What's new in vCenter Site Recovery Manager 5.0
&
vSphere Storage Appliance (VSA)

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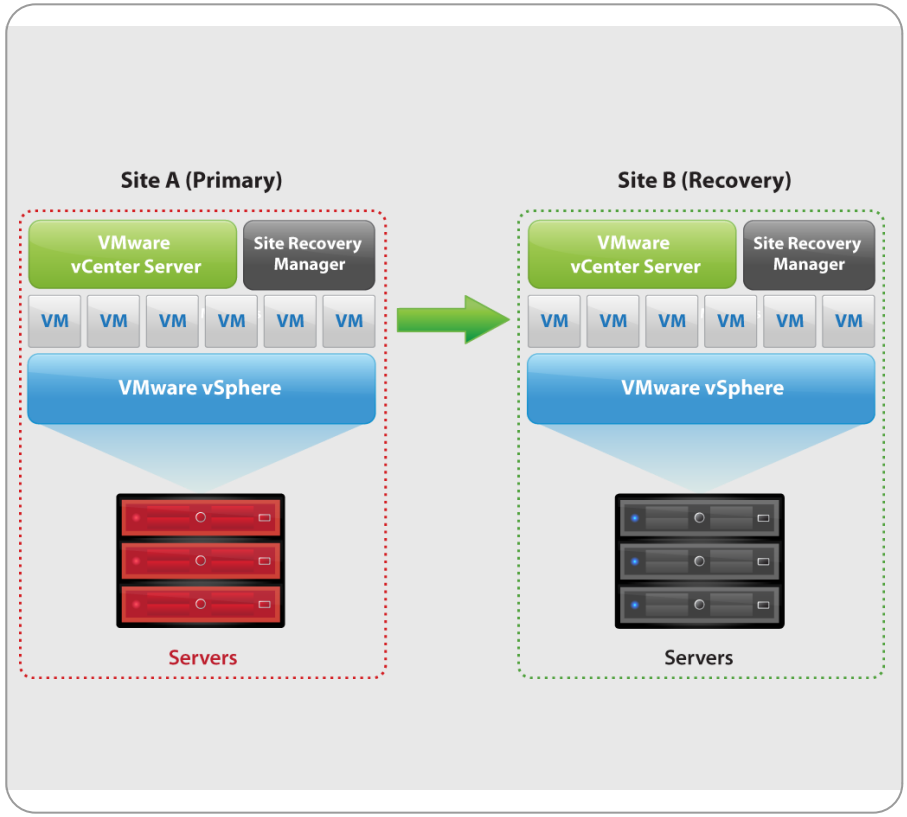
vCenter Site Recovery Manager Ensures Simple, Reliable DR

Site Recovery Manager Complements vSphere to provide the simplest and most reliable disaster protection and site migration for all applications



Provide cost-efficient replication of applications to failover site

- Built-in vSphere Replication
- Broad support for storage-based replication

Simplify management of recovery and migration plans

- Replace manual runbooks with centralized recovery plans
- From weeks to minutes to set up new plan

Automate failover and migration processes for reliable recovery

- Enable frequent non-disruptive testing
- Ensure fast, automated failover
- Automate failback processes

Use Cases

3 typical

Unplanned Failover

Recover from unexpected site failure

- Full or partial site failure

The most critical but least frequent use-case

- Unexpected site failures do not happen often
- When they do, fast recovery is critical to the business

Preventive Failover

Anticipate potential datacenter outages

- For example: in case of planned hurricane, floods, forced evacuation, etc.

Initiate preventive failover for smooth migration

- Graceful shutdown of VMs at protected site
- Leverage SRM 'planned migration' capability to ensure no data-loss

Planned Migration

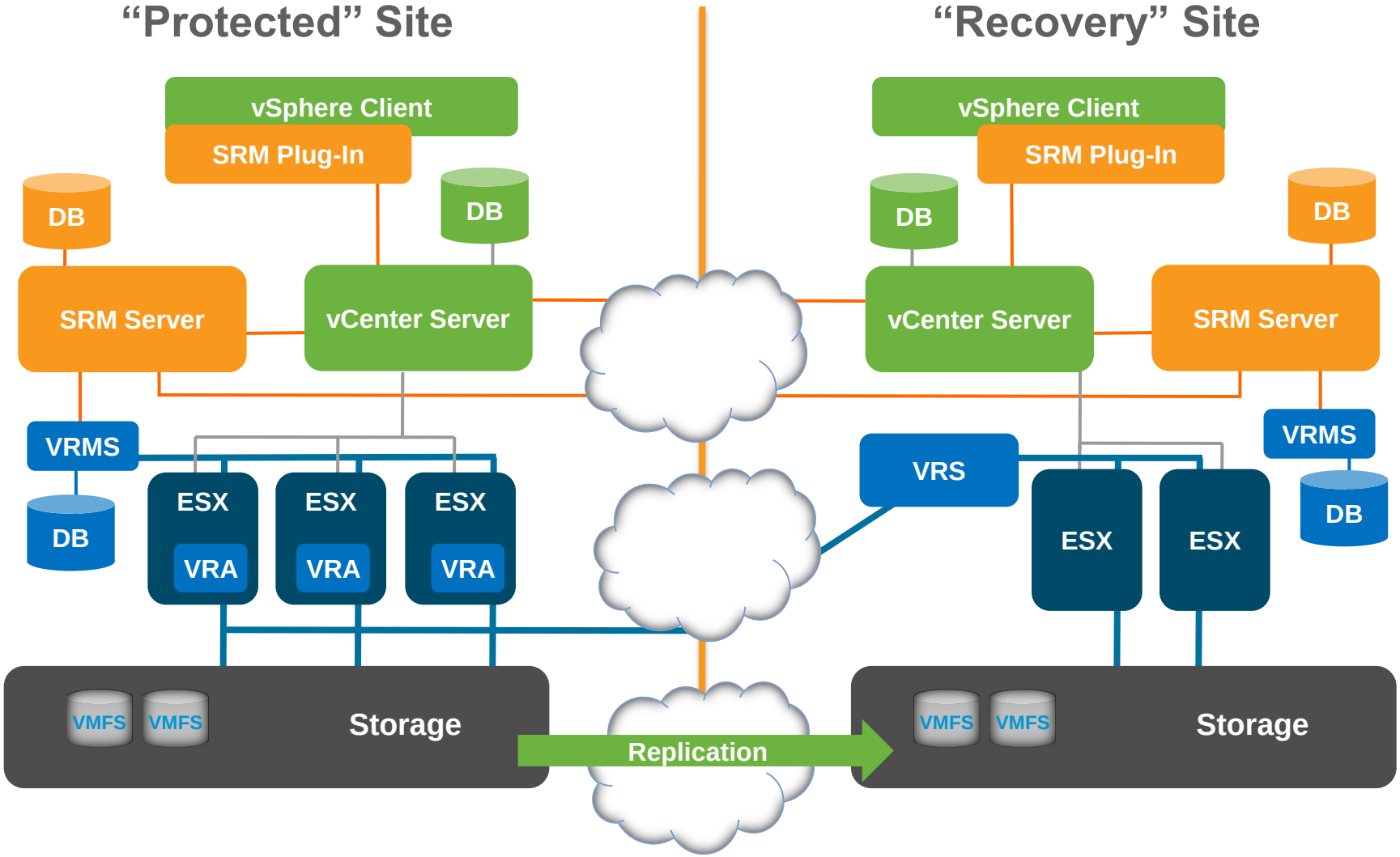
Most frequent SRM use case

- Planned datacenter maintenance
- Global load balancing

Ensure smooth site migrations

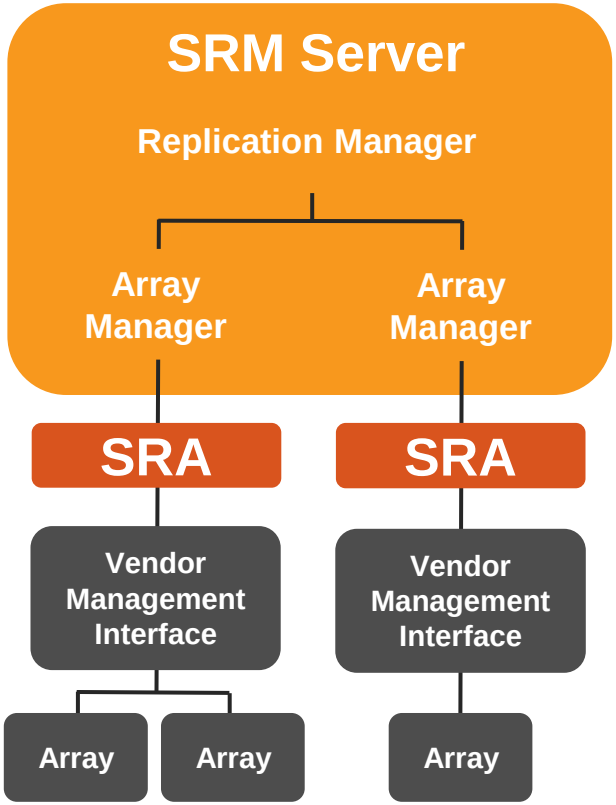
- Test to minimize risk
- Execute partial failovers
- Use SRM planned migration to minimize data-loss
- Automated Failback enables bi-directional migrations

