



AGILE  
SECURE  
SIMPLE

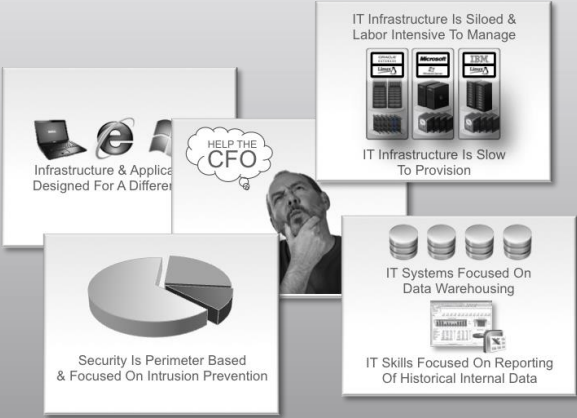
# 私有雲再進化

## EMC Hybrid Cloud解決方案

徐師亮 Sydney Hsu / EMC 系統工程協理

# BUSINESS IS MOVING MUCH FASTER

## TRADITIONAL IT TEAM



MEASURE SUCCESS IN  
**YEARS**

## ENTREPRENEURIAL BUSINESS TEAM



MEASURE SUCCESS IN  
**WEEKS**

# CHALLENGES OF IT

Efficiency



Control



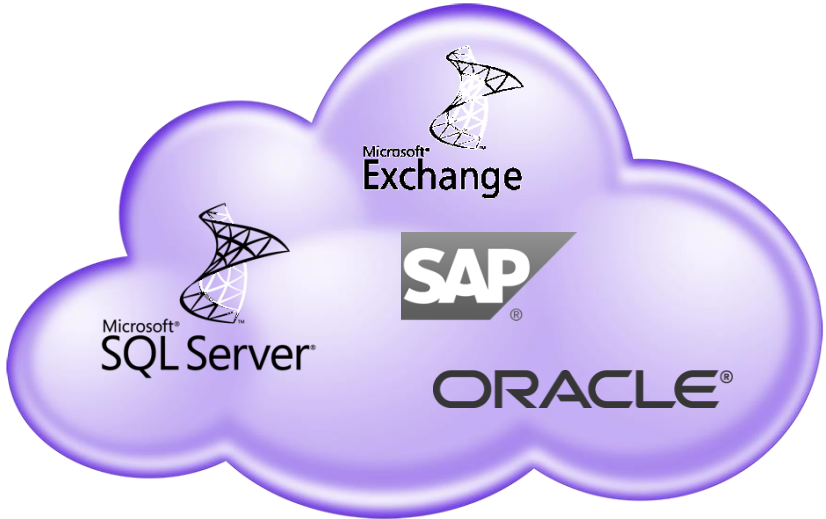
Choice



Agility



# RAPID ADOPTION OF PRIVATE CLOUD



TRUSTED | CONTROLLED | RELIABLE

# RAPID ADOPTION OF PUBLIC CLOUD



**SIMPLE | LOW-COST | FLEXIBLE**

# TOTAL DEPLOYMENTS EXPECTED BY 2016



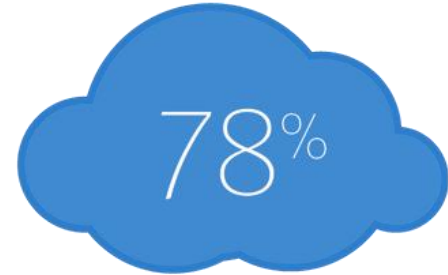
Public

- New applications
- Application resilience
- Primarily object and commodity



Hosted Private

- Traditional Enterprise. apps
- Infrastructure resilience
- Off-premise cloud



Private

- Traditional Enterprise. apps
- Infrastructure resilience
- On-premise cloud
- Primarily file & block

Better Agility

Lower Cost

Service Levels

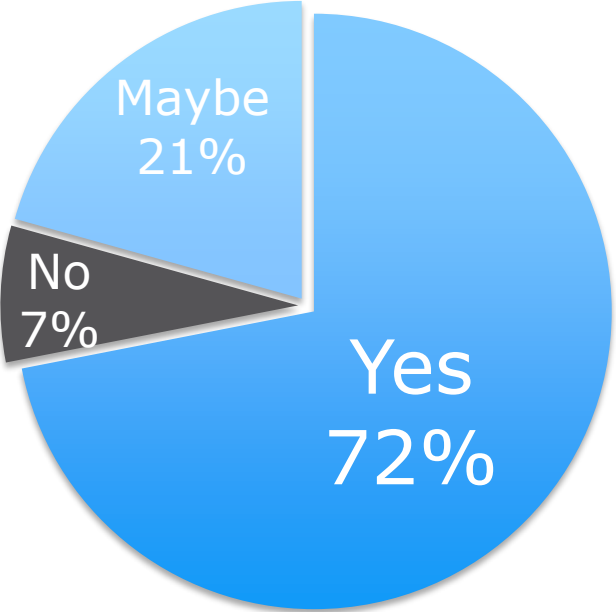
Security

# HYBRID CLOUD DRIVES AGILITY & CHOICE



# THE FUTURE IS HYBRID

## Will Your Enterprise be Pursuing a Hybrid Cloud Strategy by 2015?



(Source: Tom Bittman, Gartner Data Center Conference December 2013)



# Hybrid Cloud - Definition

What is Hybrid Cloud

- ***Hybrid cloud***

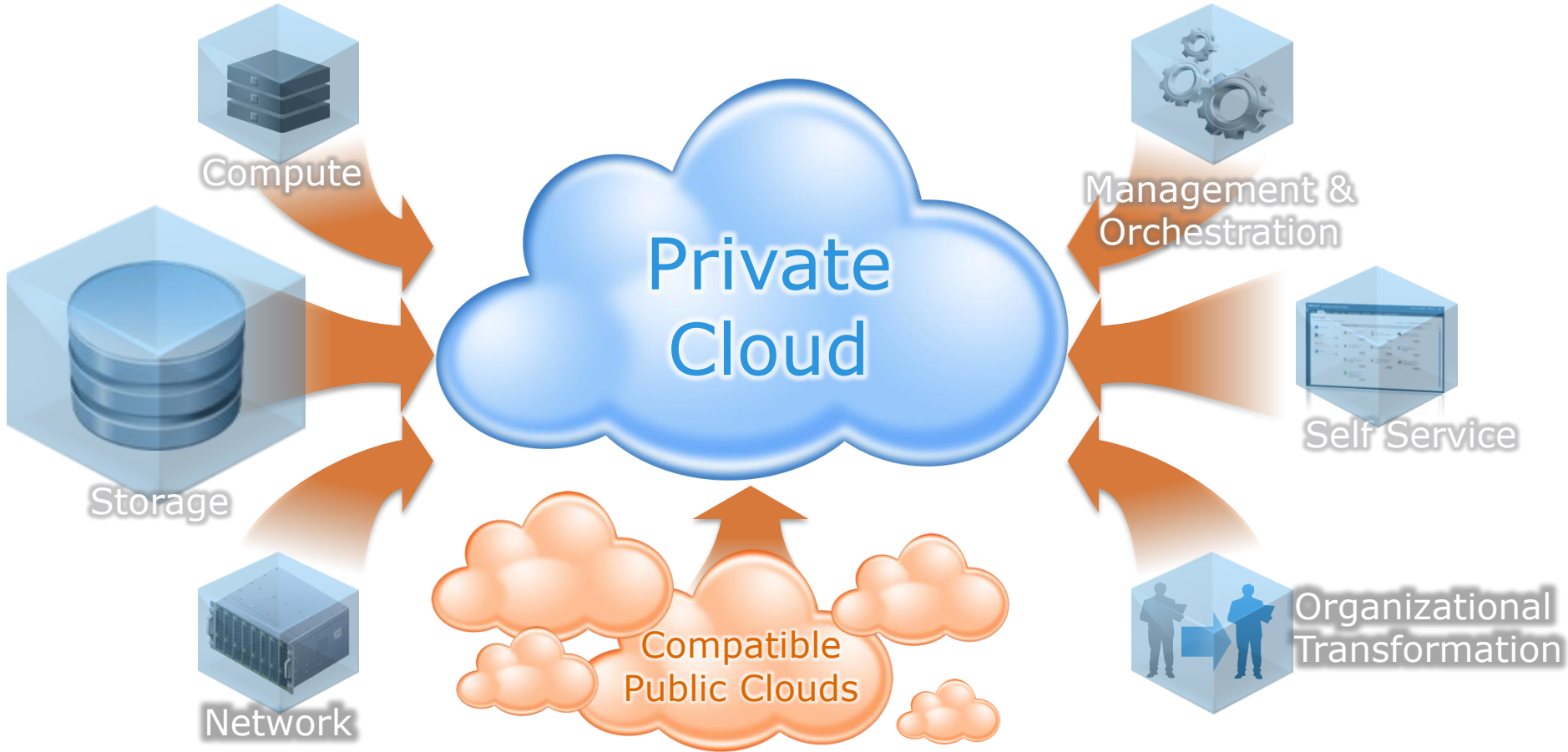
- The cloud infrastructure is a composition of two or more distinct cloud infrastructures (private, community, or public) that remain unique entities, but are bound together by standardized or proprietary technology that enables data and application portability (e.g., cloud bursting for load balancing between clouds).

