VMware Software-Defined Storage and EVO:RAIL

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9/14/2014
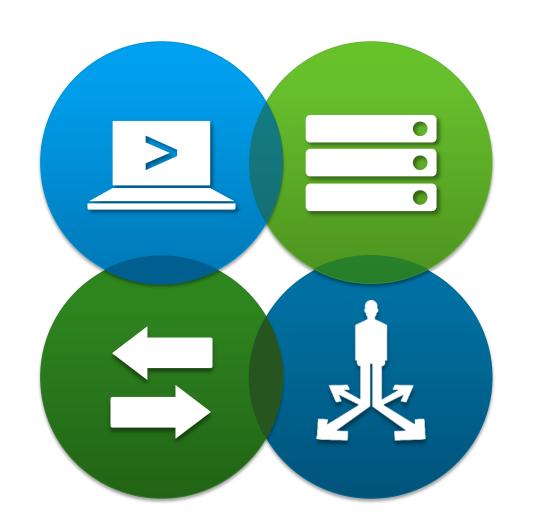
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Agenda

- VMware's Vision for Software-defined Storage

- Overview of key VMware Technologies:

  - Virtual Volumes and Storage Policy-based Management

  - VMware Virtual SAN

- EVO
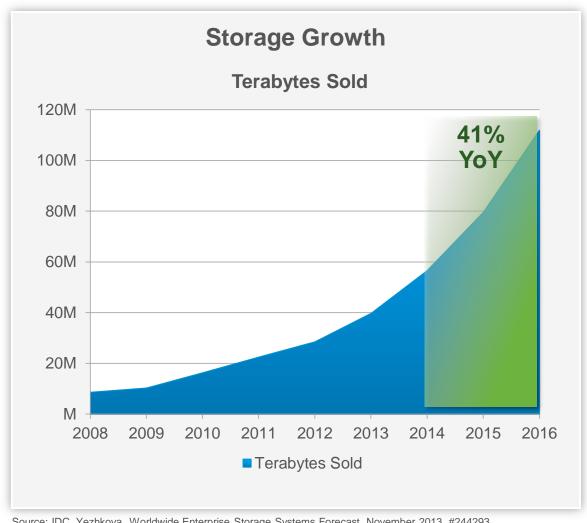
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The Software-Defined Data Center

Expand virtual compute to all applications

Transform storage by aligning it with app demands

Virtualize the network for speed and efficiency

Management tools give way to automation

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Today's Challenge:
Massive Increase in Storage Demand & Complexity

Storage Growth

Terabytes Sold

41% YoY

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Y-axis	M	20M	40M	60M	80M	100M	120M		

■ Terabytes Sold

Most Pressing Storage Challenges

Challenge	Percentage
Meeting SLA	42%
Troubleshooting	31%
Data Migrations	28%
Time/budget	28%
Provisioning	26%
Management Complexity	24%

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Increasing Diversity Of Devices

Hot Edge
- CPU/Memory-bound
- Low Latency
- Dominated by flash

Hybrid

All-SSD

All-Flash

x86 Servers

Cold Core
- Capacity-centric
- Increasing commodity hardware
- Scale-out, multi-geo
- Extends into cloud