SRM Architecture



Storage Array Integration

- Storage Replication Adapters (SRAs):
  - Discover arrays
  - Determine which LUNs are replicated
  - Assist in initiating tests, recovery
  - New capabilities in SRAs for version 5.0 include
    - Reprotect
    - Synchronization
    - Planned Migration



- **SRM 5 will require new SRA's**
- **SRM Compatibility Matrix:http://www.vmware.com/pdf/srm_storage_partners.pdf**

Supported Versions

- vCenter: Version 5.0 only
- ESX:
  - ESX/ESXi 3.5
  - ESX/ESXi 4.0
  - ESX/ESXi 4.1
  - ESXi 5.0 – Mandatory for vSphere Replication

Agenda

- **Technology**
  - vSphere Replication
  - Scalability
- **Workflow**
  - Planned Migration / failback / reprotect
  - DR event
- **User Interface**
  - Completely new UI

Agenda - continued

- **Miscellaneous**
  - IPV6
  - Miscellaneous
  - API - Protected Side
  - Dependencies
- **Summary**

Technology – vSphere Replication

- **Adding native replication to SRM**

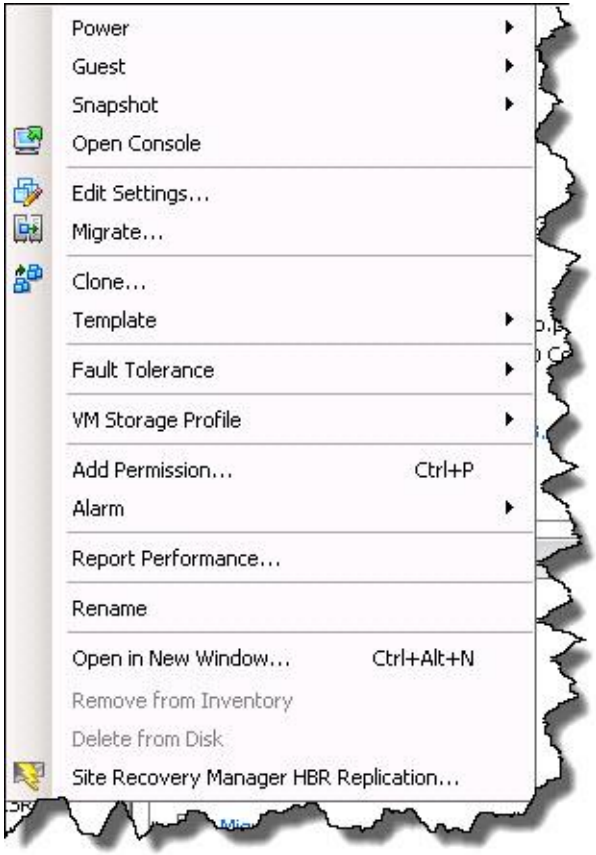
- Virtual machines can be replicated regardless of what storage they live on
- Enables replication between heterogeneous datastores
- Replication is managed as a property of a virtual machine
- Efficient replication minimizes impact on VM workloads
- Provides guest-level copy of the VM and not a copy of the VM itself

vSphere Replication Details

- **Replication Granularity per Virtual Machine**
  - Can opt to replicate all or a subset of the VM's disks
  - You can create the initial copy in any way you want - even via sneaker net!
  - You have the option to place the replicated disks where you want.
  - Disks are replicated in group consistent manner
- **Simplified Replication Management**
  - User selects destination location for target disks
  - User selects Recovery Point Objective (RPO)
  - User can supply initial copy to save on bandwidth
- **Replication Specifics**
  - Changes on the source disks are tracked by ESX
  - Deltas are sent to the remote site
  - Does not use VMware snapshots

Replication UI

- **Select VMs to replicate from within the vSphere client by right click options**
- **Can do this on one VM, or multiple at the same time!**



vSphere Replication 1.0 Limitations

- Focus on virtual disks of powered-on VMs
  - ISOs and floppy images are not replicated
  - Powered-off/suspended VMs not replicated
  - Non-critical files not replicated (e.g. logs, stats, swap, dumps)
- vSR works at the virtual device layer
  - Independent of disk format specifics
  - Independent of primary-side snapshots
  - Snapshots work with vSR, snapshot is replicated, but VM is recovered with collapse snapshots
  - Physical RDMs are not supported
- FT, linked clones, VM templates are not supported with HBR
- Automated failback of vSR-protected VMs will be late, but will be supported in the future.
- Virtual Hardware 7, or later, in the VM is required.

SRM Scalability

	Maximum	Enforced
Protected virtual machines total	3000	No
Protected virtual machines in a single protection group	500	No
Protection groups	250	No
Simultaneous running recovery plans	30	No
vSphere Replicated virtual machines	500	No

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Workflows

- **Planned Migration**
  - Allows for a data synchronization as part of the process
  - Will stop on errors and allow you to resolve them before continuing
  - Since it shut's down the virtual machines being migrated, application consistent VM's are recovered on the recovery side!
- **DR Event**
  - Allows for a data synchronization as part of the process
  - Will not stop on errors
  - If the protected site is available, than the virtual machines being migrated will be application consistent at the recovery side. If the protected site is not available the consistency state will be what was designed in the solution.
- **Test Recovery**
  - Allows for a data synchronization as part of the process
  - Supports a recovery that uses a different network
  - Uses a clone or snapshot for the test

Workflows – continued

- **Reprotect**
  - Can be run following a successful recovery
  - Reverses the direction of replication, and protects virtual machines back to the original site.
  - This enables a failback to recover the environment back to the primary site.
- **Cleanup**
  - This is done following a test recovery
  - Removes the snapshot or clone created during the test
  - Powers off and deletes test VMs
  - Recreates the shadow VM indicating protection of the relevant VM from the primary site
  - The cleanup creates its own history report
  - Following a cleanup, the relevant plan is once again ready to be run

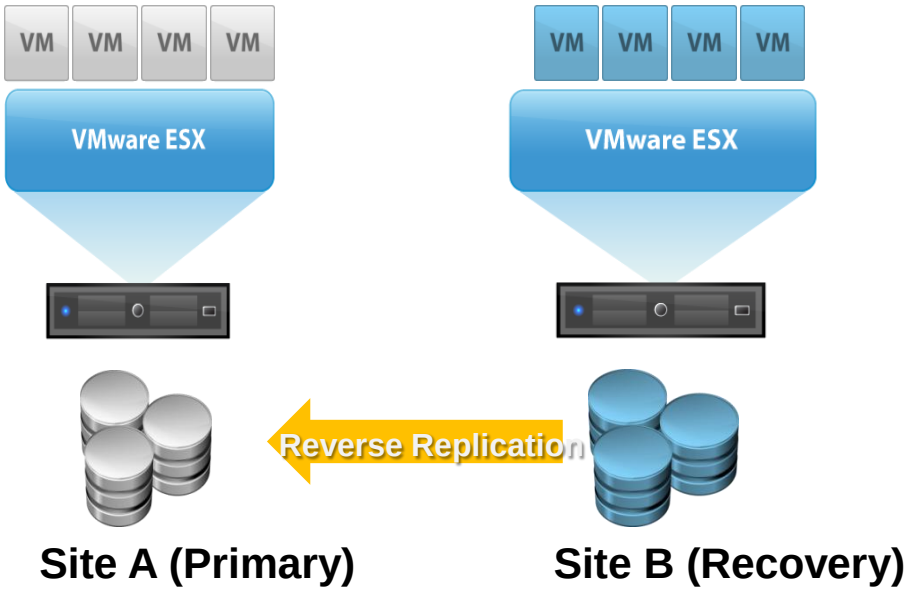
Failback

Description

- "Single button" to failback all recovered VMs
- Interfaces with storage to automatically reverse replication
- Replays *existing* recovery plans – so new virtual machines are not part of failback

