastructure assets
- Provides a seamless path to future migration to OpenStack
- Uses NSX[1] plugin for Neutron

[1]NSX is only supported in production environments, per VMware's support requirements

**ESXi driver not supported*

RHEL OpenStack Platform 7

Virtual Guest Support

- Red Hat Enterprise Linux 3
- Red Hat Enterprise Linux 4
- Red Hat Enterprise Linux 5
- Red Hat Enterprise Linux 6
- Red Hat Enterprise Linux 7
- Red Hat Enterprise Linux Atomic Host

**32 and 64 bit for all versions of RHEL*

- SUSE Linux Enterprise Server 10
- SUSE Linux Enterprise Server 11

**32 and 64 bit for all versions*

- Windows XP SP3+[1]
- Windows 7[3]
- Windows 8[3]

Microsoft SVVP Certified

- Windows Server 2003 SP2+[3]
- Windows Server 2008[3]
- Windows Server 2008 R2[2]
- Windows Server 2012[2]

[1] 32 bit only
[2] 64 bit only
[3] 32 and 64 bit

RED HAT® ENTERPRISE LINUX®

SUSE®

Windows

Largest OpenStack Partner Ecosystem

- Over 350+ members since launch in April 2013
- Over 900 certified solutions in partner Marketplace
- Over 4,000 RHEL certified compute servers
- Over 13,000 applications available on RHEL

OEMs, IHVs, and ISVs

Channel Partners

System Integrators

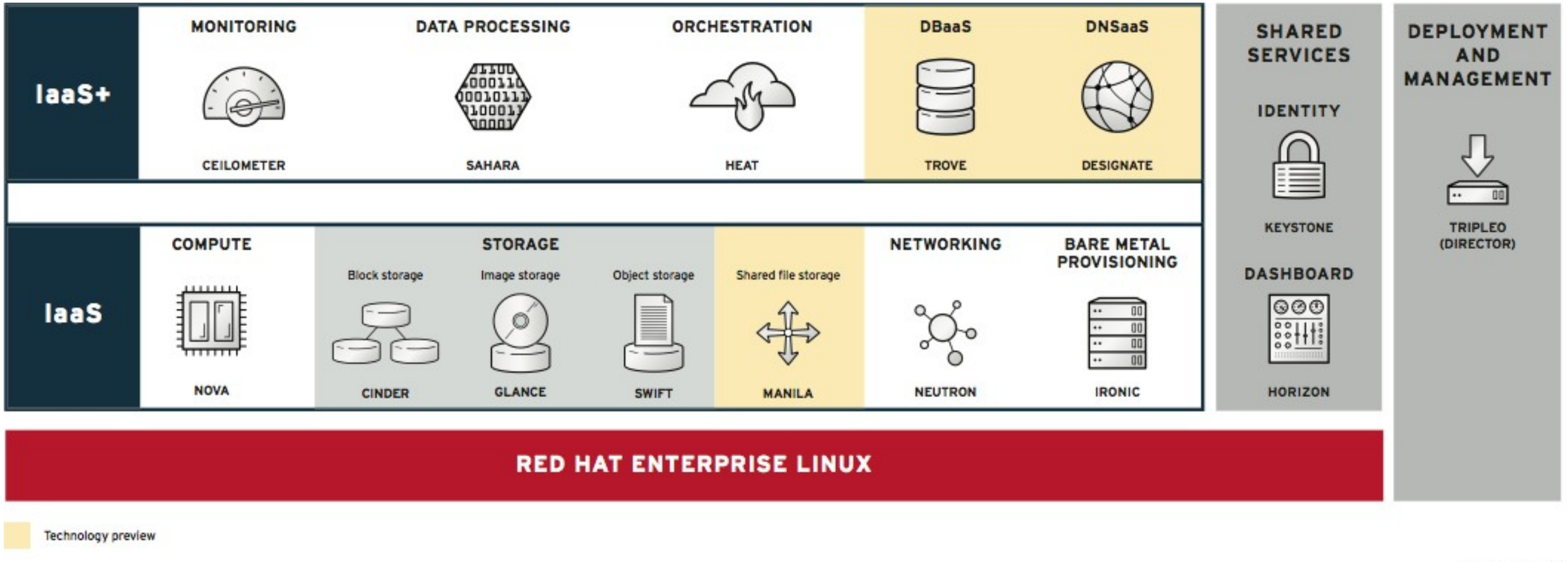
Cloud Service Providers
Managed Service Providers

What's Coming?

