Résilience x86 avec VMware

Ralf von Gunten
Sr. SE, VMware

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Agenda

1	Intro: Software-Defined Data Center
2	Context of BC/DR
3	VMware Solutions for IT Resilience
4	Local Application Availability
5	Data Protection
6	Data Replication
7	Site Application Availability
8	Virtual SAN

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Intro: Software-Defined Data Center

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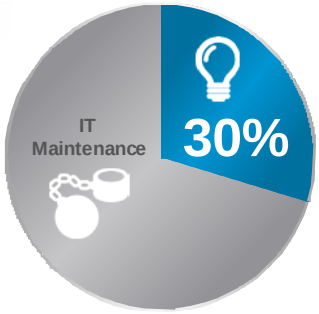
Liberating Resources to Drive Innovation

- Apps take too long.
- Device management requires human intervention.
- Provisioning takes weeks.
- Production workloads are managed via email.



Industry Average:
IT Spend on Innovation

* Source: Gartner, 2013: *"Hunting and Harvesting in a Digital World: The 2013 CIO Agenda"*

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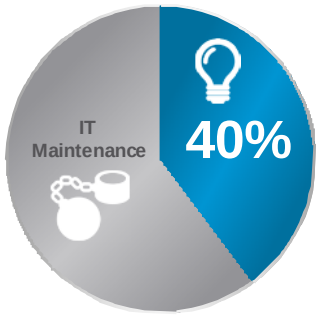
Liberating Resources to Drive Innovation



VMware Customer Average:
IT Spend on Innovation

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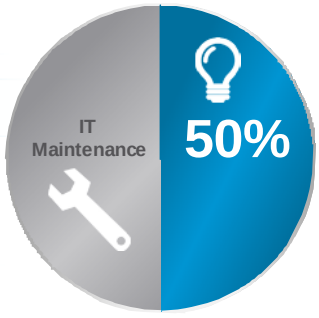
Liberating Resources to Drive Innovation

- Any user, any device, any app… automatically.
- Apps get rolled out at "the speed of business."
- Provisioning a production environment takes minutes.
- You can routinely deploy any workload…anywhere.



Goal:
IT Spend on Innovation

1/3 of VMware Customers Have Already Achieved

Source: VMware Journey Benchmark Survey, 4th Wave 2013

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What if…

The same principles that transformed a single layer of the data center…

Abstract. Pool. Automate.

and delivered unprecedented value for customers…

were applied to the entire data center?

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Software-Defined Data Center

The ideal architecture for private, hybrid and public clouds.

All infrastructure is virtualized and delivered as a service, and the control of this data center is entirely automated by software.

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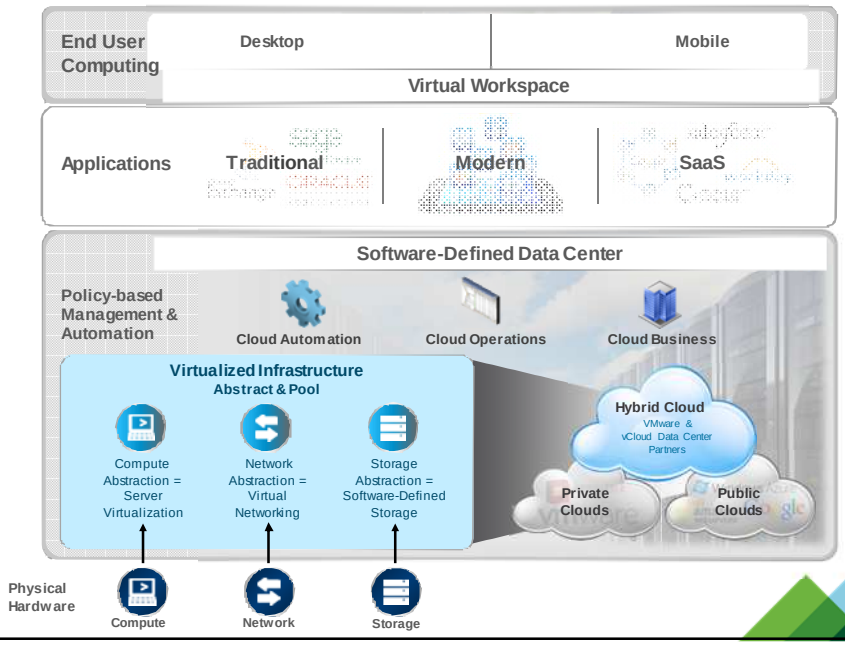
The Foundation for the Software-Defined Enterprise



SDDC Solves IT Pain Points

VMware's Software-Defined Data Center Delivers Transformational Levels of:

Reduce IT capex by 75% and opex by 56%*	Reduce downtime for tier 1 applications by 36%*	Increase IT productivity by 67%*	Support for over 500 ISV solutions and 80 operating systems
Cloud Service Provider Economics	Cloud on Your Terms	Apps at Business Speed	Any App Anywhere

* Claims being validated by the Taneja Group (final numbers expected August, 2013).

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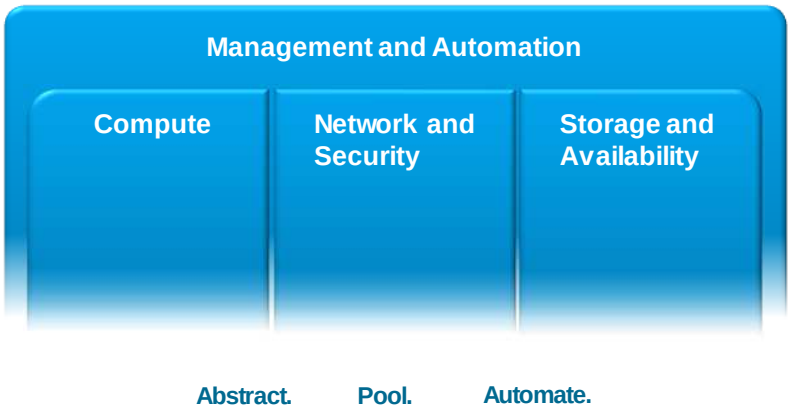
SDDC Delivers Choice