Scale-Out

Cloud Storage

Object Storage
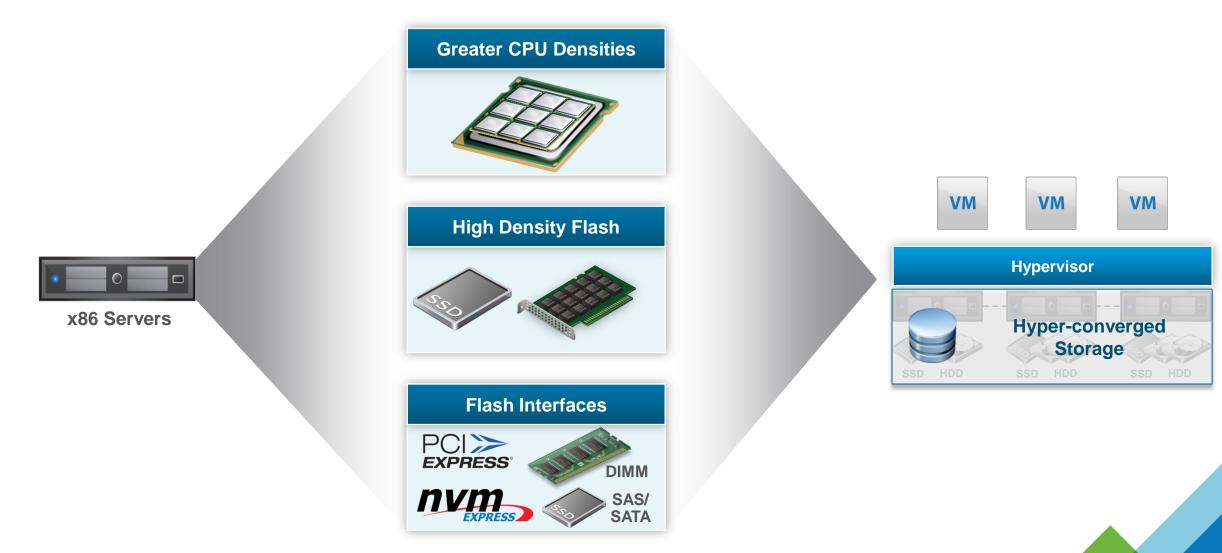
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Rapidly Emerging x-86 Server Storage Brings Data Close To Applications

x86 Servers

Greater CPU Densities

High Density Flash

SSD

Flash Interfaces

PCI EXPRESS®

DIMM

nvm EXPRESS

SSD

SAS/ SATA

VM   VM   VM

Hypervisor

SSD HDD   SSD HDD   SSD HDD

Hyper-converged Storage

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Legacy Operational Model Creates Several Challenges

VM **VM** **VM** **VM**

vSphere

Snapshot

Replication

Encryption

Device Mgmt.

SAN

Device Mgmt.

NAS

Device Mgmt.
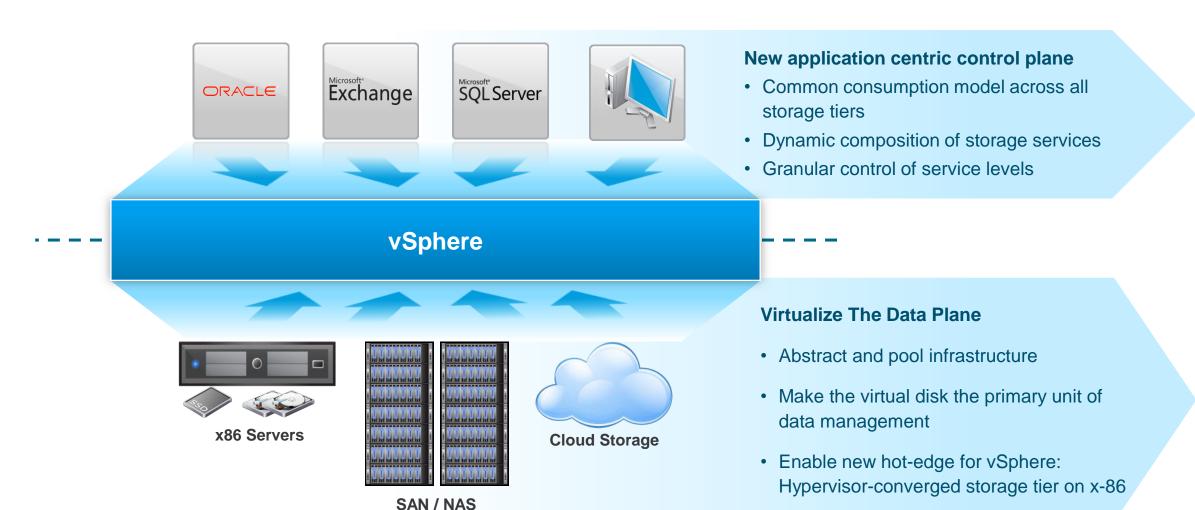
All-flash

Storage Consumer Challenges:

- Lengthy provisioning cycles
- Difficult to make adjustments
- Lack of granular control
- Complex troubleshooting
- Frequent data migrations

Storage Provider Challenges:

