

The logo features a large, stylized blue checkmark on the left, followed by the word "Failover" in a bold, italicized, white sans-serif font. A thick blue swoosh arches over the top of the text.

# **v**Failover

v6.x.0

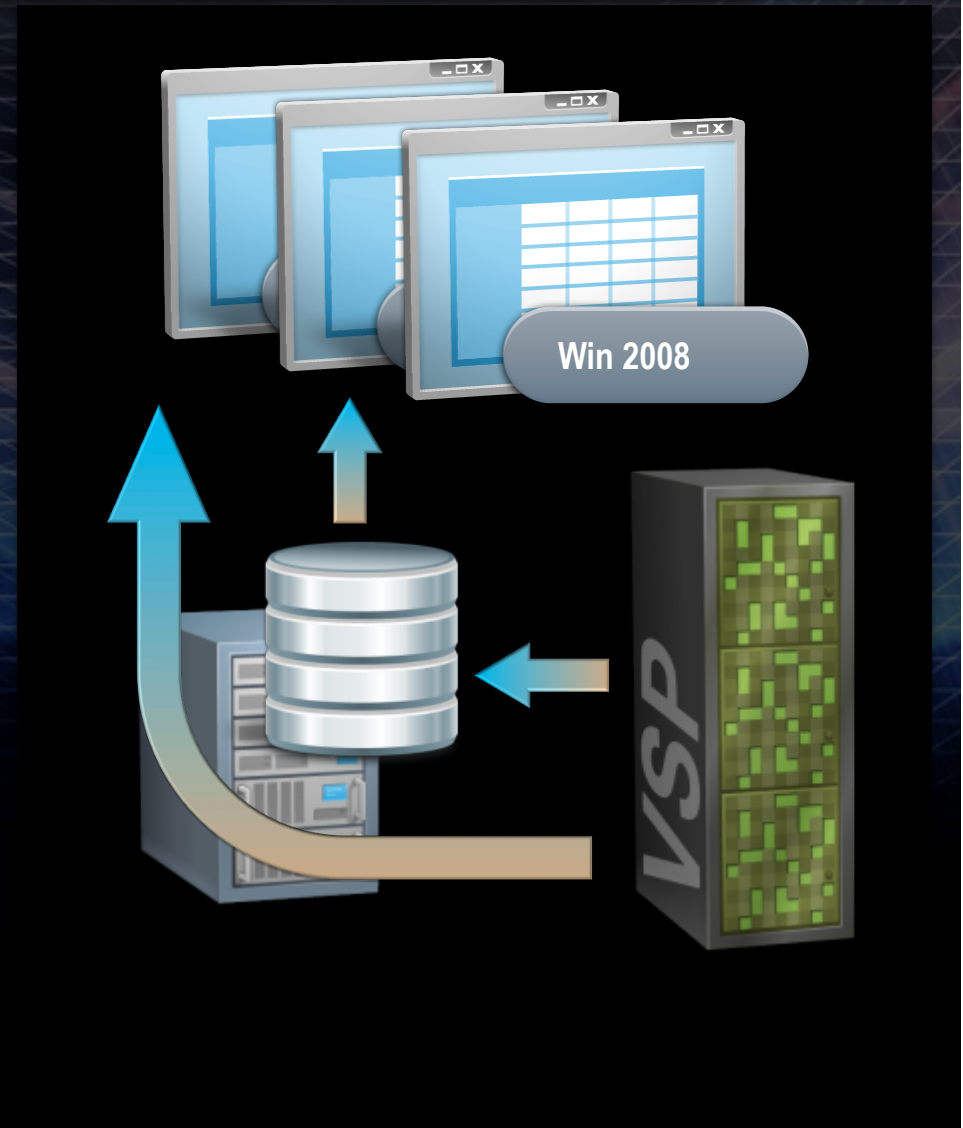
Disaster Recovery Solution for  
VMware vSphere High Availability  
Clusters

# AGENDA

- VMware Virtual Layers
- Site Recovery Manager
- vFailover
  - Scenarios
  - Introduction
  - Requirements
  - Modes
  - Failover Procedure
  - WebGUI
- Comparison