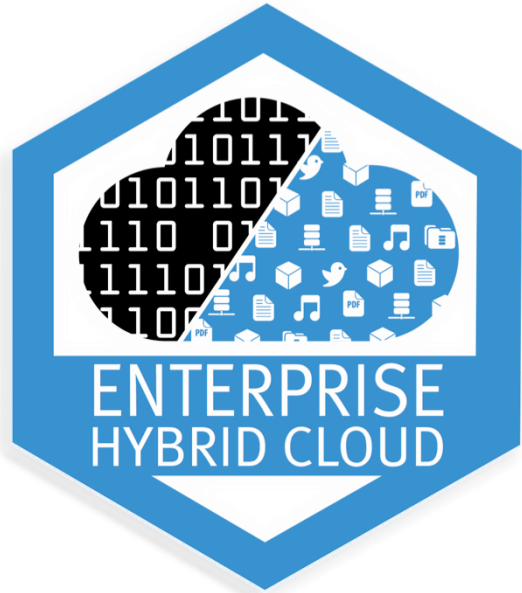


Source: <http://csrc.nist.gov/publications/nistpubs/800-145/SP800-145.pdf>



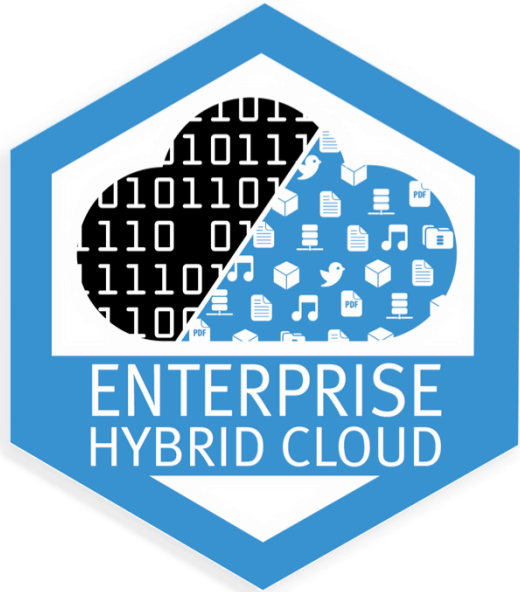
HOW DO YOU BUILD A  
CLOUD





EMC ENTERPRISE  
HYBRID CLOUD  
HYBRID CLOUD MADE EASY





HARDWARE



SOFTWARE



SERVICES



# POOLED RESOURCES, AUTOMATION & SELF-SERVICE



# STORAGE FOR ANY WORKLOAD



# OPERATIONAL MANAGEMENT & FINANCIAL TRANSPARENCY





“HYBRID READY” – Connect to Public Clouds

Operational Management

Self-Service & Automation

Virtualized Infrastructure

Software-Defined Storage

Financial Transparency

EMC VMAX VNX XtremIO

EMC Cloud Service Providers

vmware vCloud Air Network

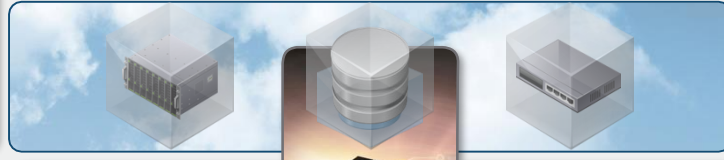
Powered by Windows Azure

# ADD-ON MODULES

Database Provisioning

Platform-As-A-Service

Cloud Brokering



HA & DR



Backup & Recovery



# EMC Hybrid Cloud – Microsoft

Productivity

Avamar VE



Azure Site Recovery



ExpressRoute



Networker 8.2



Windows  
Azure  
Pack

Admin Portal

User Portal

Resource  
Clouds

Auto-  
mation

Metering  
& Charge

Tenant  
MGMT

Hosting  
Plans

Websites  
Service

Virtual  
Machines

Service  
Bus

Virtual  
Networks

Database

Management

SCO

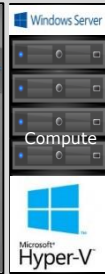
SCVMM

Microsoft  
System Center

SCSM

SCOM

ESI



Infrastructure

Facilities

# Hybrid Ready – EMC+ASR

Redefine DR by Supporting Cloud-Based DR Orchestration



On Premises

Off Premises

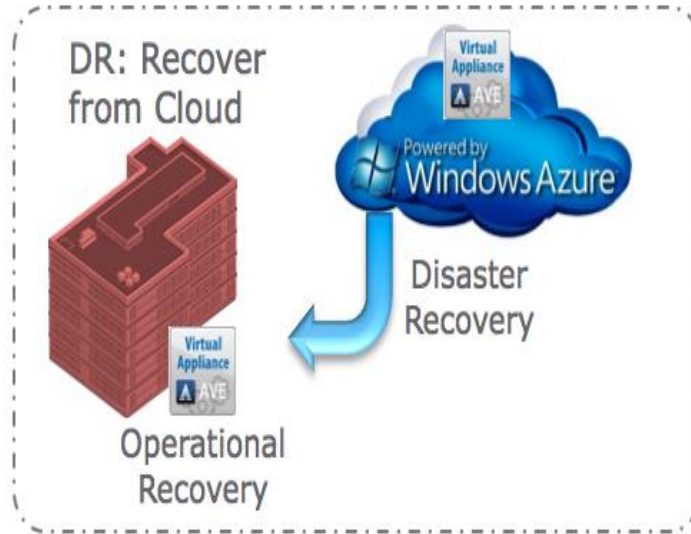
Public Cloud



# Hybrid Ready – Avamar/VE



Backup to Azure cloud



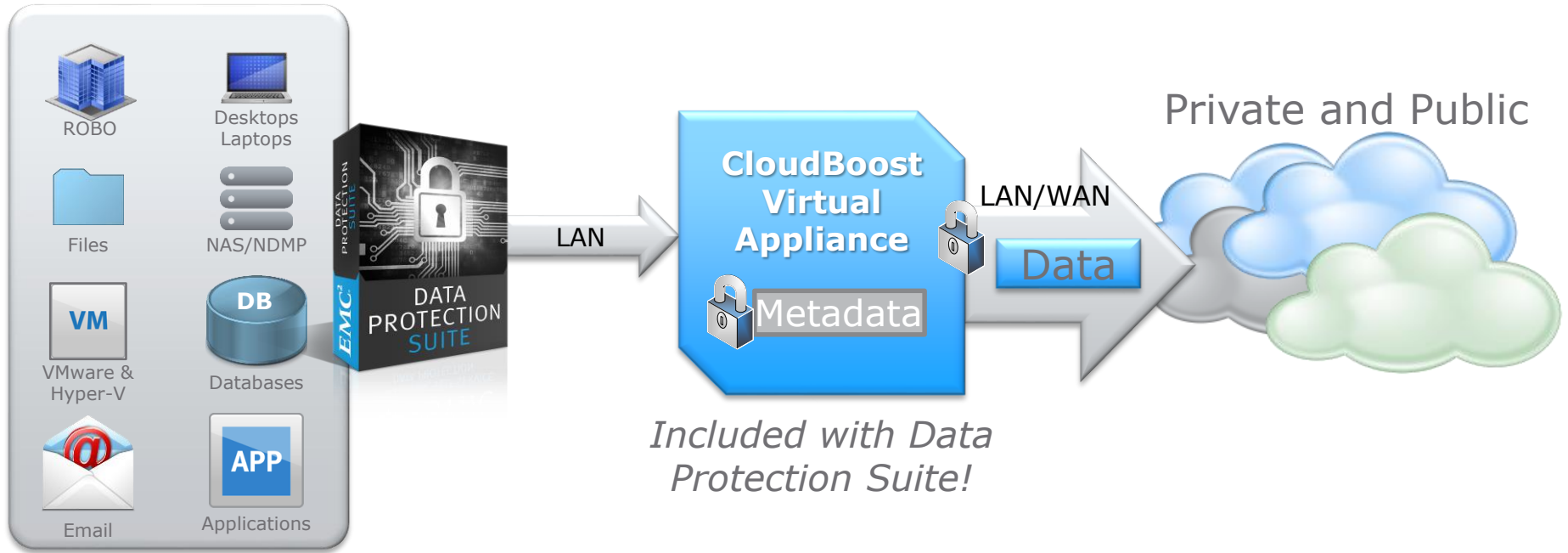
Disaster recovery for  
Hyper-V private cloud