- Fragmented device management
- Rigid capacity and data services allocation
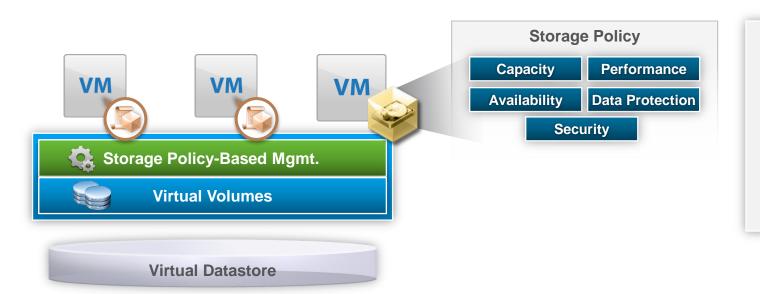- Complex LUN/Volume management

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The Hypervisor Opens Up New Opportunities

vSphere

New application centric control plane

- Common consumption model across all storage tiers
- Dynamic composition of storage services
- Granular control of service levels

x86 Servers

SAN / NAS

Cloud Storage

Virtualize The Data Plane

- Abstract and pool infrastructure
- Make the virtual disk the primary unit of data management
- Enable new hot-edge for vSphere: Hypervisor-converged storage tier on x-86

VMware Software-Defined Storage Vision For External Storage

Storage Policy

Capacity	Performance
Availability	Data Protection

Security

Storage Policy-Based Mgmt.

Virtual Volumes

Virtual Datastore

Device Mgmt.

Device Mgmt.

SAN / NAS

SAN / NAS

Published Capabilities

- 🟢 Snapshot
- 🟢 Replication
- ⚪ Deduplication
- 🟠 QoS

Storage Policy Based Management

- Policy driven, VM-centric control plane
- Dynamic composition of storage services
- Intelligent placement and transparent remediation
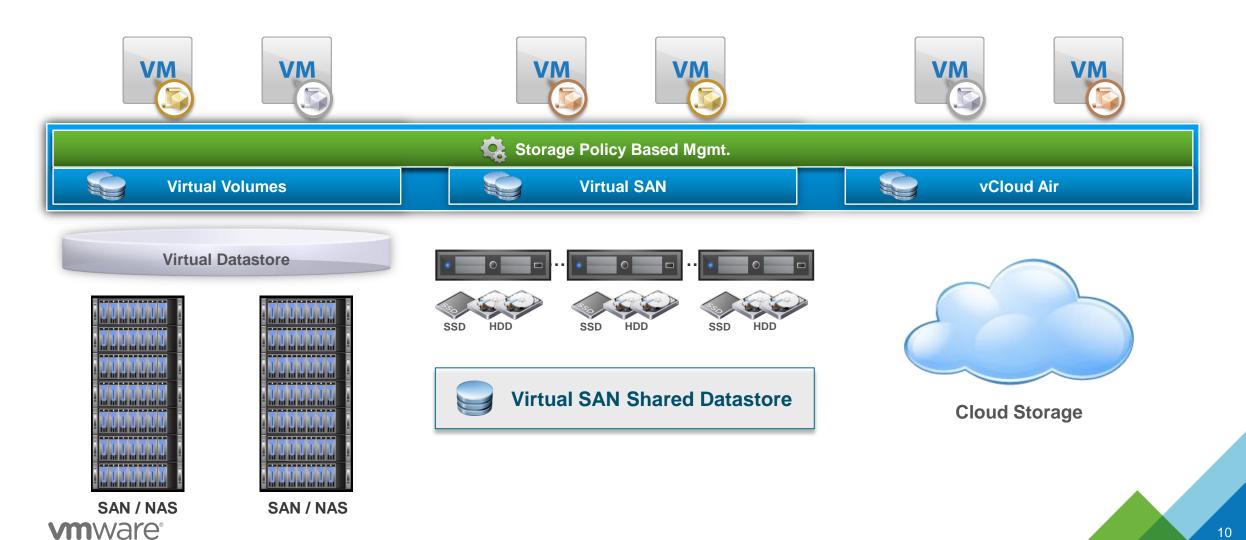- Common across heterogeneous devices