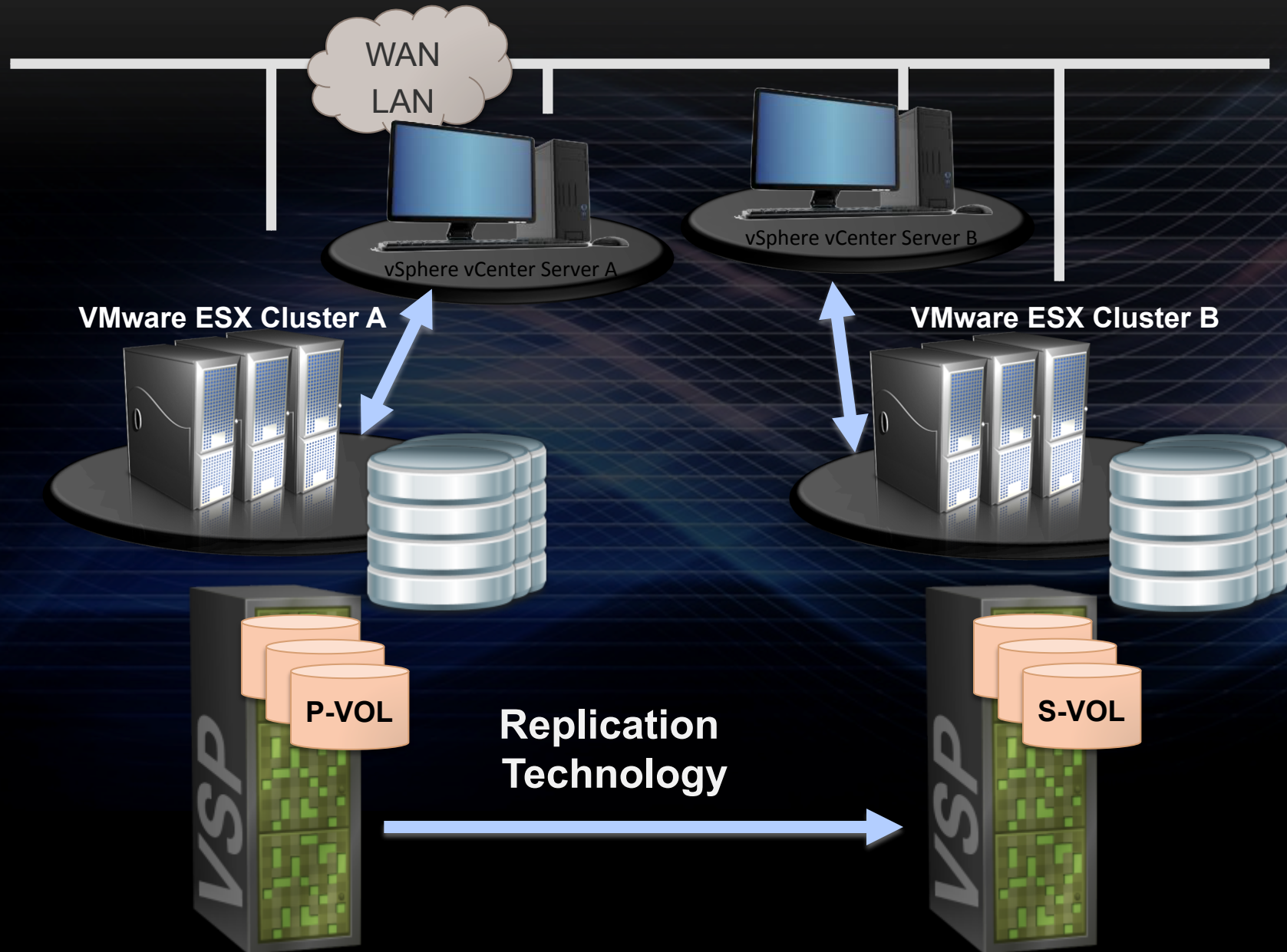
# VMWARE VIRTUAL LAYERS

- VM Host
  - Physical Server
- Datastore
  - Vmfs file system to provide storage
- Raw device mapping
  - direct access to LUNs
- Virtual Machine
  - Virtualized access to Network, Storage, Power, etc...



