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Lessons Learned

BERT DE REUS

CONSULTANT SERVER EN STORAGE SOLUTIONS

- Core parking issue BL490c G6 met Windows 2008 R2
- Upgrade Hyper-V R1 naar Hyper-V R2
- SQL2008 Performance op Hyper-V R2 met HP Lefthand P4500
- VSS Hardware Providers i.c.m. Cluster Shared Volumes
- Duplicate netwerknamen met Hyper-V R2 Cluster
- Netwerken met HP Virtual Connect
- HP Best Practices Hyper-V R2 met HP EVA



Core Parking issue BL490c G6 met Windows 2008 R2



- Situatie:
 - 3-node cluster Windows 2008 R2 EE met Hyper-V
 - HP BL490c G6
- Issue:
 - 's avonds/'s nachts server crash BSOD
Blue Screen Trap (BugCheck, STOP:
0x000000D1,0x0000000000000018, 0x0000000000000002,
0x0000000000000000, 0xFFFFF88001868096))
 - evbda.sys (NIC driver)



- Support
 - Support case geopend bij Microsoft
 - Support case geopend bij HP (situatie nagebootst)
- Oplossing
 - Virtual Connect upgrade (zonder resultaat)
 - NIC Driver en Firmware upgrade (zonder resultaat)
 - BIOS update (zonder resultaat)
 - HP heeft probleem niet kunnen reproduceren
- Workaround
 - No C-States in BIOS (Minimum Processor Idle Power State)
 - High Performance enabled in OS



Upgrade Hyper-V R1 naar Hyper-V R2



Upgrade Hyper-V R1 naar Hyper-V R2

- Situatie
 - 4-node Windows 2008 SP2 Cluster met Hyper-V
 - 1 node onbetrouwbaar na IP problemen
- Procedure
 - Installatie 1-node Windows 2008 R2 EE cluster met Hyper-V
 - Cluster Shared Volumes geconfigureerd
 - Toevoegen in VMM 2008 R2
 - Cluster Reserve Node = 0 ingesteld (verwijderen en toevoegen VMM)
 - Offline Storage Migration van VM's (drag 'n drop)
 - Verwijderen Hyper-V R1 node uit cluster
 - Herinstallatie met Hyper-V R2
 - 1 voor 1 uitgevoerd



Upgrade Hyper-V R1 naar Hyper-V R2

Host Cluster Properties for ap-nlalm1-sp021

General PRO Networks Storage

Name: ap-nlalm1-sp021
Domain: AP.Global
Location: Trusted Domain
Cluster reserve (nodes): 1
Cluster reserve state: OK
Cluster reserve details:
Nodes:

Name	Cluster Service	Status
<input checked="" type="checkbox"/> ap-nlalm1-sp040.AP.Global	Running	OK
<input checked="" type="checkbox"/> ap-nlalm1-sp039.AP.Global	Running	OK
<input checked="" type="checkbox"/> ap-nlalm1-sp041.AP.Global	Running	OK
<input checked="" type="checkbox"/> ap-nlalm1-sp042.AP.Global	Running	OK

Description:

OK Cancel



SQL Performance op Hyper-V R2



- Situatie
 - Hardware
 - HP Lefthand P4500 multi site cluster (iSCSI)
 - 3x HP DL380 G6 (92 GB RAM)
 - 3- node cluster Windows 2008 R2 EE met Hyper-V
 - Virtual Machine
 - Windows 2008 R2 x64 Std
 - 4 GB RAM
 - 4 vCPU
 - Meerdere instances
 - Koppeling met AS400



- Oude Hardware
 - HP Proliant ML350 G3
 - 4 GB RAM
 - 7x 10k disk in RAID5
 - SQL 2005
 - Windows 2003
- Query oude omgeving
 - Duur 1 uur 38 minuten
- Zelfde query nieuwe omgeving
 - **7 minuten**



VSS Hardware Providers i.c.m. Cluster Shared Volumes



- Situatie
 - VM's verspreid over meerdere CSV's
 - DPM 2010
 - HP Lefthand Hardware Providers
- Gevolg
 - Snapshots op hardware niveau
 - Gepresenteerd aan Hyper-V host
 - Cluster Resources offline
- Oorzaak
 - Cluster kon niet omgaan met snapshot met identieke signature



- Implementer MS Hotfix KB975354

- **Issue 1**

Consider the following scenario: Some Internet SCSI (iSCSI) connections are created in a virtual machine that is running Windows Server 2003.