Virtual Volumes

- Virtual disks natively represented on external storage
- Granular control of native array data services on a per VM basis
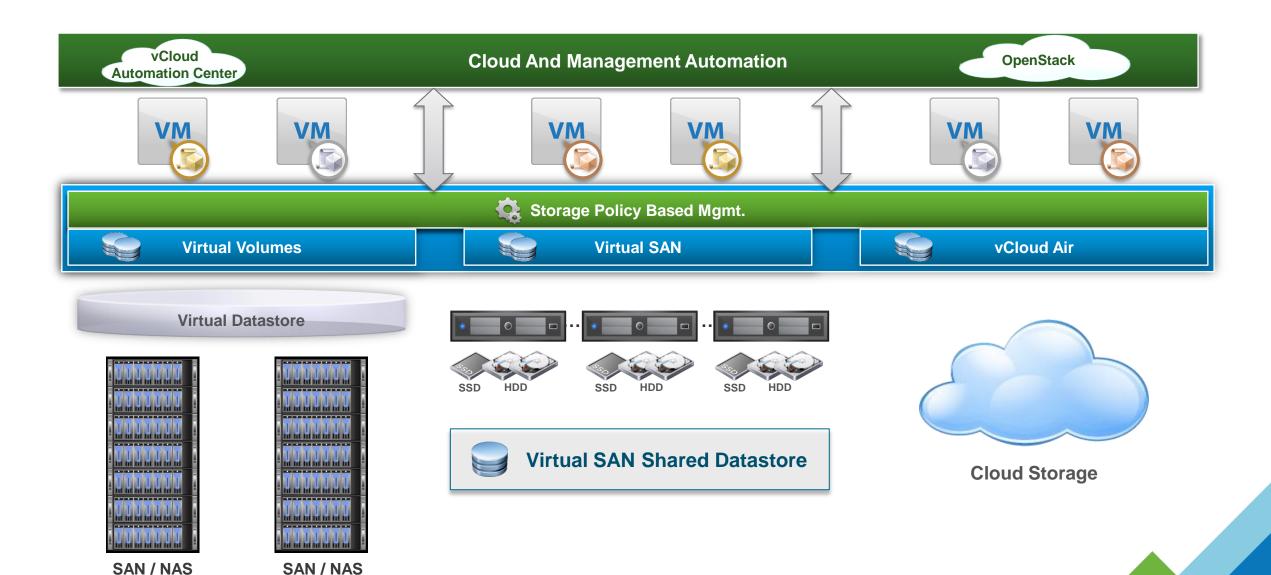- No more LUNs/Volumes

Enabling New Storage Tiers With Common Control Plane
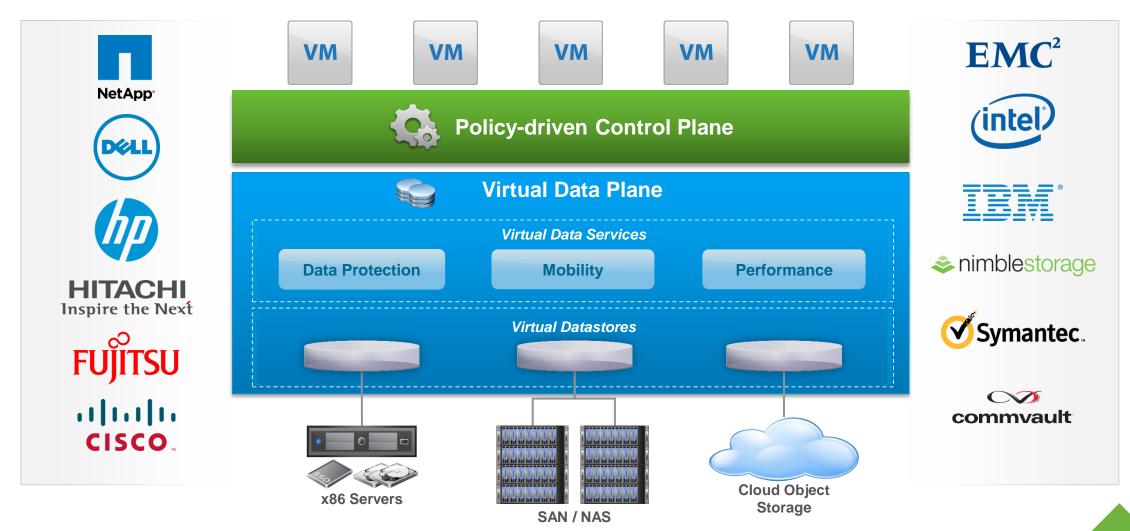
Storage Policy Based Mgmt.