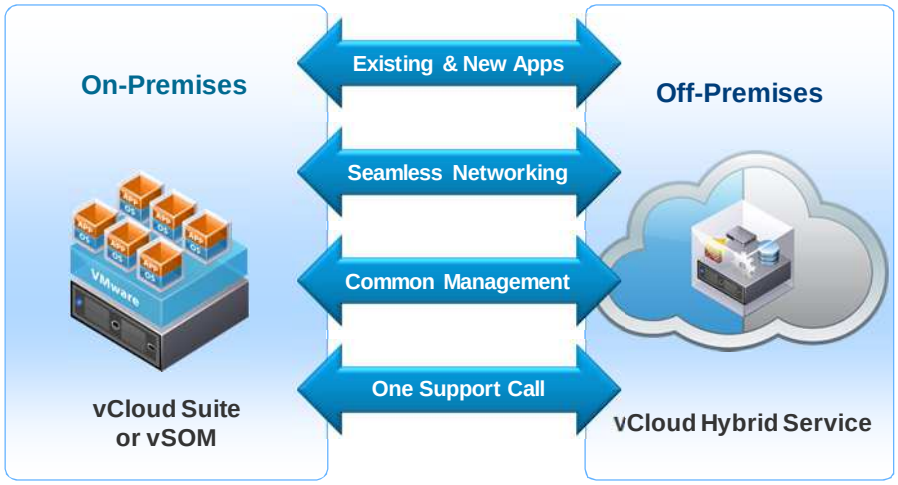
VMware's SDDC Architecture

Software-Defined Data Center



Abstract. Pool. Automate.

SDDC Comes in Two Form Factors



Any Application, Any Place… No Changes

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Context of BC/DR

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Uptime and Protection of Data are Critical for Business

Revenue		Ensure revenue streams tied to IT systems
Productivity		Enable the workforce to operate at full capacity
Compliance		Guarantee responsiveness to regulatory entities
Reputation		Protect relationships with customers and partners

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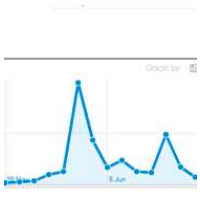
Infrastructure Failure Can Happen in Many Ways

93% of business that lost their data center for 10 days went bankrupt within one year
(National Archives & Records Administration)

Natural Disasters

Security Attacks



Service Demands

Power Outages

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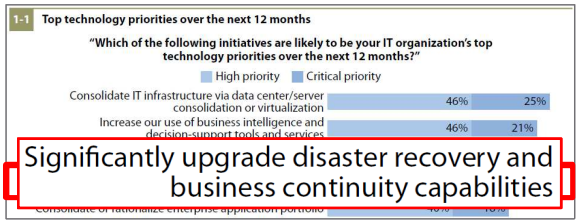
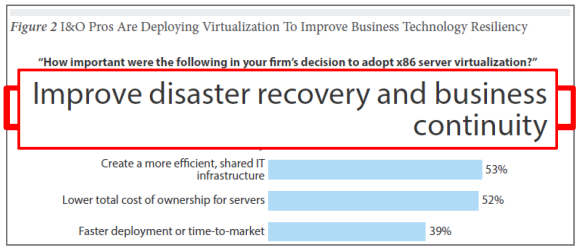
Improving BC/DR Is At The Top Of IT Initiatives



Source: Forrester "BC/DR Remain Priorities For 2012 But Take A Backseat To Cost-Saving And Efficiency Initiatives", October 2011

Top 5 technology priorities

- 40% High Priority
- 20% Critical Priority



Source: Forrester "Server Virtualization Predictions For 2013", March 2013

#1 driver for virtualization:

- 57% "very important" to adopt x86 virtualization

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Many Companies Still Rely on Legacy DR

40% of companies still use **tape for DR protection of mission-critical apps**

Source: Forrester

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Traditional Business Continuity Creates Silos and Tradeoffs

Application-level availability is complex and expensive

ORACLE	SQL Server 2008	Exchange Server 2010	Middleware / Java
Oracle RAC Oracle DataGuard	MS Clustering DB Mirroring	DB Availability Groups CCR / SCR	App Server Cluster Session State Replication

Replication is expensive has a longer RTO

Backup has a longer RPO and RTO

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Traditional Disaster Recovery is Every Bit as Challenging

Expensive


Software

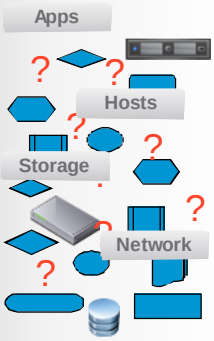

Hosts


Storage


Facilities

>$10K per app

Complex



Unreliable

DR tests once a year

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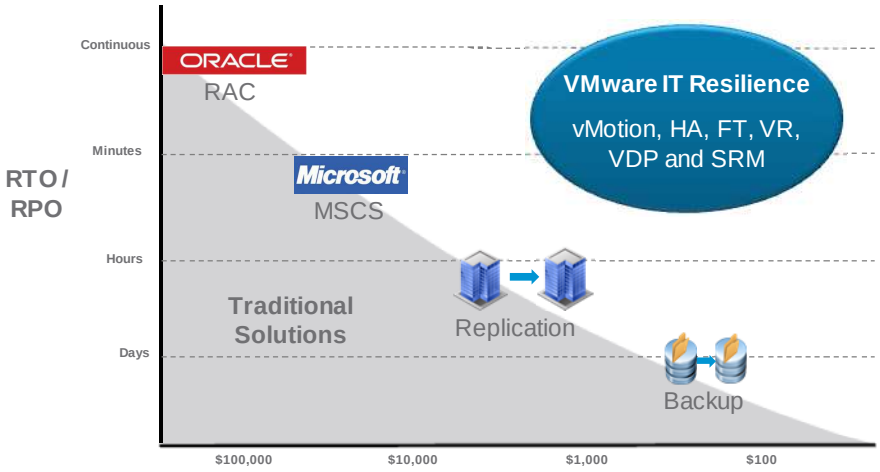
VMware Offers a Solution Portfolio for Cost-effective IT Resilience



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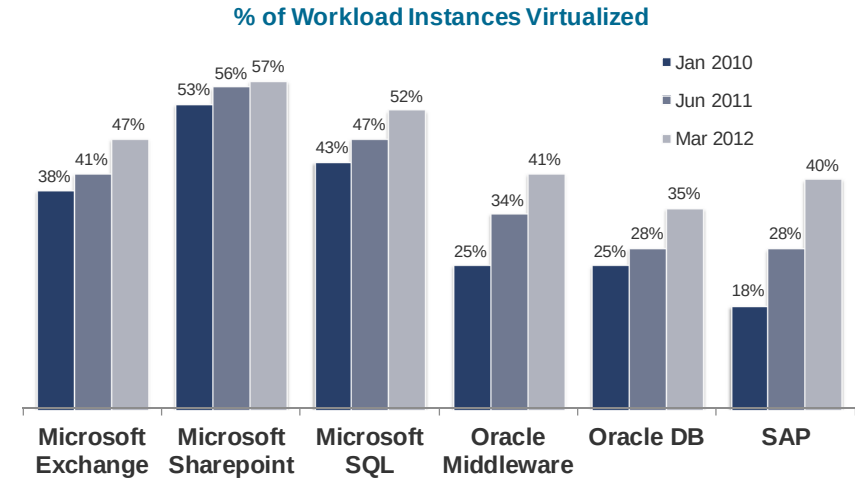
Momentum – Continue Virtualizing Business Critical Apps



Source: VMware customer survey, Jan 2010, Jun 2011, Mar 2012
Question: Total number of instances of that workload deployed in your organization and the percentage of those instances that are virtualized .