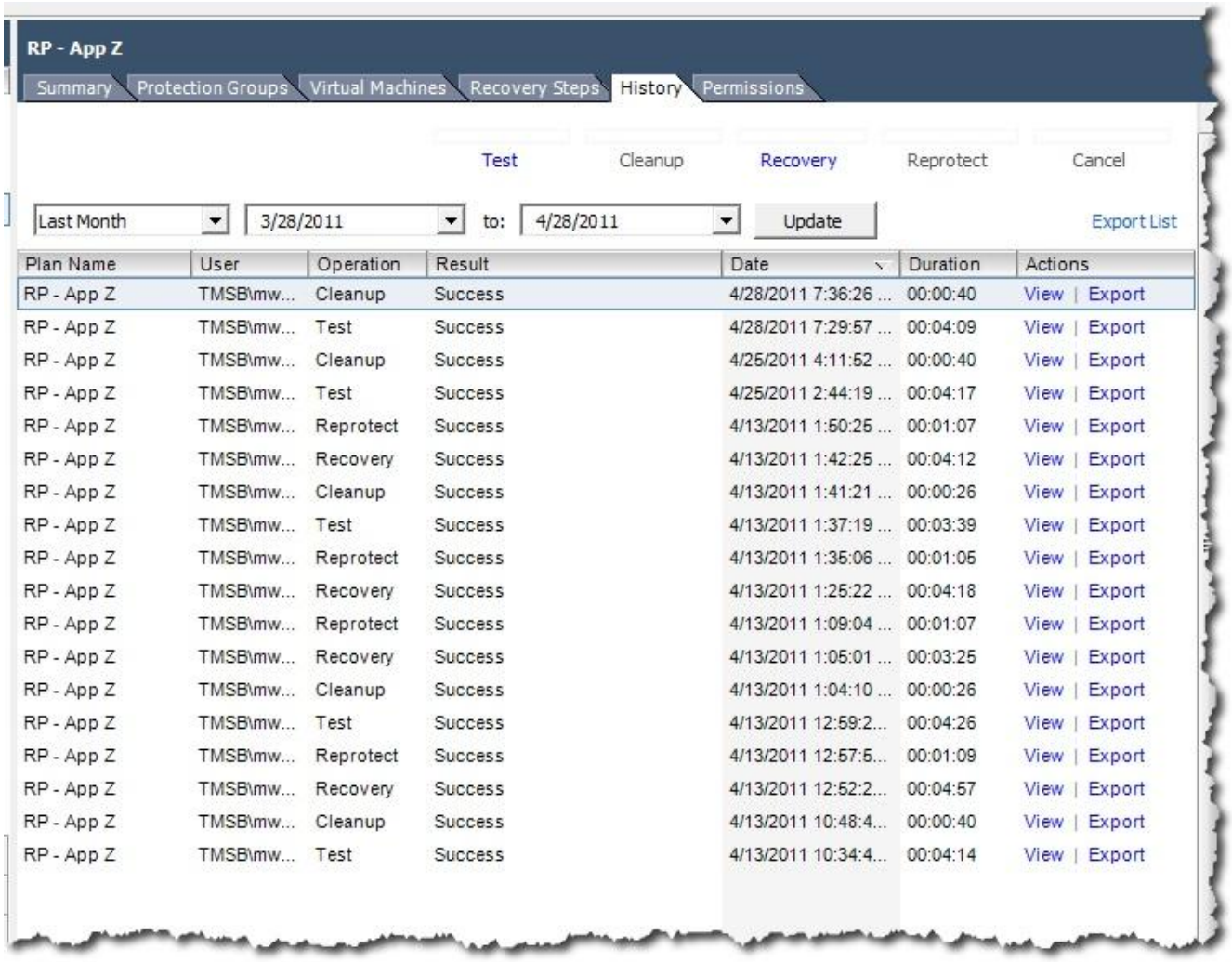
Benefits

- Facilitates DR operations for enterprises that are mandated to perform a true failover as part of DR testing
- Simplifies recovery process after disaster



History Reports

- **Each workflow operation has an associated history report**



Plan Name	User	Operation	Result	Date	Duration	Actions
RP - App Z	TMSB\mw...	Cleanup	Success	4/28/2011 7:36:26 ...	00:00:40	View | Export
RP - App Z	TMSB\mw...	Test	Success	4/28/2011 7:29:57 ...	00:04:09	View | Export
RP - App Z	TMSB\mw...	Cleanup	Success	4/25/2011 4:11:52 ...	00:00:40	View | Export
RP - App Z	TMSB\mw...	Test	Success	4/25/2011 2:44:19 ...	00:04:17	View | Export
RP - App Z	TMSB\mw...	Reprotect	Success	4/13/2011 1:50:25 ...	00:01:07	View | Export
RP - App Z	TMSB\mw...	Recovery	Success	4/13/2011 1:42:25 ...	00:04:12	View | Export
RP - App Z	TMSB\mw...	Cleanup	Success	4/13/2011 1:41:21 ...	00:00:26	View | Export
RP - App Z	TMSB\mw...	Test	Success	4/13/2011 1:37:19 ...	00:03:39	View | Export
RP - App Z	TMSB\mw...	Reprotect	Success	4/13/2011 1:35:06 ...	00:01:05	View | Export
RP - App Z	TMSB\mw...	Recovery	Success	4/13/2011 1:25:22 ...	00:04:18	View | Export
RP - App Z	TMSB\mw...	Reprotect	Success	4/13/2011 1:09:04 ...	00:01:07	View | Export
RP - App Z	TMSB\mw...	Recovery	Success	4/13/2011 1:05:01 ...	00:03:25	View | Export
RP - App Z	TMSB\mw...	Cleanup	Success	4/13/2011 1:04:10 ...	00:00:26	View | Export
RP - App Z	TMSB\mw...	Test	Success	4/13/2011 12:59:2...	00:04:26	View | Export
RP - App Z	TMSB\mw...	Reprotect	Success	4/13/2011 12:57:5...	00:01:09	View | Export
RP - App Z	TMSB\mw...	Recovery	Success	4/13/2011 12:52:2...	00:04:57	View | Export
RP - App Z	TMSB\mw...	Cleanup	Success	4/13/2011 10:48:4...	00:00:40	View | Export
RP - App Z	TMSB\mw...	Test	Success	4/13/2011 10:34:4...	00:04:14	View | Export

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- **Technology**
  - vSphere Replication
- **Workflow**
  - Planned Migration / reprotect / failback
  - DR event
- **User Interface**
  - Completely new UI

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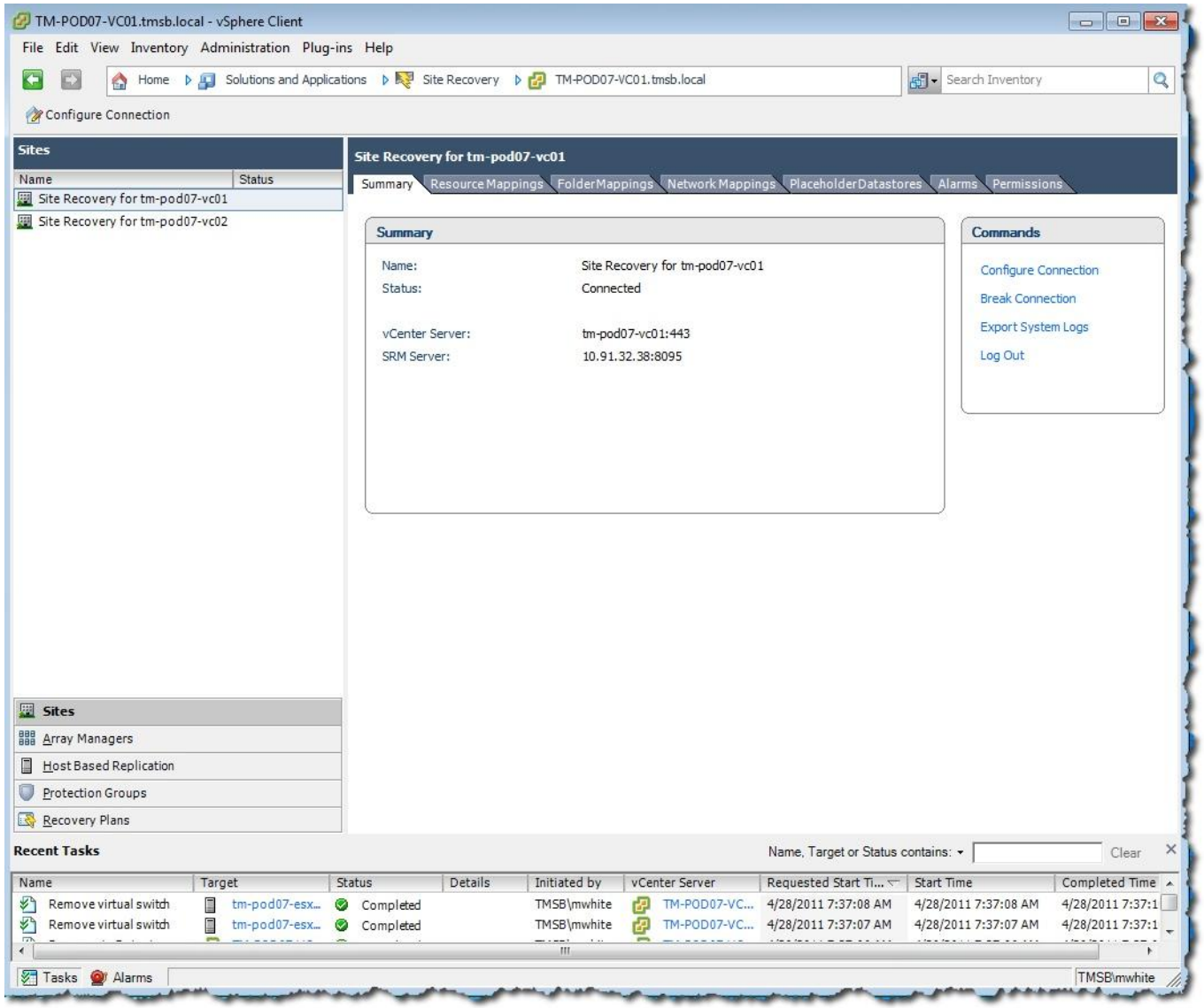
  - IPV6
  - Miscellaneous
  - API - Protected Side
  - Dependencies
- **Summary**