Technology Previews in RHEL OpenStack Platform 7

New OpenStack services:

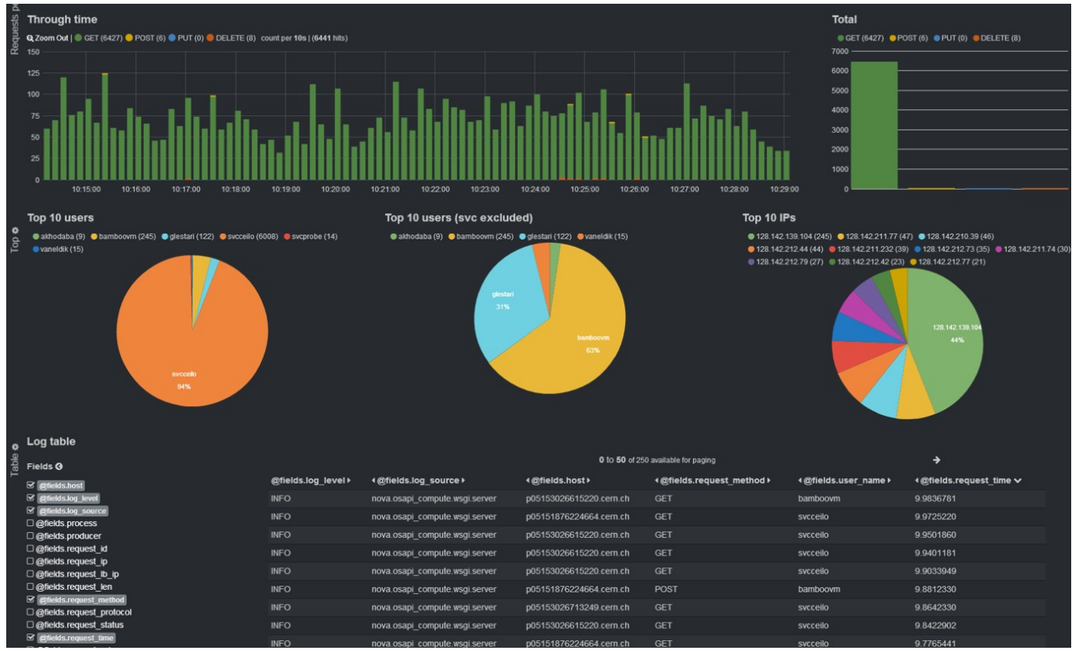
- Database as a Service (“Trove”)
- DNS as a Service (“Designate”)
- File Share Service (“Manila”)