Protect data born-in-the-cloud  
for Azure

# Hybrid Ready - CLOUDBOOST

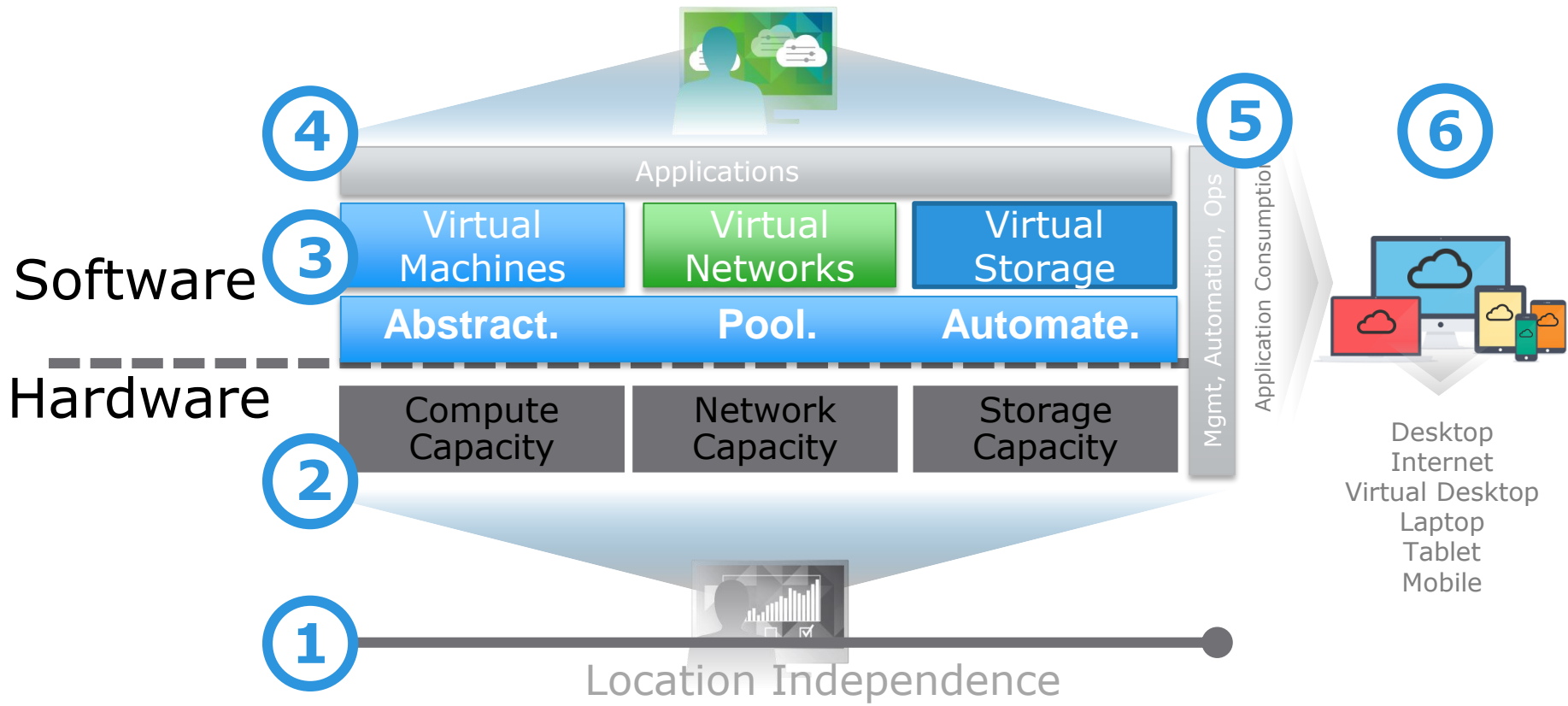
LONG TERM RETENTION TO THE CLOUD



# SDDC - A Foundation of Hybrid Cloud

- Software-Define-Servers
  - Hyper-V, Vmware, Container, etc
- Software-Define-Networks
  - Cisco, NSX, etc
- Software-Define-Storages
  - ***Simple***
  - ***Extensible***
  - ***Open***

# What Is A SDDC?





# CSF of Hybrid Cloud

## Storage Orchestration & Automation

- Overall, virtualization and orchestration and automation (O&A) are the essential elements of an effective migration strategy. Wikibon believes that, today, [storage presents the biggest challenges for hybrid cloud](#) (virtualization of servers with hypervisors and containerization is advanced, and the virtualization of networks is technically simpler than storage). As such, [Storage orchestration and automation is especially critical to hybrid cloud success.](#)



The Storage Industry

# NEEDS TO PROVIDE...

Heterogeneous storage array management

---

Policy based management of storage pools abstracted from hardware

---

Storage network management

Leverage the capabilities of the underlying hardware platforms

---

Unified storage views across the Data Center

---

New interface support



# EMC ViPR

Software-Defined Storage

VIRTUALIZE EVERYTHING  
COMPROMISE NOTHING

# Open Architecture Provides Choice

Integrates with Microsoft, Vmware, and OpenStack



# EMC ViPR Controller

Completely Separate from the Data Plane



# Abstract Storage from Physical Arrays

Presents a Single, Logical Pool of Virtual Storage

Automatically Discovers and Registers Arrays



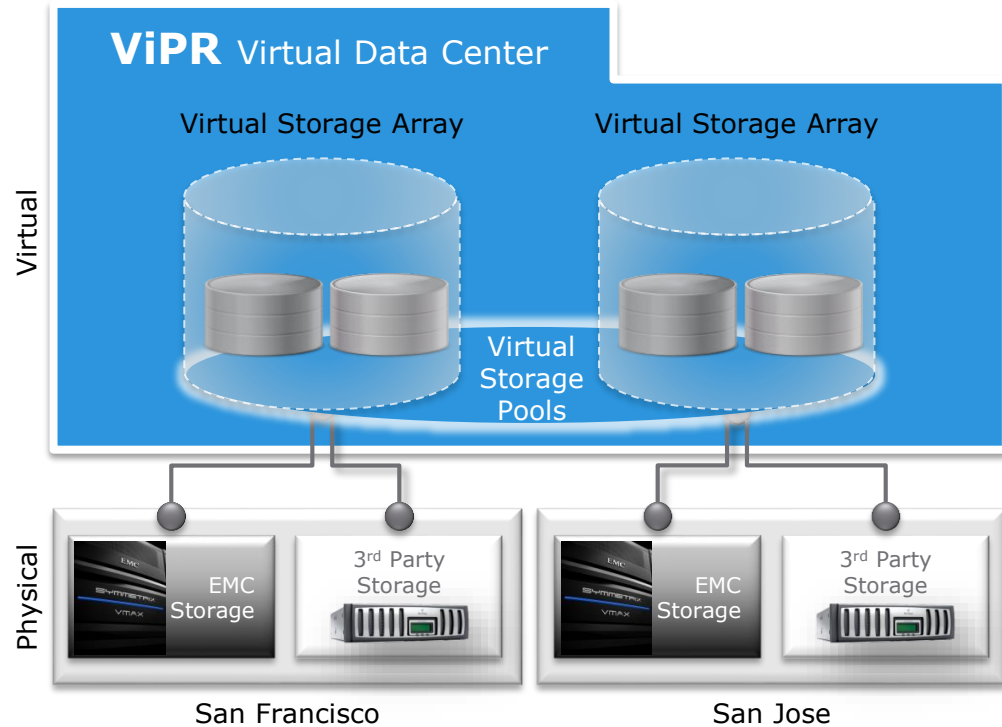
# Define Policy-based Storage Pools

## Virtual Storage Array

- Group all storage infrastructure that logically needs to be managed as one
- Abstract to manage the entire storage in a physical data center, pods, or islands of storage

## Virtual Storage Pool

- Collections of physical pools of similar capability
- Key to policy-based management



# ViPR Controller Provides Agility

## Automation

**< 60 seconds**  
Storage discovery and ingestion



**63%**  
Average reduction in provisioning times

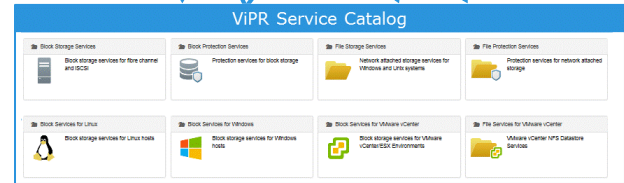
**5 Clicks**  
Automated storage provisioning

