The Software Defined Datacenter
 Agenda

- Corporate Overview
- The Software Defined Datacenter
- The New Cloud Suites – Highlights
  - Software Defined Networking
  - Software Defined Storage
  - Product Integration with EMC Storage Analytics and Management
  - Single SKU!
- Where Can I Find Out More
Yesterday’s Datacenter Based on Past IT Decisions
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

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.

5 days, 2 minutes

3 minutes

Future

VDC

Software-defined Datacenter Services
Software-Defined Datacenter

the **control plane** of infrastructure is entirely **driven by software**

Underlying **data plane** services are provided by hardware

And ... Infrastructure services are consumed as **programmable software**
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
  - Distributed Storage Tech Prev
  - vCloud Networking & Security
  - Site Recovery Manager

Virtualization
- vSphere

Extensibility
- vCloud APIs
- vCloud Connector
- vCenter Orchestrator
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

- Software Defined Storage
  - Distributed Storage Tech Preview
Improved – Making Elastic Virtual Data Centers

Overview

- Resource pools allocated to tenant organizations can now span multiple vSphere clusters

Benefits

- Enables a virtual datacenter to grow to the maximum capacity of a vCenter Server
- Ensures highest utilization of hardware
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- **Software Defined Storage**
  - Distributed Storage Tech Preview
Improved Distributed Switch

- Distributed Switch now delivers:
  - Network Healthcheck
  - Configuration Backup and Restore
  - Roll Back and Recovery
  - LACP Support

- Visibility into physical and virtual network status
- Backup and recover network settings
- Fast recovery from lost connectivity or incorrect configurations
Network & Security Haven’t Kept Pace with Datacenter Evolution

Costly
- Under utilization of compute
- Dedicated appliances

Complex
- Manual provisioning
- Fragmented management

Inflexible
- 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

- 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

Abstract and Pool Resources

- Dynamic provisioning
- Unlock efficiency & agility

- Integrated management
- 3rd party extensible

- Minimize dedicated hardware
- Optimize utilization

- Accelerate application provisioning
- Scale applications on-demand
- Simplify operations

- 4Gbps connectivity
- 2 redundant pNICs
- Load Balancer
- Web Application Firewall
vCloud Networking and Security – Components

**vCloud Networking & Security**

**vSphere**

**VMware Networking & Security**

**Integrated Management with vCenter/vCD**

- **vCloud Ecosystem Services Framework:** Integrate 3rd party services
- **vShield Manager:** Seamless integration with datacenter management via plugin
- **Edge gateway:** Secure the edge of the virtual datacenter and provide gateway services
- **Data Security:** Protect against data leaks
- **App:** Isolate and protect applications and Virtual Machines
- **VXLAN:** Foundation for elastic portable virtual datacenters

**vCloud Ecosystem Services Framework:**

- **vShield Manager:** Seamlessly integrates with datacenter management via plugin.
- **Edge gateway:** Secures the edge of the virtual datacenter and provides gateway services.
- **Data Security:** Protects against data leaks.
- **App:** Isolates and protects applications and virtual machines.
- **VXLAN:** Provides a foundation for elastic, portable virtual datacenters.

**VMware Networking & Security**:

- **vCloud Networking Services**: Enables integrated management with vCenter/vCD.
- **3rd party services**: Integrates 3rd party services for enhanced security.
- **vSphere**: Provides a comprehensive platform for virtualization and management.
- **VMware Networking & Security**: Ensures secure and efficient networking and data management.

**Integrated Management with vCenter/vCD**:

- **VMware Networking & Security** integrates with vCenter/vCD for seamless management.
- **3rd party services** are accessible through the vCloud Ecosystem Services Framework.

**vCloud Ecosystem Services Framework**:

- **vShield Manager**: Facilitates seamless integration with datacenter management.
- **Edge gateway**: Secures the edge of the virtual datacenter.
- **Data Security**: Protects against data leaks.
- **App**: Isolates and protects applications and virtual machines.
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VXLAN – How it Works

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

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

- 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
VXLAN: Common Deployment Scenarios

**Within a Datacenter:**
- Within a Datacenter: Same pod or across pods
- Private Cloud: Two or more metro datacenters

**Within a Datacenter**
- Distributed Switch now delivers:
  - Network Healthcheck
  - Configuration Backup and Restore
  - Roll Back and Recovery
  - LACP Support

**Metro Clusters**
- Enable workload mobility across data centers
- Seamless expansion of compute boundaries across data centers with service integration
- Practically unlimited scale of tenants (16M with VXLAN vs 4K with VLANs)
- Improved availability and faster DR
# Edge High Availability Firewall

**Features**
- Active/Standby High Availability
- Stateful Session Failover
- Automatic Config Sync
- <10 Second Failover

**Benefits**
- Ease migration by replicating physical topologies in virtual
- High Availability for Business Critical Apps
- Firewall Session Continuity
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- Software Defined Storage
  - Distributed Storage Tech Preview
“Where Does Integration Happen?” circa 2012

ESX Storage Stack
- VMFS
- VMware LVM
- NFS
- NFP
- Co-op
- Network Stack
- iSCSI/FCoE SW
- Vendor-specific VAAI block module
- NIC Drivers
- HBA Drivers

SRM
- View VMware-to-Storage relationships
- Provision datastores more easily
- Leverage array features (compress/dedupe, file/filesystem/LUN snapshots)