| Virtual Volumes | Virtual SAN | vCloud Air |

Virtual Datastore

SSD HDD   SSD HDD   SSD HDD

Virtual SAN Shared Datastore

Cloud Storage

SAN / NAS   **SAN / NAS**

Enabling Self-service Consumption

Cloud And Management Automation

vCloud Automation Center

OpenStack

Storage Policy Based Mgmt.

Virtual Volumes

Virtual SAN

vCloud Air

Virtual Datastore

SSD HDD   SSD HDD   SSD HDD

Virtual SAN Shared Datastore

Cloud Storage

SAN / NAS   SAN / NAS

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VMware Software-Defined Storage

Bringing the Efficient Operational Model of Virtualization to Storage

Agenda

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  - VMware Virtual SAN

- EVO:RAIL

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Virtual Volumes Overview

Management and integration framework for VM centric operations with native array capabilities
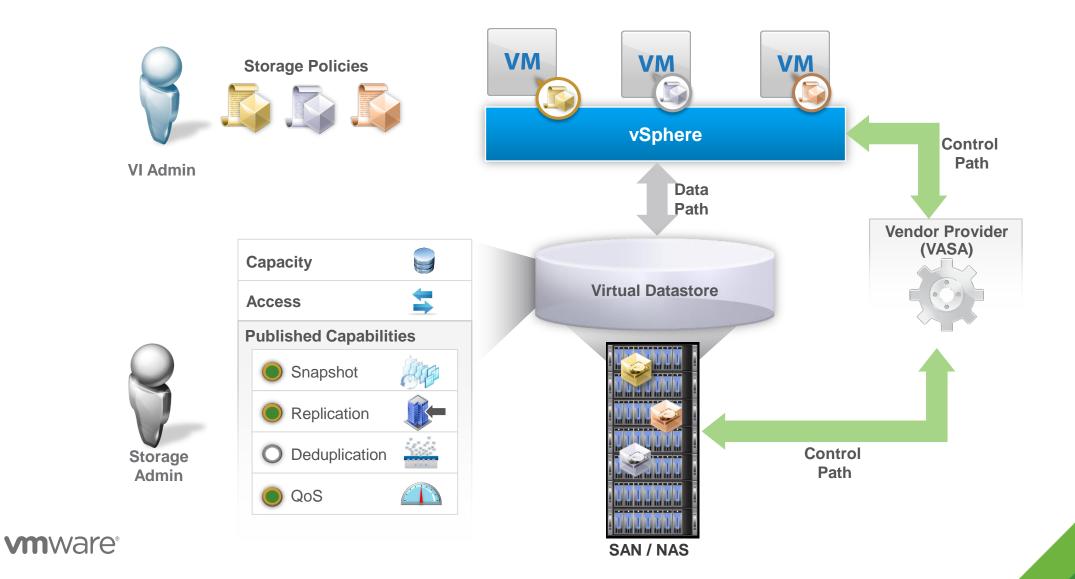

The Basics

- Virtual disks are natively represented on arrays

- Enables VM granular storage operations using array-based data services

- Integrates with Storage Policy-Based Management for policy consumption

- Supports existing storage I/O protocols (FC, iSCSI, NFS)

- Ecosystem-wide initiative

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Virtual Volumes Architecture