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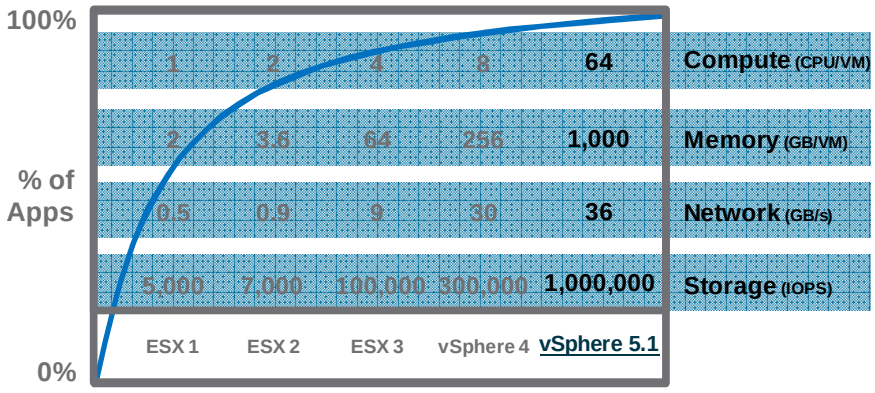
vSphere 5.1 Was Ready for the Most Demanding Applications



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VMware Solutions for IT Resilience

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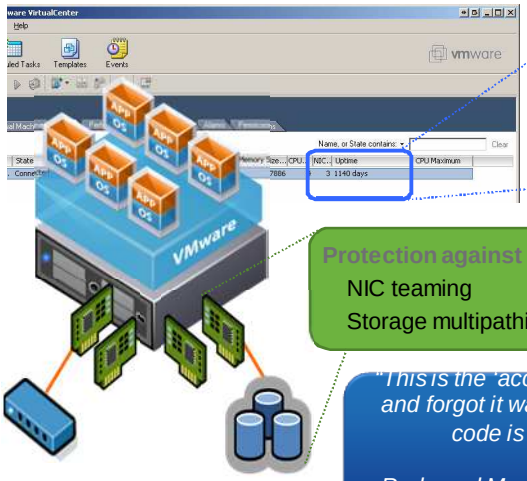
Rock-Solid Platform Is The Foundation



ESX stability
End-user system with **>3** years continuous uptime

Protection against component failures
NIC teaming
Storage multipathing

"This is the 'accidentally built a wall around it and forgot it was there' kind of reliable. The code is virtually bomb-proof."

- Redmond Magazine - Editor's Choice Awards

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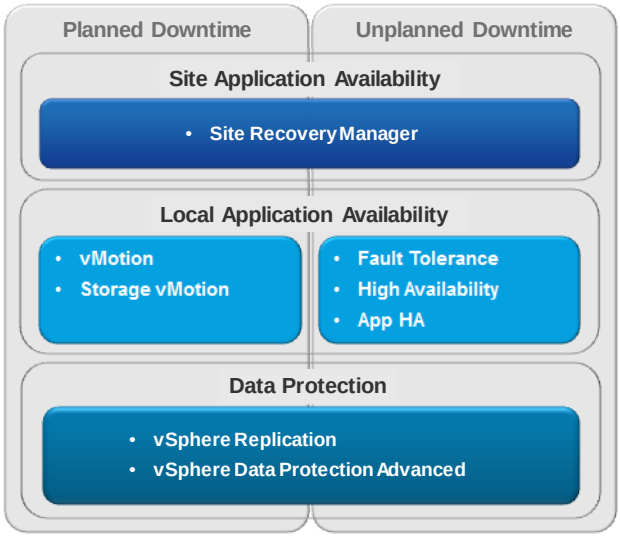
VMware Enables IT Resilience at All Levels



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Local Application Availability

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Dynamic Scalability for any Database and Application

Dynamic Scaling on vSphere

- **Hot-add capacity** 1 vCPU 2GB → 64 vCPU 1TB

- **Zero downtime maintenance**
- **Migrate live VMs**
- **Little impact to users**

- **Provision additional app instance in minutes**

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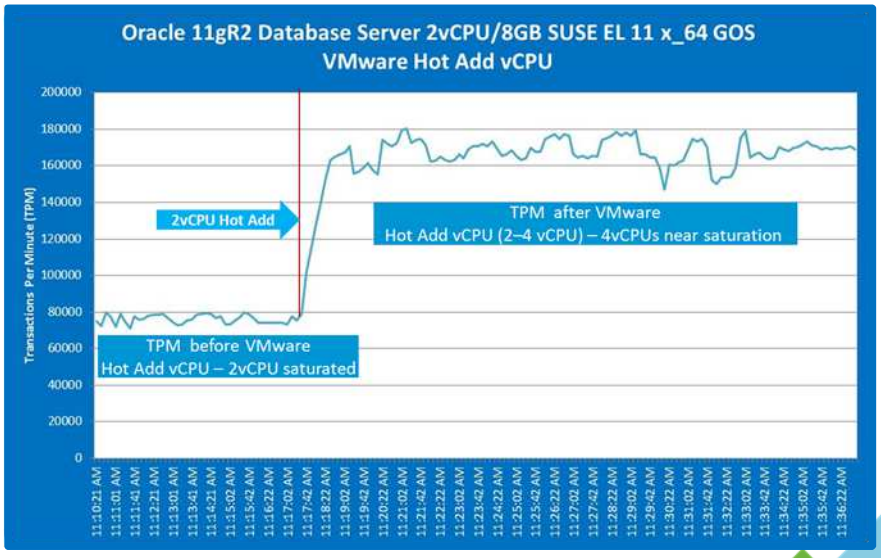
Oracle 11g R2 DB Server – Hot Add vCPU