## Storage-as-a-Service

Multi-tenancy



Metering

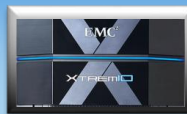


REST API

ESX & BARE METAL CLUSTERS

VIRTUAL STORAGE POOLS

VIRTUAL STORAGE ARRAYS





# DELIVERED AS A SELF-SERVICE CATALOG

END-USERS CAN REQUEST TO STORAGE RESOURCES IN 5 STEPS

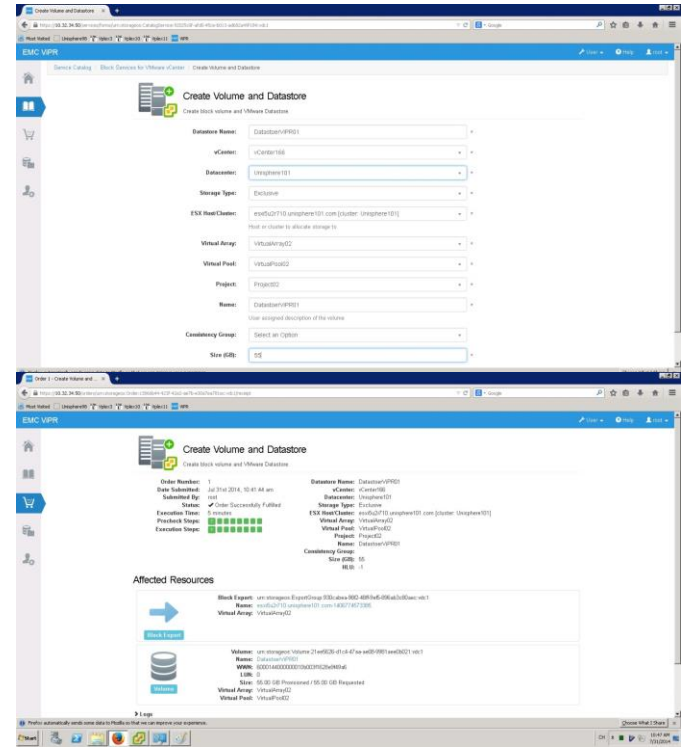
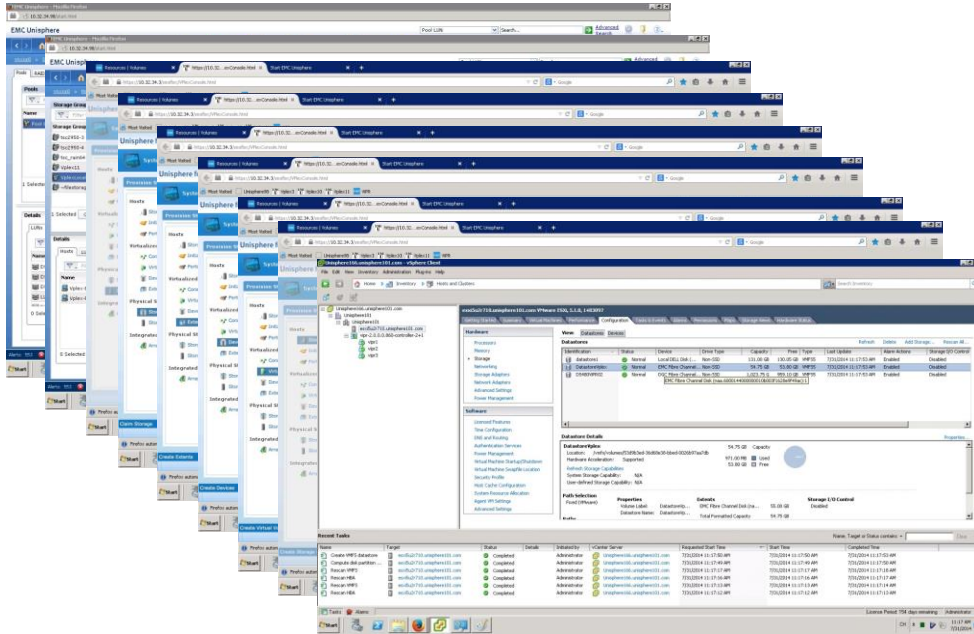
The image displays the EMC ViPR self-service catalog interface. On the left is a navigation sidebar with the following items: **EMC ViPR**, **SERVICE CATALOG**, **Recently Used**, **View Catalog** (highlighted), **Edit Catalog**, **My Orders**, **All Orders**, **Scheduled Orders**, and several icons for storage services. The main content area is a grid of service tiles:

- Block Storage Services**: Block storage services for fibre channel and iSCSI
- Block Protection Services**: Protection services for block storage
- File Storage Services**: Network attached storage services for Windows and Unix systems
- Block Services for Linux**: Block storage services for Linux hosts
- Block Services for Windows**: Block storage services for Windows hosts
- Block Services for AIX**: Block storage services for AIX hosts
- File Services for VMware vCenter**: VMware vCenter NFS Datastore Services
- VCE Vblock System Services**: Cluster Provisioning Services for VCE Vblock Systems
- File Protection Services**: Protection services for network attached storage
- Block Services for VMware vCenter**: Block storage services for VMware vCenter/ESX Environments

A large grey arrow points from the right side of the grid towards the **Block Services for AIX** tile. To the right of the grid are four small portrait photos of users: two men and two women.

# Automate Storage Provisioning

## Simplified Storage Management



Hours

Minutes w/ ViPR

# SCVMM ViPR Add-in

## Provision ViPR Block Volume for Hyper-V

The screenshot displays the Virtual Machine Manager (VMM) interface with the EMC ViPR Add-in. The main window title is "Administrator - WIN-DERJN856DUO.unisphere101.com - Virtual Machine Manager (Evaluation Version - 175 days remaining)". The interface includes a top navigation bar with tabs for Home, Folder, and Host. Below this is a ribbon with various tools like "Create Service", "Create Virtual Machine", "Create Cloud", "Create Host Group", "Create VM Network", "Assign Cloud", "Overview", "VMs", "Services", "VM Networks", "EMC ViPR™ Add-in", "PowerShell", "Jobs", and "PRO".

The left-hand navigation pane shows "VMs and Services" with sub-items: Tenants, Clouds, VM Networks, Storage, All Hosts, and WIN-DERJN856DUO. Below this, "VMs and Services" is expanded to show Fabric, Library, Jobs, and Settings.

The main content area is titled "EMC ViPR Add-in" and features the "EMC<sup>2</sup> ViPR™" logo. A "Provision ViPR Block Volume" dialog box is open, titled "Provision a Volume for a Cluster or Host". The dialog contains the following fields:

- Cluster or Host: WIN-DERJN856DUO.unisphere101.com
- Volume Name: VMMB-00085
- Size (GB): 50
- Virtual Array: VNX5500
- Virtual Pool: vnx5500new [ Free Space: 10661 GB, Used
- Project: Project1
- Protocol: Fibre Channel

At the bottom of the dialog are "Previous", "Next", and "Cancel" buttons. To the right of the dialog, three icons represent "Provision a Volume for a Cluster or Host", "Expand a Volume", and "Delete a Volume".

In the bottom right corner of the interface, there is a watermark: "Activate Windows Go to System in Control Panel to activate Windows."

# SCVMM ViPR Add-in

## Expand a Volume for Hyper-V

The screenshot displays the SCVMM ViPR Add-in interface. The top navigation bar includes 'Home', 'Folder', and 'Host' tabs. The main toolbar contains icons for 'Create Service', 'Create Virtual Machine', 'Create Cloud', 'Create Host Group', 'Create VM Network', 'Assign Cloud', 'Overview', 'VMs', 'Services', 'VM Networks', 'EMC ViPR Add-in', 'PowerShell', 'Jobs', and 'PRO'. The left sidebar shows a tree view with 'VMs and Services' expanded, containing 'Tenants', 'Clouds', 'VM Networks', 'Storage', and 'All Hosts' (with 'WIN-DERJN856DUO' selected). The main content area features three large buttons: 'Provision a Volume for a Cluster or Host', 'Expand a Volume', and 'Delete a Volume'. Below these is a log table with the following data:

Status	Time	Message
Success	18:40:08.2	Executing: Provision volume for WIN-DERJN856DUO.unisphere101.com At: 2015/04/22 18:40:08 - Elapsed: 117.0 seconds.
Success	18:40:08.2	Creating Volume: VMMB-00085 - Size: 50 GB
Success	18:40:39.3	Successfully created volume. WWN = 6006016057802C0030A640CEDCE8E411
Success	18:40:39.3	Fetching host information from WIN-DERJN856DUO.unisphere101.com - Executing Script: GetWWN.ps1
Success	18:40:39.4	Exporting Volume to Host: WIN-DERJN856DUO.unisphere101.com
Success	18:41:25.3	Volume (6006016057802C0030A640CEDCE8E411) was successfully presented to WIN-DERJN856DUO.unisphere101.com
Success	18:41:25.4	Start creating cluster shared volume for WIN-DERJN856DUO.unisphere101.com. WWN = 6006016057802C0030A640CEDCE8E411
Success	18:41:25.4	This step may take a few minutes or more, please be patient. - Executing Script: AddSharedVolume.ps1
Success	18:42:05.1	Creating cluster shared volume for WIN-DERJN856DUO.unisphere101.com completed. \\.\PHYSICALDRIVE1

The 'Expand a Volume' dialog box is open, showing the following configuration:

- Cluster or Host: WIN-DERJN856DUO.unisphere101.com
- Volume: VMMB-00085 - - \\.\PHYSICALDRIVE1
- New Size (GB): 120
- Old Size (GB): 50.00
- Extend Partition

Buttons: Expand, Cancel

Activate Windows  
Go to System in Control Panel to activate Windows.

# SCVMM ViPR Add-in

## Add or Expand Pass through disk for VM

The screenshot displays the SCVMM console with the 'Virtual Machine Tools' ribbon selected. A dialog box titled 'Manage ViPR Pass-through Disks' is open for VM005, showing options to 'Add a Pass-through Disk' and 'Expand a Pass-through Disk'. The background interface shows a table of VMs and various management options.

Name	Status	Virtual Mach...	Availability Set...	Host	Cloud	Job Status	Owner	User Role	CPU Average	Service	Operating System
VM005	Running	Running		WIN-DERJN856...		Completed			1 %		64-bit edition of...

**Virtual machine information:**

- Status: Running
- Owner: Administrator
- Processors: 4
- Memory: 4 GB

**Storage (1 disks):**

- Total storage (80.00 GB): 27% used

**Recent job:**

- Name: Refresh virtual machine
- Job status: 100 % Completed

**Daily performance (CPU):**

- Average: 1 %

System tray: 6:46 PM, 4/22/2015

# DATA PROTECTION CONTINUUM

AVAILABILITY, REPLICATION, BACKUP AND ARCHIVE

## Complementary Tiers To Meet Any Recovery Requirement



Avamar, Data Domain, NetWorker  
SourceOne, RecoverPoint, VPLEX...

