Datacenter of the future

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A New Approach to Cloud

The Software Defined Datacenter
Virtualization Simplifies Provisioning of VMs, But Additional Steps Needed to Deploy in a Production Environment

**Past**

$10,000
10 weeks

**Present**

$1,800
5 days, 2 minutes

$300
2 minutes

$10,000
10 weeks

$13,800
5 days, 2 minutes

Enterprise storage

VLAN networks

Firewall, load-balancer

IDS, security, monitoring

Availability

Virtualization Simplifies Provisioning of VMs, But Additional Steps Needed to Deploy in a Production Environment
Software-Defined Datacenters Simplifies Process to Define an Application and All the Resources It Needs

Future

VDC

Software-defined Datacenter Services

5 days, 2 minutes

3 minutes
In a Software-Defined Datacenter…

All infrastructure services are delivered as software.

And, the control of this datacenter is entirely driven by software.
Compute
Software Defined Storage

Compute
Software Defined Networking and Security

Software Defined Storage

Compute
Software Defined Networking and Security
Software Defined Storage
Management & Automation
Software Defined Networking and Security
Compute
The Cloud Bill Of Materials

Management
- Automated Provisioning for Applications
- Automated Cloud Operations Management

Cloud Infrastructure
- Secure Multi-Tenancy
- Placement and Load Balancing of Software Defined DC Services
- Software Defined Storage
- Software Defined Networking
- Software Defined Security
- Software Defined Availability

Virtualization
- SW Defined Compute & Memory

Extensibility
- Cloud APIs
- Application Migration b/w Clouds
- Orchestration with 3rd Party Systems
VMware’s Complete Cloud Infrastructure & Management Suite

Management
- vFabric Application Director
- vCenter Operations Mgmt Suite

Cloud Infrastructure
- vCloud Director
  - Software Defined Storage
  - Software Defined Networking
  - Software Defined Security
  - Software Defined Availability

Virtualization
- vSphere

Extensibility
- vCloud APIs
- vCloud Connector
- vCenter Orchestrator
DynamicOps Capabilities

Cloud Automation Center
- Personalized Self Service
- Organizational Awareness
- Automated Delivery & Management
- Intelligent Resource Management
- Multi-Vendor Orchestration
- Cost Transparency and Reporting

Design Center
- Admin level ability to graphically adapt process to environment

DynamicOps Platform
- Model-driven automation engine
- Distributed runtime execution
- Logic is abstracted and independent from execution engine

Cloud Development Kit
- Developer tools to extend platform to new use cases
VMware believes the VMW Cloud Infrastructure Stack provides the most efficient and automated cloud environment.

However, many customers may have heterogeneous pools of infrastructure due to:
- Line of business decision
- Developers going to AWS
- Distributed decision-making
- M&A

DynamicOps helps deliver on our commitment to customer choice by enabling customers to choose the model that best works for their needs.
VMware Cloud Management Platform

Cloud Automation Center

- Security
- Service Tiers
- Policies
- Service Blueprint

**vCenter Operations Mgmt. Suite**

- vCloud Director
  - Software Defined Storage
  - Software Defined Networking
  - Software Defined Security
  - Software Defined Availability

- vCloud Datacenter SPs
- vCloud Powered SPs

**vSphere**

**IT Business Mgmt. Suite**

- vFabric Application Director
- vFabric AppInsight
VMware’s vCloud Suite is…

A cloud infrastructure suite that dramatically simplifies IT operations…

…delivering the best SLAs for all Apps

…available in one SKU
VMware’s vCloud Suite is…

A cloud infrastructure suite that dramatically simplifies IT operations…

- Software Defined Virtual Datacenters
  - Elastic Virtual Datacenters

- Software Defined Networking & Security
  - VXLAN
  - Improved VDS
  - Nicira

- Software Defined Storage
  - Distributed Storage Tech Preview
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Network & Security Haven’t Kept Pace with Datacenter Evolution

- Underutilization of compute
- Dedicated appliances

- Manual provisioning
- Fragmented management

- Networks don’t scale with dynamic workloads
- Lag time to provision network and security services
- Not extensible
vCloud Networking and Security – How it Works

**Integrated Management with vCenter/vCD**

- **VMware Networking & Security**
- **vSphere**

**Abstract and Pool Resources**
- Minimize dedicated hardware
- Optimize utilization

**Create Logical Networks**
- Accelerate application provisioning
- Scale applications on-demand
- Simplify operations

**Attach Services**
- Integrated management
- 3rd party extensible

**Enable Policy-based Automation**
- Dynamic provisioning
- Unlock efficiency & agility

**Network Metadata**
- 4Gbps connectivity
- 2 redundant pNICs
- Load Balancer
- Web Application Firewall

**3rd party services**
VXLAN – How it Works

Segment
- VXLAN segments defined with vCD
- Scalable - 16 million VXLANs available

Encapsulate
- VXLAN encapsulation is performed by hypervisor
- Packet transported as UDP

Flexible and Elastic Fabric
- VXLAN fabric is elastic enabling traffic to traverse clusters, virtual switches and layer 3 networks
- Physical infrastructure remains intact and with no need for special upgrades or configuration
What is Network Virtualization?