Virtual Volumes Will Soon Be Available

...and many more

29 VVOL Partners

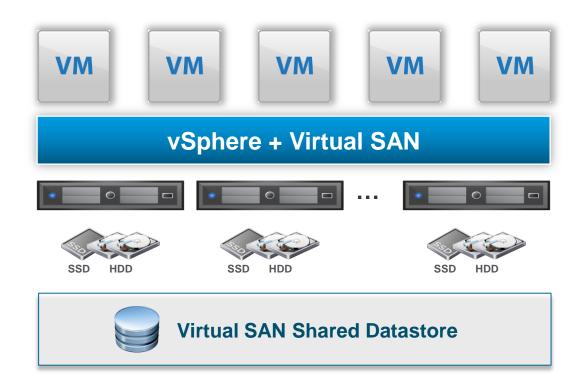**Virtual Volumes in Beta**

Partners Announcing GA

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VMware Virtual SAN

Radically simple hypervisor-converged storage

VM **VM** **VM** **VM** **VM**

vSphere + Virtual SAN

SSD HDD   SSD HDD   …   SSD HDD
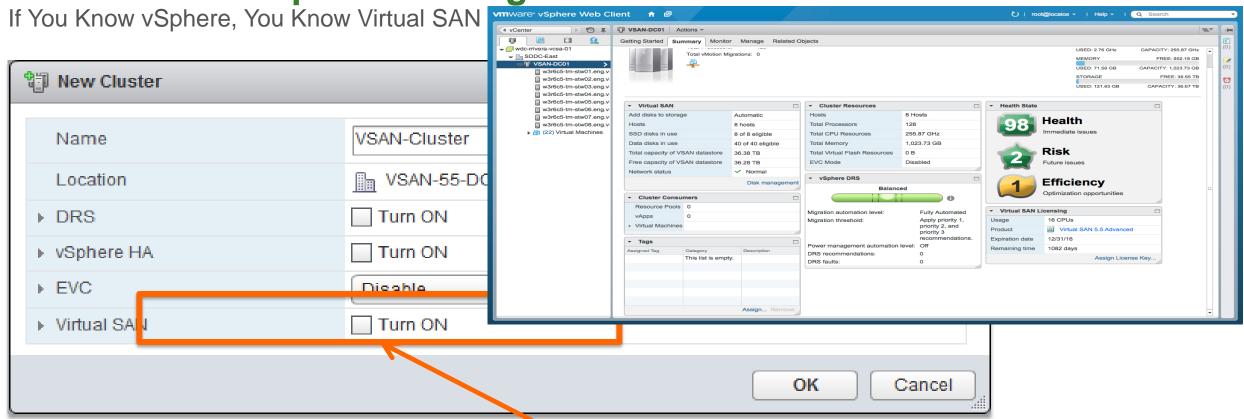
Virtual SAN Shared Datastore

The Basics

- Software-defined storage embedded in vSphere
- Pools HDD/flash into a shared distributed datastore
- Runs on any standard x86 server
- Highly resilient - zero data loss in the event of hardware failures
- High performance through flash cache acceleration
- Elastically scalable
- Managed through Storage Policy-Based Management
- Deeply integrated with the VMware stack
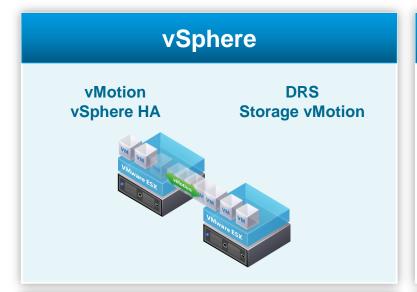
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Virtual SAN Simplifies Storage

If You Know vSphere, You Know Virtual SAN

Two clicks to deploy!

Virtual SAN is Deeply Integrated with VMware Stack

Ideal for VMware Environments

vSphere

vMotion
vSphere HA

DRS
Storage vMotion

Data Protection

Snapshots
Linked Clones

VDP Advanced
vSphere Replication

Virtual Desktop

VMware View

Cloud Ops and Automation

vCenter Operations Manager
vCloud Automation Center

IaaS

Disaster Recovery

Site Recovery Manager

Site A   Site B

Storage Policy-Based Management

VM

Customers are Deploying VSAN in Several Use Cases

Virtual Desktop (VDI)

- Handle peak performance requirements (boot, login, read/write storms)
- Granularly scale from POC to production without huge upfront investments
- Supports high VDI density

Tier 2 Production

VM **VM** **VM**

- Simple to deploy and manage for any vSphere admin through integration with VMware stack
- High performance and consolidation ratios
- VM level SLA management via policy
- Ideal for workloads that require replication RPOs > 15 min and 2/3 daily snapshots