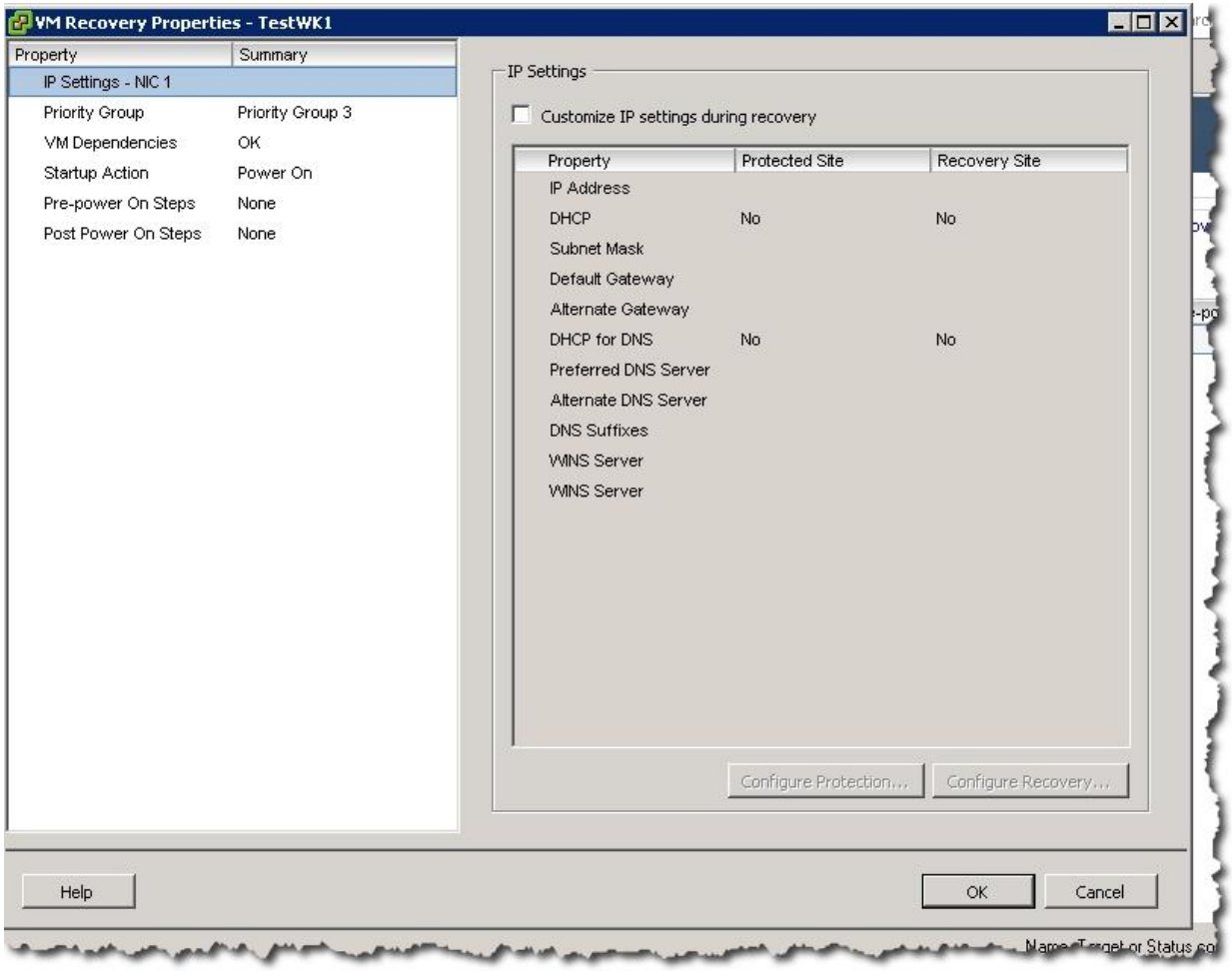
New SRM 5.0 Interface

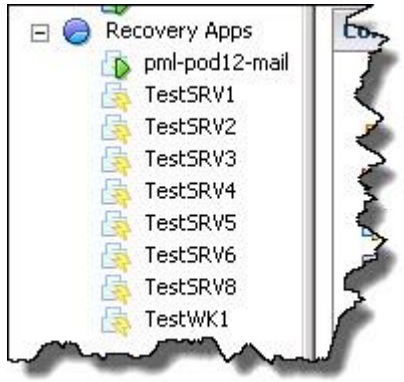


One UI (for both sites)

Export Logs

User Interface - Continued





New icons for Shadow VMs

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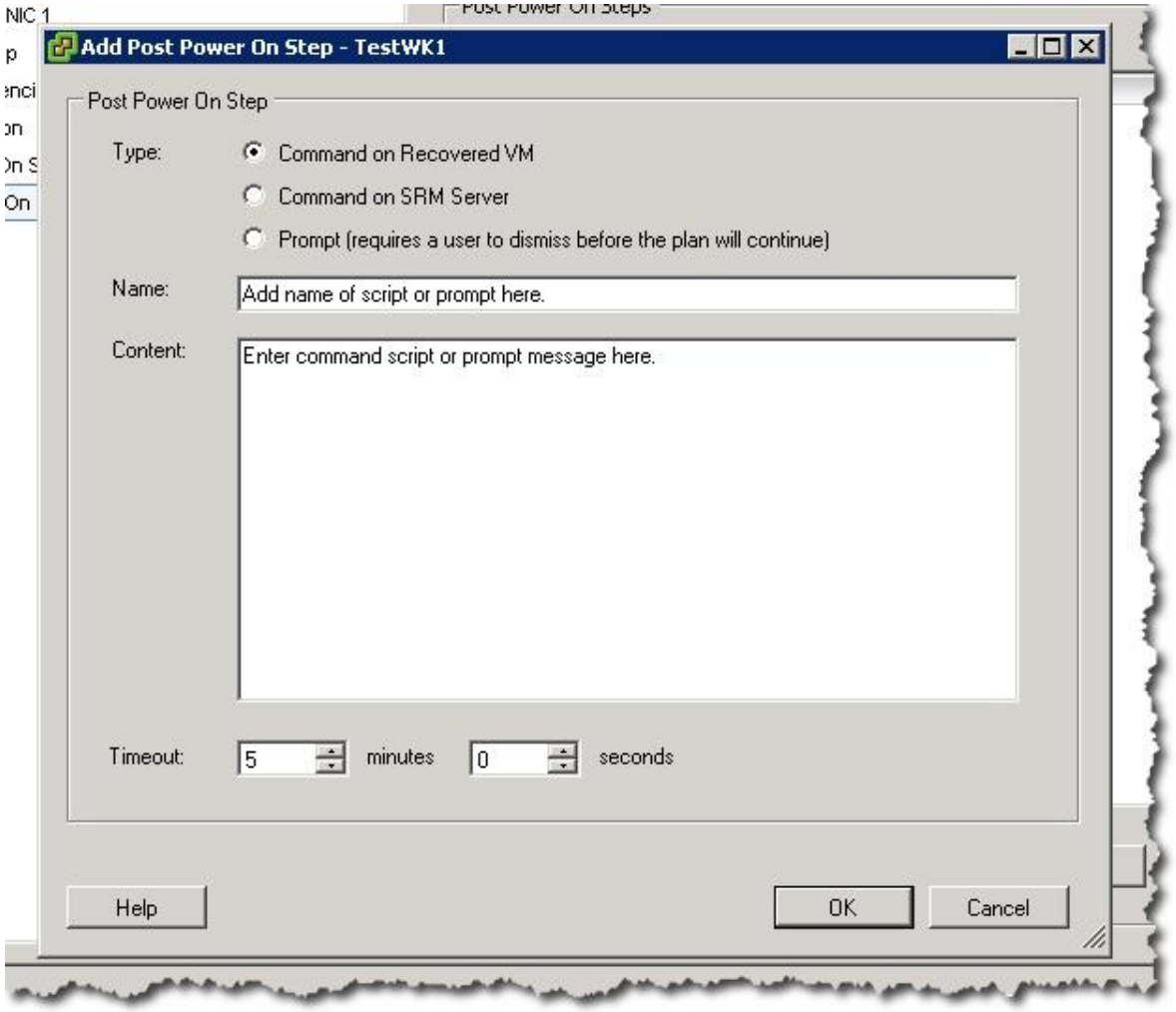
Miscellaneous

- **IPv6**
  - SRM will support IPv6 for all network links
  - vSphere Replication will support communication over IPv6 if underlying ESXi servers support IPv6.
- **Single UI – don't need to use two clients or linked mode**
- **IP Customization performance increase**
  - The command line doesn't change for bulk imports, but the actual action of customization is much faster.
- **In guest callouts**
  - Since 1.0 you can execute a script that was held on the SRM server, now you can do it inside the guest.