Availability

Replication

Snapshot

Backup

Archive

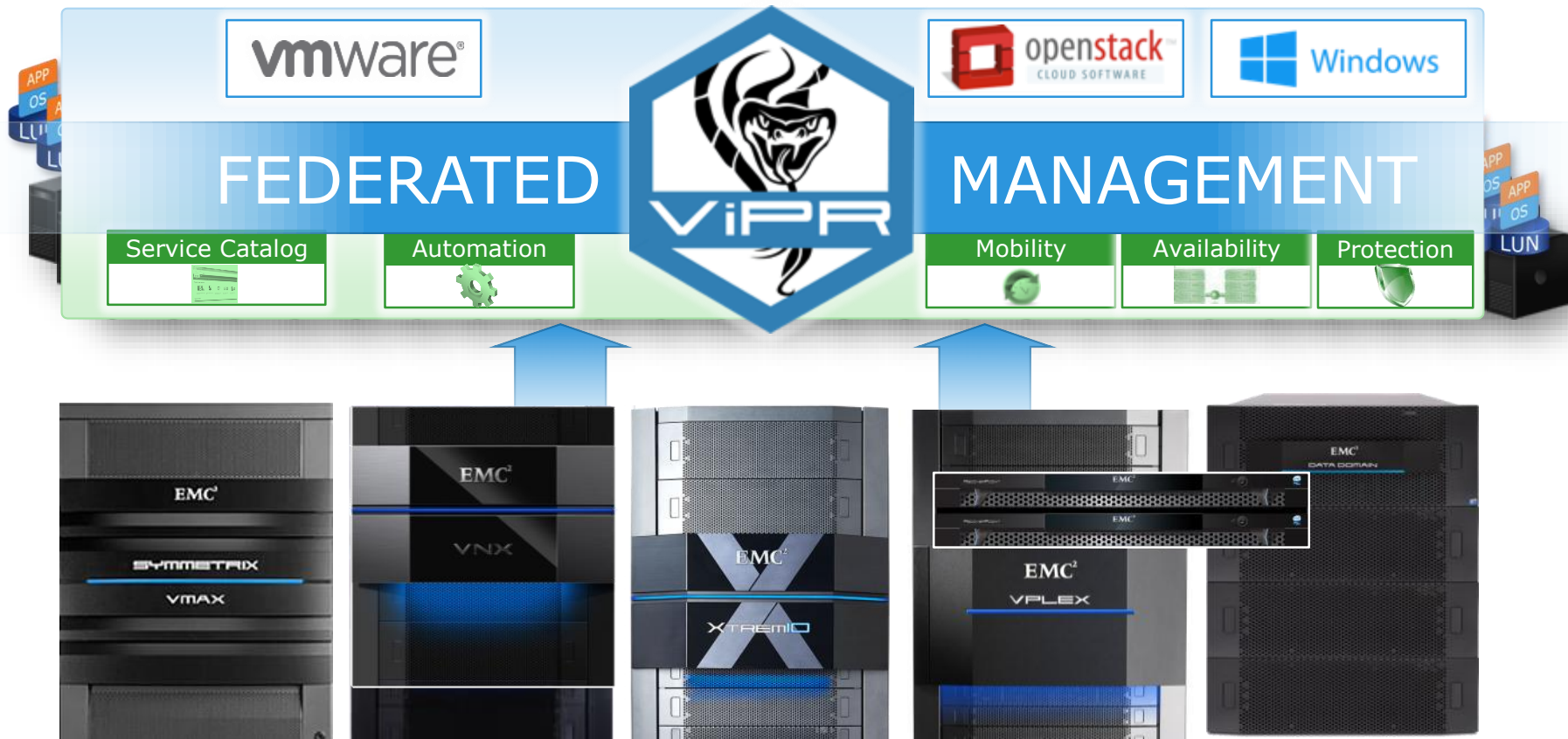
Zero

Seconds

Minutes

Hours

# AUTOMATE DELIVERY OF DATA PROTECTION SERVICES



# DATA PROTECTION-AS-A-SERVICE

PROVISION DATA PROTECTION SIMULTANEOUSLY WITH STORAGE

## HIGH AVAILABILITY



ACTIVE-ACTIVE  
DATA CENTERS



CONTINUOUS  
AVAILABILITY



CHANGE CLASS  
OF SERVICE



NON-DISRUPTIVE  
MIGRATIONS

VPLEX

## DISASTER RECOVERY



**SRDF**  
REMOTE  
REPLICATION

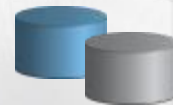


**RECOVERPOINT**  
LOCAL & REMOTE  
REPLICATION



**DATA DOMAIN**  
BACKUP &  
ARCHIVE

## OPERATIONAL RECOVERY



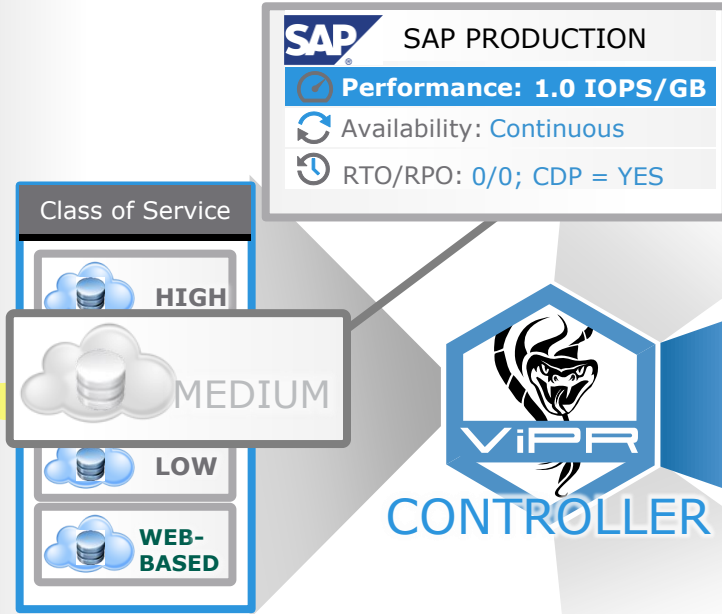
**ARRAY-BASED**  
LOCAL COPIES

**89%**  
average  
reduction in  
manual steps



# AUTOMATING MOVE TO PRODUCTION

Profile Defined In ViPR Controller



Delivered By VMAX


**Sets New:**


- Resource Allocation
- Performance Settings





# AUTOMATING AVAILABILITY WITH VPLEX

Profile Defined In ViPR Controller


 **EXCHANGE PRODUCTION**


 Performance: 1.0 IOPS/GB


 **Availability: Continuous**


 RTO/RPO: 0/0; CDP = YES

Class of Service

 **HIGH**

 **MEDIUM**

 **LOW**

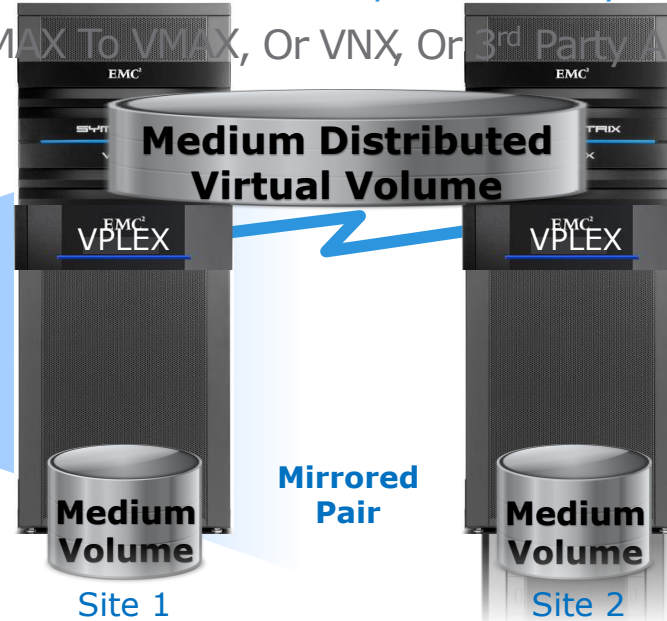
 **WEB-BASED**



Delivered By VPLEX

- Continuous Availability
- Non-disruptive Mobility

VMAX To VMAX, Or VNX, Or 3<sup>rd</sup> Party Arrays



# AUTOMATING CONTINUOUS DATA PROTECTION

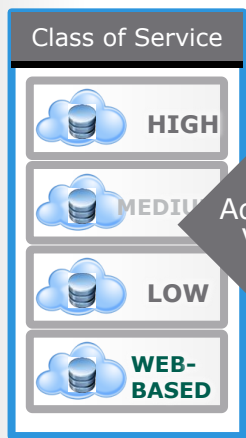


# AUTOMATING NON-DISRUPTIVE DATA MOBILITY

Discovered By ViPR  
Controller

Delivered By VPLEX

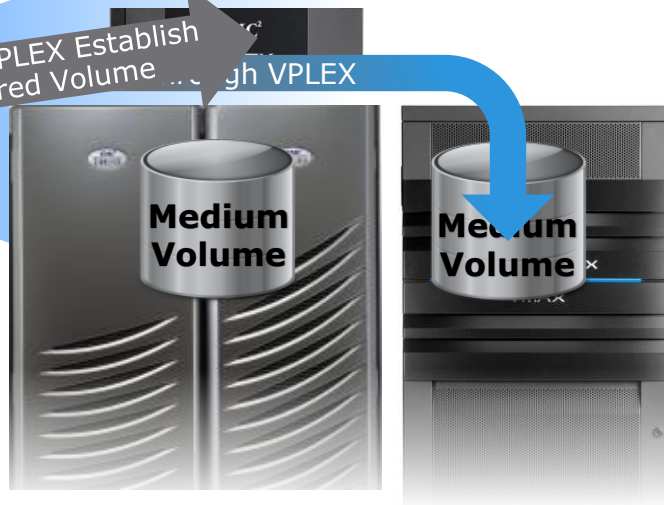
- Mirrors Data
- Non-disruptive Activity