RHELOSP0012C-4

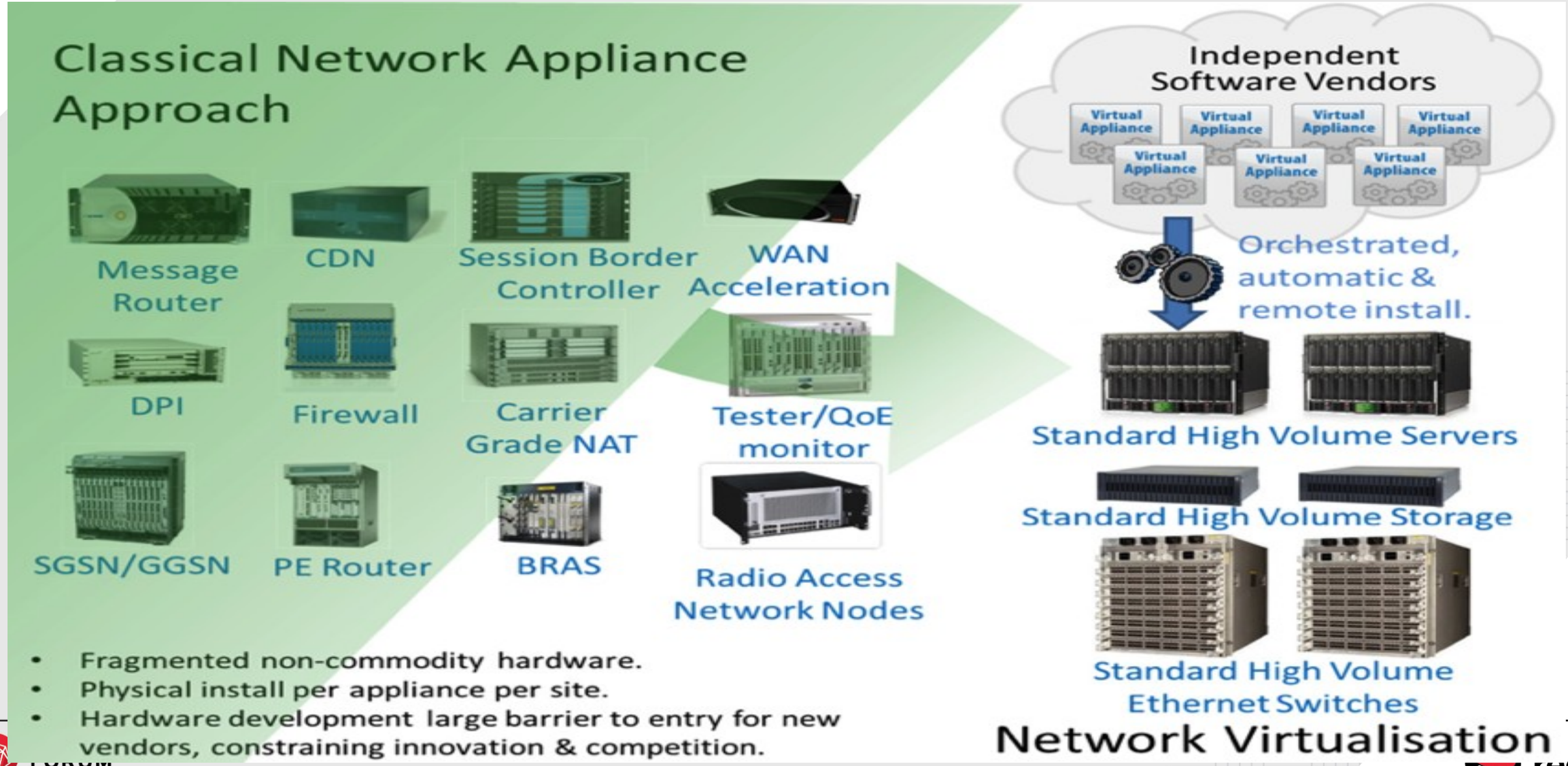
Technology Previews in RHEL OpenStack Platform 7

- Core component features:
  - Distributed Virtual Router (Neutron)
  - Swift - Erasure Coding (Swift)
- Operational tools (logging, monitoring, etc):
  - Centralized Logging: f
    - luentd + ElasticSearch + Kibana
  - Availability Monitoring:
    - sensu + rabbitmq + redis + uchiwa