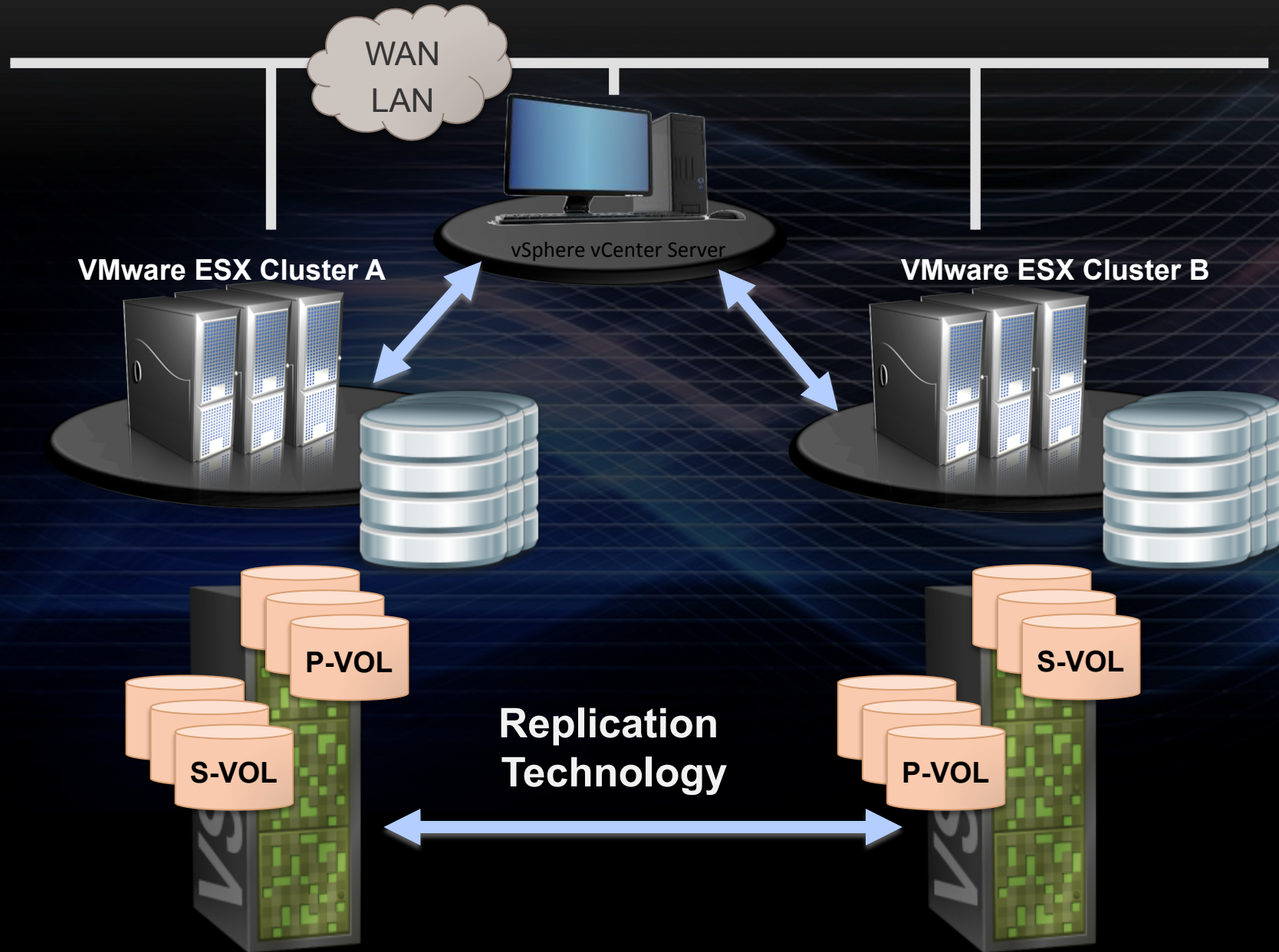


# SITE RECOVERY MANAGER

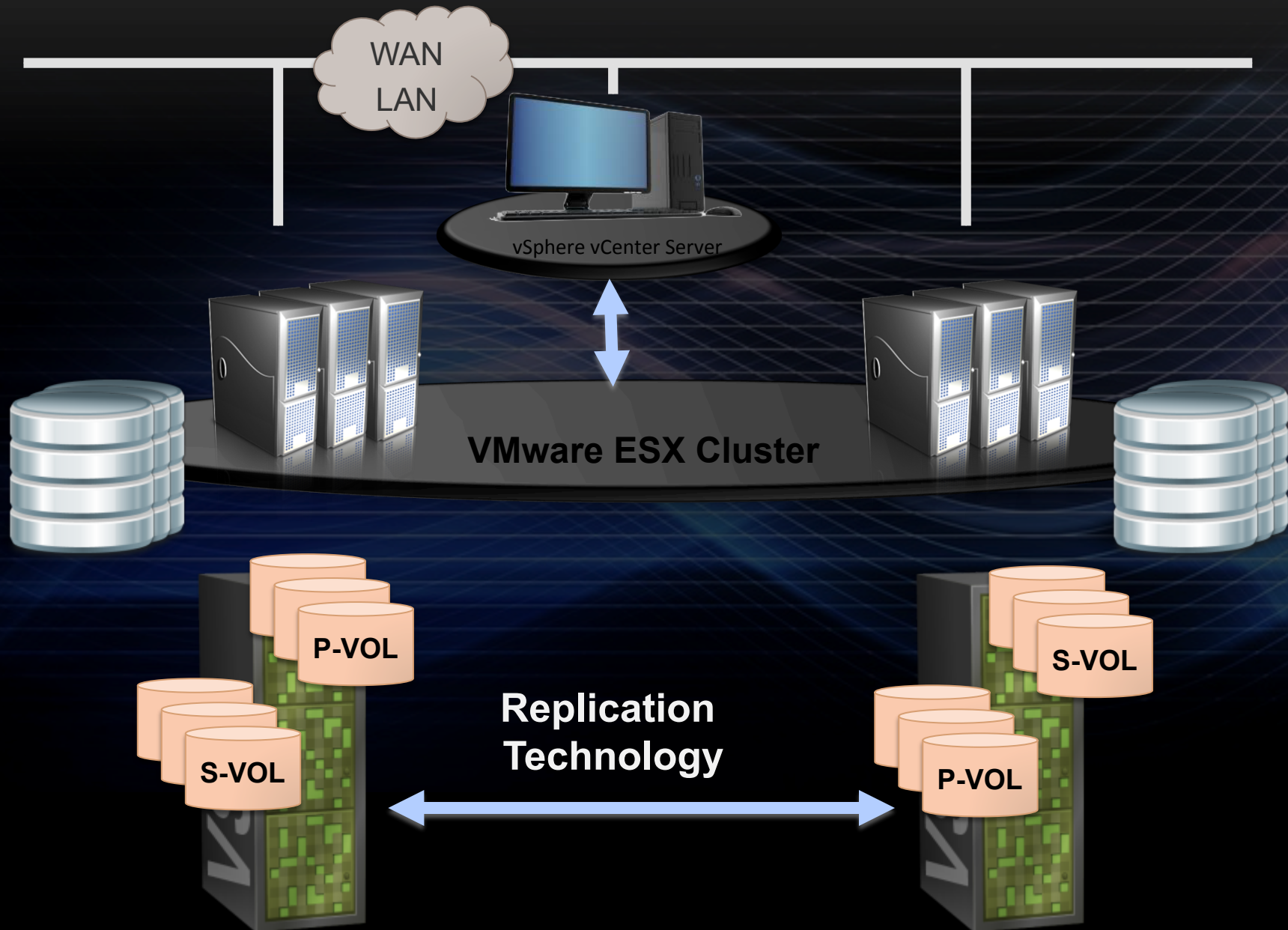




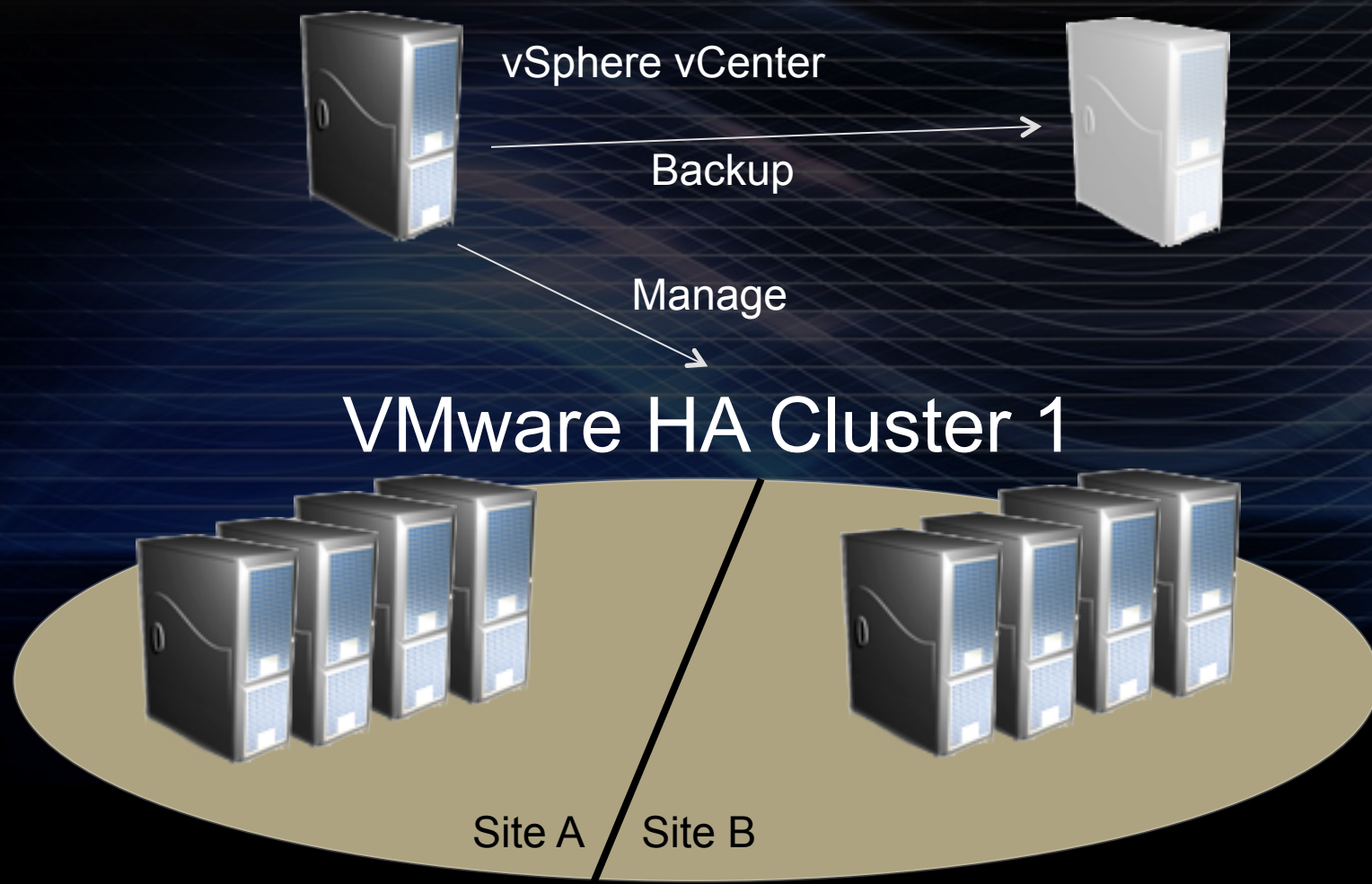
# vFAILOVER – DUAL CLUSTER



# vFAILOVER – STRETCHED CLUSTER

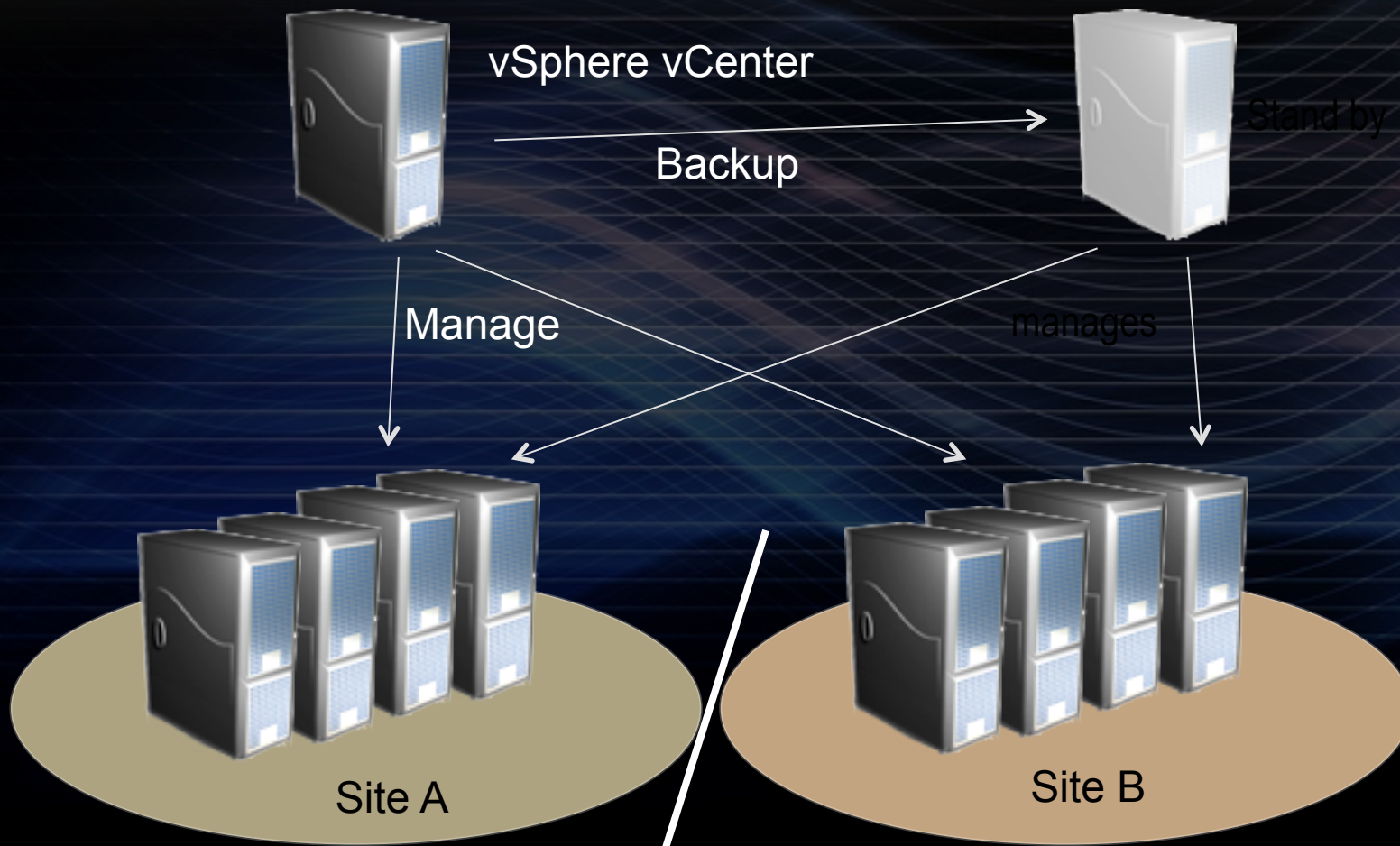


# vFAILOVER SCENARIOS – MULTISITE HA CLUSTER

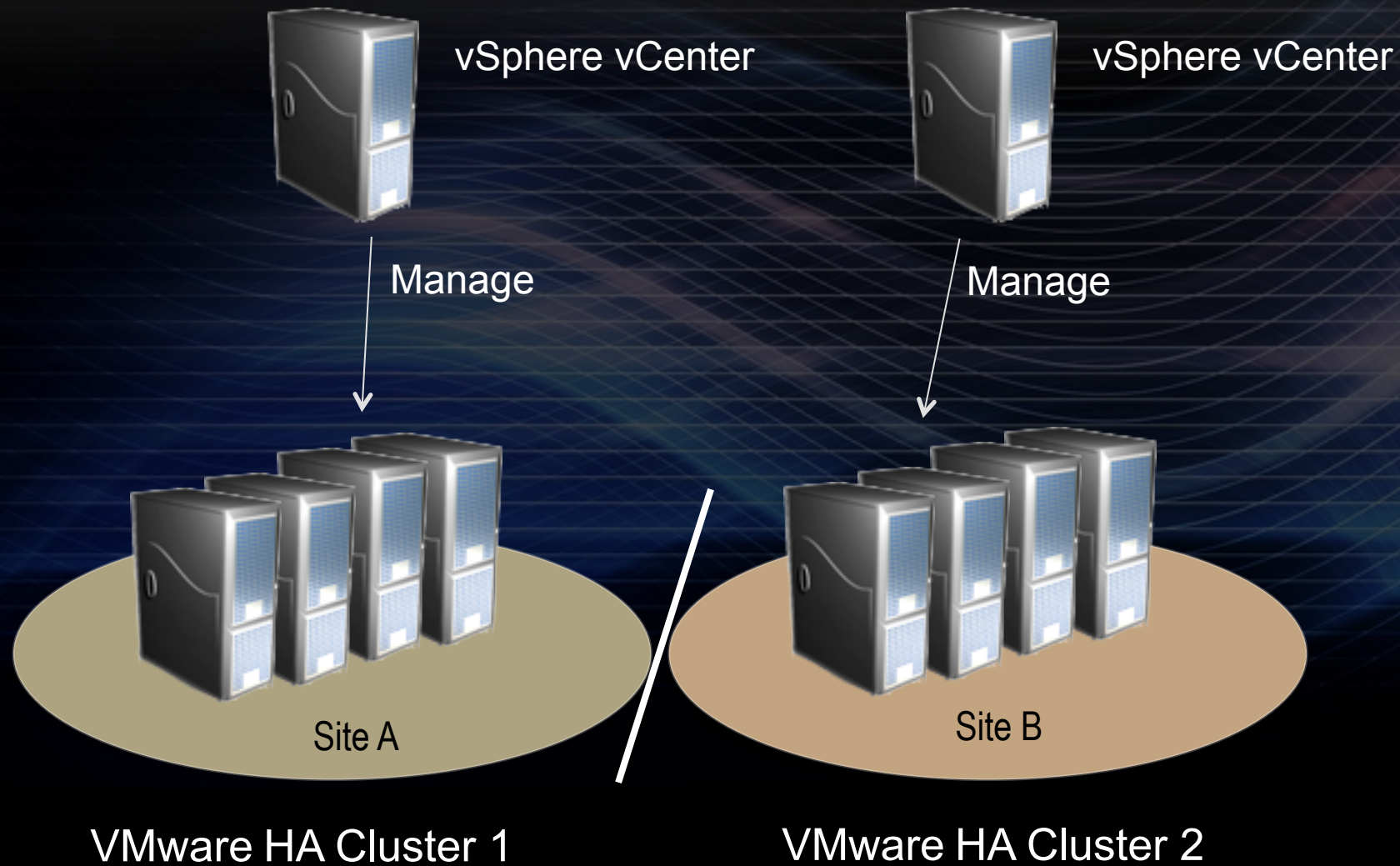




# vFAILOVER SCENARIOS – HA CLUSTER PER SITE



# VFAILOVER SCENARIOS – HA CLUSTER PER SITE WITH DEDICATED vCENTER



# INTRODUCTION

- Power Shell Script Framework running on vCenter Server or any Host with vCenter access through network
- VMware Datastores mirrored with Hitachi Truecopy synchronous remote replication (HDS VSP/USP-V, HDS HUS-VM/NSC, HDS HUS/AMS/9500V Series) or Hitachi Universal Replicator asynchronous replication (HDS VSP/USP-V)