Added To ViPR  
Virtual Pool

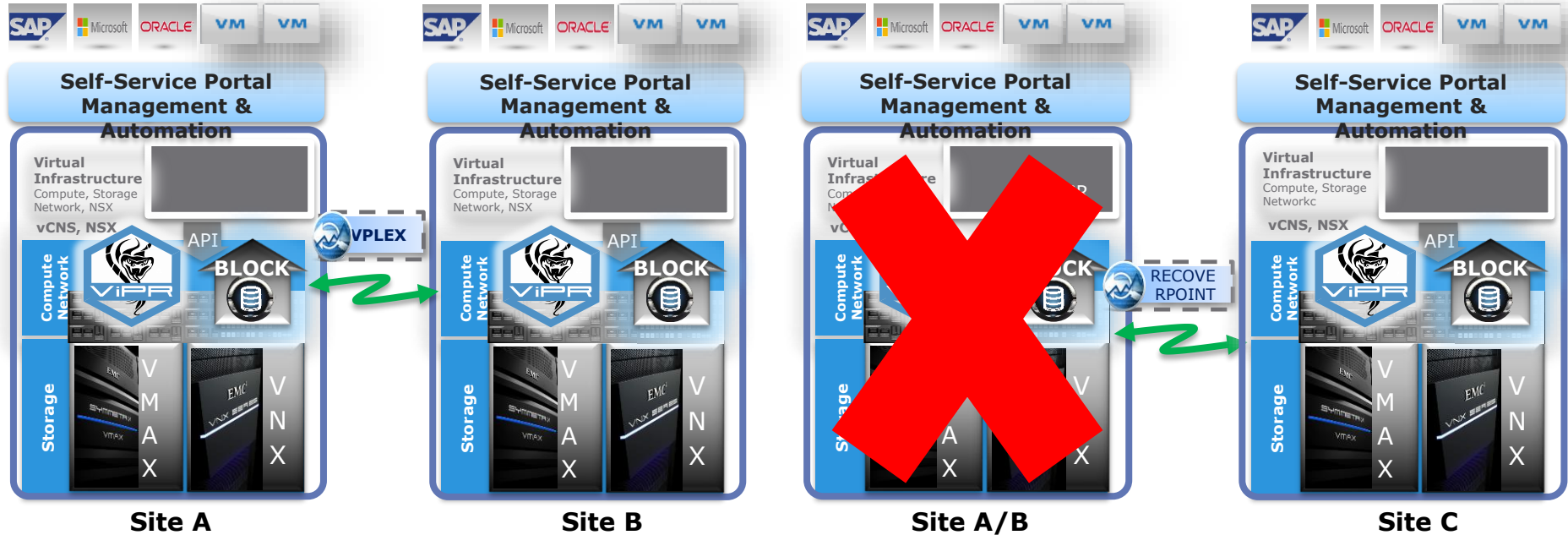


ViPR Has VPLEX Establish  
A Mirrored Volume through VPLEX



# Active-Active Hybrid Cloud

Always On Protection + Automated DR



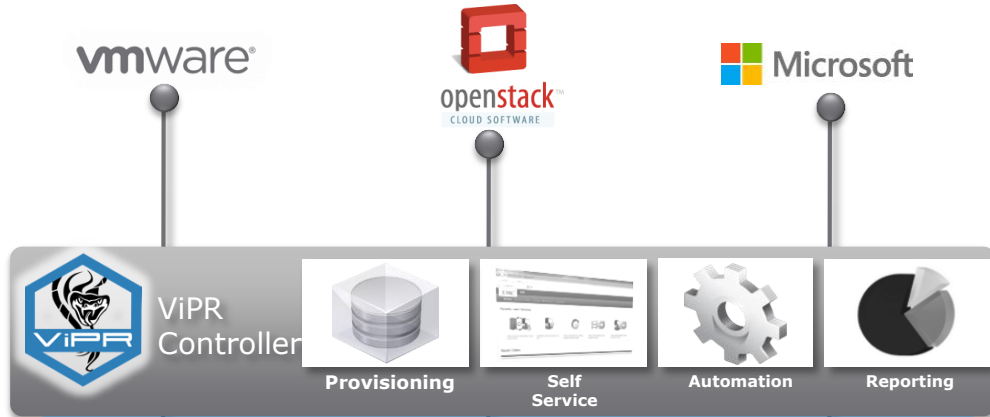
# DATA DOMAIN & VIPR CONTROLLER INTEGRATION



- First Protection Storage Supported With ViPR Controller
- Streamlines Provisioning
- NAS Target For Archive Data

# ONE CENTRAL SOFTWARE PLATFORM

AUTOMATES AND MANAGES ENTIRE STORAGE INFRASTRUCTURE



EMC and 3<sup>rd</sup> Party Storage

**EMC Storage:** VMAX, VNX, VNXe, Isilon, ScaleIO, XtremIO

**3<sup>rd</sup> Party Storage:** Hitachi, IBM, HP, SolidFire, NetApp, & Oracle

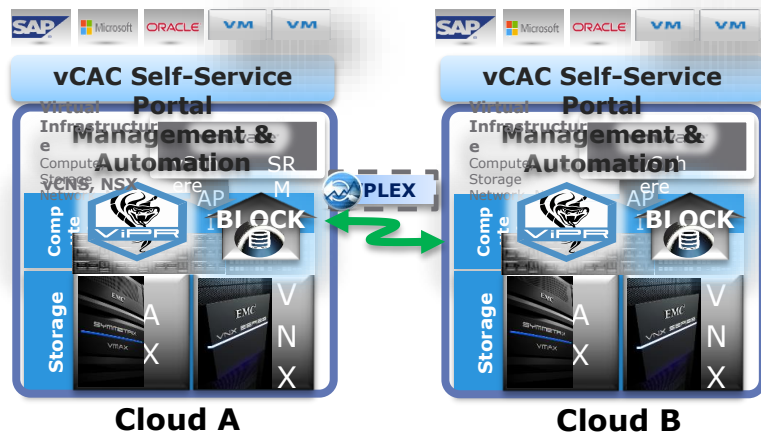
**Data Protection Technologies:** VPLEX, RecoverPoint, SRDF, Data Domain

**Integrates with Cloud Stacks** VMware, Microsoft and OpenStack

# ONLY EMC

Enable Everything-as-a-Service

- IaaS
- PaaS
- Storage-aaS
- Application-aaS
- DB-aaS
- Backup-aaS
- DR-aaS
- .....