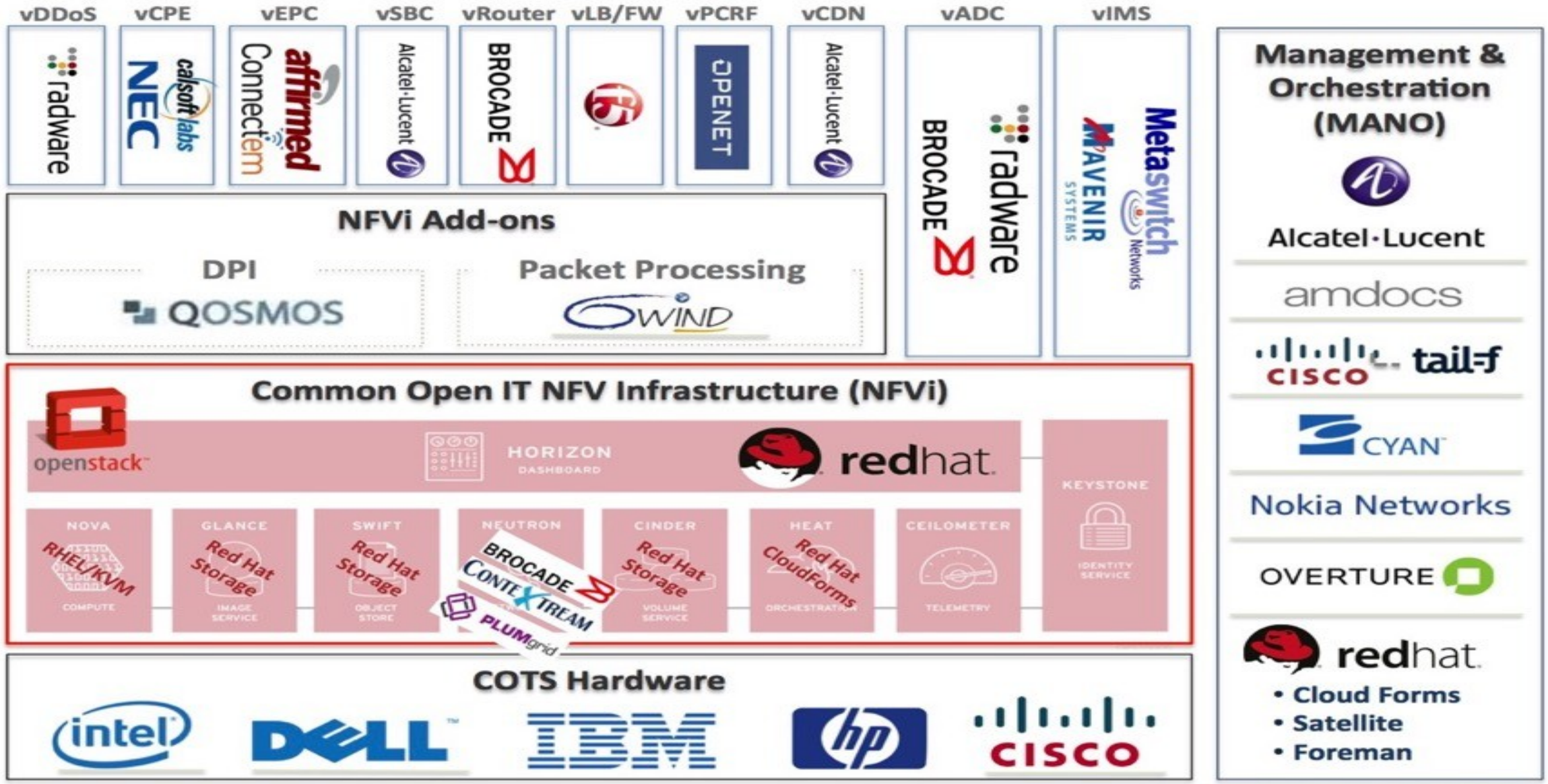
NFV

Business Motivation for NFV

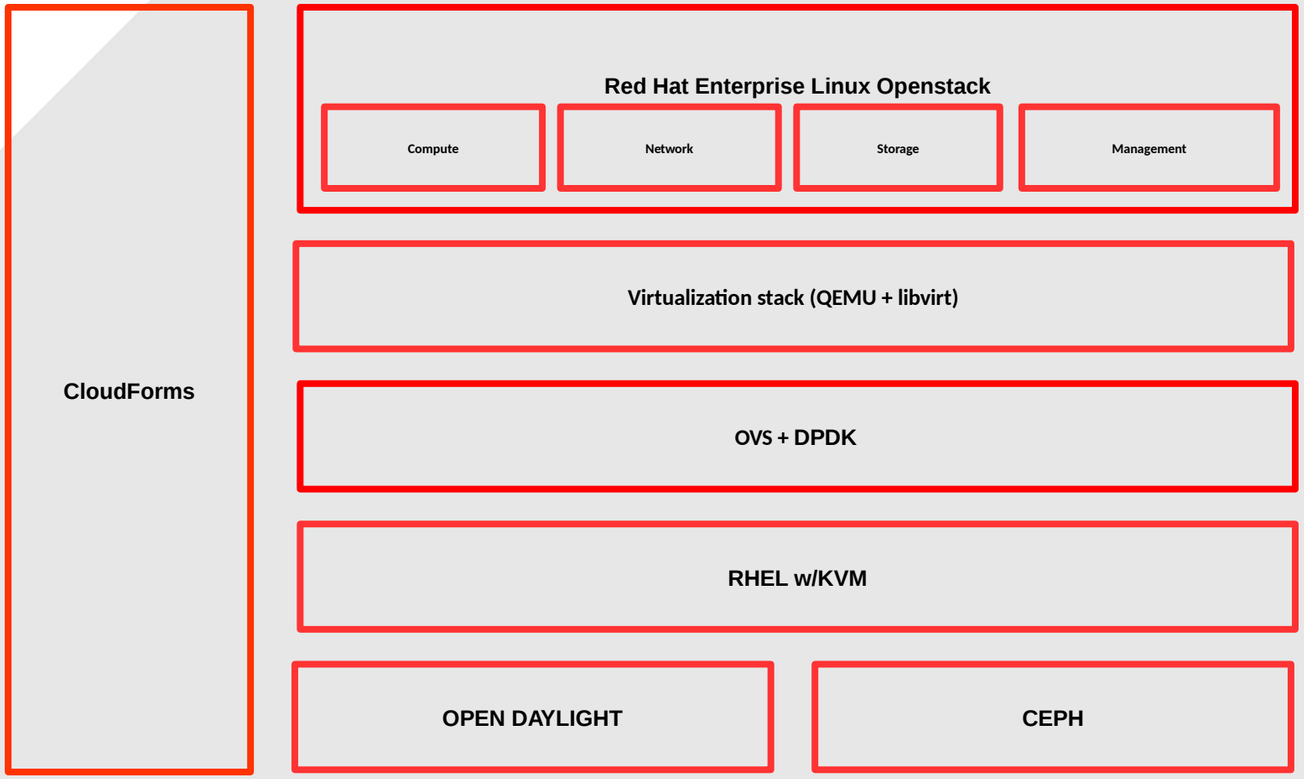


- Fragmented non-commodity hardware.
- Physical install per appliance per site.
- Hardware development large barrier to entry for new vendors, constraining innovation & competition.

NFV/SDN Ecosystem



Red Hat NFV Solution



❖ Red Hat's Product Strategy

- ➢ Product Approach instead of Customized solution
- ➢ Introduce NFV features into existing Red Hat portfolio instead of creating a dedicated NFV Product

❖ Red Hat's Solution Benefits

- ➢ Ease of Deployment. Ease of Operate
- ➢ Linux + Virtualization + Openstack packaging
- ➢ Carrier Ready