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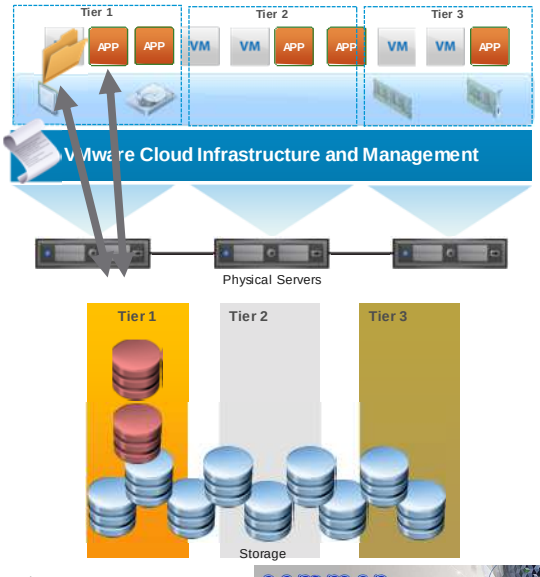
Dynamic Load Balancing of Resources



DRS – Load balances VMs across hosts

Storage DRS – Load balances VMs across storage arrays

Network and Storage I/O Control – Critical workloads get preferential access to network and storage I/O

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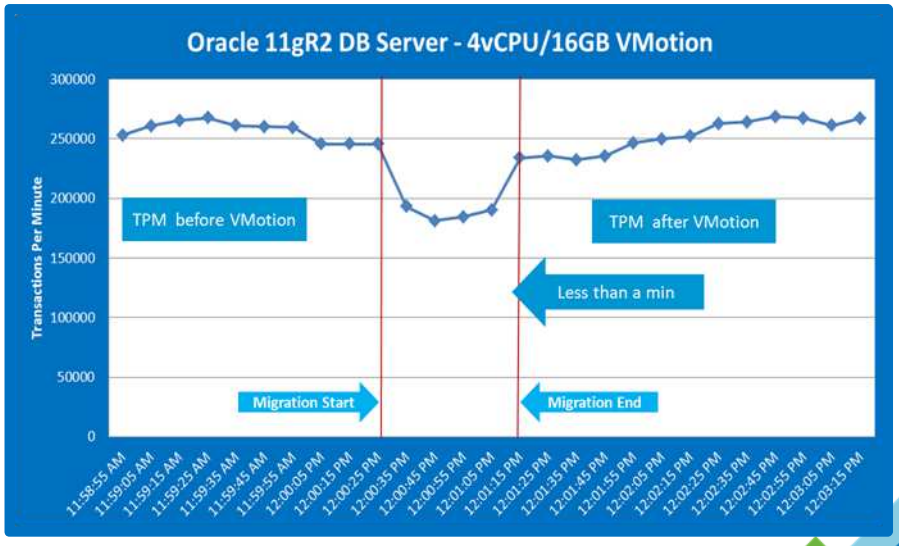
Oracle 11g R2 DB Server – vMotion



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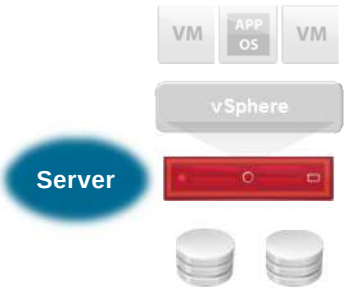
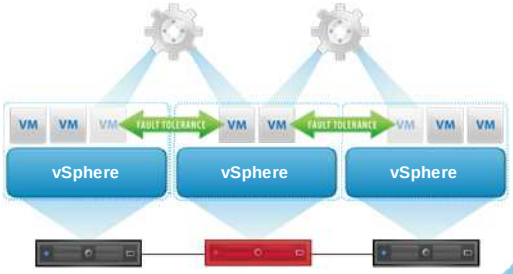
Protect Applications From Unplanned Downtime

vSphere Fault Tolerance

- Live shadow VM running on separate host in lockstep with primary instance for **zero downtime, zero data loss**





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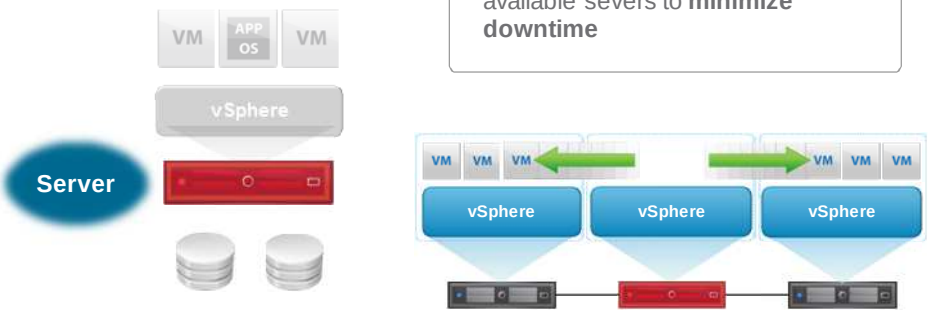
Protect Applications From Unplanned Downtime

vSphere High Availability

- Automated VM failover to alternate available severs to **minimize downtime**



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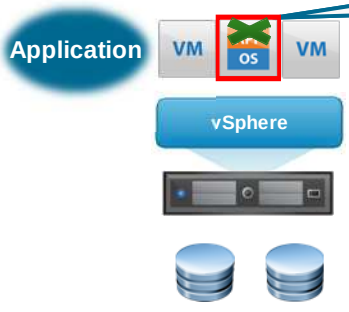
Protect Applications From Unplanned Downtime

- Downtime avoidance from application service failure



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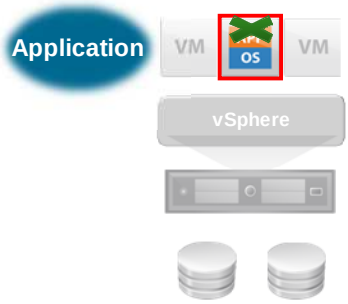
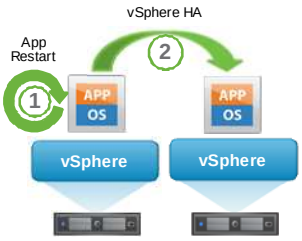
Protect Applications From Unplanned Downtime

New

vSphere App HA

- Application-level monitoring that enables recovery from application failure





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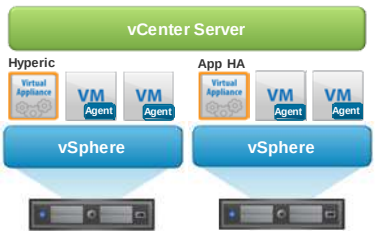
vSphere App HA – *New with vSphere 5.5*