**x86 Environment**

- **Server Hypervisor**
  - Requirement: x86
  - Virtual Machine

**Network Virtualization Platform**

- **Network Virtualization Platform**
  - Requirement: IP Transport
  - Virtual Network

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**Physical Compute & Memory**

- (Dell, HP, IBM, Quanta, …)

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**L2, L3, L4-7 Network Services**

- **Workload**
  - Virtual Network

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**Physical Network**

- (Arista, Cisco, HP, Juniper, Cumulus, …)
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Software Defined Storage Vision

**Deliver policy-based storage management**
- Automatically enforce per-VM SLAs for all apps across different types of storage

**Enhance compute-storage integration**
- Tighter integrations with broad storage ecosystem through APIs

**Enable new, lower cost storage tiers**
- Enable DAS & server flash for shared storage along with enterprise SAN/NAS

### SLA Definitions

**Software Defined Storage**

#### “Gold” Array(s)
- **Availability:** 99.99%
- **DR RTO:** 1 hour
- **Backup:** Daily
- **Storage capacity:** 1 TB
- **Performance:** High I/O
- **Security:** High

#### “Silver” Array
- **Availability:** 99%
- **DR RTO:** 4 hour
- **Backup:** Weekly
- **Storage capacity:** 10 TB
- **Performance:** High I/O
- **Security:** High

#### “Distributed Storage”
- **SSD Hard disks**
VMware’s vCloud Suite is…

…delivering the best SLAs for all Apps

Unparalleled Availability for All Apps
- vSphere Data Protection
- vSphere replication for all apps, all use cases
- SRM Improvements
- vMotion for EVERY app, every environment

Easier to Add Capacity to Clusters
- Auto deploy improvements – enables higher redundancy

Improved Performance & Efficiency for All Apps
- IO Intensive, latency sensitive apps – SR-IOV support
- vCloud support for snapshots
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...delivering the best SLAs for all Apps
Improved Auto Deploy

**Overview**
- Deploy and patch vSphere hosts in minutes using a new “on the fly” model
- Coordination with vSphere Host Profiles
- 2 new operating modes

**Benefits**
- Fast initial deployment and patching
- Centralized host and image management
- Reduce manual deployment and patch processes
- Continue deployment even when a failure occurs
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vSphere Scales to Support Mission-Critical Applications

Overview

- Create virtual machines with up to:
  - 64 vCPU
  - 1 TB of vRAM

Benefits

- 2x size of previous vSphere versions
- Run even the largest applications in vSphere, including very large databases
- Virtualize even more applications than ever before (Tier 1 and 2)
VMware’s vCloud Suite is…

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…to deploy new services
Improved Provisioning for DevOps: AppDirector

vFabric AppDirector

Overview

- Closed-loop application provisioning and monitoring to improve DevOps collaboration
- Media library of standardized application components and settings to deploy and manage applications quickly
- Drag and drop canvas to simplify construction of application blueprints

Benefits

- Decouples application and infrastructure management to facilitate hybrid cloud deployments
- Just minutes to define an application deployment topology and execution plan, then deploy the application
Key Customer Challenges around Databases

Support Growing Database Infrastructure

- Thousands of under-managed and under-secured databases
- Fragmented database environment
- Difficult to enforce policy and compliance

Support Growing Database Infrastructure

Automate Database Lifecycle Management

- 1000s of databases to manage with few DBA's
- Long lead time for database services for developers

Automate Database Lifecycle Management

Unify Platform for Heterogeneous Databases

- Cost savings and operational benefits of virtualization and cloud
- Require unified platform for diverse databases
- Require right platform investments upfront

Unify Platform for Heterogeneous Databases
Accelerate Application Development through Self-service

Key Benefits
- Fast database provisioning
- Integrated database refresh using database ingestion
- Achieve productivity gain for DBA’s

Provisioning Today
- Multiple IT teams
- Multiple systems
- Days to Weeks
- Leads to Shadow IT

Self-Service with Data Director
vCenter Operations Manager Dashboard

Overview

- Comprehensive dashboard for cloud operations with health, risk and efficiency scores
- Single tool to manage performance and capacity across multiple vCenter servers

Benefits

- End-to-end visibility into cloud infrastructure health
- Proactive incident avoidance
- Optimize for efficiency and cost
VMware EUC Platform for the Post-PC Era

- SIMPLIFY
- MANAGE
- CONNECT

Desktop Service
App Catalog Service
Data Service
Universal Services Broker
Users, Desktops, Apps, Data Policies
Secure Universal Access
End Users
Where are we headed for the User?

My Apps, My Files, Native Device Experience
Taking the End User Experience to the Cloud

Access to all your applications from any device
One point of access, one authentication