Cloud Computing – the VMware Perspective

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Product Marketing

Cloud Computing - the Key Questions

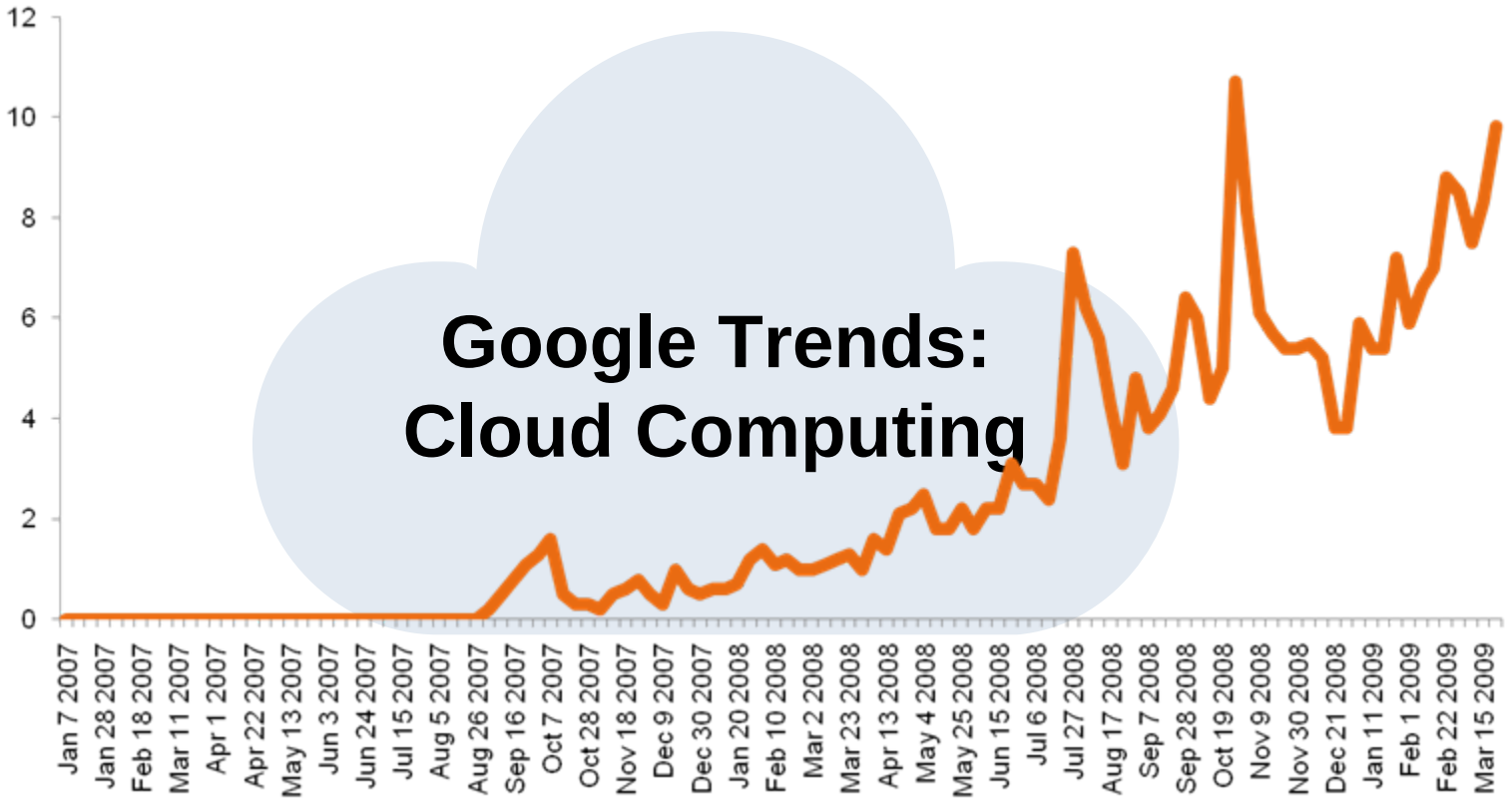
What is it?

Why do you need it?

How do you build (or leverage) one (or many)?

How do you operate it?

There is Certainly a Lot of Hype…



But what is it?

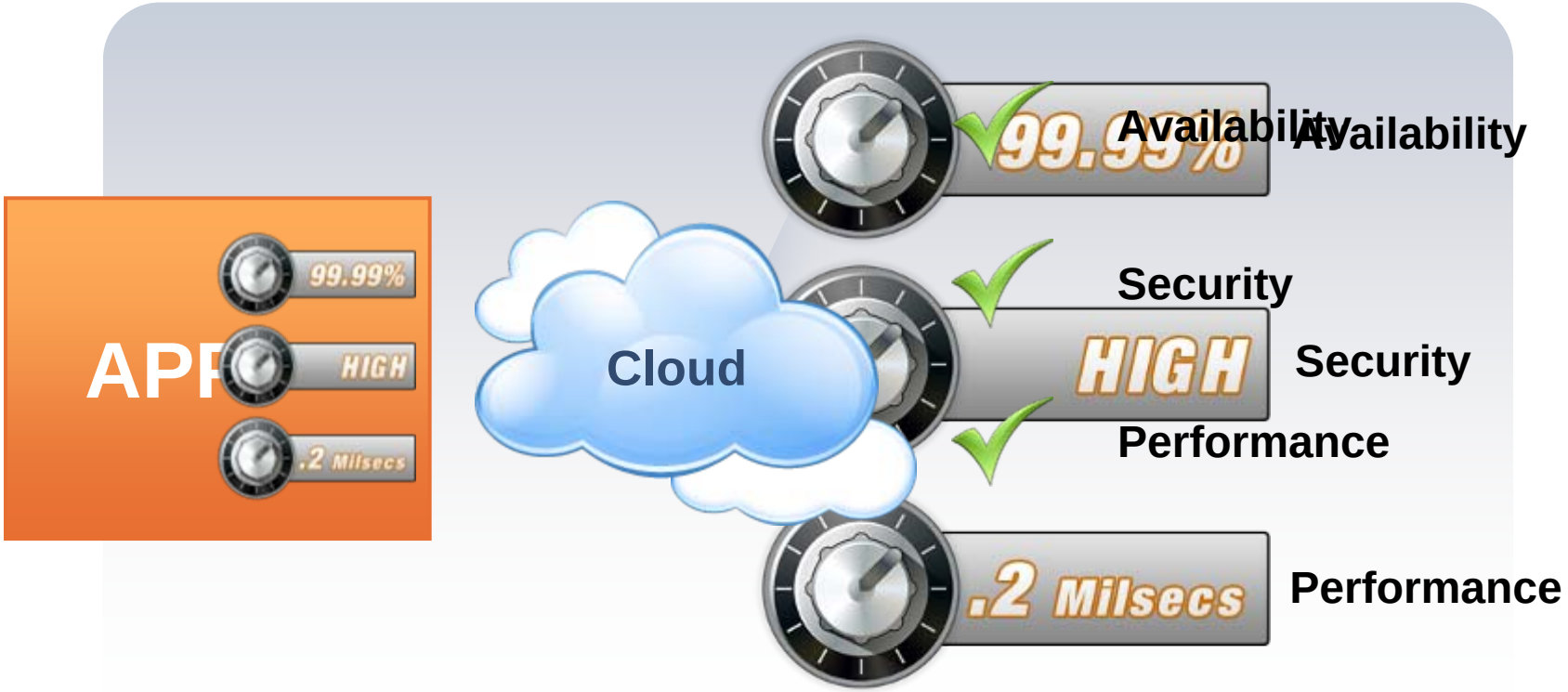
Cloud Defined - New Style of Computing

IT as a Shared Service

Just like…..

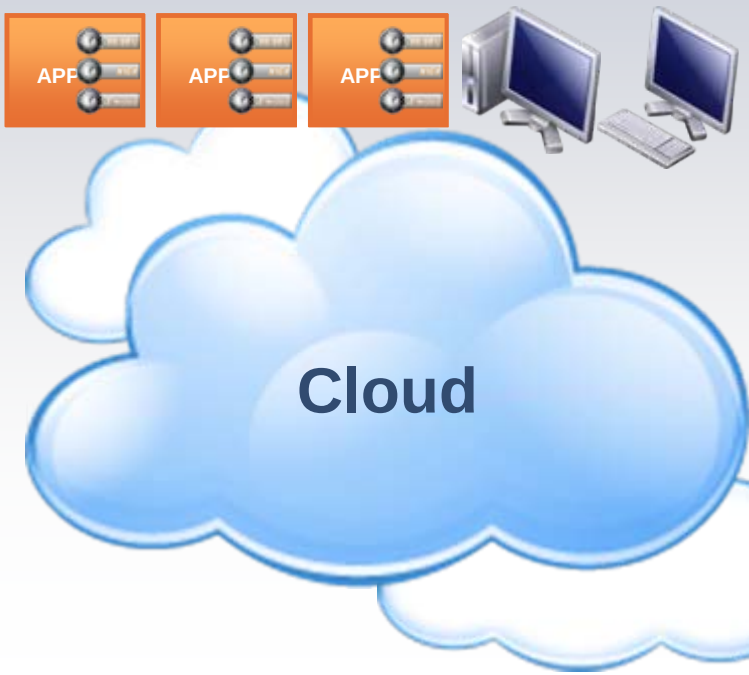
- Inexpensive, pay as you go,
- Ubiquitously available
- Reliable
- Choice of providers

Rolling Out a New Business Service…



…is a Matter of Specifying SLAs

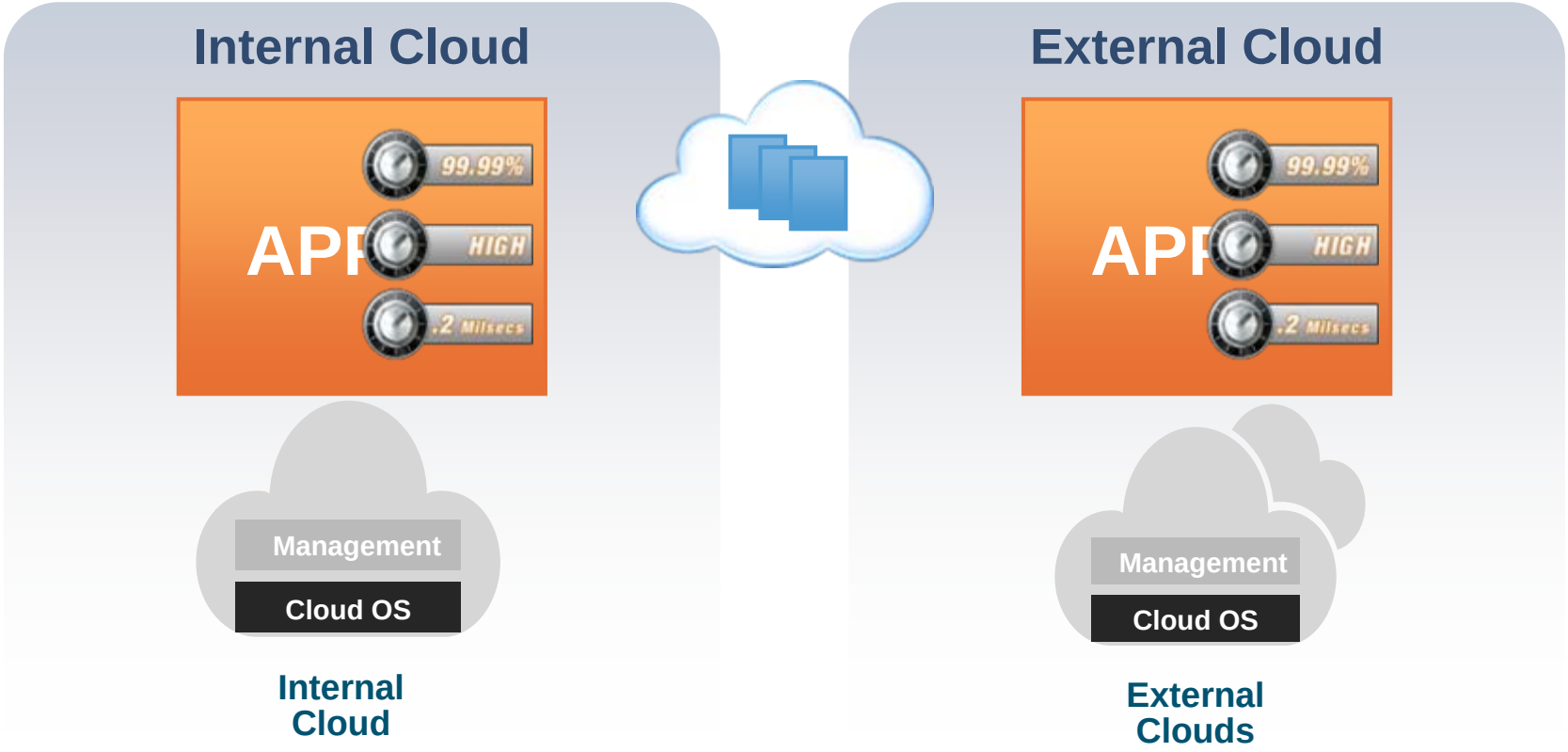
Rolling Out New IT Offerings…



- Availability
- Security
- Performance
- Lowest TCO

…Is Always Efficient

Leveraging the External Cloud…



…Doesn't Require Giving Up On Security, Control or QoS

Different Types Of Cloud Computing

3 Main Types or Personalities

Application/Information – Sometimes referred to as Software-as-a-Service, applications or information delivered as a service

Expedia.com
Google
salesforce.com Success On Demand.