- You back up this virtual machine on the virtual machine host server.
- In this scenario, the error code 0x800423f4 occurs when you back up the virtual machine. Additionally, the following event is logged into the Hyper-V Virtual Machine Management Service event log:

The number of reverted volumes does not match the number of volumes in the snapshot set for virtual machine "'virtual machine name' (Virtual machine ID <GUID>)".

- **Issue 2**

Consider the following scenario: Cluster shared volumes are enabled on a failover cluster for Hyper-V.

- Some virtual machines are saved on the same volume. But they are running on different nodes.
- These virtual machines are backed up in parallel.
- In this scenario, the virtual machine backup operation fails.



- **Issue 3**

Consider the following scenario: A virtual machine is being backed up on a server that is running Hyper-V.

- At the same time, an application backup operation is being performed in the same virtual machine.
- In this scenario, some data is truncated from the application backup in the virtual machine. Therefore, this behavior causes data loss.

Issue 4

Consider the following scenario: A virtual machine that has some snapshots is backed up on a server that is running Hyper-V.

- Then, this virtual machine is restored to another location



Duplicate netwerknamen



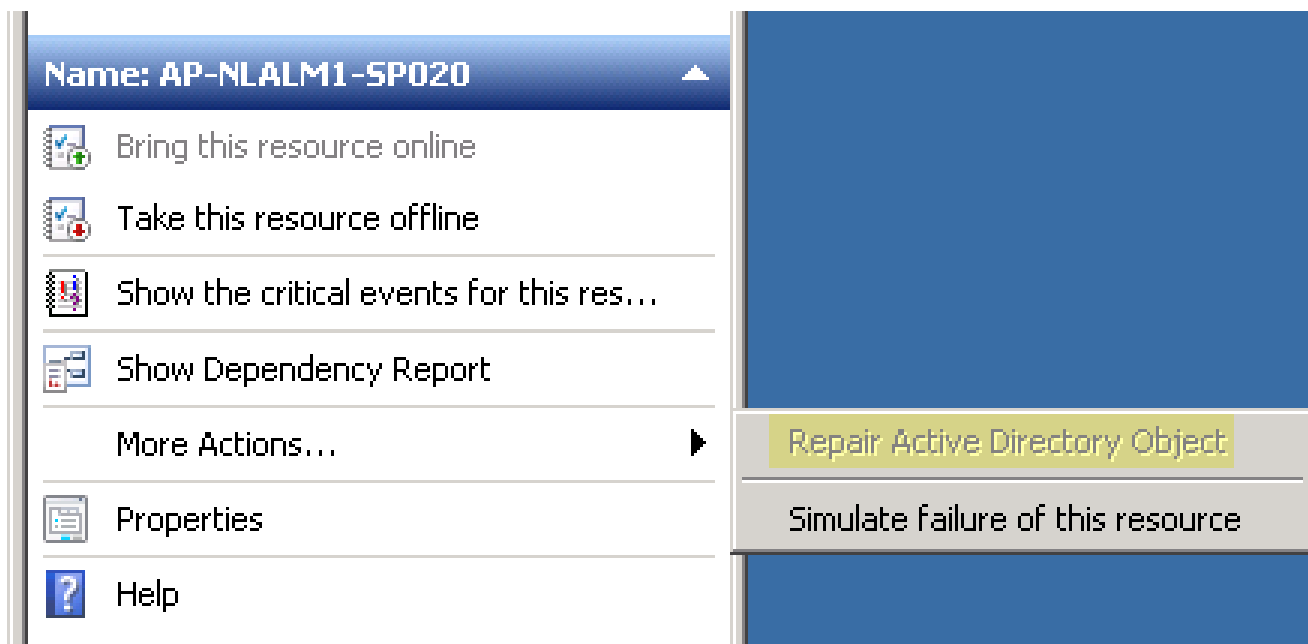
- Situatie
 - 2 Windows 2008 R2 clusters met Hyper-V
 - Diverse VM's
 - Hyper-V nodes nog niet geactiveerd
- Probleem
 - Missing VM's
 - Onbereikbare VM's
 - Cluster Shared Volumes alleen benaderbaar op owning node
 - Crashende VM's
 - Live Migration lukte wel, maar VM was vervolgens "Missing"



- Troubleshooting
 - Alle CSV's en VM's online op 1 node
 - Probleem op 1 cluster
 - Herstarten nodes geen resultaat
 - Cluster niet online na complete shutdown
 - Ping op clusternaam gaf reply (ondanks shutdown)
- Oorzaak
 - VM op cluster 2 had dezelfde naam als cluster 1
 - VM was aangemeldt op domein



- Oplossing
 - Hernoemen van VM
 - Toevoegen van clusternaam in DNS
 - Toevoegen van clusternaam in AD
 - Herstarten van alle Hyper-V nodes
 - Repair Active Directory Object in Failover Cluster Manager





Netwerken met Virtual Connect



Netwerken met HP Virtual Connect

Shared Uplink Set			Port Status		
OK	<input type="radio"/>	SUS_1	OK	Linked/Active	10 Gb
			OK	Linked/Active	10 Gb
OK	<input type="radio"/>	SUS_2	OK	Linked/Active	10 Gb
			OK	Linked/Active	10 Gb

Shared Uplink Sets

Associated Networks (VLAN tagged) ?