VM
- VSS via VMware Tools
- vStorage API for Data Protection (VDDK)
- Vendor-specific vCenter Plug-In

VI Client
- Snap request
- SvMotion request
- VM provisioning
- Thin provisioning

Inyo Change
- New coolness
- VASA Module
- NFS VAAI Module
- Standards-based VAAI
- SCSI commands

Change
- VSS via VMware Tools
- vStorage API for Multi-pathing
- NMP
- Network Stack
- FC
- FCoE
- iSCSI
- VAAI SCSI cmds
- VASA Module
- NFS VAAI Module

New
- vCOPs Connectors
- Awareness in array/mgmt
- VASA Module
- NFS VAAI Module
- Standards-based VAAI
- SCSI commands

Change
- Adapter
- NIC Drivers
- HBA Drivers
- Standards-based VAAI
- SCSI commands

SRM
- Vendor Specific vStorage API for SRM
- SVMotion request
- VM provisioning
- Thin provisioning

5.1 Change
- Snap request
- SvMotion request
- VM provisioning
- Thin provisioning

5.1 Change
- SVMotion request
- VM provisioning
- Thin provisioning

Vendor Specific vStorage API for SRM
VMware Vision: Software Defined Storage

SLA Definitions
Availability = 99.99%
DR RTO = 1 hour
Back up = daily
Storage capacity = 1 TB
Performance = High I/O
Security = High

SLA Definitions
Availability = 99%
DR RTO = 4 hour
Back up = weekly
Storage capacity = 10 TB
Performance = High I/O
Security = High

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
VMware’s Distributed Storage Will Deliver Radically Simple Storage

Overview

- Converged compute & storage with vSphere integration & vCenter mgmt
- Scale-out storage with SSD caching and built-in resiliency
- Converts low cost server disks into intelligent shared storage

Benefits

- Easy to setup, configure & manage: policy-driven storage with automated per-VM SLA enforcement
- Eliminate performance bottlenecks and single points of failure
- Lower storage TCO
VMware’s Distributed Storage – Primary Use-Cases

Virtual Desktop (VDI)
- High Performance
- No Bottlenecks

Test & Dev
- Fast Provisioning
- Low Cost

Big Data
- Scale Out
- High Bandwidth

DR Target
- Reduced hardware at remote site
vC Ops and VNX Storage Integration

VNX Storage Analytics Suite

- Problem detection, isolation and remediation to ensure service levels
- Analytics engine with dynamic thresholds
- Physical and virtual environments

vC Ops storage view

VNX Connector for vC Ops (adapter + dashboards)
# 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)
Improved Provisioning for DevOps: AppDirector

- 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
Transitioning to the New Era with EMC

Big
- Big Data Processing
  - Serengeti

Fast
- OLTP workloads
  - SQLFire
- Analytic workloads
  - SQLFire

Flexible
- Content
  - Documentum
- Object
  - GemFire
- Key / Value
  - redis
- OSS Relational
  - vPostgres

Cloud Delivery Model
Data as a service for private and public clouds
# vCloud Suite Edition Lineup

## Virtualization

<table>
<thead>
<tr>
<th>vSphere Enterprise Plus</th>
<th>vCloud Director &amp; vCloud Connector</th>
<th>Standard vCloud Networking and Security</th>
<th>vCenter Site Recovery Manager Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtualized infrastructure with policy-based automation</td>
<td>Virtualized datacenters with multi-tenancy and public cloud extensibility</td>
<td>Software defined networking, security, and ecosystem integration</td>
<td>Automated disaster recovery planning, testing, and execution</td>
</tr>
</tbody>
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## Cloud Infrastructure

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## Operations Management

<table>
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<tr>
<th>vCenter Operations Management Suite</th>
<th>vCenter Configuration Manager</th>
<th>vCenter Infrastructure Navigator</th>
<th>vCenter Chargeback Manager</th>
<th>vFabric Application Director</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance monitoring and alerting</td>
<td>Configuration and compliance management of virtual infrastructure</td>
<td>Application discovery, dependency mapping, and management</td>
<td>Metered chargeback reporting and accountability</td>
<td>Multi-tier application service catalog publishing and provisioning</td>
</tr>
</tbody>
</table>

## Price (per CPU, license only)

<table>
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<tr>
<th>vCloud Suite Standard</th>
<th>vCloud Suite Advanced</th>
<th>vCloud Suite Enterprise</th>
</tr>
</thead>
<tbody>
<tr>
<td>$4,995</td>
<td>$7,495</td>
<td>$11,495</td>
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</tbody>
</table>

### vCenter SRM
- Automated disaster recovery planning, testing, and execution

### vCNS
- Standard
- Advanced

### vCOps
- Advanced
- Enterprise
VMware’s vCloud Suite is…

A Comprehensive Suite Available in One SKU

Integration Between Products
- Integrated UI: vSphere Web Client
- SSO: Sign in once to vCenter, never sign in again
- vC-OPS monitoring vCloud, vCM integration
- vCloud support for Storage DRS

An Entire Cloud Infrastructure – Available in one SKU
- New vCloud Suite Editions

Broad Alliance Support for the Cloud
- vShield App Partner Integrations – Symantec, McAfee, Trend Micro, etc.
- New VMready partner program for Network and Security
- VAAI extended to vCD
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  • Enter the Raffle to win a set of Beats by Dr. Dre Headphones!
  • Find out more about what’s new in our Solutions and Products portfolio

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