Development – Sometimes referred to as Platform-as-a-Service, application development platforms enabling authoring and runtime environments

cohesiveFT assemble. deploy. manage
Google app engine
salesforce.com Success On Demand.
rPath
Engine Yard

Infrastructure – Sometimes referred to as Infrastructure-as-a-Service, compute, storage, networking made available for as a cloud service.

amazon web services
MOSSO the hosting cloud
terremark Worldwide, Inc.

Cloud Computing - the Key Questions

What is it?

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How do you operate it?

Key Business Properties/Metrics

- ***Efficiency*** **-** The ratio of the output the organization as compared to the input of that system/organization
- ***Flexibility and Agility*** **–** The ability to quickly react or realign business assets to take advantage to business and/or market opportunities.
- ***Reliability*** **–** The capability for an organization to recover from anything affecting the normal business cycle
- ***Predictability*** **-** The ability to reduce variance the quality of service provided
- ***Choice*** – Flexibility to choose which business tool/platform that provides the best value.

Are also Key Cloud Properties

IT as a Shared Service

- Efficiency, low cost
- Ease of use, flexibility, agility
- Reliability, predictability
- Choice

Also are Key Cloud Properties

- ***Efficiency*** **–** Turn substantial capex investment into ongoing OpEx.
- ***Flexibility and Agility*** **–** IT service “on tap”; dynamically reconfiguring resources
- ***Reliability*** **–** *All* business applications inherit high availability and business continuance features provided the abstraction and underlying physical systems.
- ***Predictability*** **–** Standardization and service level caalogue reduce variance
- ***Choice*** – Operating system platform agnostic. Works with what you have and what you will have.

Cloud Computing - the Key Questions

What is it?

Why do you need it?

How do you build (or leverage) one (or many)?

How do you operate it?

How do You Bridge from the Datacenter of Today to the External Cloud?

Trusted
Reliable
Secure

Efficient
Flexible
Dynamic

?
(no migration path)

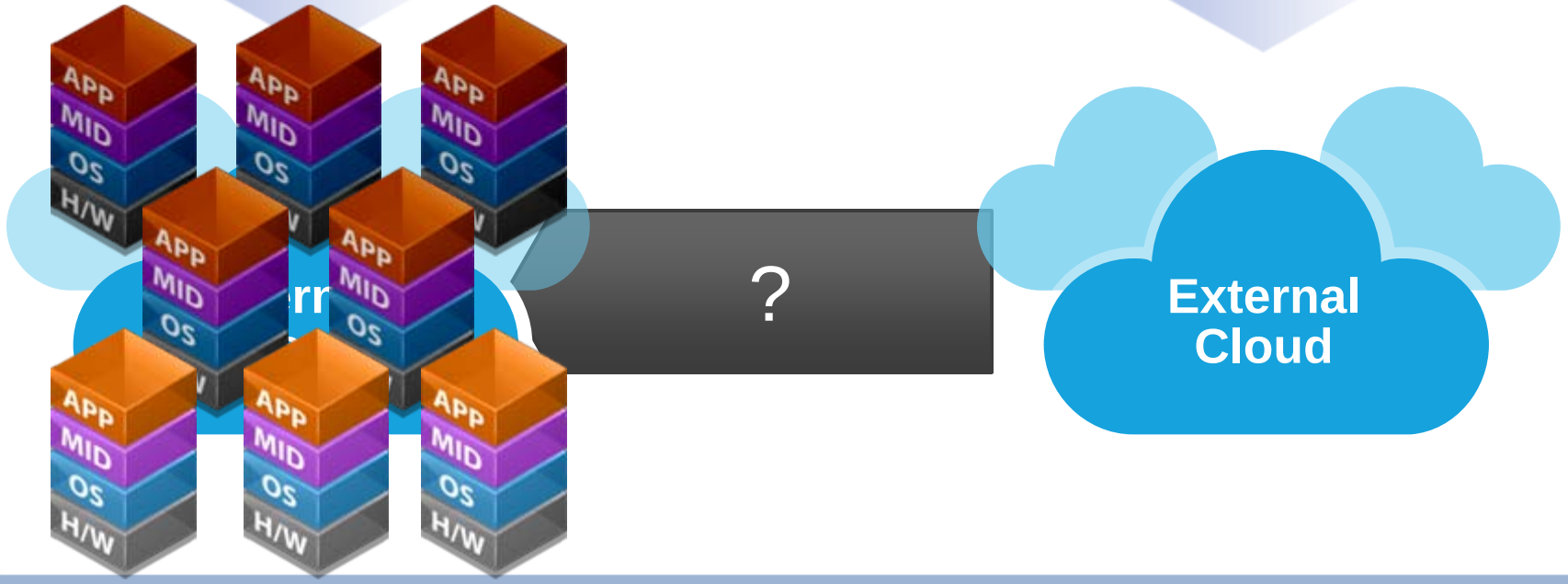
External Cloud

Internal Cloud

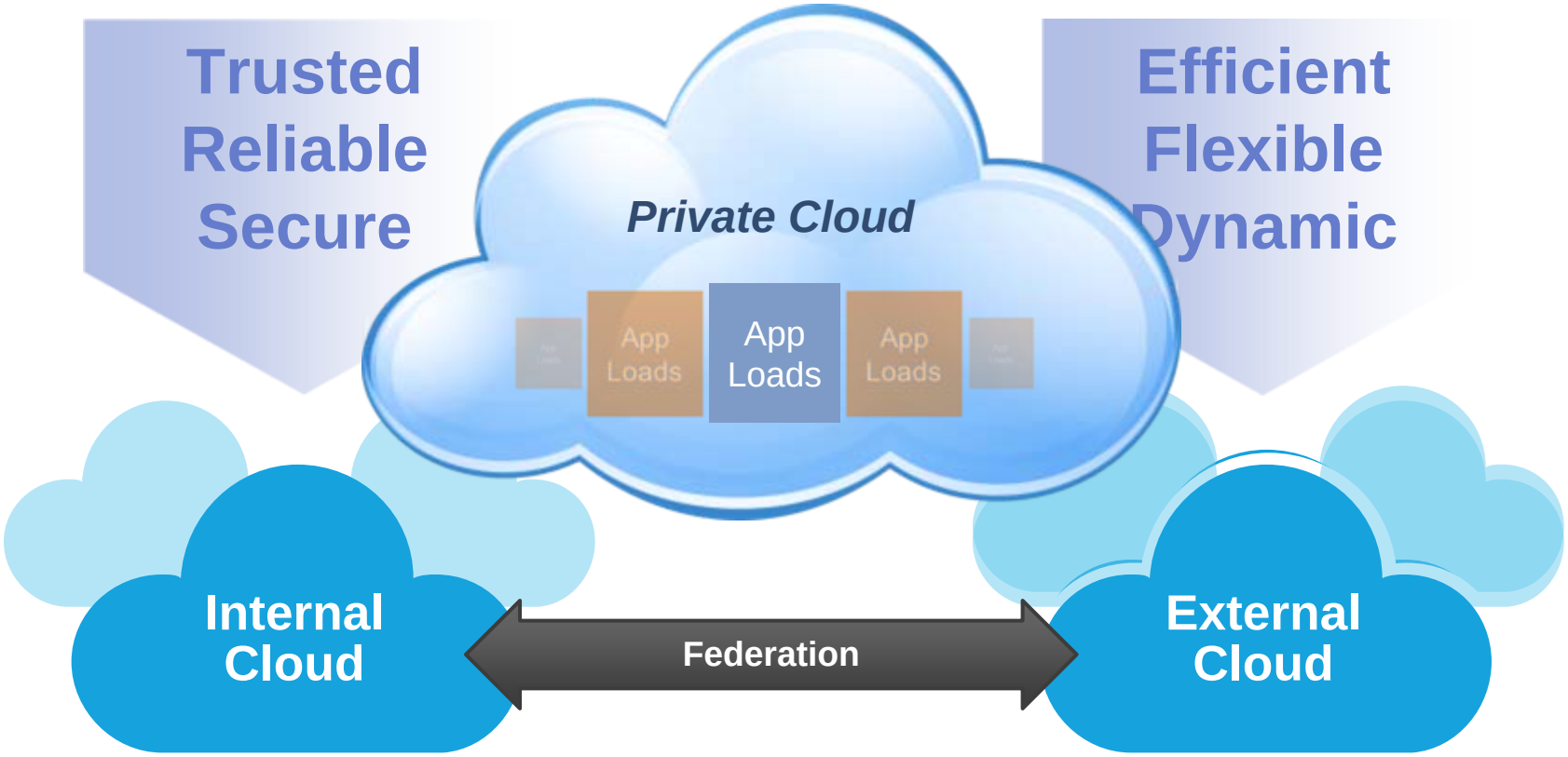
Can You Move the Cloud to the Datacenter?

Trusted
Reliable
Secure

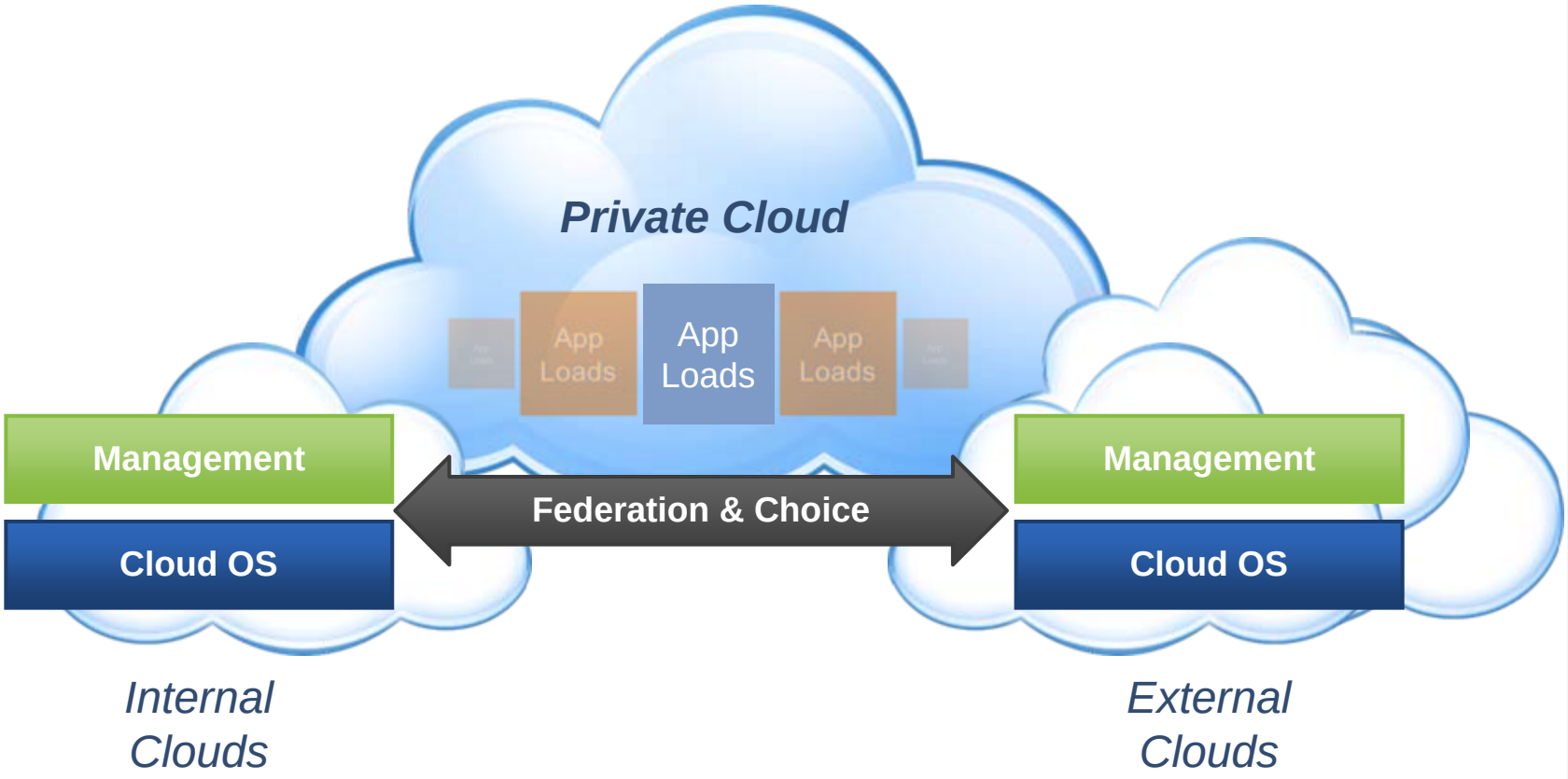
Efficient
Flexible
Dynamic



And Even Connect Internal and External?