- HA Solution, switching Datastores and RAW Devices (RDM) from one Datacenter to another Datacenter(bidirectional)
- Modes: Config/Status/Repair/Planned/Unplanned Failover, Failback
- WebGUI for easy operation



# REQUIREMENTS

- vSphere 4 and 5 Environments (4.0, 4.1, 5.0, 5.1, 5.5)
- vCenter Server accessible on both sites for Disaster Recovery (Clustered, Standby, Replicated Database,... Best Practices Guide available), Two vCenter Servers, one at each Site
- vSphere PowerCLI
- ESX(i) Hosts configured as HA Multisite Cluster or ESX(i) Hosts configured as two HA Clusters
- Supported Storage Systems (9500V, AMS first generation, AMS2000, HUS, USP V/VM, VSP, HUS VM, HNAS)

# vFAILOVER - MODES

- **Config**  
Creates Datastore-LUN Mapping for Failover Operation and Backup of vCenter Configuration
- **Status**  
Check Replication Status of Datastores and RAW Device Mappings
- **Repair**  
Checks virtual environment after a disaster, when all components are up and running again, for missing parameters. Reconfigures settings to the point of time of last configuration backup

# vFAILOVER - MODES

- Failover/Failback Planned  
Maintenance Tasks, all components are working  
Switch Single/Multiple/All Datastores and RDMS to other Datacenter,  
automatic Recovery(Failback) in case of problems during failover
- Failover/Failback UnPlanned  
Disaster Recovery, Site Failure, Storage/SAN Failure  
Switch Single/Multiple/All Datastores and RDMS to other Datacenter



# FAILOVER PROCEDURE

- Shutdown/PowerOff Virtual Machines  
Shutdown VMs properly (VMware Tools installed)  
PowerOff VMs (no VMware Tools installed)
- Switch mirrored LUNs  
Make mirrored LUNs accessible to ESX(i) Hosts on remote Site
- Rescan, resignature Datastores
- Startup Virtual Machines
- Startup and reconfiguration of VMs in predefined Order on available Hosts at remote site, Shutdown less important VMs as defined in config File

# FEATURES 1/3

- Reapplies everything  
Failover is developed to reapply all data store, virtual machine and cluster settings as they were before a planned or unplanned failover. No manual failover configuration needed at all.
- Virtual machine boot order control  
Startup and reconfiguration of VMs in predefined Order on available Hosts at remote site, Shutdown less important VMs as defined in config File.
- Consistency group support  
vFailover handles the usage of consistency groups to combine two or more data stores plus their virtual machines raw device mappings.