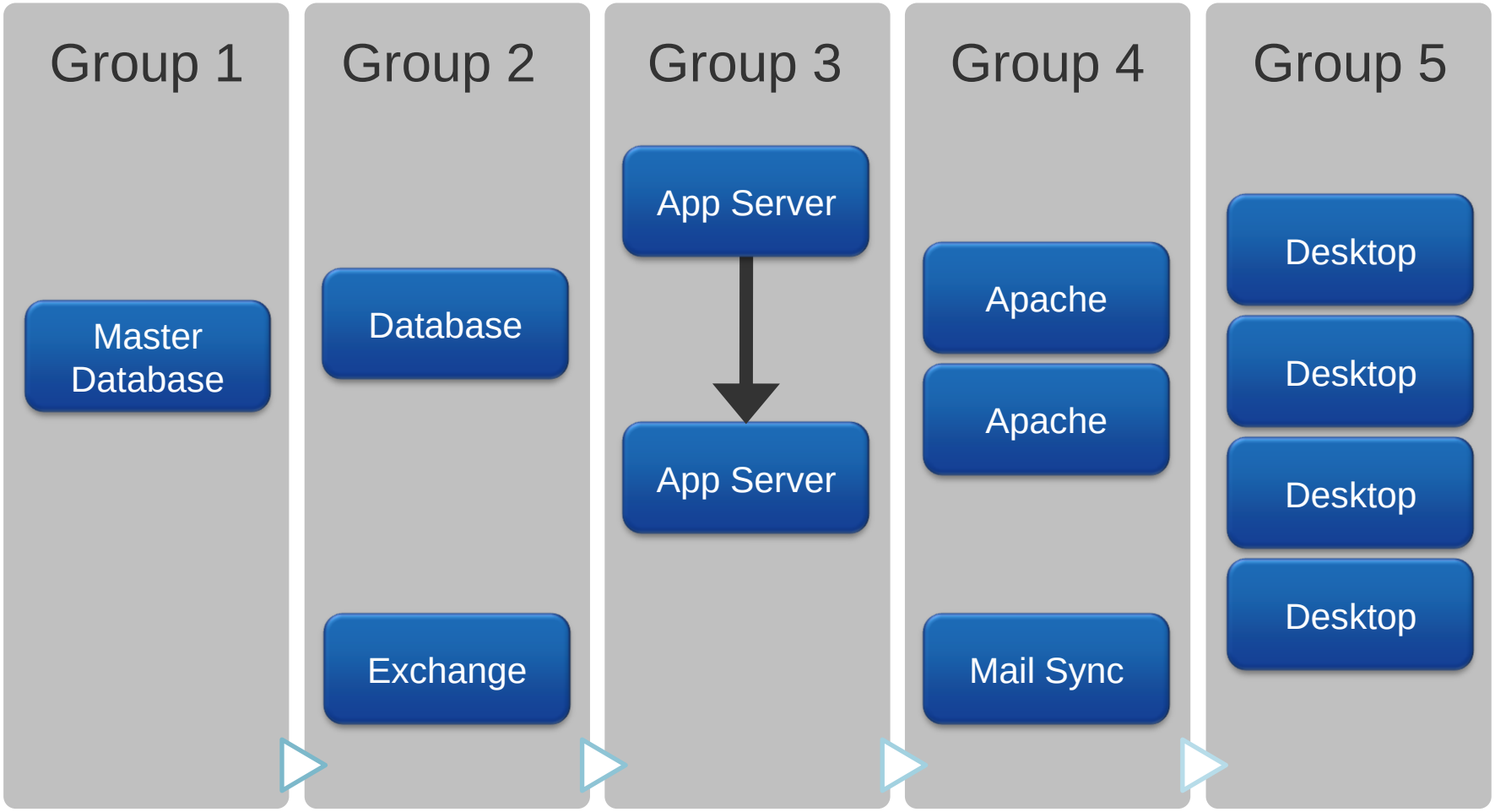
Miscellaneous – In guest callouts / scripts



API

- **Existing API on recovery site preserved**
- **New API on both protected and recovery sides**
- **Protected Site API set includes:**
  - List replicated datastores / protection groups / resources / VM
  - Query the status of protection for a VM or VMs
  - Protect or unprotect one or more VM
  - Status of protection group
- **Recovery Side API includes:**
  - Recovery Plan info
  - Start / cancel, list / answer prompts
  - Get XML representation of historical run of plan
  - Get basic result information of a plan (name, start, stop, etc.)

Dependencies – continued - VM Startup Order



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Summary of SRM v5.0 new features

- New user interface
- Planned migration – with replication update
- Failback
- vSphere Replication
- Faster IP customization
- Shadow VM icons
- In guest scripts
- New edition!

vSphere Storage Appliance (VSA)

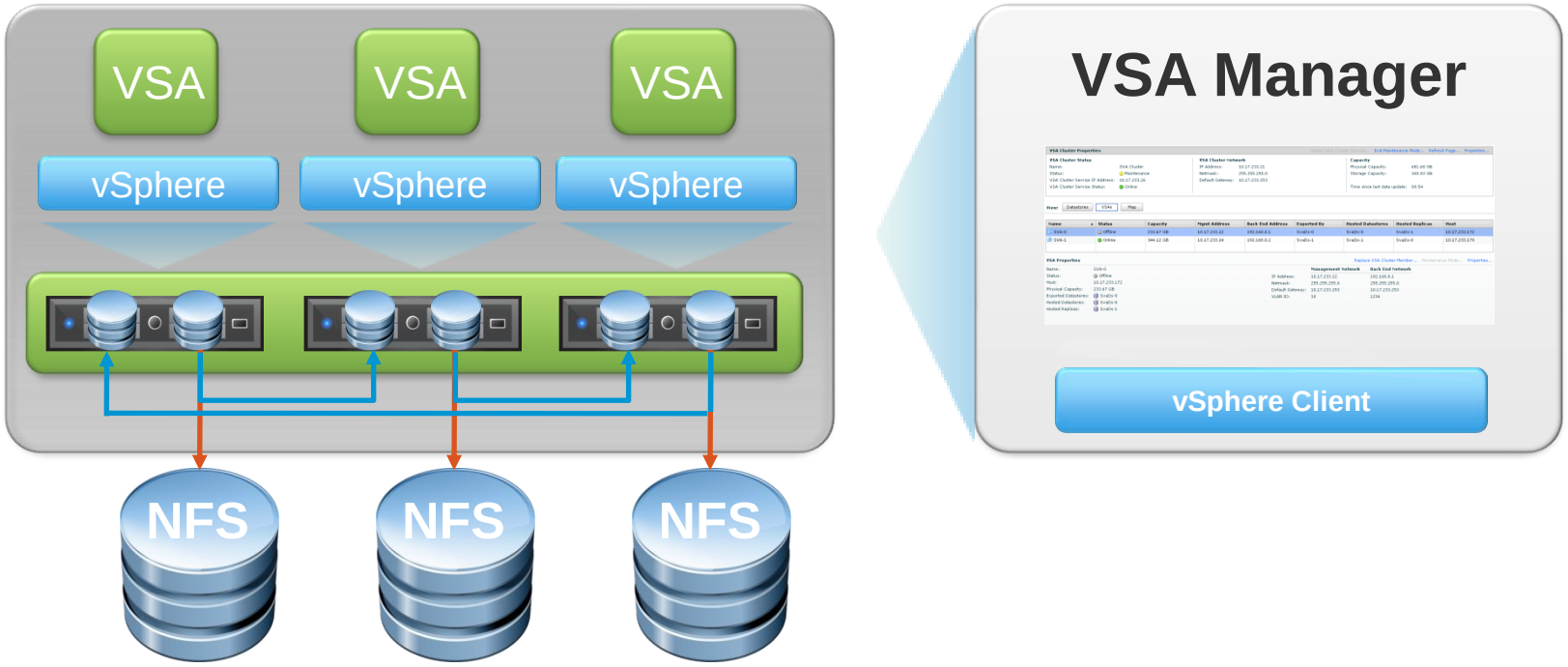
Agenda: vSphere Storage Appliance

- **Introduction**
- Installation & Configuration
- VSA Cluster Resilience
- Maintenance Mode
- Summary

Introduction (1 of 3)

- **In vSphere 5.0, VMware releases a new storage appliance called VSA.**
  - VSA is an acronym “vSphere Storage Appliance.”
  - This appliance is aimed at our **SMB (Small-Medium Business)** customers who may not be in a position to purchase a SAN or NAS array for their virtual infrastructure, and therefore do not have shared storage.
  - Without access to a SAN or NAS array, this excludes these SMB customers from many of the top features which are available in a VMware Virtual Infrastructure, such as vSphere HA & vMotion.
  - Customers who decide to deploy a VSA can now benefit from many additional vSphere features without having to purchase a SAN or NAS device to provide them with shared storage.

Introduction (2 of 3)



- Each ESXi server has a VSA deployed to it as a Virtual Machine.
- The appliances use the available space on the local disk(s) of the ESXi servers & present one replicated NFS volume per ESXi server. This replication of storage makes the VSA very resilient to failures.

Introduction (3 of 3)

- The NFS datastores exported from the VSA can now be used as shared storage on all of the ESXi servers in the same datacenter.
- The VSA creates shared storage out of local storage for use by a specific set of hosts.
- This means that vSphere HA & vMotion can now be made available on low-end (SMB) configurations, without external SAN or NAS servers.
- There is a CAPEX saving achieved by SMB customers as there is no longer a need to purchase a dedicated SAN or NAS devices to achieve shared storage.
- There is also an OPEX saving as the management of the VSA may be done by the vSphere Administrator and there is no need for dedicated SAN skills to manage the appliances.