The VMware Vision: IT as a Shared Service Delivered Through Private Cloud



Private Cloud: the Efficiency Without the Disruption

The Efficiency of Cloud Computing…

Business

- Fast response times
- Contractual and auditable SLAs
- Usage based, pay-as-you-go financial model

IT

- Economies of scale
- High performance, highly available
- Policy-driven automation

…Without the Risk Or Disruption

- Compatible with any existing or future application
- Security enforced on- and off-premise
- Leverage and evolve existing skills, management
- Future proof – no lock in to specific architectures

Takeaway #1: Virtualization is the Key to the Cloud

GE Puts 'Private' Cloud Computing To The Test

It's starting a three-year effort aimed at better efficiency and flexibility.

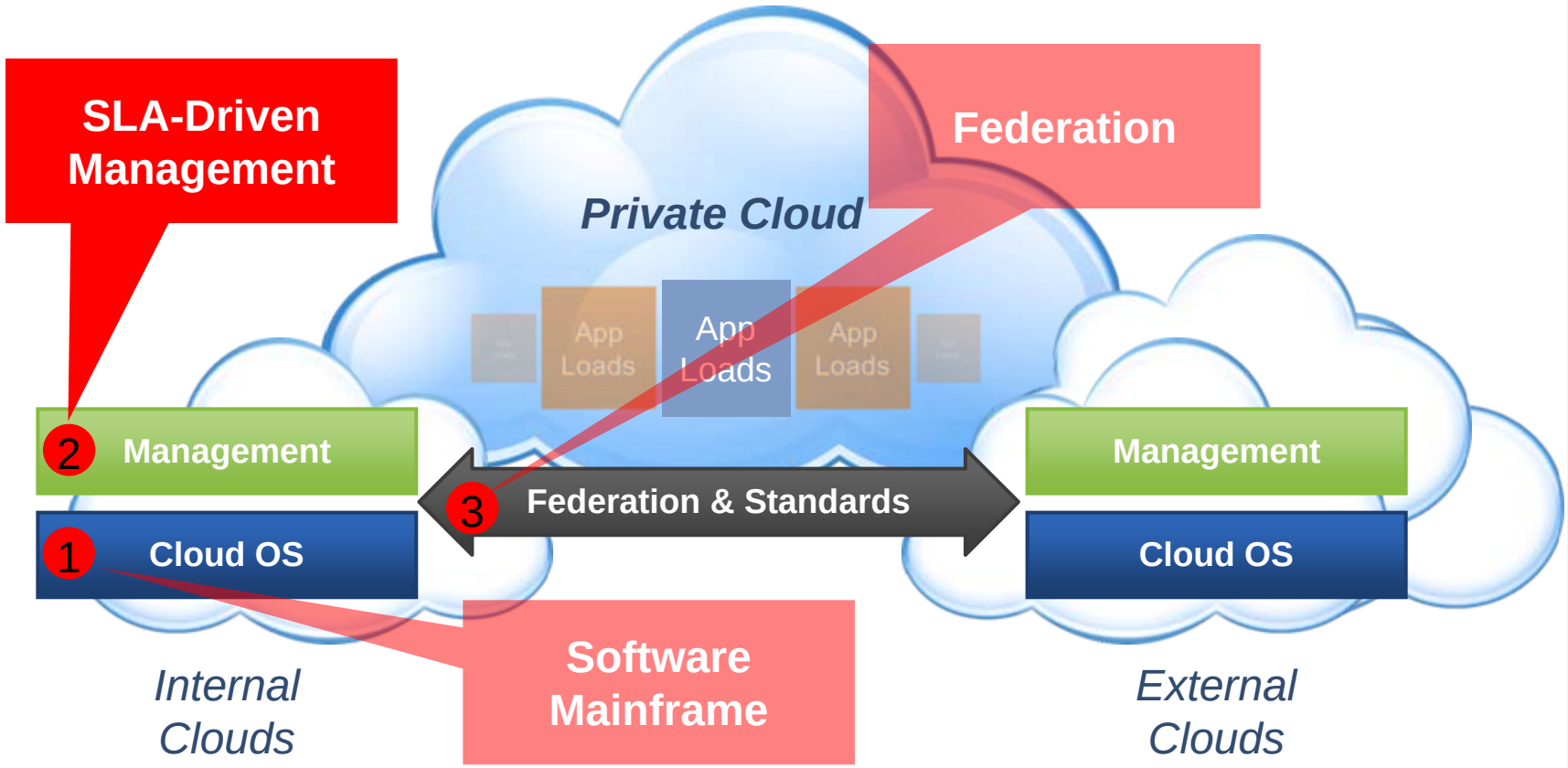
By J. Nicholas Hoover
InformationWeek

April 11, 2009 12:01 AM (From the April 13, 2009 issue)

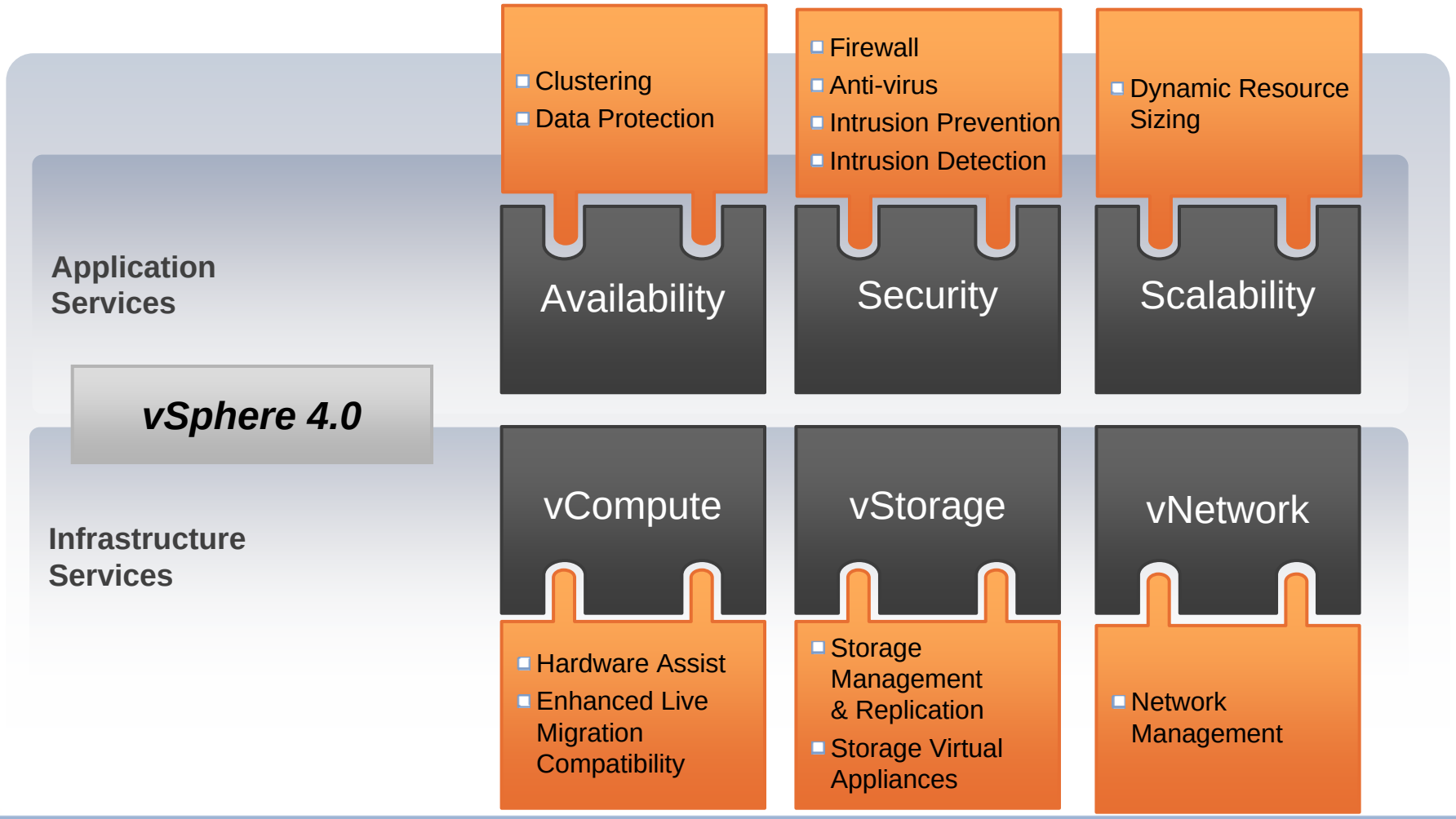
General Electric's road to better data center efficiency is paved with virtualization. Now, as GE looks to build an internal or "private" cloud computing environment, virtualization will once again play a key role.

"Virtualization will once again play a key role"

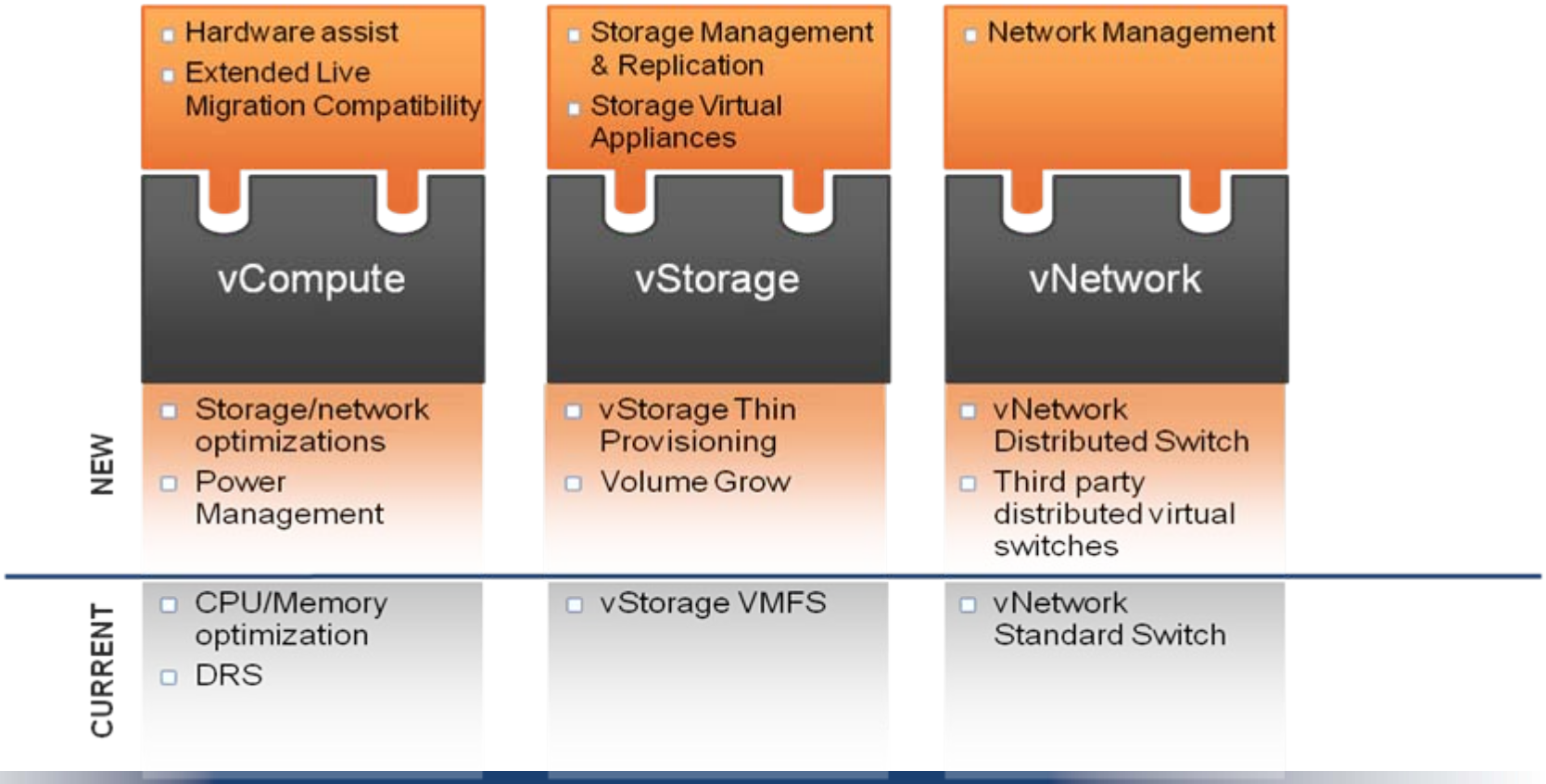
Three Building Blocks for the Private Cloud