Disaster Recovery Target

Site A   Site B

- Integrated with vSphere Replication and VMware SRM
- Reduces cost of storage
- Minimizes data center footprint

Staging & Test/Dev

VM **VM** **VM**
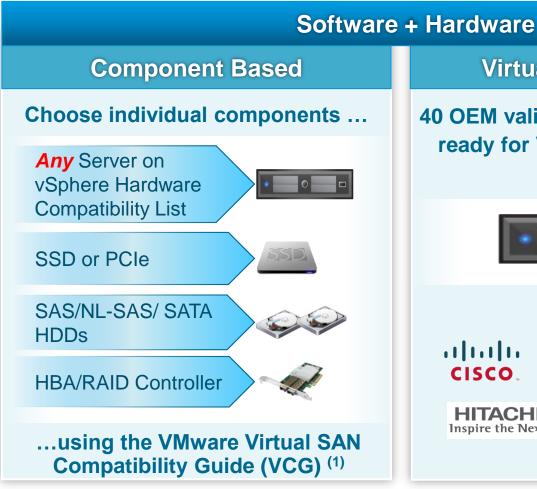
- Rapid storage provisioning and complete automation
- Reduces cost of storage for non-mission critical workloads
- Enables Cloud Architect to easily provision storage

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How To Deploy A Virtual SAN Cluster

Software + Hardware

Component Based

Choose individual components …

***Any* Server on vSphere Hardware Compatibility List**

SSD or PCIe

SAS/NL-SAS/ SATA HDDs

HBA/RAID Controller

…using the VMware Virtual SAN Compatibility Guide (VCG) [1]

Virtual SAN Ready Node

40 OEM validated server configurations ready for Virtual SAN deployment [2]

CISCO

DELL

FUJITSU

hp

HITACHI Inspire the Next

HUAWEI

IBM

SUPERMICRO

VMware EVO:RAIL

Hyper-Converged Infrastructure

vmware EVO RAIL

A Hyper-Converged Infrastructure Appliance (HCIA) for the SDDC

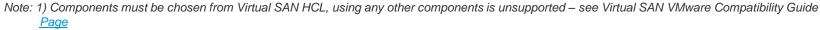**Each EVO:RAIL HCIA is pre-built on a qualified and optimized 2U/4 Node server platform.**
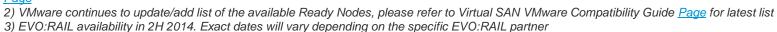
Sold via a single SKU by qualified EVO:RAIL partners [3]

Maximum Flexibility ←——————————→ ***Maximum Ease of Use***

Note: 1) Components must be chosen from Virtual SAN HCL, using any other components is unsupported – see Virtual SAN VMware Compatibility Guide *Page*
2) VMware continues to update/add list of the available Ready Nodes, please refer to Virtual SAN VMware Compatibility Guide *Page* for latest list
3) EVO:RAIL availability in 2H 2014. Exact dates will vary depending on the specific EVO:RAIL partner

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Virtual SAN: Unprecedented Customer Interest

"Best of Interop and Audience Choice Award"

Best of
INTEROP
2014
STORAGE
WINNER

"Best of TechEd Virtualization Winner"

Best of
WINNER
TechEd
North America 2014
PRODUCT AWARDS PRODUCED BY
Windows IT Pro

300+
Customers in the first three months

"Virtual SAN takes VMware a big step closer to the software-defined datacenter..."

—*Charles Babcock*
InformationWeek

"It's really a no-brainer when the hypervisor you want to use also includes this virtualized storage."

—*Ryan Hoenle*
IT Director of The Doe Fund
NETWORKWORLD

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VMware Provides Choice to Customers

"Build Your Own"

- Maximum customization and flexibility (hardware selection, scalability)

Converged Infrastructure

- Ease of procurement
- Custom fit to environment
- No limitations on scalability
- One support call

NEW

Hyper-Converged Infrastructure

- Ease of procurement via prescriptive approach
- Strong economics
- Faster time to deployment
- Simplified SDDC lifecycle management
- One support call

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VMware EVO:RAIL

Simplify How You Buy, Deploy and Operate Your SDDC

- EVO:RAIL software with vSphere and Virtual SAN technology is the key enabler
- Single SKU procurement model creates design and price predictability
- Simple, streamlined deployment and ongoing SDDC lifecycle management
- One support call