New



Overview

- Restart app or restart the VM using vSphere HA
- Supports common applications (SQL, Tomcat, etc)
- Managed from vCenter Server
- **Included in vSphere Enterprise Plus**

Benefits

- Policy-based application monitoring
- Automated remediation
- Tier 1 application protection at scale
- Avoid application-specific clustering solutions

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Data Protection

Store and Move Data to Ensure Business Continuity

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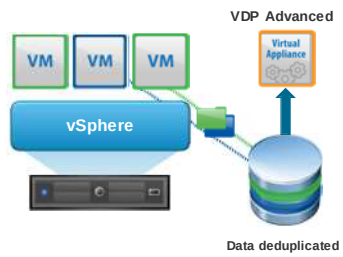
vSphere Data Protection Advanced

Deduplication Backup and Replication for VMs and Critical Apps



Overview

- Agent-less at the image-level
- App-aware for MS SQL, Exg and SP
- Storage-agnostic
- vSphere Web Client management
- Powered by EMC Avamar dedupe
- **VDP included in vSphere Ess+ or up**

Benefits

- Install and use with ease
- Reduce backup storage by 75%
- Recover up to 6x faster
- Protect data offsite with WAN efficiency

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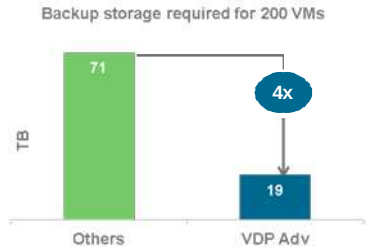
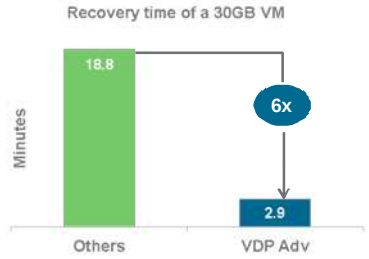
4x More Storage-efficient and 6x Faster for Recovery



- Unique variable-length dedupe
- ~$60K savings on storage TCO per year



- Unique CBT Restore technology
- Recover VMs to production in minutes

Source: ESG Lab Validation Report – vSphere Data Protection, February 2013

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Simple Management Designed for the VI Admin

End-to-end integration

Simple deployment

Simple backup job creation

Simple, granular restore

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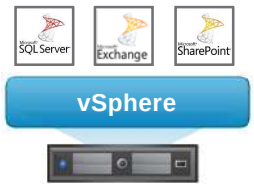
Application Aware for Mission-Critical Apps
Backup for Virtual and Physical Systems

New with VDP Adv 5.5

- New agent for SharePoint
- Mailbox-level recovery for Exchange
- Backup for non-virtualized MSFT apps (starting 03/01)



Virtual

Physical

Overview

- Application consistency
- Client-side deduplication
- Granular backup and restore
- Log management

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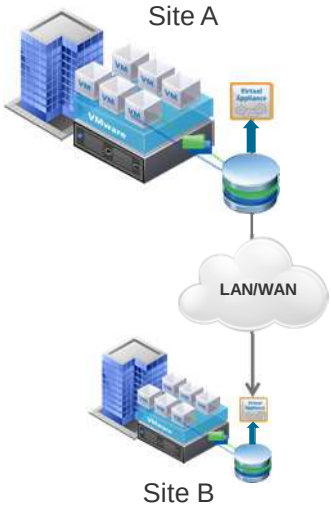
Network-efficient Backup Data Replication



Overview

- Replication of deduped, encrypted backups
- Specific schedules and retentions
- 1:many and many:1 topologies
- Multiple choices for targets

Benefits

- Enable disaster recovery
- WAN efficiency
- Safer than shipping physical tapes offsite

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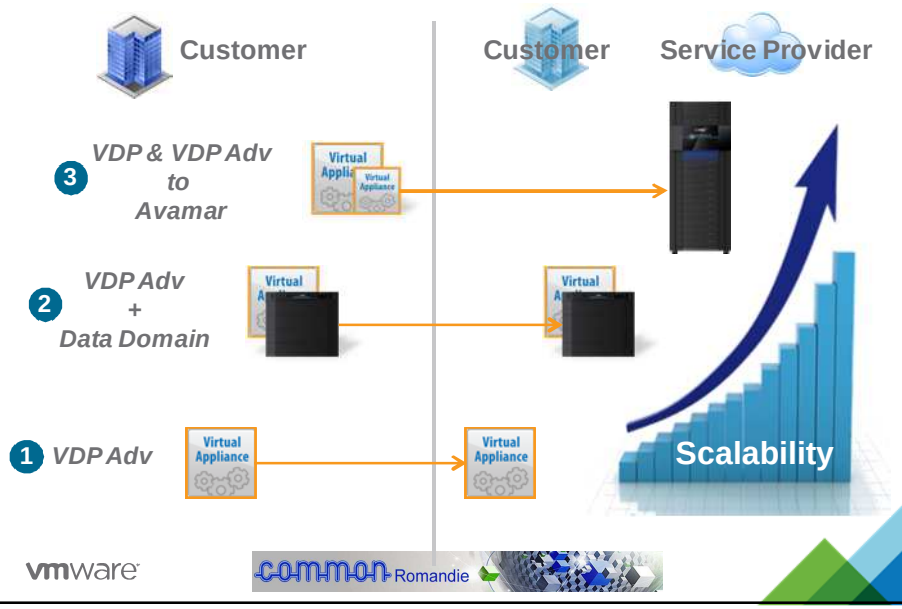
Multiple Replication Targets with VDP Advanced



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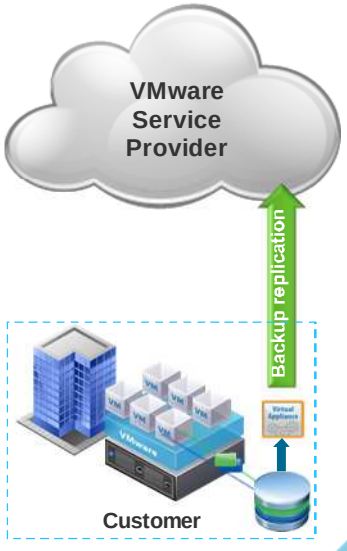
Protect Data in the Cloud of VMware Service Providers