VMware vSphere™ – The Industry's First Cloud Operating System

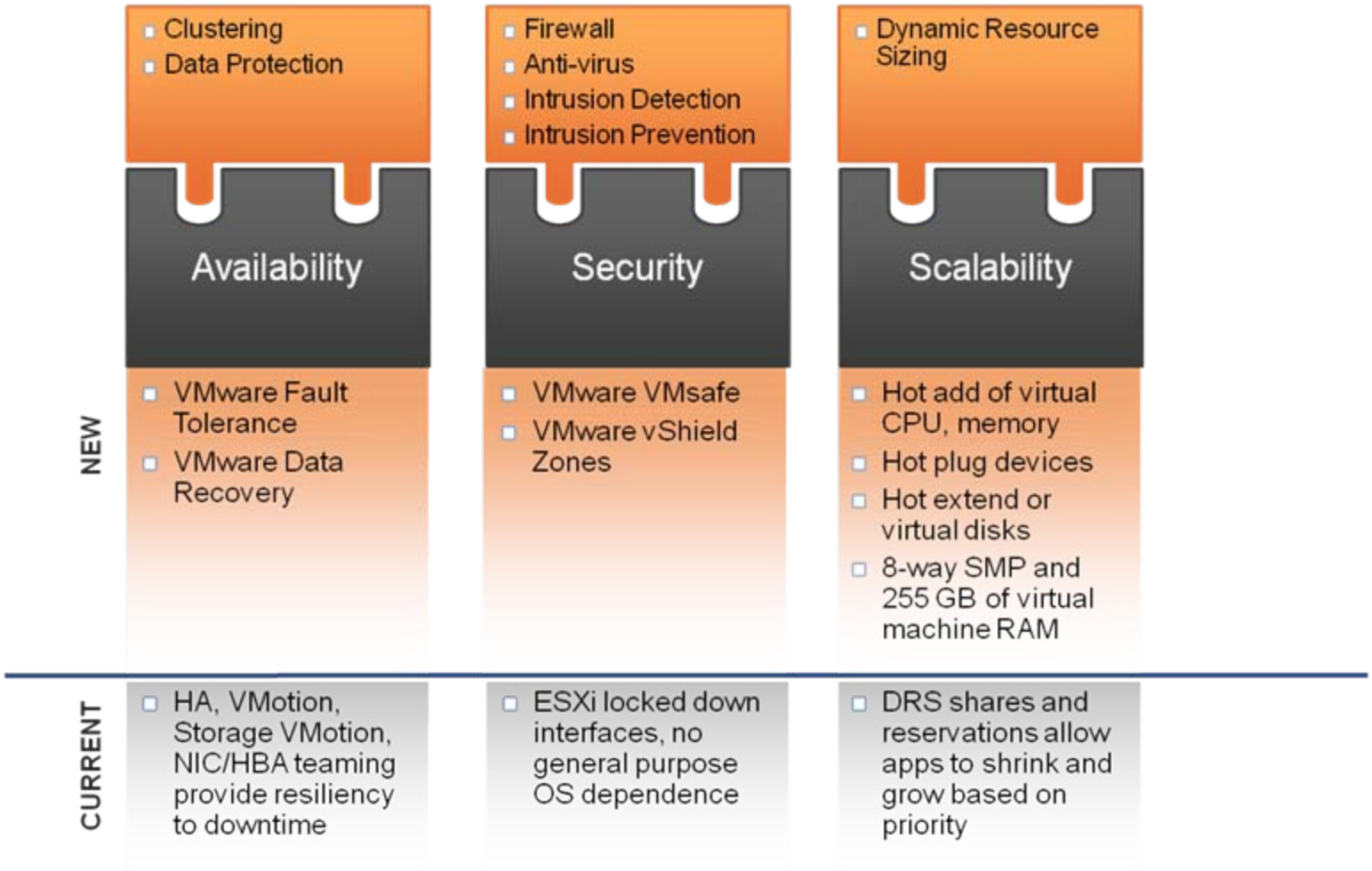


Infrastructure Services Deliver CapEx and OpEx Savings

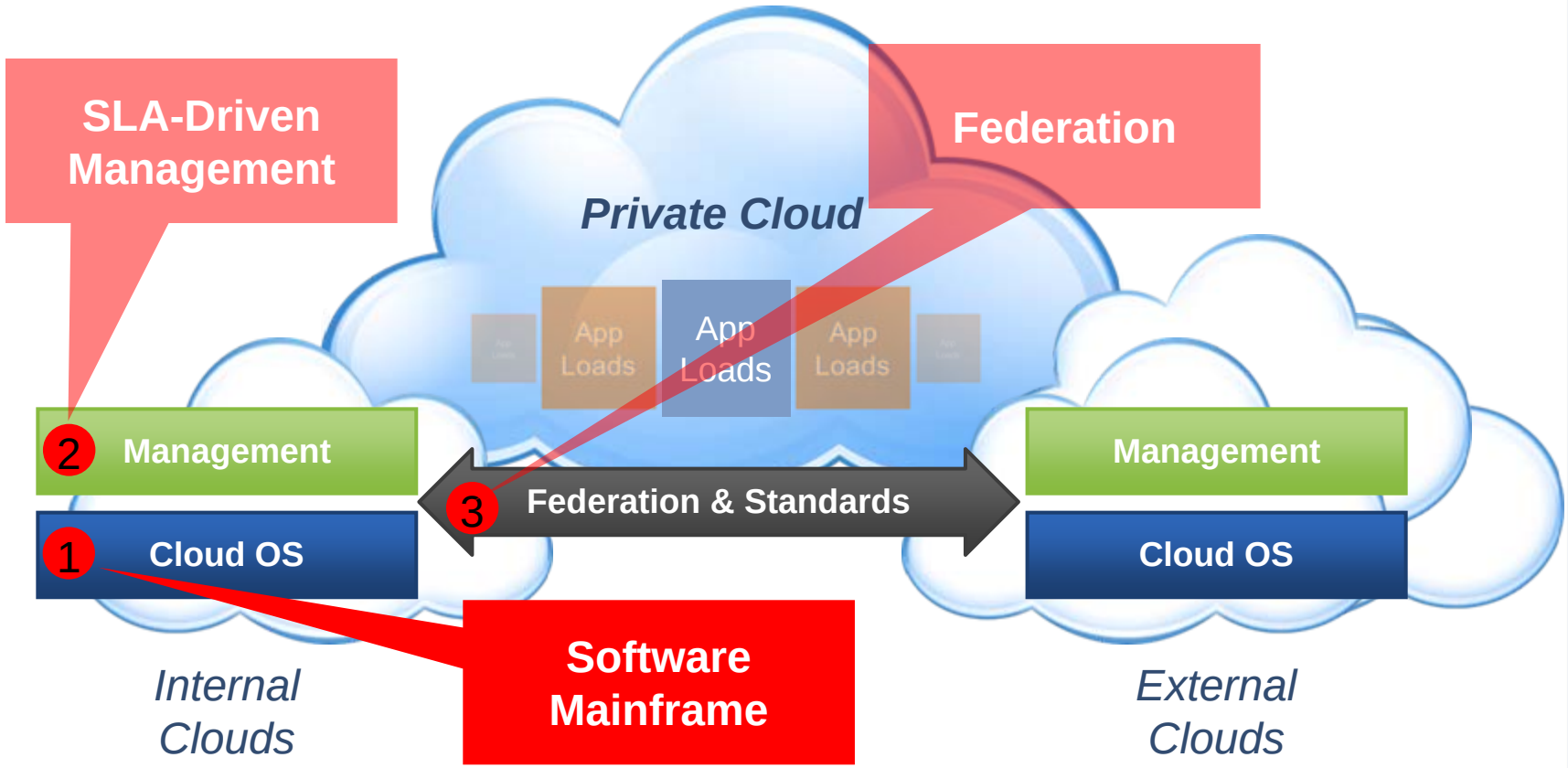


Highest consolidation ratios in the industry
Most efficient use of hardware resources
Low operational overhead

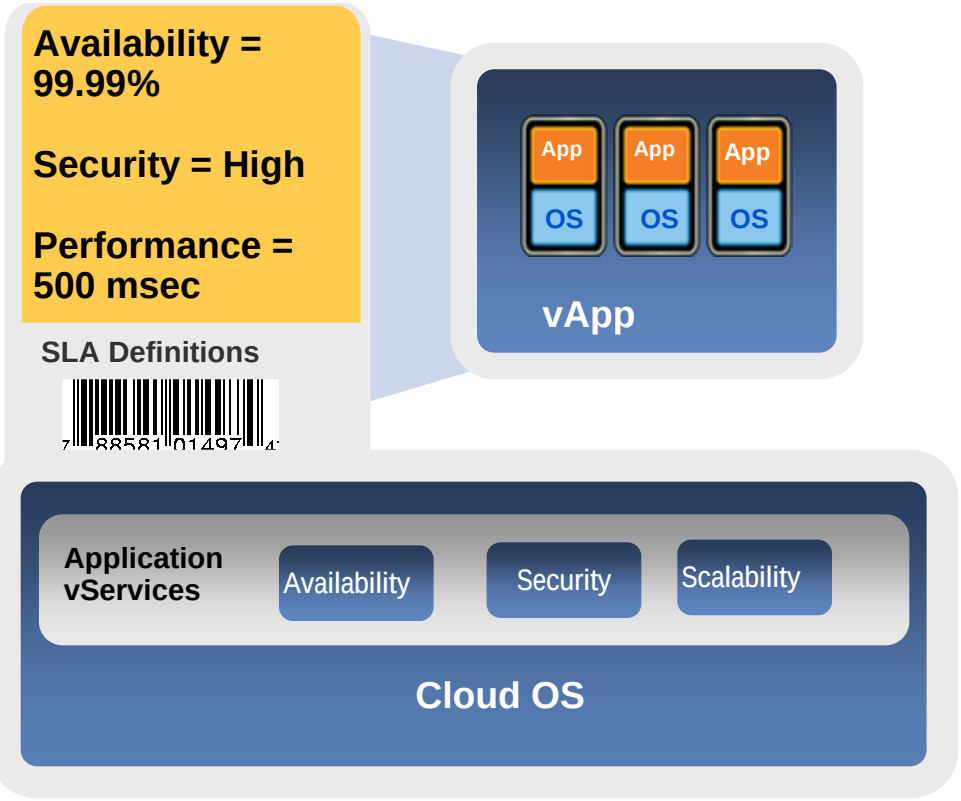
Application Services Provide Built in Service Level Controls