Agenda: vSphere Storage Appliance

- Introduction
- **Installation & Configuration**
- VSA Cluster Resilience
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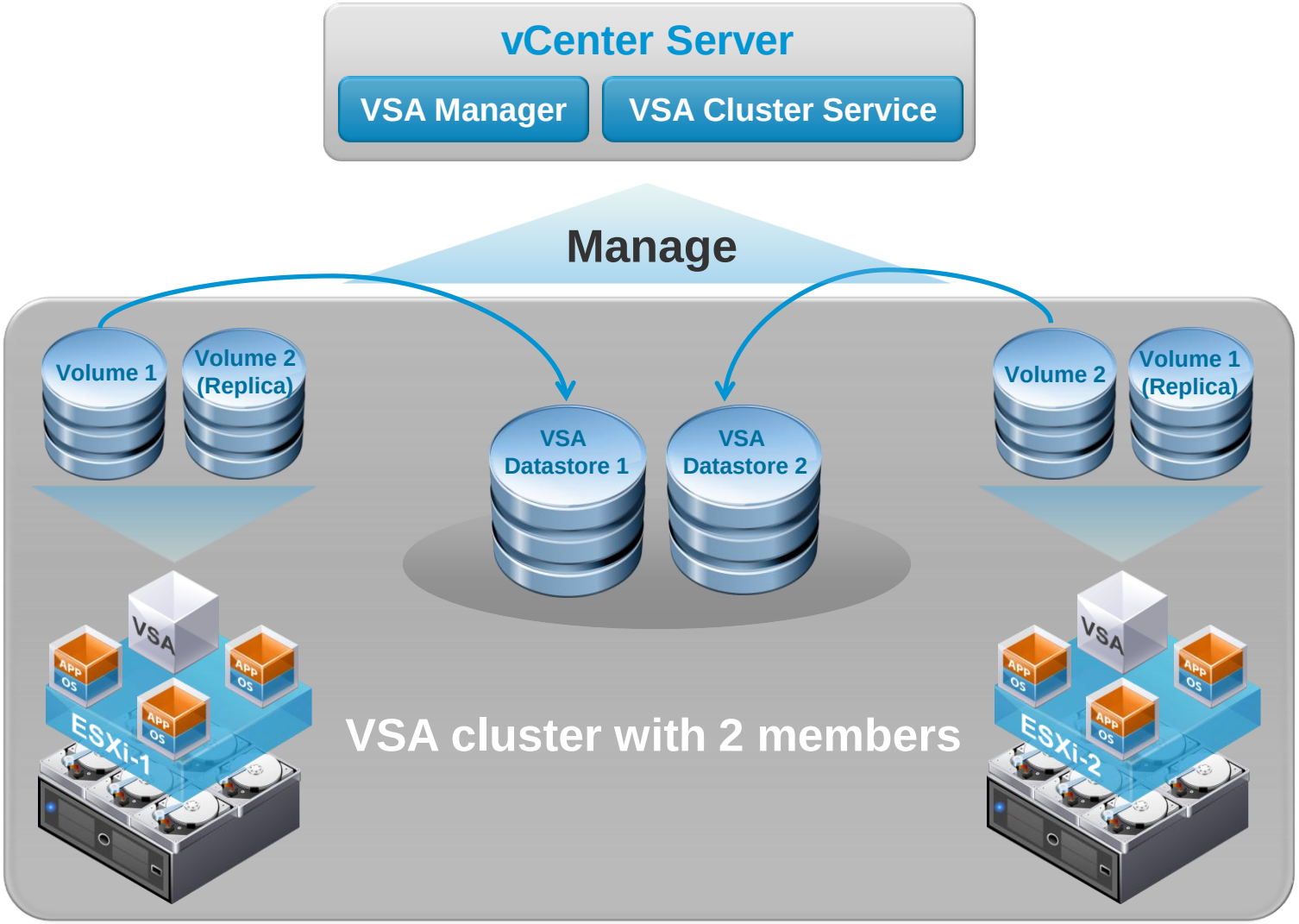
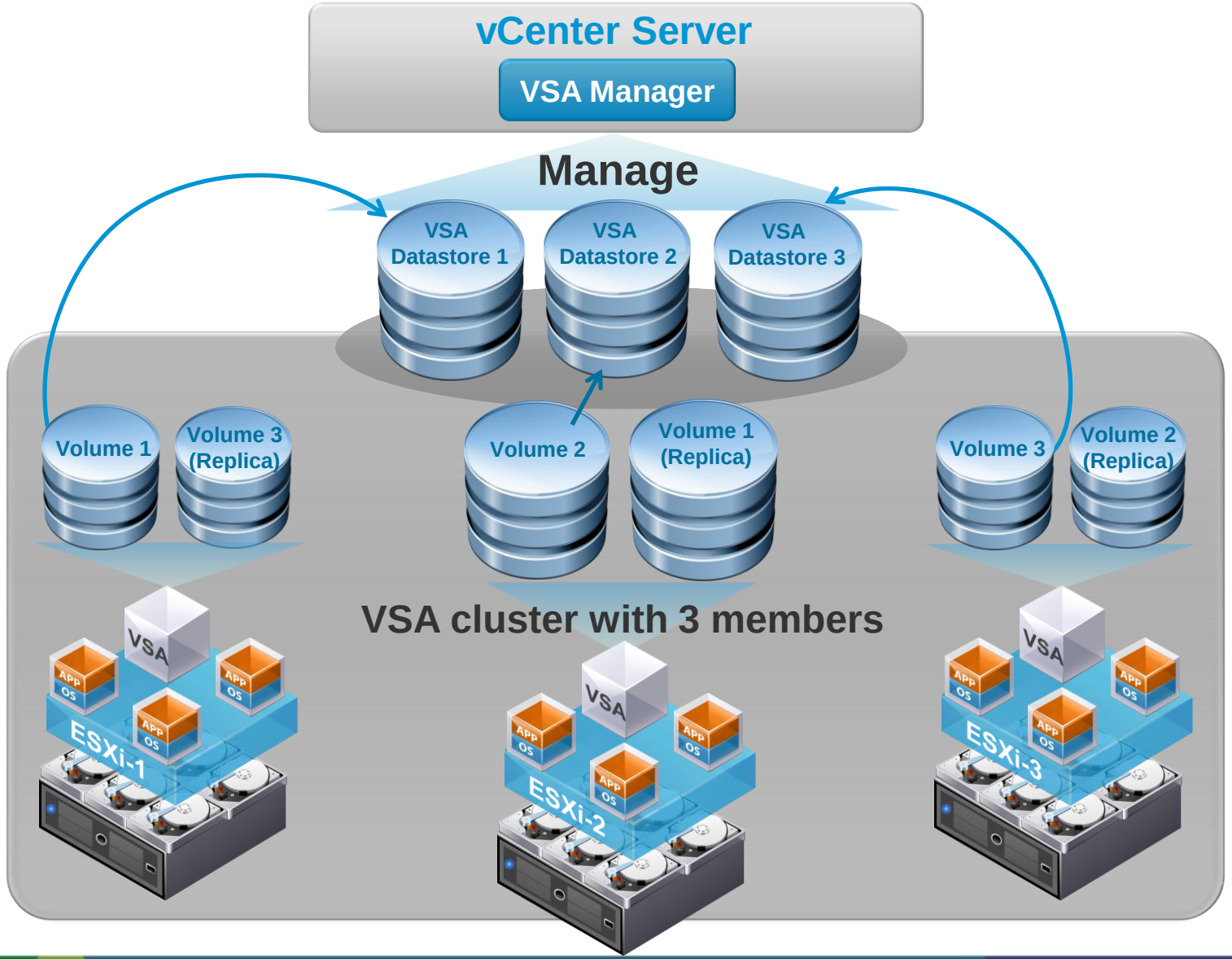
Supported VSA Configurations

- **The vSphere Storage Appliance can be deployed in two configurations:**
  - **2 x ESXi 5.0 servers configuration**
    - Deploys 2 vSphere Storage Appliances, one per ESXi server & a VSA Cluster Service on the vCenter server
  - **3 x ESXi 5.0 servers configuration**
    - Deploys 3 vSphere Storage Appliances, once per ESXi server
  - Each of the servers must contain a new/vanilla install of ESXi 5.0.