Offsite Backup
- Restore back to your premises

Disaster Recovery
- Restore directly in the cloud

Long term retention
- Ensure regulatory compliance



SUNGARD Availability Services

pds

iomart 100% UPTIME

...and more to come

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Data Replication

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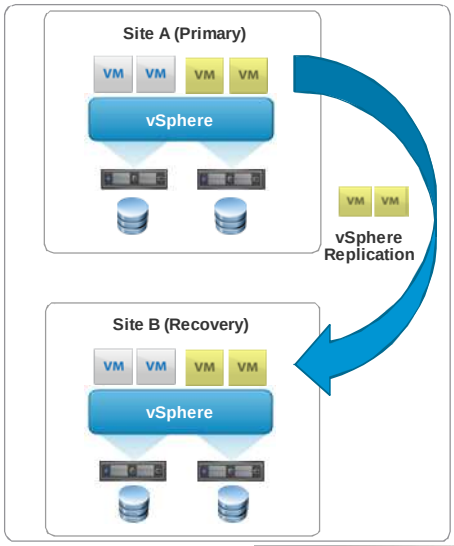
vSphere Replication

Hypervisor-based Replication of Live Virtual Machines



Overview

- Asynchronous, flexible RPOs
- VM-level configuration
- Storage-agnostic
- vSphere Web Client management
- **Included in vSphere Ess+ and up**

Benefits

- Eliminate replication software costs
- Use heterogeneous arrays
- Easy to configure and manage
- Native SRM integration for DR

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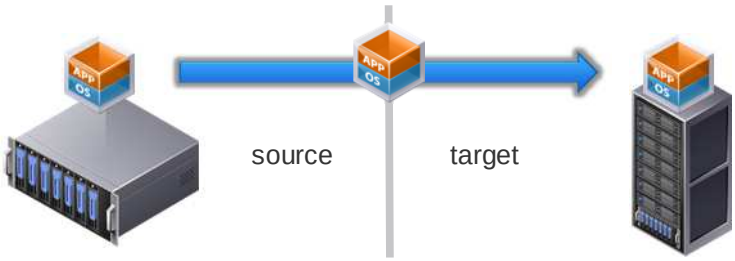
Fundamentally Simpler and More Cost-Effective Replication



Managed as property of VMs	Independent from underlying storage	Even between heterogeneous datastores	Replicates only changed data

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New

What's New in vSphere Replication 5.5

- Multiple-point-in-time recovery
- Multiple appliances per vCenter Server
- Support for Storage vMotion and Storage DRS
- Dramatic speed improvement
- Support for VMware Virtual SAN

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Site Application Availability

Minimize downtime and data loss across sites

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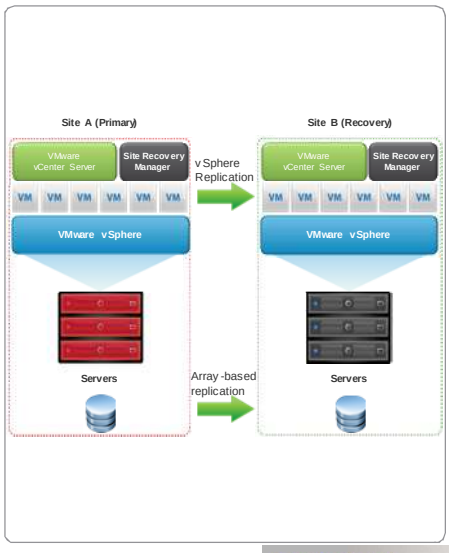
vCenter Site Recovery Manager

Automated Disaster Recovery Orchestration



Overview

- Centralized recovery plans
- Automated failover, failback and planned migrations
- Non-disruptive testing
- vSphere Replication and 3rd party array-based replication support

Benefits

- Up to 50% lower TCO for DR
- Setup recovery plans in minutes
- Initiate failover with one click
- Test as frequently as needed

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New

What's New in Site Recovery Manager 5.5

- Multiple-point-in-time recovery with vSphere Replication
- Support for Storage vMotion and Storage DRS
- Support for VMware Virtual SAN

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Beyond DR: Disaster Avoidance And Planned Migrations

3 typical use-cases for SRM

Disaster Recovery	Disaster Avoidance	Planned Migration
Recover from unexpected site failure • Full or partial site failure	**Anticipate data center outages** • Hurricanes, forced evacuation, etc.	**Streamline routine migrations** • DC maintenance • Global load balancing
Least frequent, but most critical use-case • Cost of downtime is $145,000 per hour - *Forrester*	**Preventive failover for smooth migration** • Ensures no data-loss and application consistency	**Most frequent SRM use case** • Bi-directional migrations that can be tested frequently

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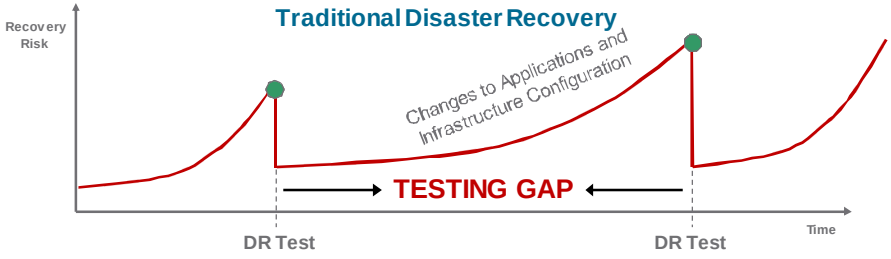
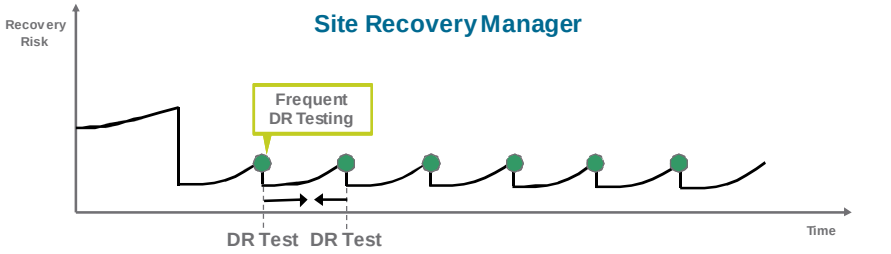
Frequent Testing Reduces Recovery Risk





SRM provides assurance that DR objectives will be met.