Three Building Blocks for the Private Cloud



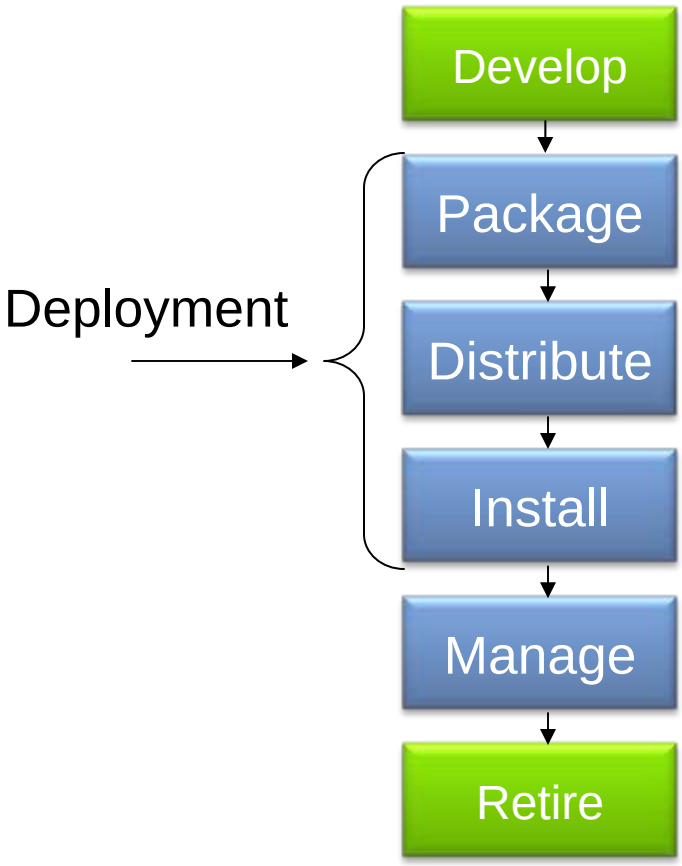
vApp – New Model for Describing and Deploying Applications



- Allows management of multi-tier applications as a single entity
- Utilizes industry standard OVF to provide instructions on how to deploy
- Templates, Clone and other operations execute at the vService level

- Simpler, application centric view of management
- Easier portability of applications
- Applications can now be written to monitor and scale themselves

DMTF's OVF- Open Virtualization Format



Benefits

- **Improves your user experience with streamlined installations**
- **Offers customers virtualization platform independence and flexibility**
- **Creates complex pre-configured multi-tiered services more easily**
- **Efficiently delivers enterprise software through portable virtual machines**
- **Offers platform-specific enhancements and easier adoption of advances in virtualization through extensibility**