Red Hat NFV ARchitecture

RED HAT ENTERPRISE LINUX

RED HAT JBOSS MIDDLEWARE

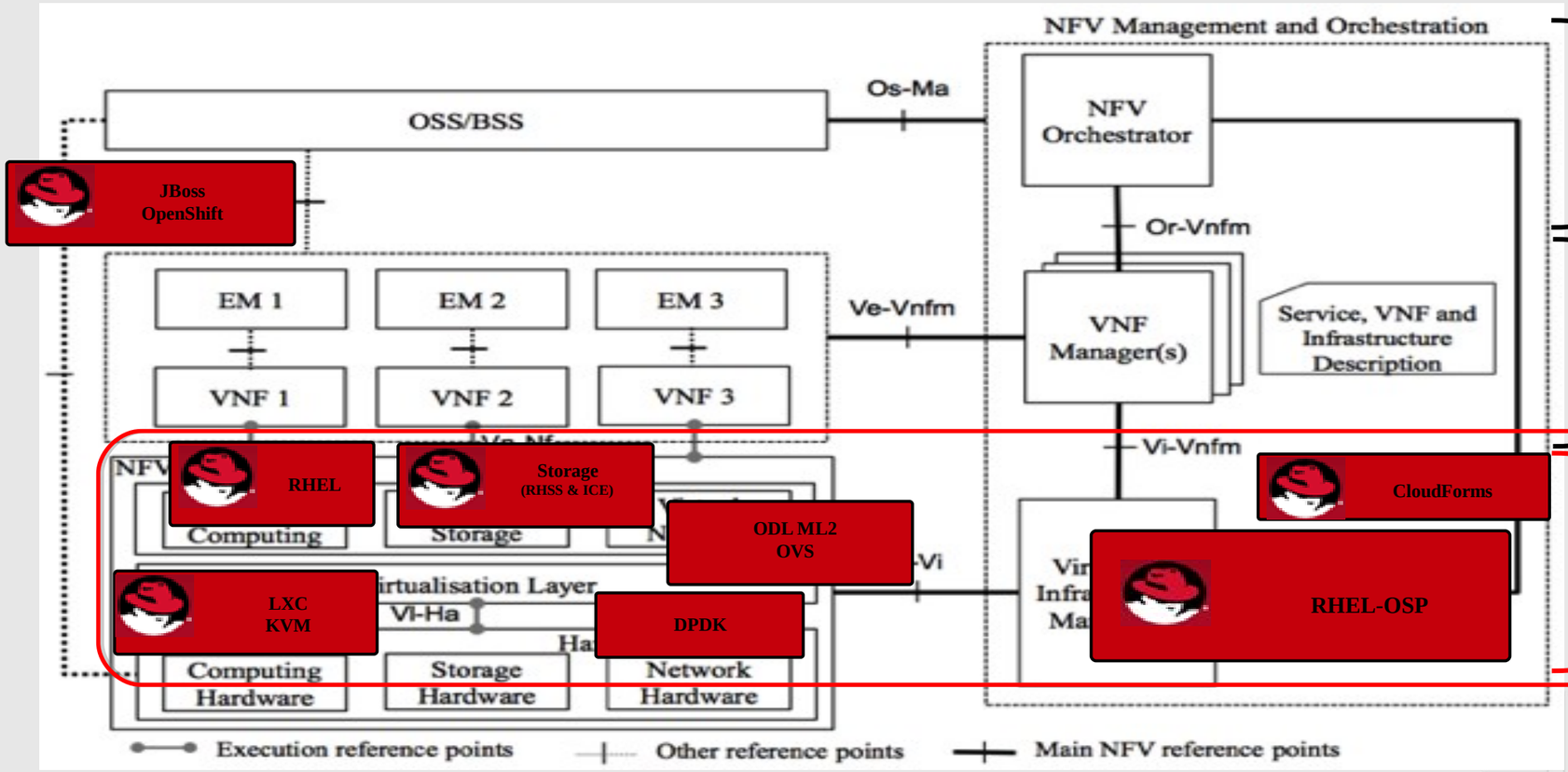
RED HAT ENTERPRISE VIRTUALIZATION

RED HAT STORAGE

RED HAT ENTERPRISE LINUX OPENSTACK PLATFORM

OPENSHIFT by Red Hat

RED HAT CLOUDFORMS *



Red Hat works with partners

Red Hat works with partners

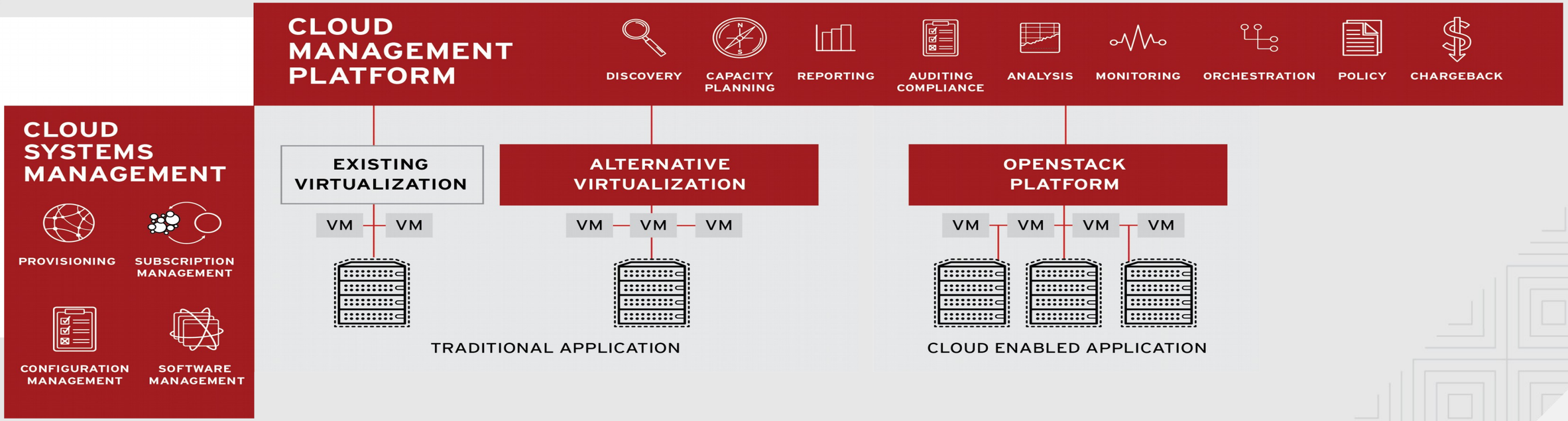
Red Hat Focus: Trusted NFVI / VIM SW Platform Provider

① Red Hat will integrate for PoCs, pilots and lab demos with partners for customers.
② Red Hat will work with Network Equipment Provider and Systems Integrator partners to provide end-to-end support for NFV based products and NFV product based networks for SLAs, 24/7, etc for Service Providers.

Integrated Cloud Solutions...