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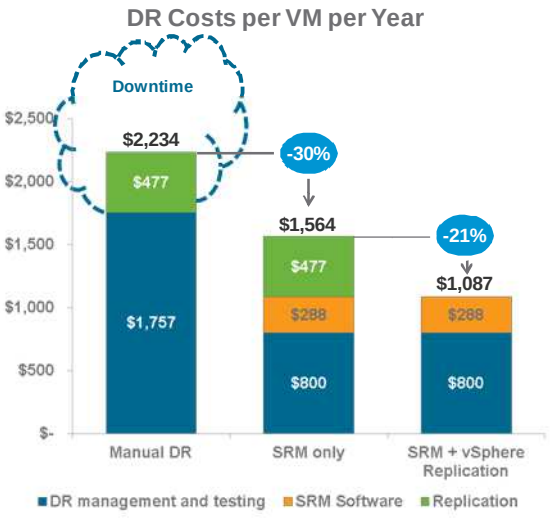
Automation Reduces The Cost of Disaster Recovery



50% lower DR costs
(not factoring cost of downtime)

- Over $1,100 savings per year for each protected VM
- Avg. cost of downtime is $145,000 per hour
- Planned migrations add 5% cost savings

Source: The Total Economic Impact of VMware vCenter Site Recovery Manager, Forrester, May 2013

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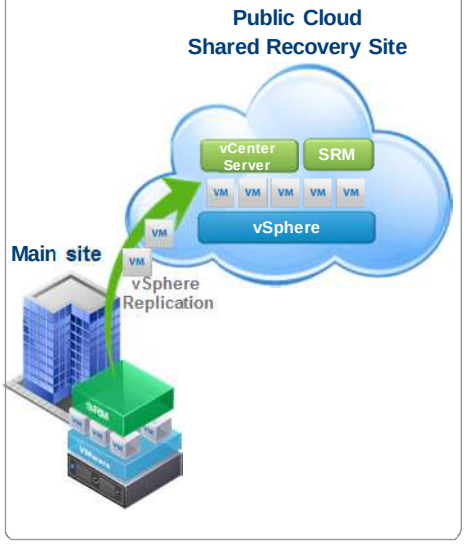
DR2C Delivers SRM Benefits without Secondary Site



DR to the Cloud with SRM

- Cost-efficient DR services:
  - Subscription-based
  - Shared resources lower cost
- Providers offer variety of pricing, packaging, service levels

Partner Ecosystem

FUSIONSTORM IT Delivered · HOSTING · iland · rackspace · virtacore SYSTEMS · terremark · SUNGARD · VERISTOR

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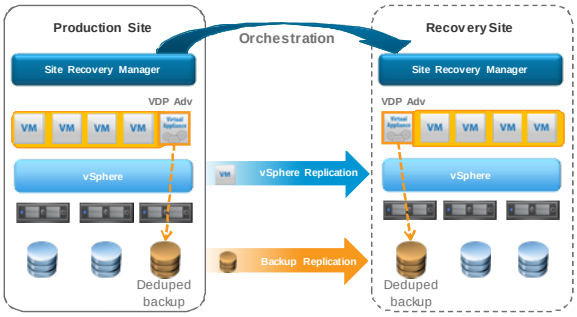
VMware-based Backup, Replication and Recovery



	VDP Advanced	vSphere Replication	Site Recovery Manager
RPO	24 hrs minimum	15 min – 24 hrs	Replication-defined
RTO	Minutes to hours per VM	3-5 min per VM	30 min to hours per Site
Retention	Long-term e.g. 30 – 180 days	Near-term up to 24 replicas	N/A
DR Orchestration	No	No	Yes
Integration	Backup to Data Domain Replication to Avamar	SRM orchestration	vSphere Replication 3rd party storage replication

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VMware Virtual SAN

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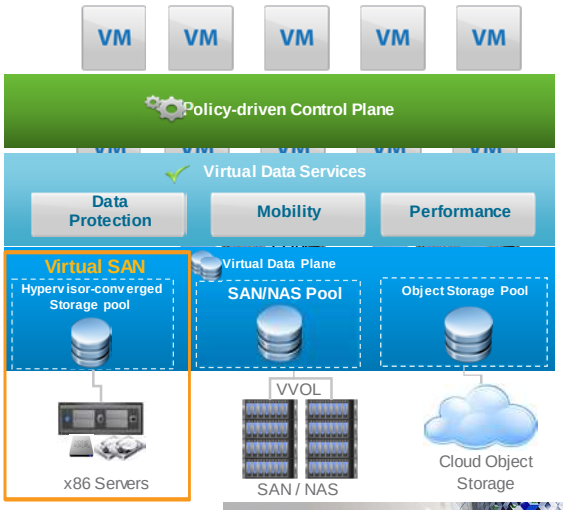
VMware Software-defined Storage

Bringing compute's operational model to storage



- Common policy-based automation and orchestration
- VM centric data services
- Third-party services integration
- Abstraction and pooling
- Infrastructure integration
- New storage tiers

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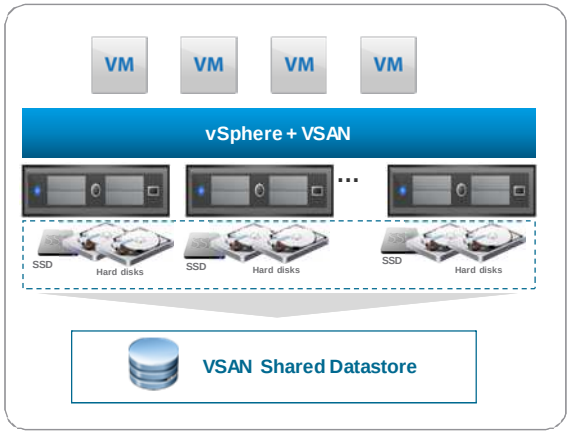
VMware Virtual SAN

Radically Simple Hypervisor-Converged Storage



- Software-defined storage array
- Runs on standard servers, using internal storage
- Embedded in vSphere
- Flash accelerated
- **SIMPLE!!!**

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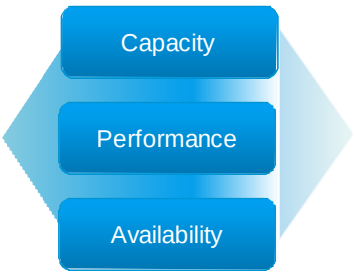
Simplifies and Automates Storage Management

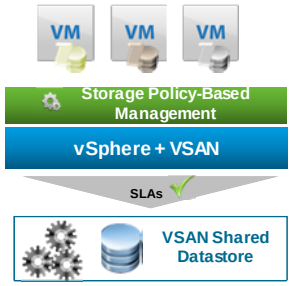
Per VM storage service levels from a single self-tuning datastore

Per VM Storage Policies

Policies set based on application needs



Software automates control of service levels



No more LUNs!