Original Submitters include the following companies

CITRIX® DELL hp invent IBM Microsoft® vmware

vmware

Management Model For Delivering IT as a Service

Self-service Datacenter

IT Services

Enable Self-Service, Pay As You Go

IT Consumers

Lights-out Automation

IT Infrastructure

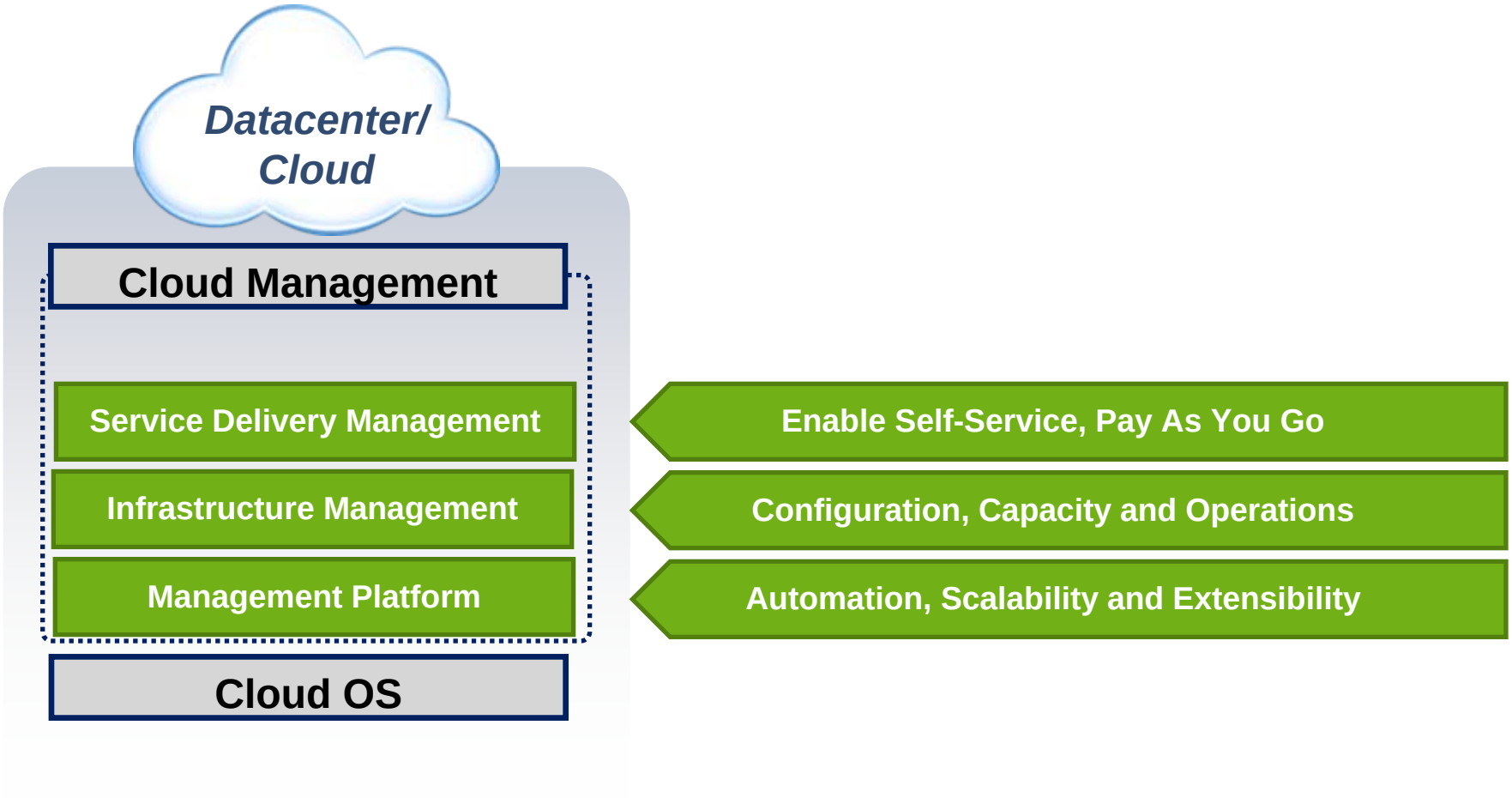
Configuration, Capacity and Operations

Automation, Scalability and Integration

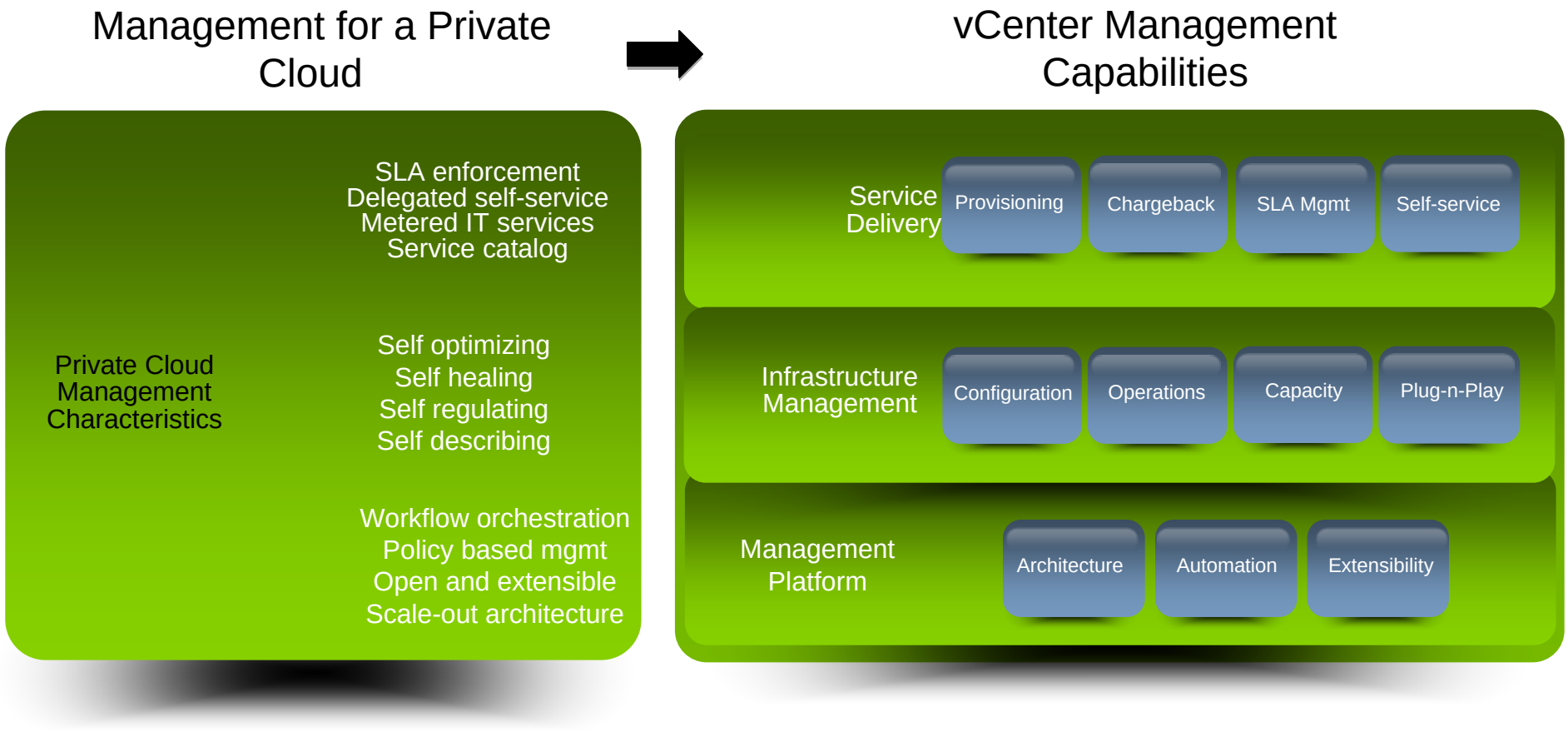
IT Staff

vmware

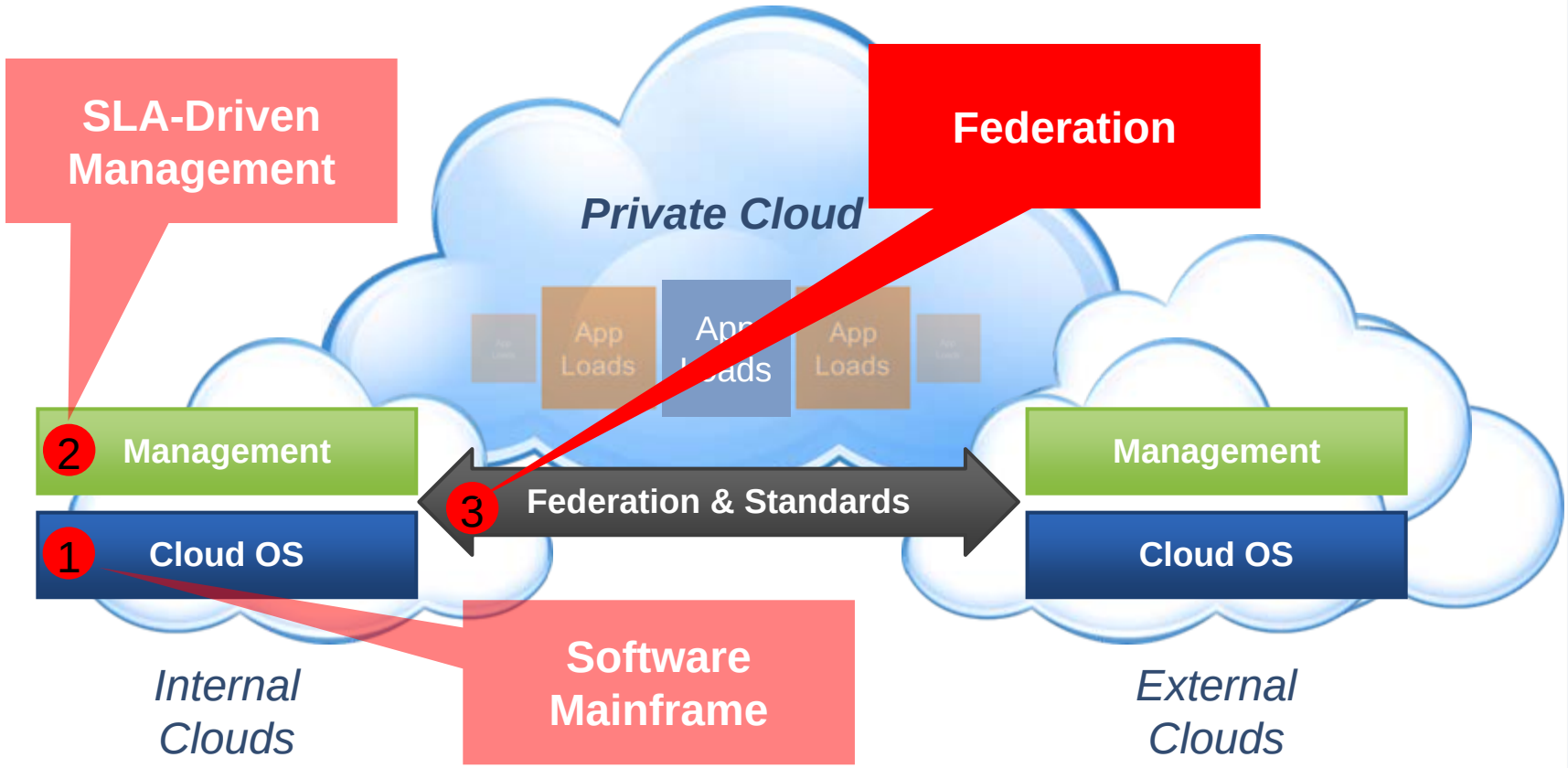
Cloud Management



vCenter Management Suite



Three Building Blocks for the Private Cloud

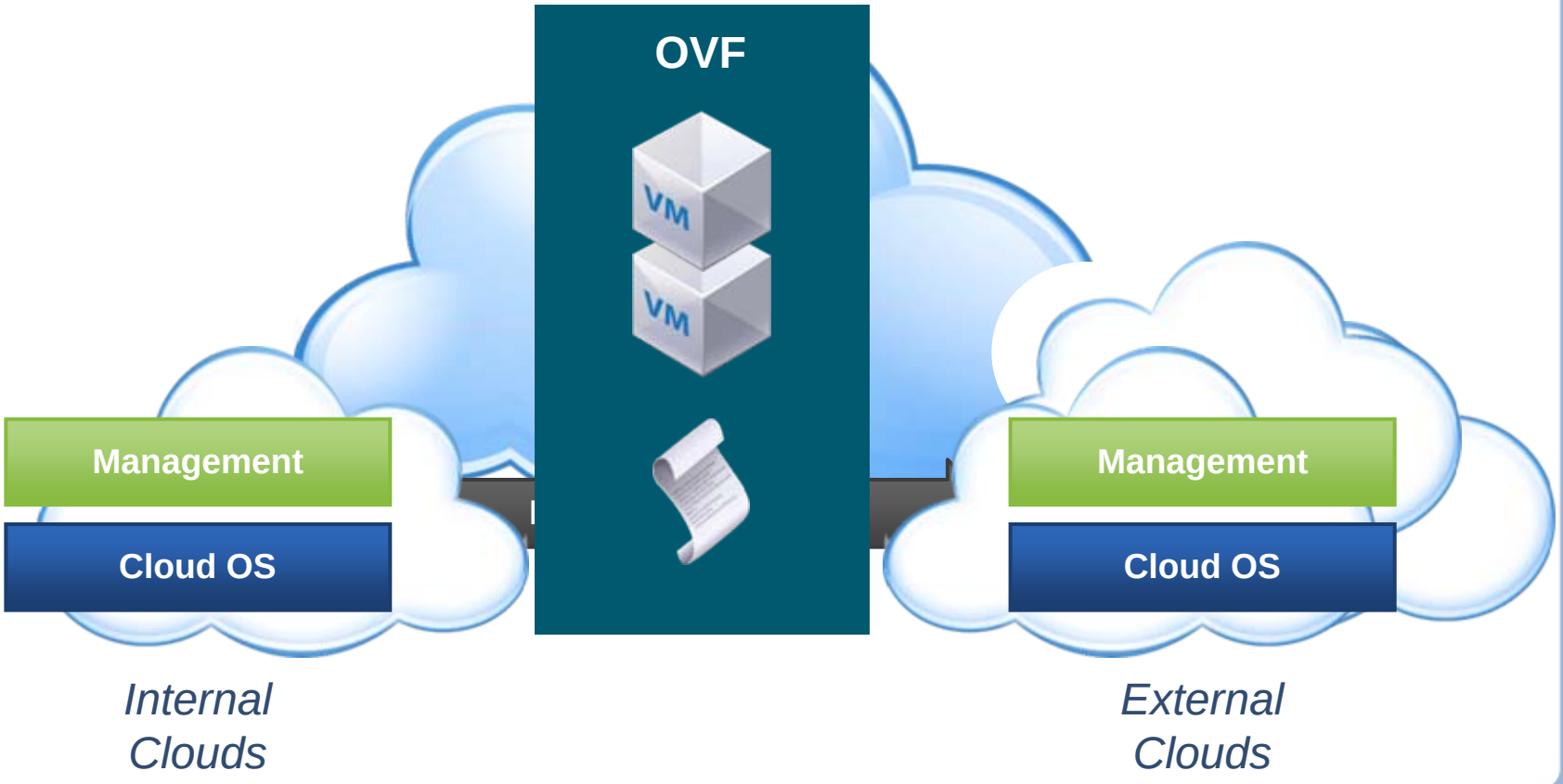


Open Cloud Manifesto

Principles of an Open Cloud

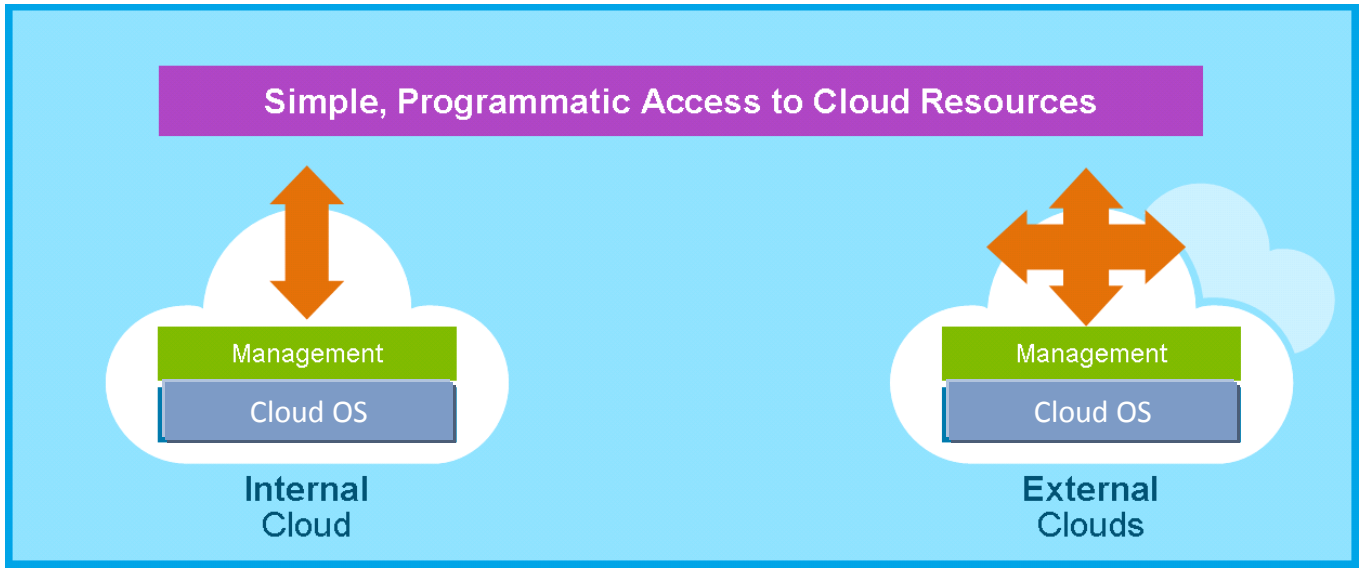
1. Cloud providers must work together to ensure that the challenges to cloud adoption (security, integration, portability, interoperability, governance/management, metering/monitoring) are addressed through open collaboration and the appropriate use of standards.
2. Cloud providers must not use their market position to lock customers into their particular platforms and limit their choice of providers.
3. Cloud providers must use and adopt existing standards wherever appropriate. The IT industry has invested heavily in existing standards and standards organizations; there is no need to duplicate or reinvent them.
4. When new standards (or adjustments to existing standards) are needed, we must be judicious and pragmatic to avoid creating too many standards. We must ensure that standards promote innovation and do not inhibit it.
5. Any community effort around the open cloud should be driven by customer needs, not merely the technical needs of cloud providers, and should be tested or verified against real customer requirements.
6. Cloud computing standards organizations, advocacy groups, and communities should work together and stay coordinated, making sure that efforts do not conflict or overlap.
7. *Supported today by over 150 companies and growing*
8. *www.opencloudmanifesto.org*