Network Name	VLAN ID	Native ?	Smart Link ?	Private Network ?	Advanced...		
Management_1	10	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
Live_Migration_1	20	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
VLAN50_1	50	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
VLAN60_1	60	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
VLAN103_1	103	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
VLAN51_1	51	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
VLAN104_1	104	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
VLAN203_1	203	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
VLAN204_1	204	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			



Netwerken met HP Virtual Connect

Port	Network Name	Status	Port Speed Setting	Allocated Bandwidth	PXE	MAC	Mapping	Delete
1	Management_1	OK	Custom	1 Gb	Use BIOS	00-17-A4-77-00-00	LOM:1-a => Bay 1	X
2	Management_2	OK	Custom	1 Gb	Use BIOS	00-17-A4-77-00-02	LOM:2-a => Bay 2	X
3	Live_Migration_1	OK	Custom	1 Gb	Use BIOS	00-17-A4-77-00-28	LOM:1-b => Bay 1	X
4	Live_Migration_2	OK	Custom	1 Gb	Use BIOS	00-17-A4-77-00-2A	LOM:2-b => Bay 2	X
5	Multiple Networks	OK	Preferred	8 Gb	Use BIOS	00-17-A4-77-00-2C	LOM:1-c => Bay 1	X
6	Multiple Networks	OK	Preferred	8 Gb	Use BIOS	00-17-A4-77-00-2E	LOM:2-c => Bay 2	X

vNet Name	Status	Server VLAN Id	Untagged ?	Delete
VLAN50_1	OK	50	<input type="checkbox"/>	X
VLAN51_1	OK	51	<input type="checkbox"/>	X
VLAN60_1	OK	60	<input type="checkbox"/>	X
VLAN103_1	OK	103	<input type="checkbox"/>	X
VLAN104_1	OK	104	<input type="checkbox"/>	X
VLAN203_1	OK	203	<input type="checkbox"/>	X



- 3 Teams

The screenshot shows the 'HP Network Configuration Utility Properties' dialog box. It has two tabs: 'Ethernet Devices' (selected) and 'iSCSI Devices'. Under 'Ethernet Devices', there is a section for 'HP NICs' which contains a tree view of network teams. Three teams are visible: 'MgmtTeam #1' (with a green checkmark icon), 'Live Migration Team #2' (with a green checkmark icon), and 'VM Network Team #3' (with a blue 'V' icon). Each team is connected to a list of HP NC532i Dual Port 10GbE Multifunction BL-c Adapters. For example, 'MgmtTeam #1' is connected to adapters #4 and #3. To the right of the tree view is a 'Teaming Setup' panel with buttons for 'Team', 'Dissolve', 'VLAN(802.1Q)', 'Save', and 'Properties'. At the bottom of the dialog are buttons for 'Help', 'License Manager', 'Enable UID' (unchecked), 'Display Tray Icon' (checked), and the HP logo with 'invent' text. At the very bottom right are 'OK' and 'Cancel' buttons.



- Vul VLAN's in

Team Properties

Teaming Controls | Settings | **VLAN** | Information | Statistics | Team Utilization

VM Network Team #3

Ethernet VLAN Connections

VLAN Id	VLAN Name	IP Address	IPv6 Address
50	VLAN50		
51	VLAN51		
60	VLAN60		
103	VLAN103		
104	VLAN104		
203	VLAN203		

Add Edit Remove Properties

Default/Native VLAN Id: 50










Default/Native VLAN Tag:

Receive Path Validation VLAN Id: 50

OK Cancel Help

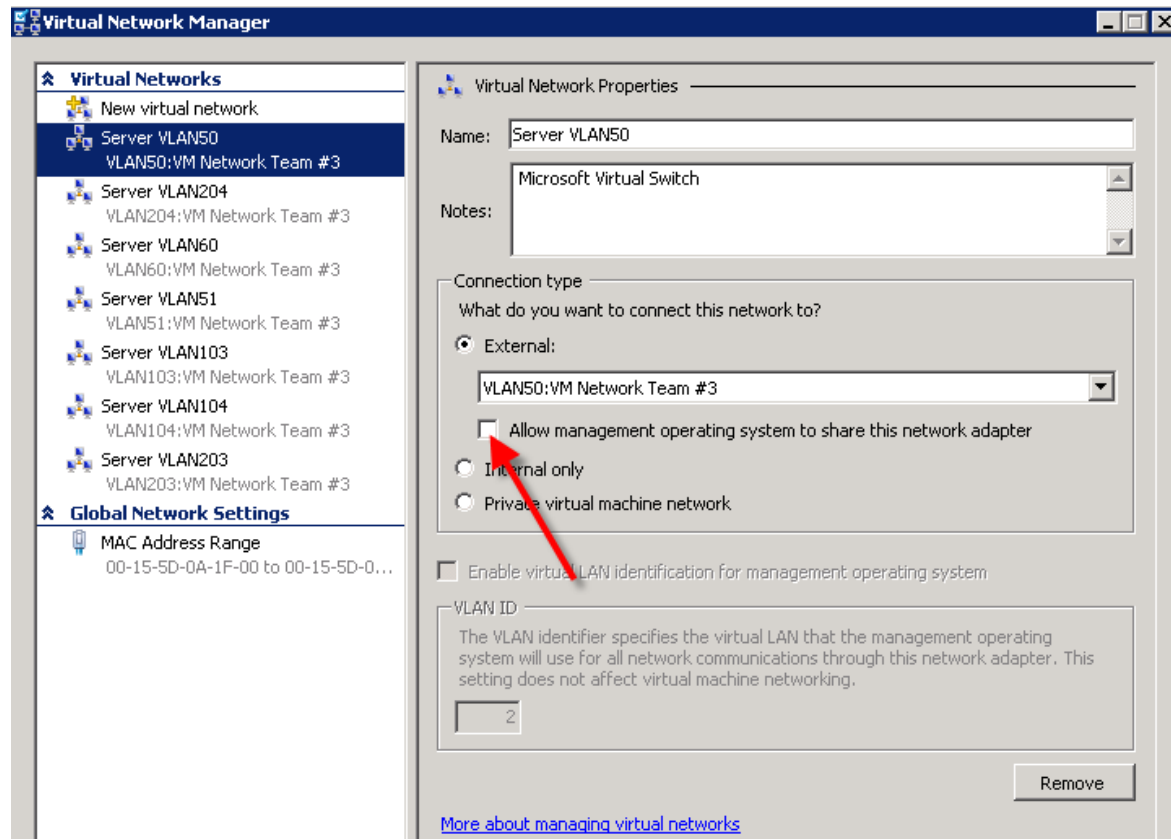


- Ieder VLAN krijgt een netwerk adapter in Windows

 VM Team VLAN60	Enabled	VLAN60:VM Network Team #3
 VM Team VLAN51	Enabled	VLAN51:VM Network Team #3
 VM Team VLAN50	Enabled	VLAN50:VM Network Team #3
 VM Team VLAN204	Enabled	VLAN204:VM Network Team #3
 VM Team VLAN203	Enabled	VLAN203:VM Network Team #3
 VM Team VLAN104	Enabled	VLAN104:VM Network Team #3
 VM Team VLAN103	Enabled	VLAN103:VM Network Team #3
 Managment	AP.Global	MgmtTeam #1
 Live Migration	Unidentified network	Live Migration Team #2
-		