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Virtual SAN 5.5 - Use Cases

Virtualization optimized storage software that is Simple, Fast and Cost Effective

Virtual Desktop (VDI)

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

Tier 2 / Tier 3 Staging

- Rapid storage provisioning and complete automation
- Ideal price/performance
- Enables Cloud Architect to easily provision storage

DR Target

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

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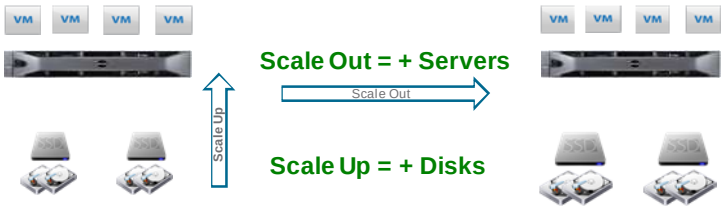
Storage Evolution for VDI – VSAN Storage Design



- Storage for VDI is contained within a single server
- Application Latency/Response time is a function of the SSD tier within the Server (milliseconds)
- Allows granular scaling – Add one server with SSD & Disk to scale out
- Deployment Simplicity – Eliminates need for extensive storage design and sizing
- Accelerate Deployment - Customers can quickly go from POC to Pilot to Production

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Two Ways to Build a Virtual SAN Node

Completely Hardware Independent

1. Virtual SAN Ready Node

Preconfigured server ready to use Virtual SAN…

CISCO DELL FUJITSU IBM SUPERMICRO

…with multiple options available at GA + 30

2. Build Your Own

Choose individual components …

- ***Any*** Server on vSphere Hardware Compatibility List
- SSD or PCIe
- SAS/NL-SAS/ SATA HDDs
- HBA/RAID Controller

…using the Virtual SAN Compatibility Guide*

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* Note: For additional details, please refer to Virtual SAN VMware Compatibility Guide Page

* **Components for Virtual SAN must be chosen from Virtual SAN HCL, using any other components is unsupported**

Virtual SAN Key Benefits

Radically Simple

- Installs in two clicks
- Managed from vSphere Client
- Policy-based management
- Self-tuning and elastic
- Deep integration with VMware stack

High Performance

- Embedded in vSphere kernel
- Flash-accelerated
- Up to 915K IOPs from 16 nodes cluster
- Matches the VDI density of all flash array
- Best price/performance

Lower TCO

- Eliminates large upfront investments (CAPEX)
- Grow-as-you-go (OPEX)
- Flexible choice of industry standard hardware
- Does not require specialized skills

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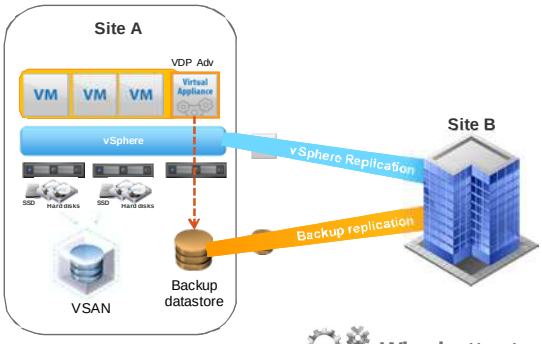
Data Protection for Virtual SAN



2 vSphere Replication

- ✓Disaster recovery
- ✓Aggressive RPO/RTO

1 VDP Advanced

- ✓Local protection
- ✓Retention
- ✓Moderate RPO/RTO

Why better together?

- ✓ **Minimal storage costs**
  - → VSAN + deduplicated backup
- ✓ **Radically simple**
  - → VM-centric
  - → End-to-end vSphere integration

VSAN Interop:

- ❑ VDP Advanced 5.5
- ❑ vSphere Replication 5.5

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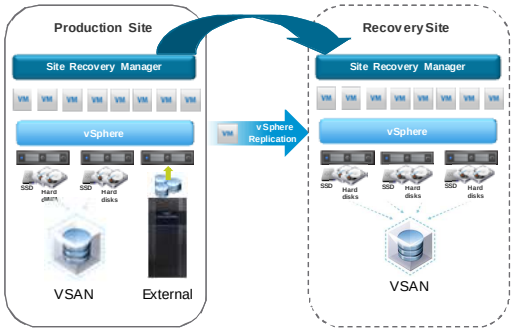
Software-Defined, App-centric Disaster Recovery



3 Automate DR

- ✓ SRM reduces RTOs for any virtualized application

2 Replicate from and to VSAN

- ✓ VR enables use of heterogeneous storage across sites

1 Converge storage at the recovery site

- ✓ VSAN leverages server DAS

Why better together?

- ✓ **Low costs** → Reduced storage DR footprint
- ✓ **Simple** → VM-centric, automated DR
- ✓ **Flexible** → Any virtualized app, any type of storage

VSAN Interop:

- ❑ vSphere Replication 5.5
- ❑ Site Recovery Manager 5.5

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Wrap Up

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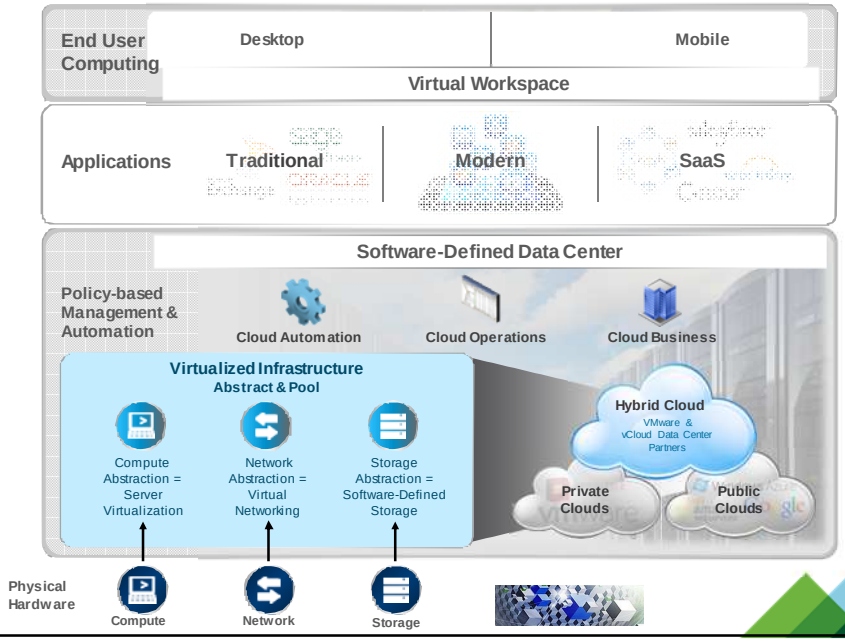
The Foundation for the Software-Defined Enterprise



Questions?

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