OVF is the Common Language Between Clouds



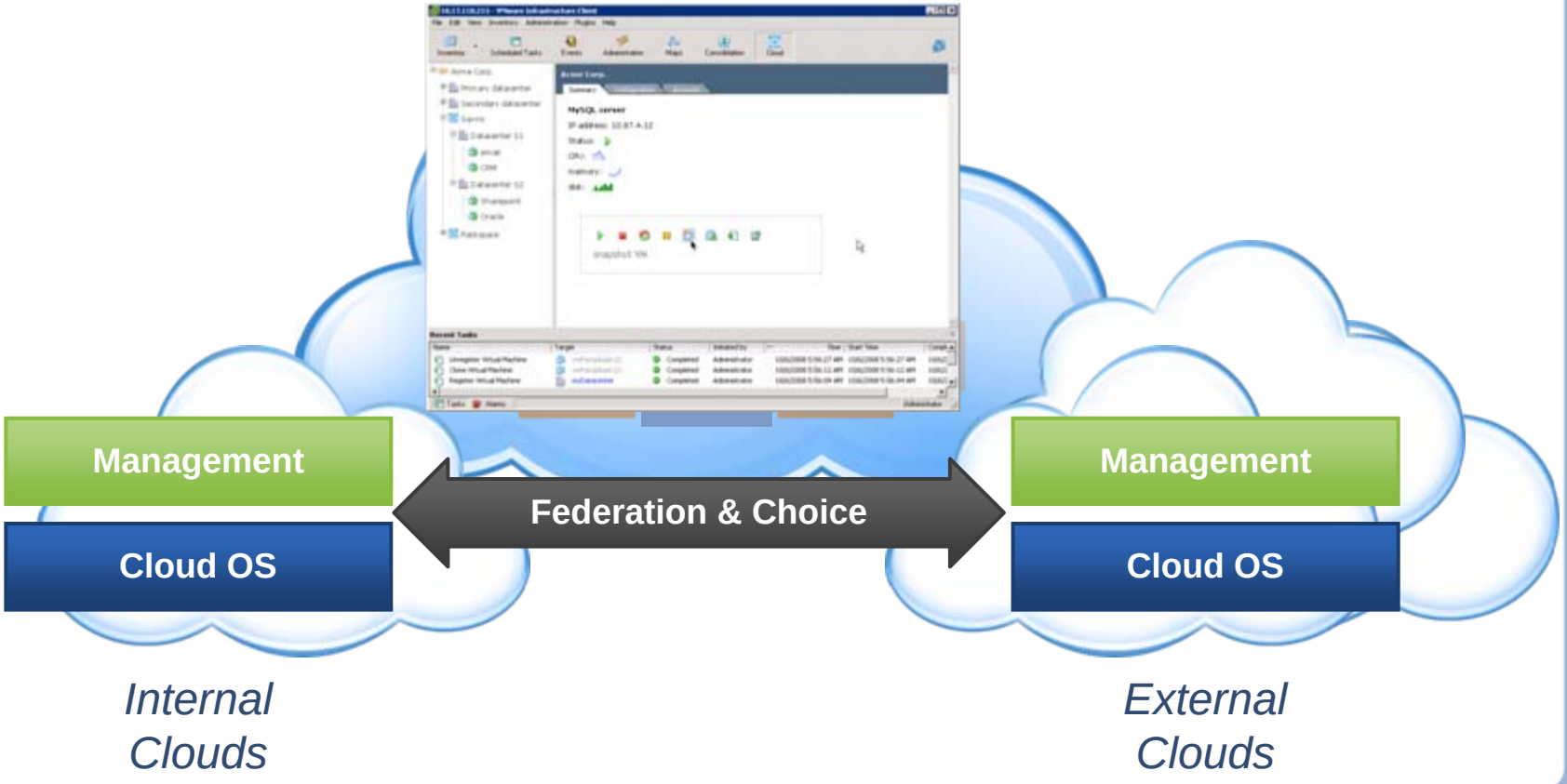
vCloud API

- Enabler for interoperability across clouds
- In private release currently

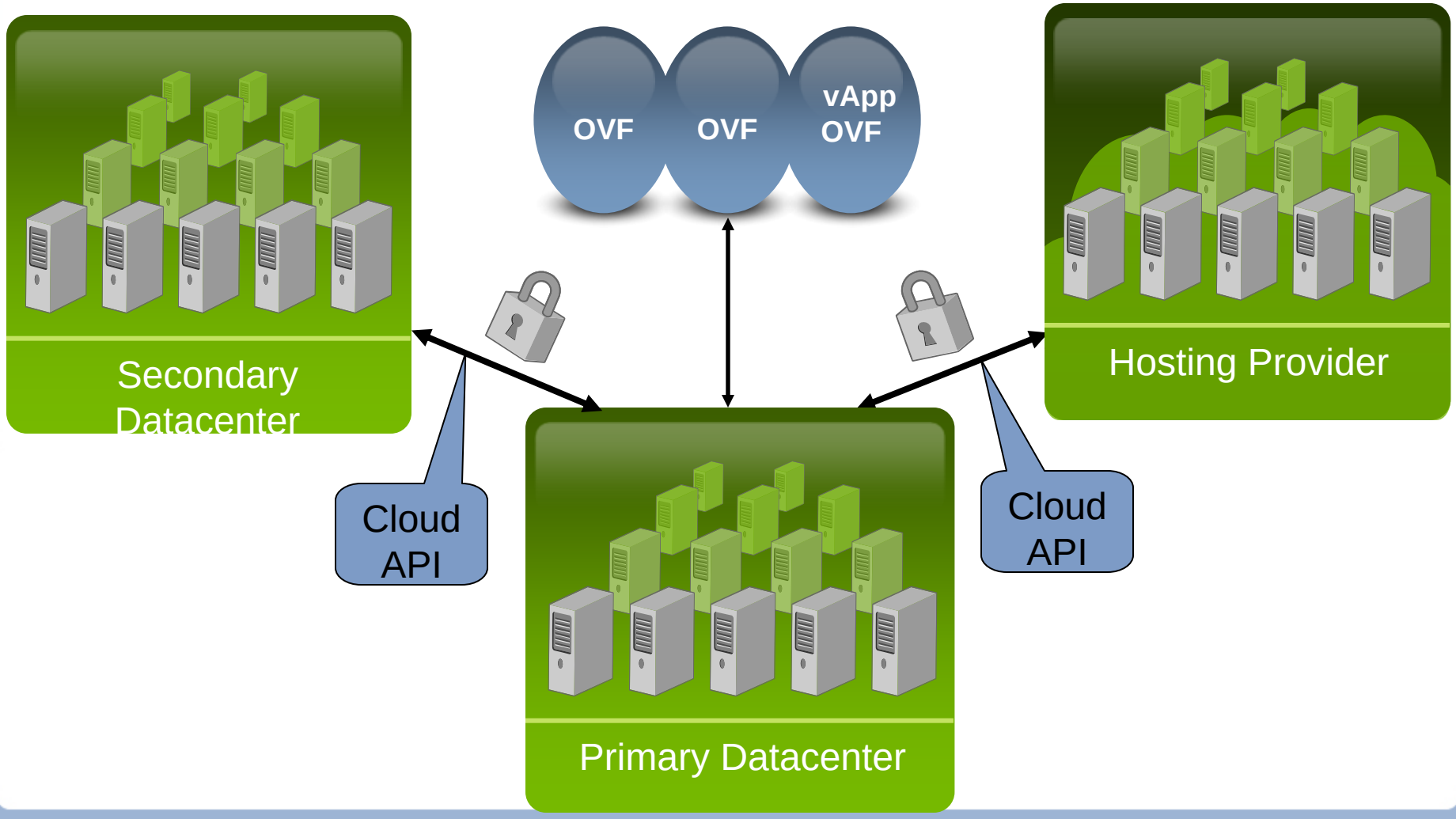


vSphere Client Plug-In

Enables interoperability, mobility, and centralized management of environments across internal and external clouds.

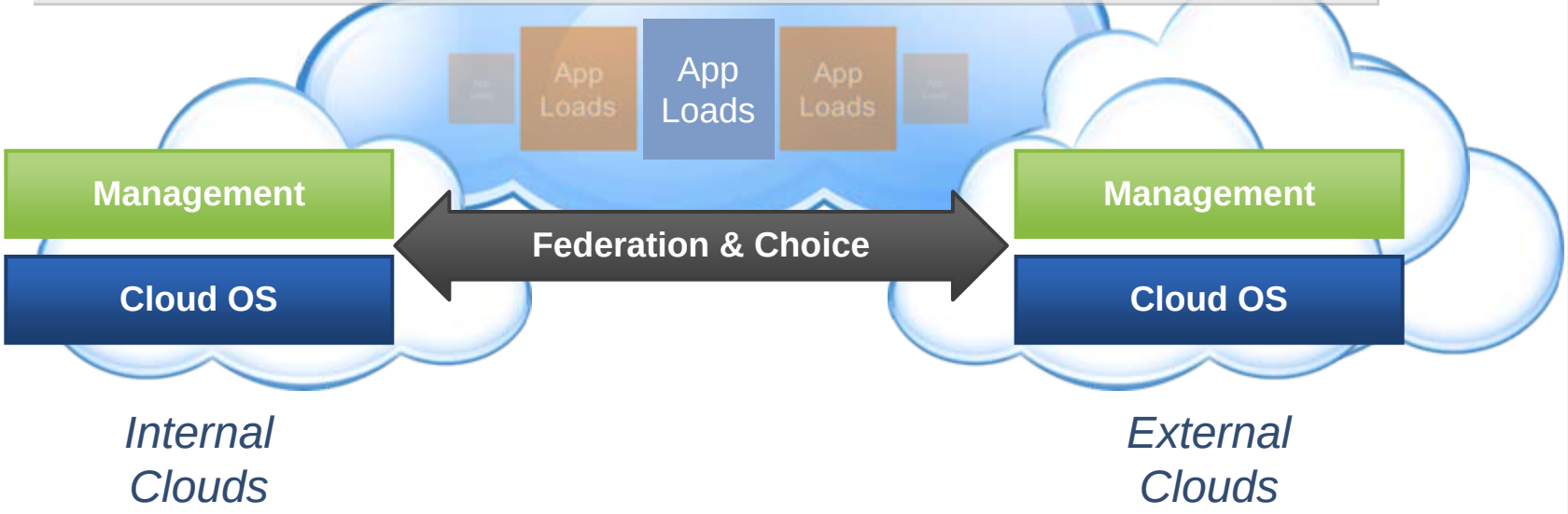


Cloud Interfaces to Standardize



vCloud Ecosystem

500+ service providers

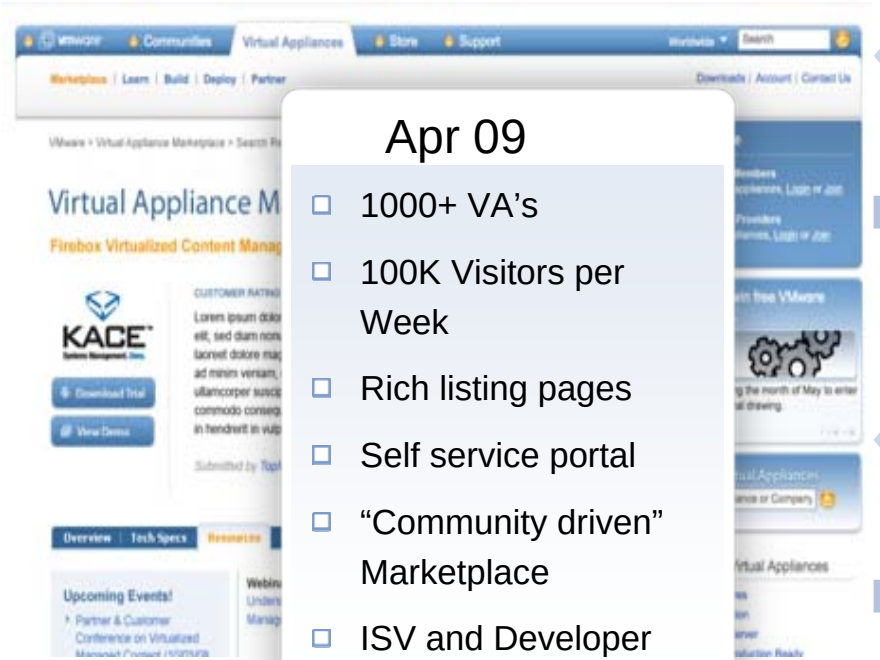


Internal Clouds

External Clouds

Virtual Appliance Marketplace (VAM)

The largest library of applications for the cloud



Apr 09

- 1000+ VA's
- 100K Visitors per Week
- Rich listing pages
- Self service portal
- "Community driven" Marketplace
- ISV and Developer focused

ISVs

End Customers

Service Providers

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What is it?

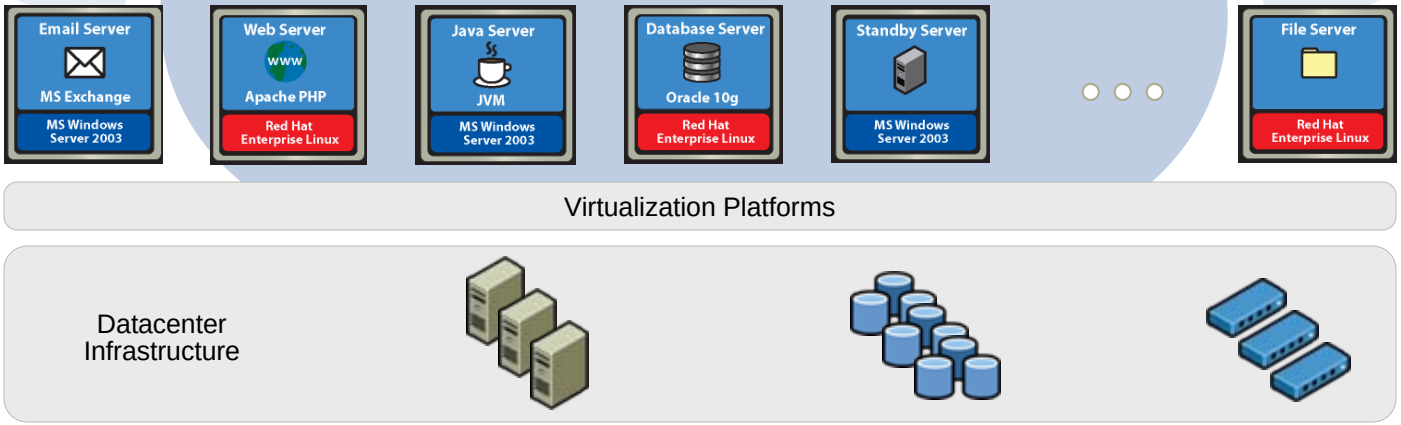
Why do you need it?

How do you build / acquire / leverage one (or many)?

How do you operate it?