# FEATURES 2/3

- RAW device exclude list  
If a RAW device mapping is build upon a LDEV which is not mirrored (Backup LUN, Command Device, etc...) it can be excluded from failover within the RAW device exclude list.
- Virtual machine boot order control  
Startup and reconfiguration of VMs in predefined order on available esx hosts at remote site. Shutdown less important VMs as defined in Custom Attributes.



# FEATURES 3/3

- **SCSI Hide enable/disable**  
vFailover allows you to SCSI hide the S-VOLs per a parameter setting in the configuration file.
- **SilentMode**  
With SilentMode enabled a planned failover can be executed without any user input. For safety reasons a automatic failback functionality is in place at all stages.
- **Pre failover Analyses**  
vFailover analyses all involved components if they are in a proper state to allow failover to the other site.

MANAGEMENT

# Vmware vSphere Client

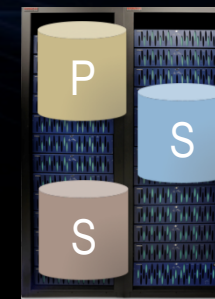
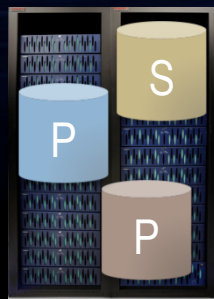


SETUP

VIRTUAL



PHYSICAL



bidirectional  
TrueCopy sync

P = Primary, S = Secondary (Replication)

MANAGEMENT

# Vmware vSphere Client



PowerCLI (cmd> vFailover.ps1 -Mode planned -ConfFile myProd -dsIdentifier Green)

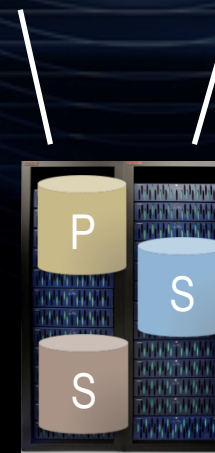


START SCRIPT

VIRTUAL



PHYSICAL



bidirectional  
TrueCopy sync

P = Primary, S = Secondary (Replication)



MANAGEMENT

# Vmware vSphere Client



PowerCLI (cmd> vFailover.ps1 -Mode planned -ConfFile myProd -dsIdentifier Green)

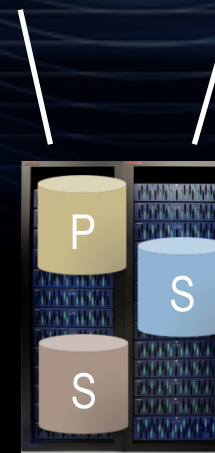


STOP VMs

VIRTUAL



PHYSICAL



bidirectional  
TrueCopy sync

P = Primary, S = Secondary (Replication)

MANAGEMENT

# Vmware vSphere Client



PowerCLI (cmd> vFailover.ps1 -Mode planned -ConfFile myProd -dsIdentifier Green)

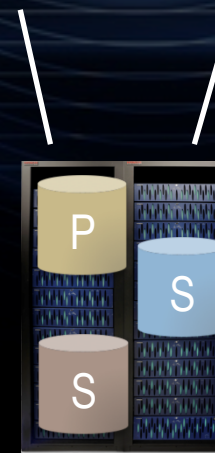


UNREGISTER VMs

VIRTUAL



PHYSICAL



bidirectional  
TrueCopy sync

P = Primary, S = Secondary (Replication)

MANAGEMENT

# Vmware vSphere Client



PowerCLI (cmd> vFailover.ps1 -Mode planned -ConfFile myProd -dsIdentifier Green)

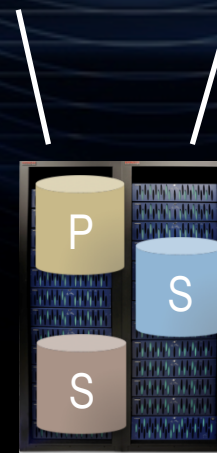


## SWAP DATASTORES

VIRTUAL



PHYSICAL



bidirectional  
TrueCopy sync

P = Primary, S = Secondary (Replication)



MANAGEMENT

# Vmware vSphere Client



PowerCLI (cmd> vFailover.ps1 -Mode planned -ConfFile myProd -dsIdentifier Green)

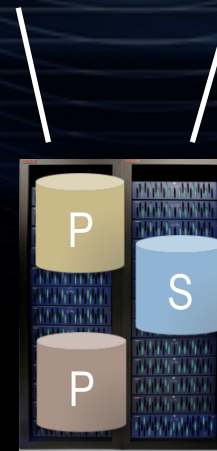
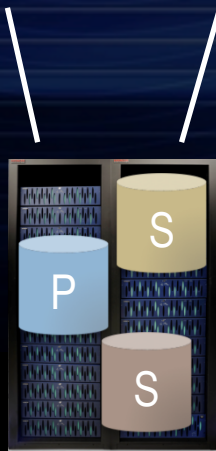