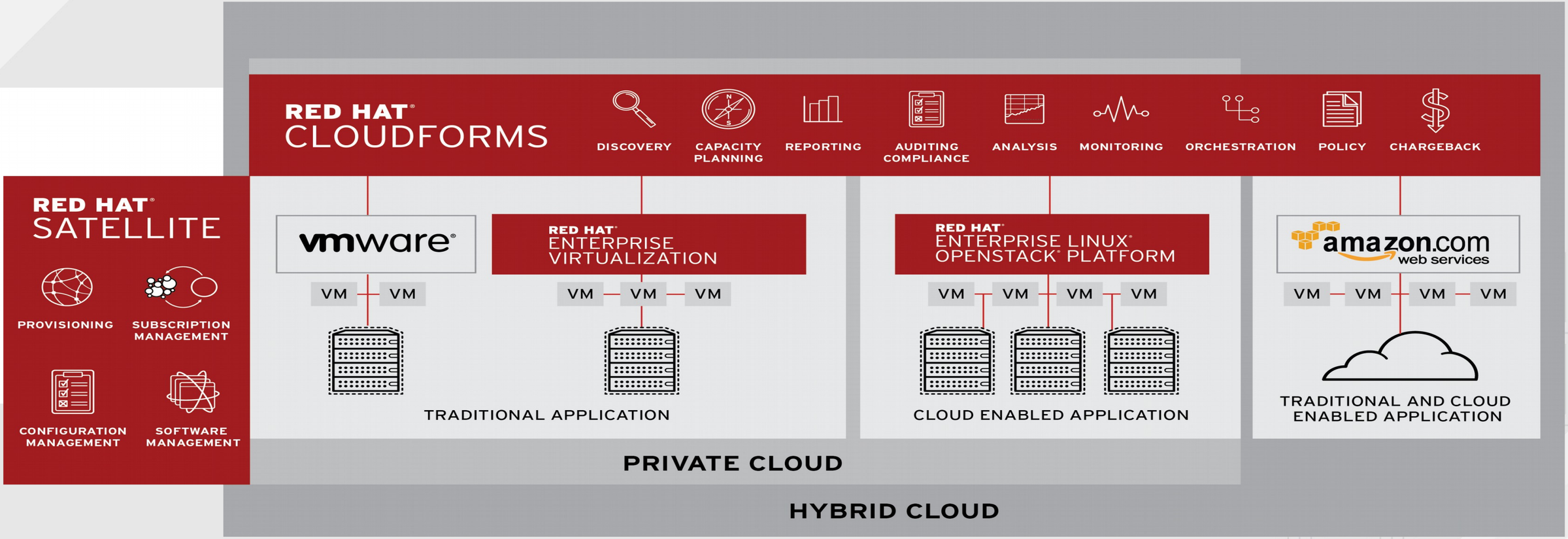
Red Hat Cloud Infrastructure

Delivering an open private cloud



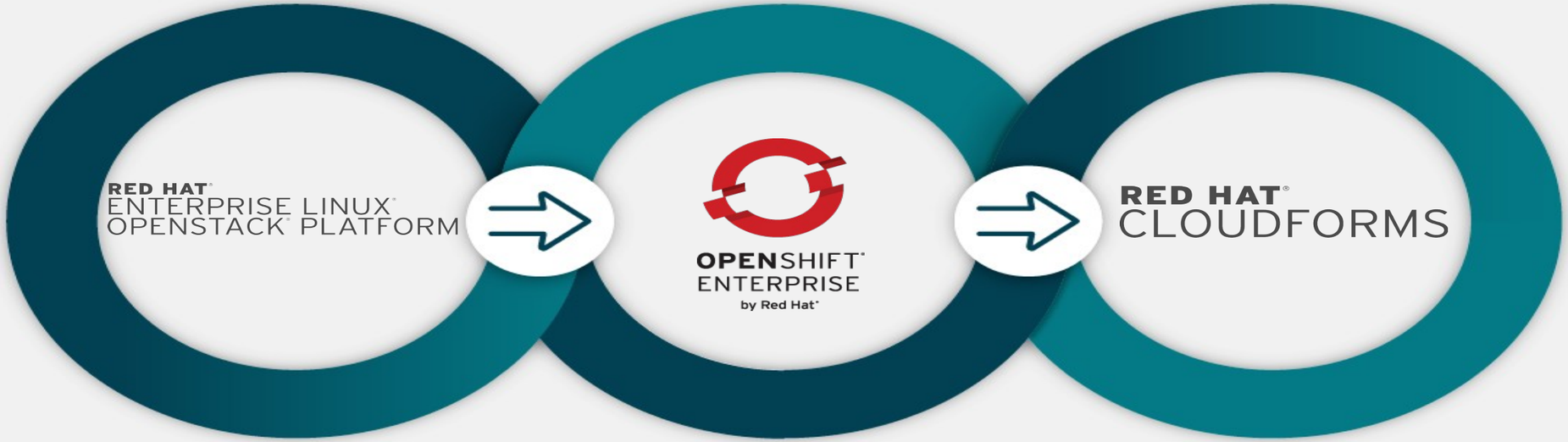
Open Hybrid Cloud

CloudForms adds heterogeneous capacity



Red Hat Cloud Suite for Applications

Integrated DevOps Platform for the enterprise



IaaS PaaS Management

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