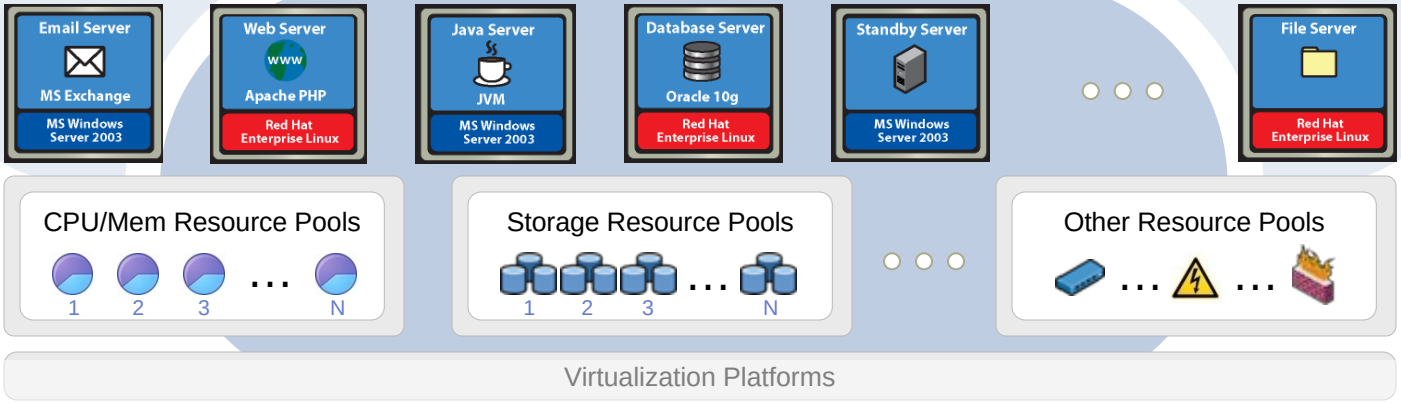
Step 1: 100% Virtualization…

- Hardware, hypervisor and OS advances ensure fully virtualized environments
- vSphere 4 removes last barriers



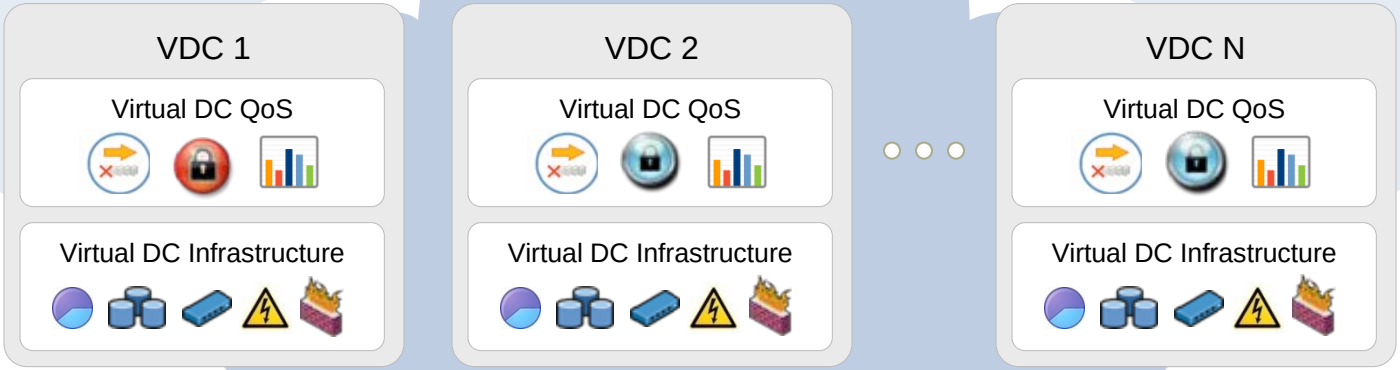
Step 2: Tier the infrastructure in QoS resource pools

- Logical grouping of abstracted resources allows non-disruptive addition or subtraction of capacity
- Delivery of right resource / right time enabled by pools also allows infrastructure to be treated as a variable cost
- More profoundly, even in mixed vendor environments, it gives rise to a consistent tiering of resources which is the basis for a new, late-binding contract between applications and their infrastructure



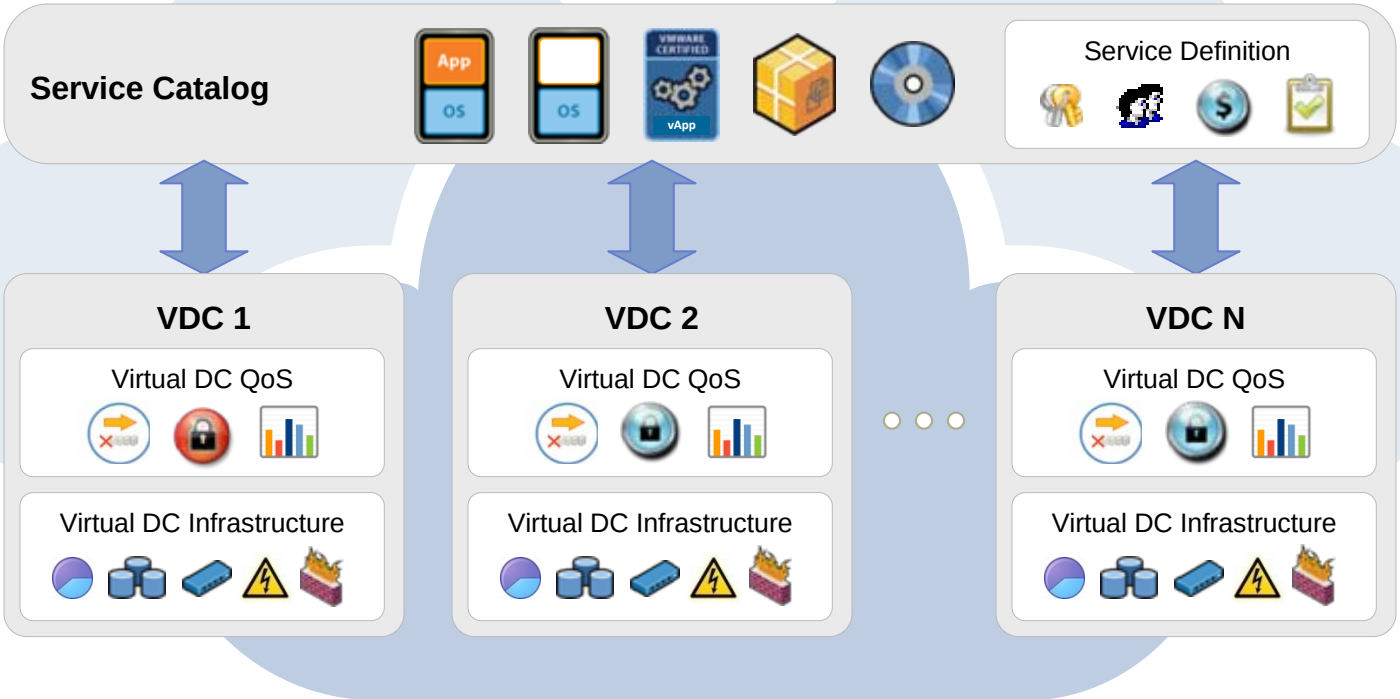
Step 2: Tier the infrastructure in QoS resource pools

- Logical grouping of abstracted resources allows non-disruptive addition or subtraction of capacity
- Groups of pools across resource types create virtual datacenters with performance, availability and other characteristics defined by both the underlying physical resource and the virtual layers



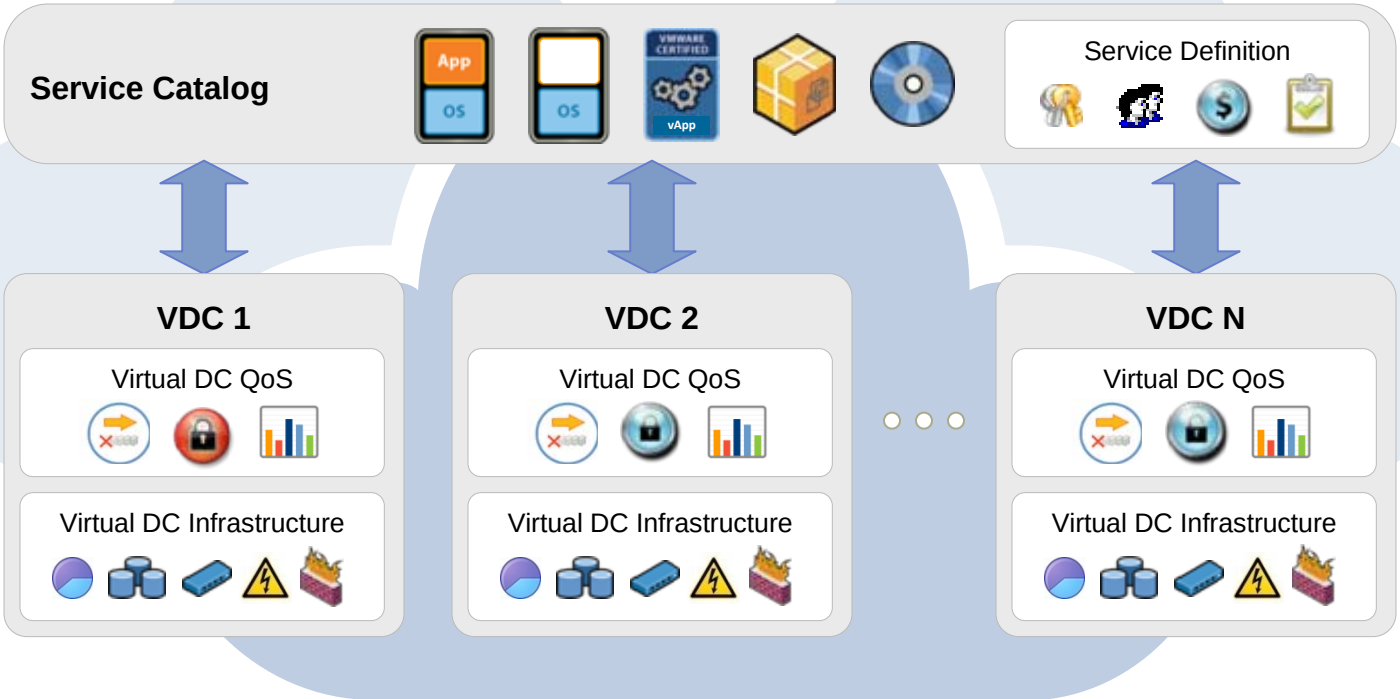
Step 3: Create a Standardized Service Catalogue

- VMUs are published as service offerings, accessed programmatically
- Conceptually, VMUs are a key step towards the simplification and standardization of IT that enables true lights-out operation

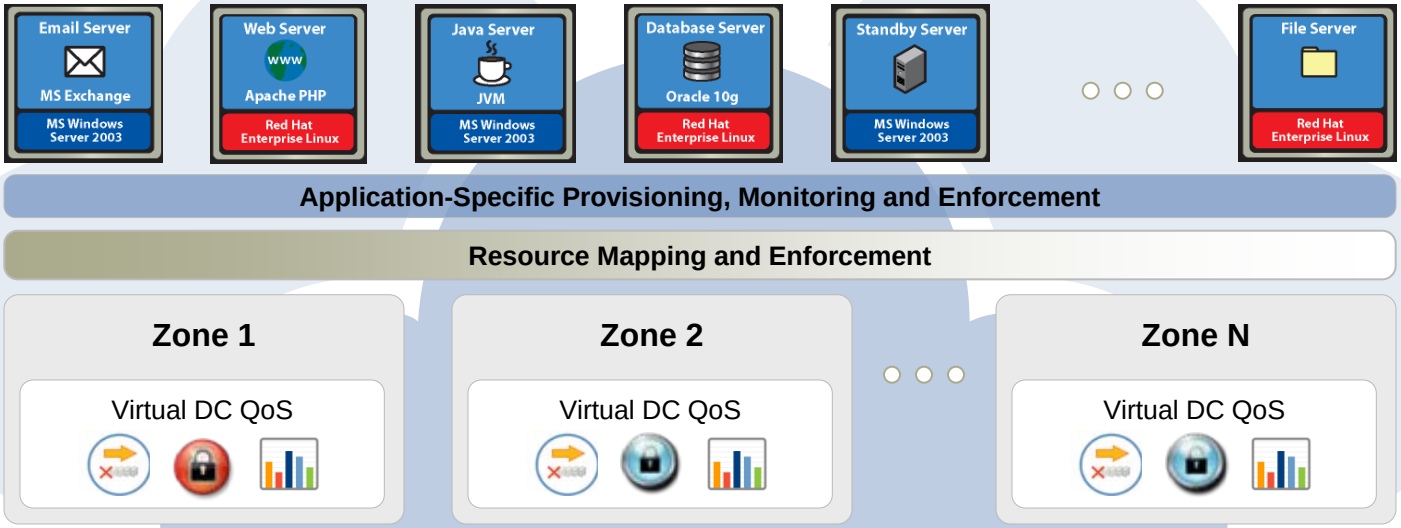


Step 4: Make it Available Through Self-Serice

- VMUs are published as service offerings, accessed programmatically
- Conceptually, VMUs are a key step towards the simplification and standardization of IT that enables true lights-out operation



Step 5: Fully Automated App Hosting



- Service offerings will become app-specific over time
- This eventually clears the way for automated application to infrastructure provisioning, enforcement and monitoring
- Closes the loop on app performance, and thereby completes the lights-out datacenter

VMware products: Studio, vApp, vProbes, AppSpeed, others

vmware

Old Slides

Example: vCloud Service Provider vs. Amazon EC2

Feature	vCloud	AWS EC2
Linux Support	✓	✓
Windows 2003 Support	✓	✓
Windows 2008 Support	✓	✖
Web-based Self-Service	✓	Minimal
Dynamic Provisioning	✓	✓
Public IP Address	✓	✓

Feature	vCloud	AWS EC2
VM Compatible with Internal IT	✓	✖
VM image persistence	✓	✖
LAN-to-LAN or Private-to-Virtual VPN Available	✓	✖
Dedicated Support Team	✓	✖
Managed Services	✓	✖
Professional Services	✓	✖