SVREGISTER VMs ES

VIRTUAL



PHYSICAL



bidirectional  
TrueCopy sync

P = Primary, S = Secondary (Replication)

MANAGEMENT

# Vmware vSphere Client



PowerCLI (cmd> vFailover.ps1 -Mode planned -ConfFile myProd -dsIdentifier Green)

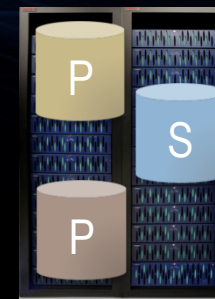


RESTART VMs/s

VIRTUAL



PHYSICAL



bidirectional  
TrueCopy sync

P = Primary, S = Secondary (Replication)

MANAGEMENT

# Vmware vSphere Client



PowerCLI (cmd> vFailover.ps1 -Mode planned -ConfFile myProd -dsIdentifier Green)

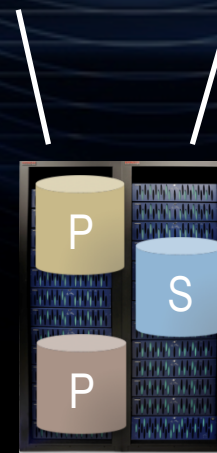


FINISHED

VIRTUAL



PHYSICAL



bidirectional  
TrueCopy sync

P = Primary, S = Secondary (Replication)



## Vmware vSphere Client



PowerCLI (cmd> vFailover.ps1 -Mode planned -ConfFile myProd -dsIdentifier Green)

### FEATURES

- Uses current configuration to failover or failback virtual machines
- All customized settings and attributes are stored and reapplied after failover
- No need to setup target configuration
- No need to license VMware SRM
- Supports active/active data center configuration
- Integrated alerting feature via replication status checking functionality
- Keeps control of VMware DRS feature during failover or failback
- RAW device mappings are fully supported
- Supports all HDS storage subsystems (Modular and Enterprise)
- Planned failover for maintenance activity
- Unplanned failover to recover from storage and/or ESX host failures

A fully automated disaster recovery solution  
for business critical virtual environment

# WEBGUI

- WebGUI for easy Operation and Overview about configuration

The screenshot displays the vFailover WebGUI interface in a Firefox browser window. The address bar shows the URL: localhost:8080/vfailoverPlugin/Main.htm?moreF=ClusterComputeResource:domain-c78instanceName=moviscluster&sessionId=5290f84d-f64a-48e3-59a3-9df8690d1359&serviceUrl=https://192.168.1.200/sdk&locale=de\_DE. The interface includes a navigation sidebar on the left with options for Clusters, Hosts, Storage Pods, Datastores, and Virtual Machines. The main content area is divided into two sections: a top summary section and a bottom host details section.

**User: vfailover Instance: moviscluster**

**Status Backup Failover Reload Logout**

Last Backup	✓	14. Februar 2014 08:10:29 MEZ	Clusters	1
HORCM Instance Vienna	✓	60	Hosts	2
HORCM Instance Prague	✓	61	Storage Pods	1
			Datastores	2
			Virtual Machines	5

**ClusterComputeResource: MovisCluster**

**Hosts Boot Order Datastores Virtual Machines**

Name	Target	Progress	Status	Details	Initiated by	Requested Start Time	Start Time	Completed Time
<b>Datacenter Vienna</b>								
<a href="#">vienna.movis.local</a>			▶			24.01.2014 15:02		
<b>Datacenter Prague</b>								
<a href="#">prague.movis.local</a>			▶			24.01.2014 17:20		

**vFailover**  
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# COMPARISON 1/3

	SRM	vFailover
<b>INTERFACE</b>	VMware GUI	VMware PowerCLI Script based solution WebGUI
<b>FAILOVER CONFIGURATION</b>	Manually by creating recovery tasks on a step-by-step basis. Needs maintenance if configuration changes	Automatically discovered. vFailover reapplies all virtual machine and cluster settings in case of a failover
<b>STORAGE CONFIGURATION</b>	Manually by creating HORCM files	Initial Sync needs to be done manually. HORCM files are created and managed by vFailover



# COMPARISON 2/3

	<b>SRM</b>	<b>vFailover</b>
<b>RAW DEVICE MAPPING</b>	Supported	Supported
<b>HA MULTISITE CLUSTER</b>	Not supported	Supported
<b>TEST FAILOVER</b>	Supported	Not supported. Can be done by creating a "Test" datastore

# COMPARISON 3/3

	SRM	vFailover
<b>FAILOVER OBJECT BASIS</b>	Datstore	Datstore
<b>BIDIRECTIONAL FAILOVER</b>	Supported, Additional Hardware and Software Licenses needed	Supported
<b>HDS STORAGE REPLICATION TECHNOLOGY</b>	TC sync/async, HUR	TC sync/async, HUR