**Active-Active Hybrid Cloud  
As-a-Service**

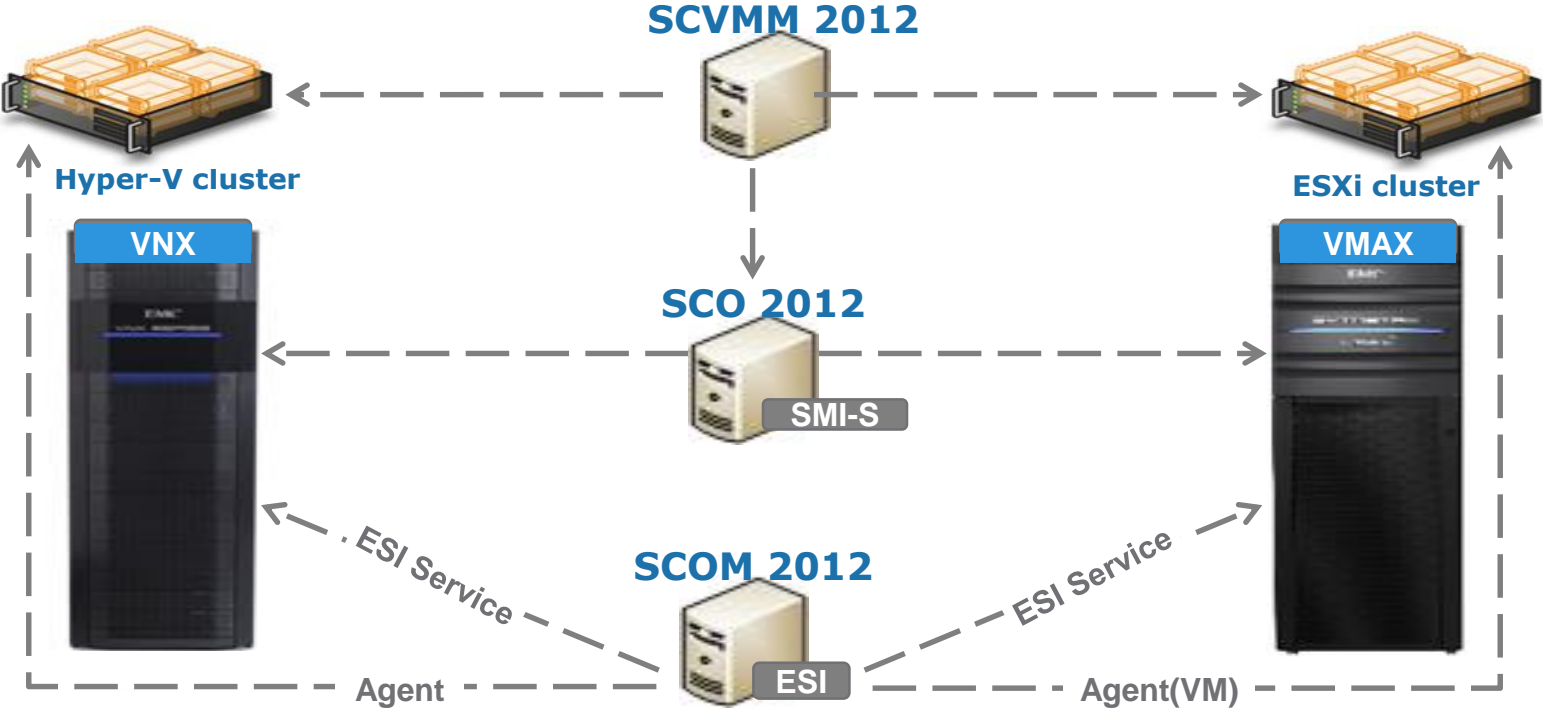




# EMC MANAGEMENT INTEGRATION FOR MICROSOFT PRIVATE CLOUD

EMC Storage Integrator (ESI)  
for Windows Suite

# ESI for Windows



...how it all works

# ESI FOR WINDOWS SUITE

## ESI MANAGEMENT CONSOLE

### Block View/File View

The screenshot displays the EMC Storage Integrator (x64) management console. The interface includes a menu bar (File, Action, View, Help) and a toolbar with navigation icons. On the left, a tree view shows the hierarchy: EMC Storage Integrator > Storage Systems > 7600 - FNM0013C > Hosts > SSE-UCS1-B7 - 1C > Host Clusters > Hypervisors > Applications > Replication.

The main area shows details for a storage system:

- Friendly Name:** 7600
- Array Name:** [Redacted]
- Serial Number:** [Redacted]
- System Type:** VNX
- Model:** VNX7600
- Software Revision:** [Redacted]

The **Switch View:** dropdown menu is set to **File View**, which is circled in red.

Below the details, there are two tabs: **Shared Folder Pools** and **Shared Folders**. The **Shared Folders** tab is active, displaying a table with the following data:

Name	Service Protocol	Total Capacity	Export Path	Parent Pool
OSFS	CIFS	3.000 TB	\\192.168.121.247\OSFS	OSFS
MixFS	CIFS	15.900 TB	\\192.168.121.247\MixFS	MixFS
test	CIFS	5.000 GB	\\192.168.121.247\test	OSFS
SCVM_1T	CIFS	1.000 TB	\\192.168.121.247\SCVM_1T	SCVM_1T
SCVM_500G	CIFS	500.000 GB	\\192.168.121.247\SCVM_500G	SCVM_500G

# ESI FOR WINDOWS SUITE

## ESI MANAGEMENT CONSOLE

### Hyper-V Host Information

EMC Storage Integrator (x64)

Host: WIN-DERJN856DUO  
IP Address: 10.32.34.40  
Username: UNISPHERE101/administrator  
Hypervisor Type: Microsoft Hyper-V

EMC<sup>2</sup>

Actions  
WIN-DERJN856DUO - 10.32.34.40  
Refresh  
Create Disk  
Connect Disk  
Test Connection  
Remove System  
View  
Help  
PhysicalDrive1  
Disconnect Disk  
Remove Disk  
Expand Disk  
Change Drive Letter and Paths  
Help

Host Disks	SAN Initiators	Virtual Machines									
Disk	Partition Style	Capacity	Mount Path	Disk Flags	Status	Disk Type	Source	Storage Syst...	LUN Name	ID on Storage	LUN Identifiers
PhysicalID...	UNKNOWN	120.000 GB		ReadOnly	Offline	Physical	N/A	vxvcs0	VMMB-00085	0	NAA.6006016...
CdRom0	UNKNOWN	0	E:\	None	NoMedia	Physical	N/A				
PhysicalID...	MBR	544.499 GB	C:\	BootDisk, Pa...	Online	Physical	N/A				NAA.6001C23...

EMC Storage Integrator (x64)

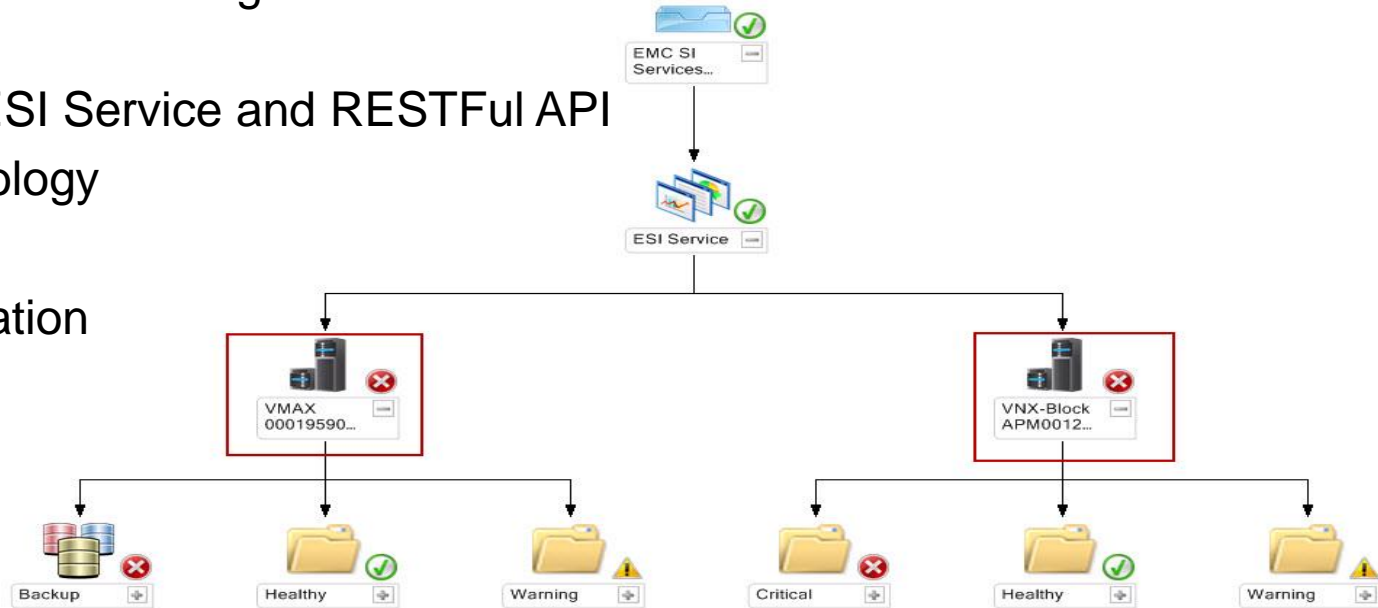
Host: WIN-DERJN856DUO  
IP Address: 10.32.34.40  
Username: UNISPHERE101/administrator  
Hypervisor Type: Microsoft Hyper-V

EMC<sup>2</sup>

Host Disks	SAN Initiators	Virtual Machines			
ID	Type	Manufacturer	IP Address	Host Name	Model
20:00:00:E0:8B:9E:A7:0F:21:0...	Fibre Channel	QLogic Corporation	10.32.34.40	win-dejrn856duo.unisphere...	QLE2460
20:00:00:E0:8B:9E:10:0D:21:0...	Fibre Channel	QLogic Corporation	10.32.34.40	win-dejrn856duo.unisphere...	QLE2460
iqn.1991-05.com.microsoft:...	iSCSI	Microsoft	10.32.34.40	win-dejrn856duo.unisphere...	Software iSCSI initiator

# SCOM - HEALTH MONITOR FOR EMC STORAGE

- Import and configure ESI Management Packs for SCOM
- Health monitor via ESI Service and RESTFul API
- Storage system topology
  - Array health
  - Space utilization
  - Alerts