Two Member VSA

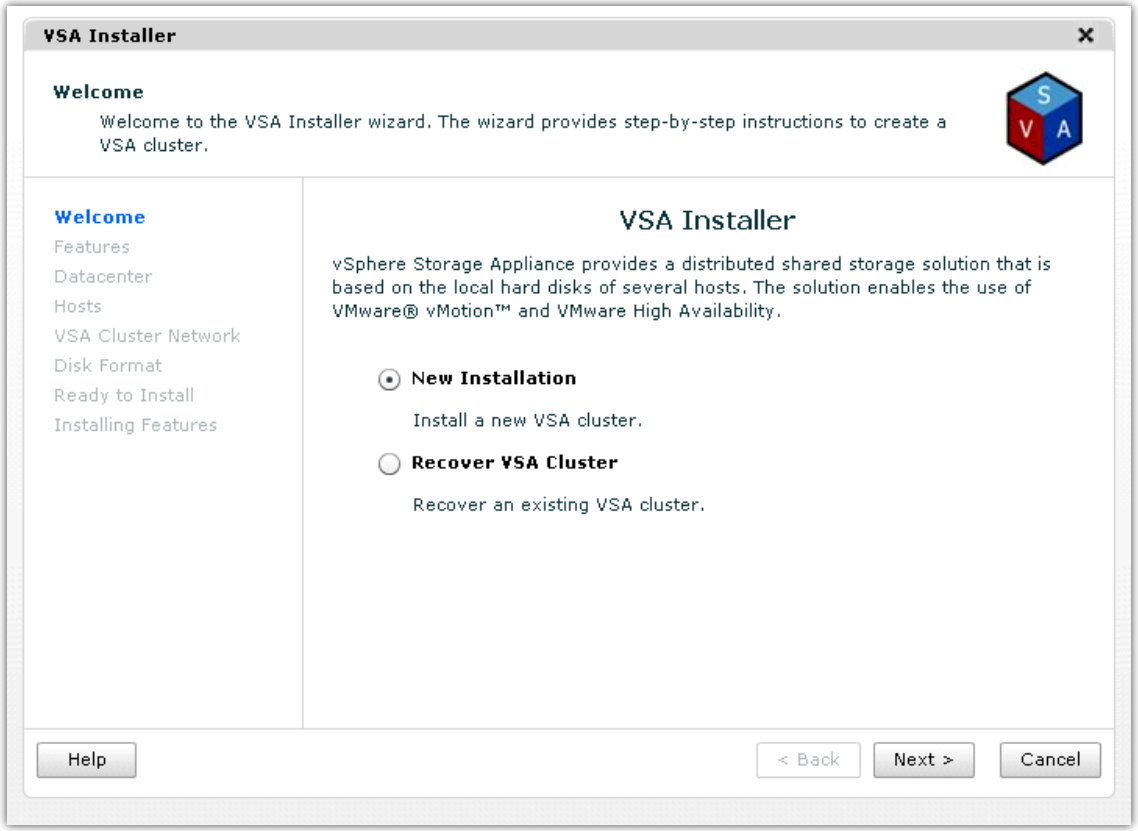


Three Member VSA

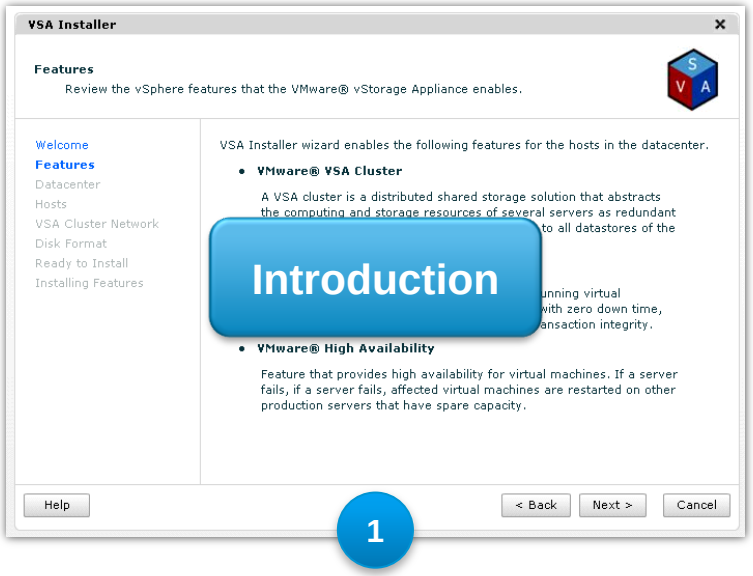


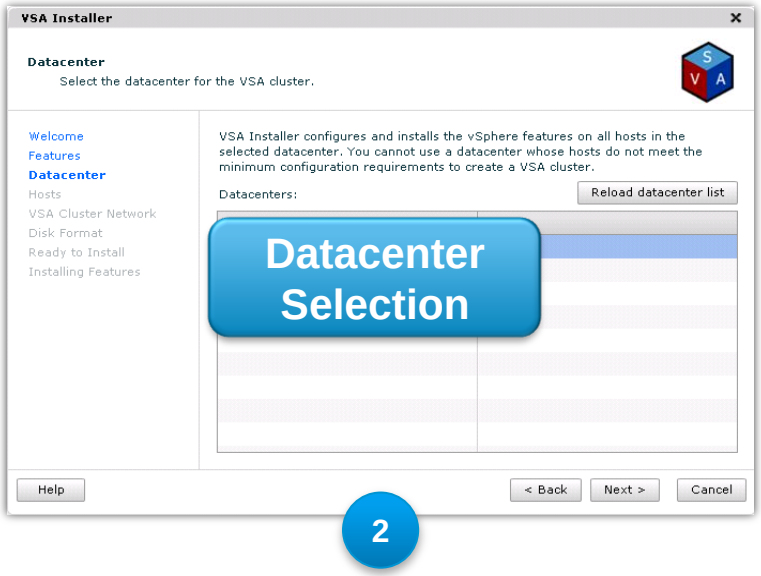
Simplified UI for VSA Cluster Configuration

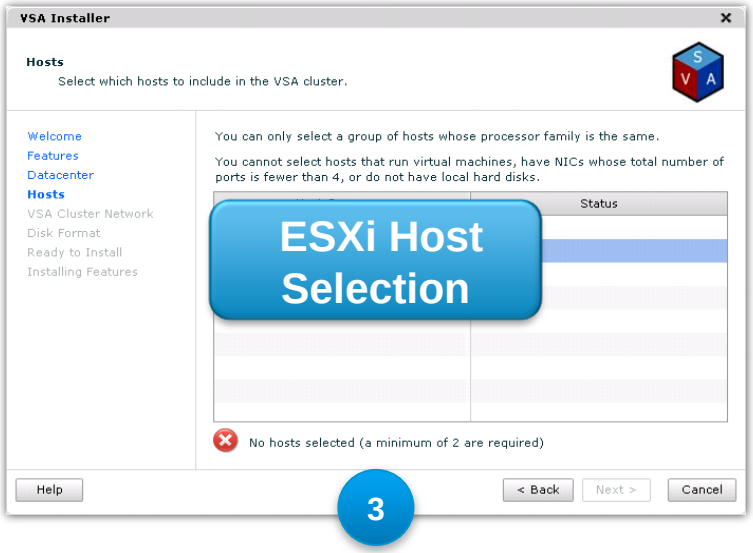
- **Once the VSA Manager installation has completed and the VSA manager plug-in is enabled in vCenter, select the datacenter in the vCenter inventory and select the VSA Manager tab. The following is displayed:**