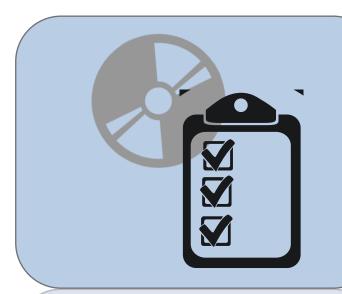**vm**ware®

EVO:RAIL Route to Market through Partners

Franchise "Like" Model

Qualified EVO Partners

Customer

- **EVO:RAIL Software**
- **100% VMware software stack**
- **Build Recipe**
- **Enablement Collateral**

- **Source**
- **Build**
- **Fulfill**
- **Sell**
- **Support**

- **Simplicity**
- **Single SKU**
- **Lower TCO**
- **Customer Choice**
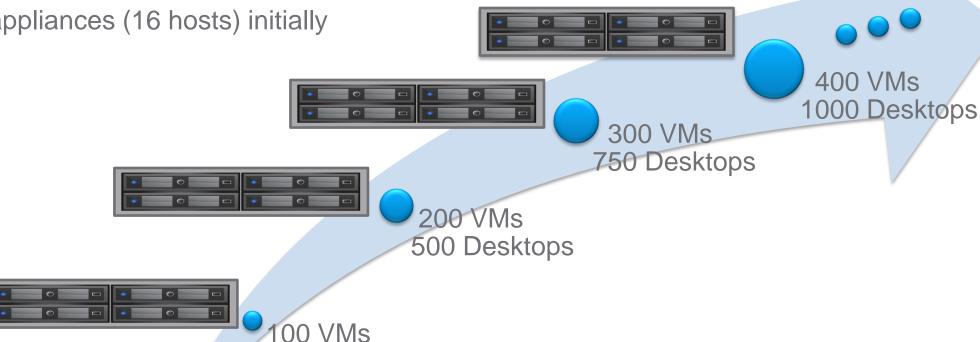- **One Support Call**

Simplified Linear Scale Out

- Scale performance, bandwidth, and capacity by simply adding appliances
  - Each appliance adds compute, networking, and storage resources in minutes
- New appliances are automatically discovered
  - Add to the cluster with zero configuration
- Supports 4 appliances (16 hosts) initially

400 VMs
1000 Desktops

300 VMs
750 Desktops

200 VMs
500 Desktops

100 VMs
250 Desktops

General-purpose VM profile: 2 vCPU, 4GB vMEM,60GB of vDisk, with redundancy
Horizon View virtual desktop profile: 2 vCPU, 2GB vMEM, 32GB vDisk linked clones

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VMware EVO:RAIL Summary

Technical Value

- **OpEx savings**
  - Simplified planning and deployment
  - Pre-loaded software with configuration finished in minutes
  - One-click update and patch
- **Consistent hardware experience**
  - Same hardware and ensured interoperability
  - Known sizing and scaling steps
- **Integrate with existing network and storage solutions or use standalone**
- **Customer choice of solution vendors**

Business Value

- **CapEx savings**
  - Server storage economics
  - Pay-as-you-grow
- **Meet business requirements**
  - Faster deployments and fewer touch-points
- **Simplified procurement**
  - Single SKU for all hardware, software & support
  - Choice of preferred OEM partners
- **Building block for the future**
  - SDDC, end-user computing, hybrid cloud connector

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Ideal Environments for EVO:RAIL

- **Virtual Desktop Solution**
  - POC and Pay & Scale as you grow

- **R&D and Test Environments**
  - Tight budget for compute/storage; Quick deployment of infrastructure

- **Remote/Branch Office Locations**
  - Data Center in a Box

- **Private Cloud Infrastructure**
  - On-site cloud for employees or customers; Off-site co-located

- **Limited IT staff**
  - Simplified, repeatable deployment/management

- **Geographic Data Locality**
  - Limited footprint for in-country solution

VDI

ROBO

Virtual Private Cloud

Thank You

@vmwevorail

http://vmware.com/products/evorail

http://vmware.com/products/virtual-san

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