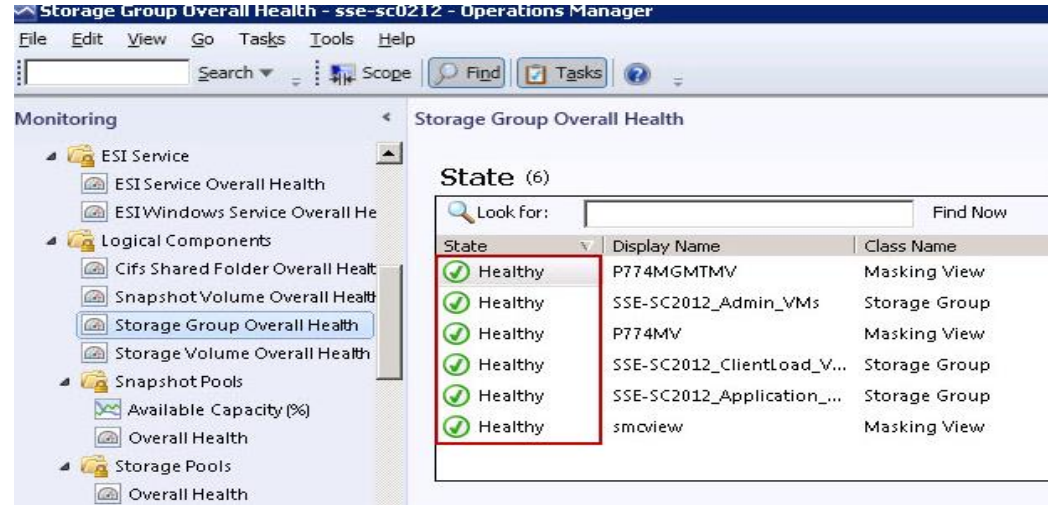


Overall topology view of storage system in SCOM

# SCOM - HEALTH MONITOR FOR EMC STORAGE

## Monitored Components

- ESI Service
- Logical Components
  - Storage Pools
  - Snapshot Volume
  - Storage Group
- Physical Components
  - CPU Module
  - Disk Drive
  - Enclosure
  - Network Switch
  - Memory Module



Storage Group Overall Health - sse-sc0212 - Operations Manager

File Edit View Go Tasks Tools Help

Search Scope Find Tasks

Monitoring < Storage Group Overall Health

ESI Service

- ESI Service Overall Health
- ESISWindows Service Overall He

Logical Components

- Cifs Shared Folder Overall Healt
- Snapshot Volume Overall Health
- Storage Group Overall Health
- Storage Volume Overall Health

Snapshot Pools

- Available Capacity (%)
- Overall Health

Storage Pools

- Overall Health

State (6)

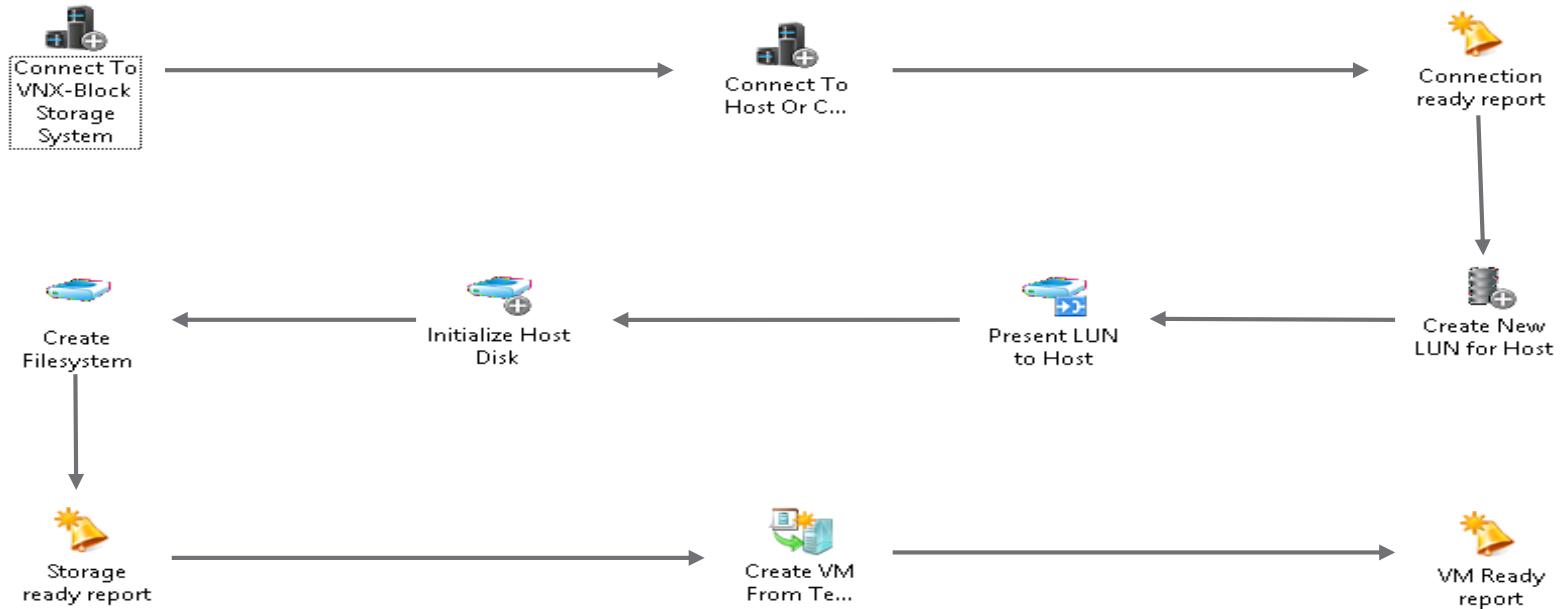
Look for: Find Now

State	Display Name	Class Name
Healthy	P774MGMTMV	Masking View
Healthy	SSE-SC2012_Admin_VMs	Storage Group
Healthy	P774MV	Masking View
Healthy	SSE-SC2012_ClientLoad_V...	Storage Group
Healthy	SSE-SC2012_Application_...	Storage Group
Healthy	smcview	Masking View

Storage Group Overall Health

# ESI SCO INTEGRATION PACK

















## Work flow Test – VM & storage provision



# ESI SCO INTEGRATION PACK

- Includes 16 Runbook activities
- SCO can also leverage additional EMC PowerShell commands

## ESI SCO Integration Pack

- |  |   |
|--|---|
|  Connect To Host Or Cluster System   |  Disconnect Host, Cluster, or Storage System |
|  Connect To VMAX Storage System      |  Initialize Cluster Disk                     |
|  Connect To VNX-Block Storage System |  Initialize Host Disk                        |
|  Connect To VNXe Storage System      |  Present LUN to Cluster                      |
|  Create Cluster Filesystem           |  Present LUN to Host                         |
|  Create Filesystem                   |  Remove a LUN from Cluster                   |
|  Create New LUN                      |  Remove a LUN from Host                      |
|  Delete LUN                          |  Resize Host Volume                          |



# SCO – ORCHESTRATOR RUNBOOK DESIGNER

The screenshot displays the System Center 2012 Orchestrator Runbook Designer interface. The main workspace shows a workflow diagram with three activities: 'Create VM From Template', 'Create Disk with ESI ...', and 'Add disk to VM with ESI PowerShell'. The 'Add disk to VM with ESI PowerShell' activity is highlighted with a blue box. Below the diagram, a 'Log History' table shows two successful runs of the workflow.

Workflow management

1. Create VM via SCVMM IP (Integration Pack)
2. Create LUN with ESIPS
3. Add Disk to VM...

...Runbook – a series of activities

Start Time	End Time	Status
11/21/2012 6:58:15 PM	11/21/2012 7:03:22 PM	success
11/21/2012 6:28:40 PM	11/21/2012 6:33:57 PM	success

...no activities of LUN creation in SCVMM IP

# SCVMM – EMC STORAGE MANAGEMENT

Manage EMC storage system via EMC SMI-S provider

- Discover VNX and VMAX
- Configure storage pools
- Create LUNs

The screenshot displays the SCVMM console interface. The top ribbon includes buttons for 'Create Classification', 'Create Logical Unit', 'Create File Share', 'Add Resources', 'Allocate Capacity', 'Overview', 'Fabric Resources', 'Services', 'PowerShell', 'Jobs', 'Remove', and 'Properties'. The left navigation pane shows 'Storage' selected, with 'Classification and Pools' highlighted. The main area shows a table of storage resources:

Name	Type	Total Capacity	Available Ca...	Assigned	Description	Provisioning Type
Exchange	Classification	41,861.37 GB	5,581.50 GB			
DAG1	Storage pool	20,930.69 GB	2,759.42 GB		DAG1	
DAG2	Storage pool	20,930.69 GB	2,822.04 GB		DAG2	
VMAX10k	Classification	6,408.69 GB	1,945.99 GB			
Backup	Storage pool	6,408.69 GB	1,945.97 GB		Backup	
VNX5700	Classification	2,138.17 GB	1,260.46 GB			
Pool 1	Storage pool	2,138.17 GB	1,260.46 GB		Pool 1	
LUN_99_ClientLoar	Logical unit	800.00 GB	800.00 GB	Yes	LUN_99_ClientLoad_VM_OS	Fixed
SCVMMtest	Logical unit	50.00 GB	50.00 GB	Yes		Fixed

Managing both VNX5700 and VMAX 10K

# SOLUTION SUMMARY

This solution highlights the close integration of ESI for Windows Suite with Microsoft System Center 2012 SP1, which allows administrators to control application and EMC storage infrastructure throughout the data center. This includes multi-hypervisor and multi-array environments.

- ESI Management Packs for SCOM monitor EMC storage systems
- EMC SMI-S Provider allows storage management with SCVMM
- ESI PowerShell allows automated provisioning of EMC storage
- SCO provides workflow management
- SCVMM manages both ESXi and Hyper-V