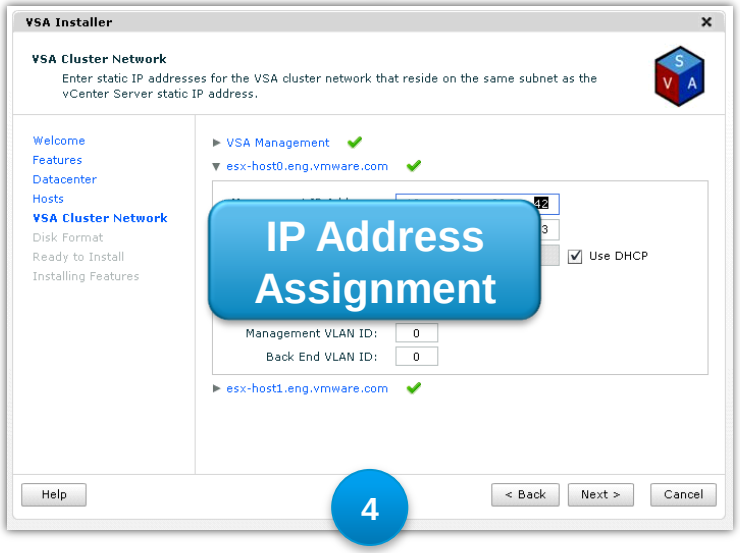


Simplified UI for VSA Cluster Configuration









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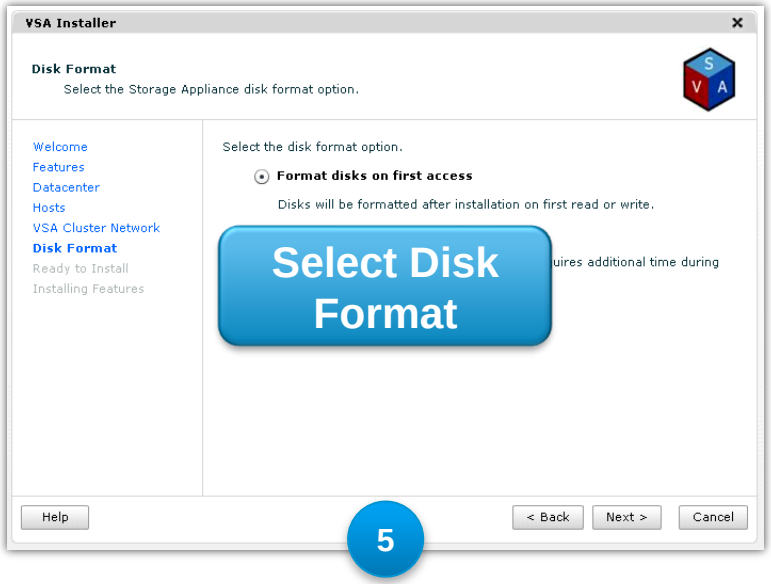
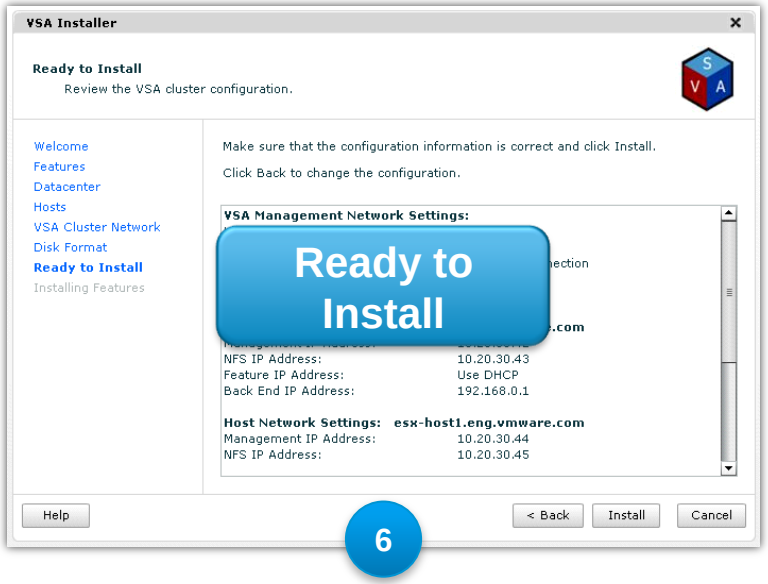
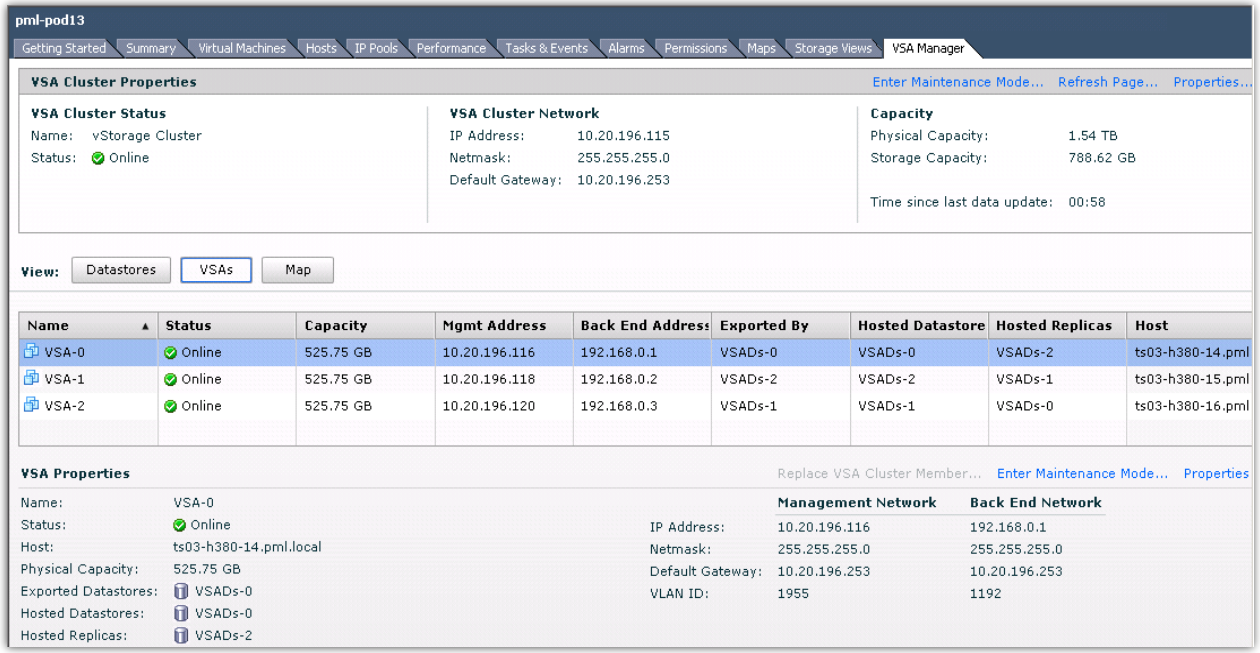




VSA Manager



- **The VSA Manager helps an administrator perform the following tasks:**
  - Deploy vSphere Storage Appliance instances onto ESXi hosts to create a VSA cluster
  - Automatically mount the NFS volumes that each vSphere Storage Appliance exports as datastores to the ESXi hosts
  - Monitor, maintain, and troubleshoot a VSA cluster

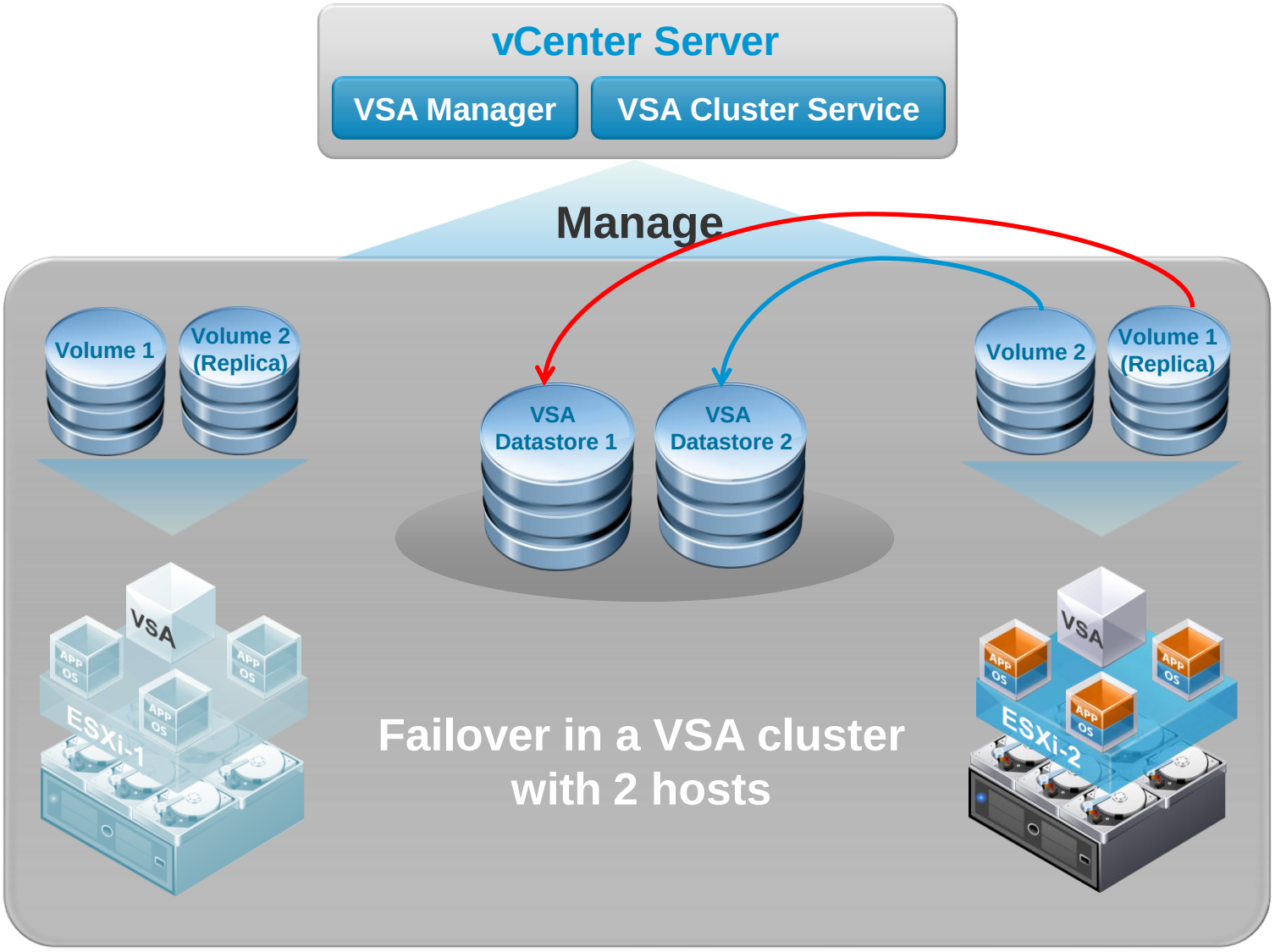
Agenda: vSphere Storage Appliance

- Introduction
- Installation & Configuration
- **VSA Cluster Resilience**
- Maintenance Mode
- Summary

Resilience

- Many storage arrays are a single point of failure (SPOF) in customer environments.
- VSA is very resilient to failures.
- If a node fails in the VSA cluster, another node will seamlessly take over the role of presenting its NFS datastore.
- The NFS datastore that was being presented from the failed node will now be presented from the node that holds its replica (mirror copy).
- The new node will use the same NFS server IP address that the failed node was using for presentation, so that any VMs that reside on that NFS datastore will **not** be affected by the failover.

Resilience Diagram



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Maintenance Mode

- **The are two types of Maintenance Mode:**
  - Whole VSA Cluster Maintenance Mode
  - Single VSA Node Maintenance Mode
- **A user can put a particular VSA node into maintenance mode in order to reconfigure the VSA in some way, e.g. rolling upgrade**
- **Since only one VSA is being taken offline, the storage volumes being supplied by the storage cluster will remain online, and there is no need to migrate any VMs that are running guest operating systems using that storage.**
- **This does mean however that at least 2 volumes will be degraded with the loss of one VSA.**

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vSphere Storage Appliance: Summary

Simple manageability	Installed, configured and managed via vCenter
	Abstraction From Underlying Hardware
Delivers high availability	Resilient to server failures
	Highly available during disk (spindle) failure
	Provides Storage framework for vMotion, HA and DRS
Creates shared storage	Pools server disk capacity to form shared storage
	Leverages vSphere Thin provisioning for space utilization
	Enables storage scalability

Thank You ☺ !!!!!