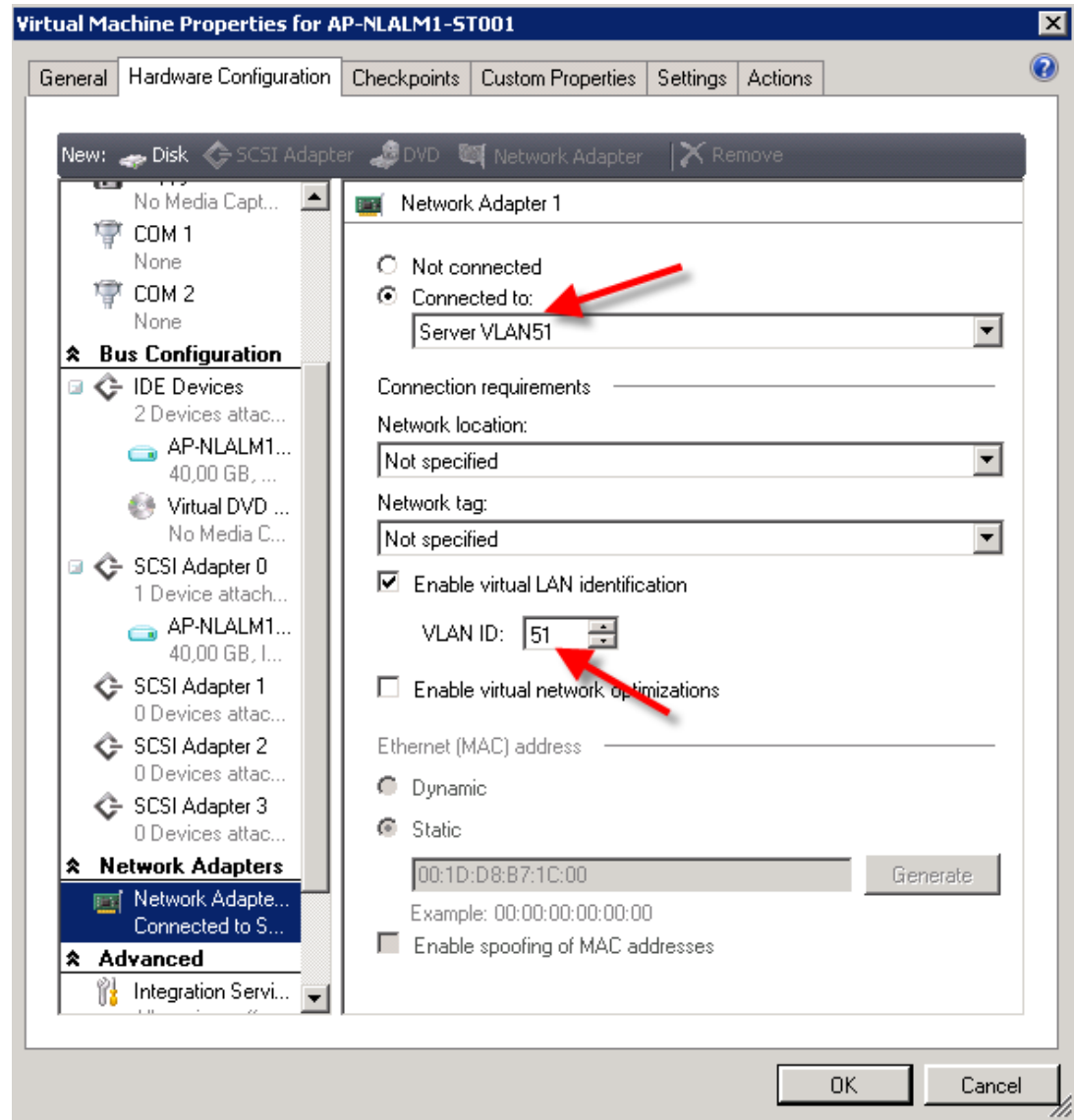
Netwerken met HP Virtual Connect



- Maak Virtual Network voor ieder VLAN
- Vink "Allow Management" uit

Netwerken met HP Virtual Connect

- Kies Virtual Network
- Vul VLAN ID in





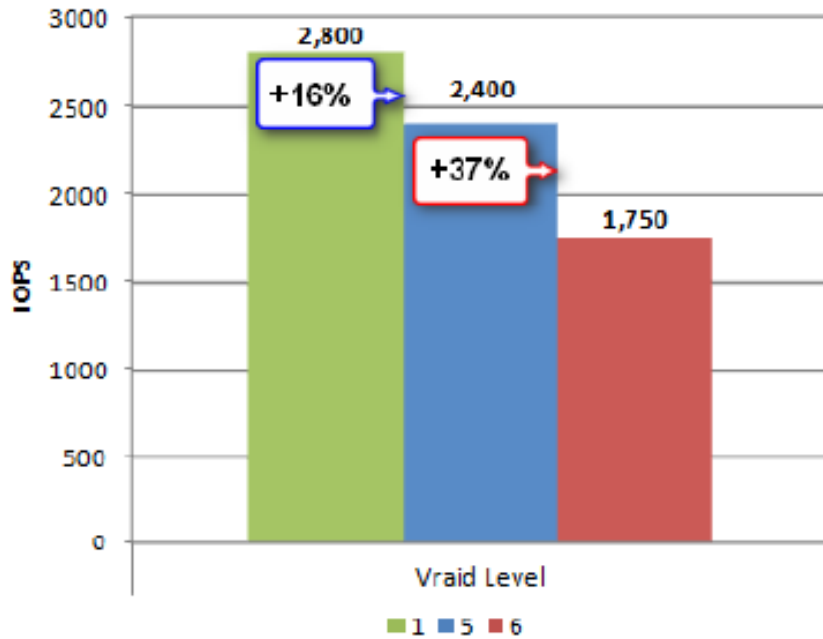
HP Best Practices Hyper-V R2 met HP EVA



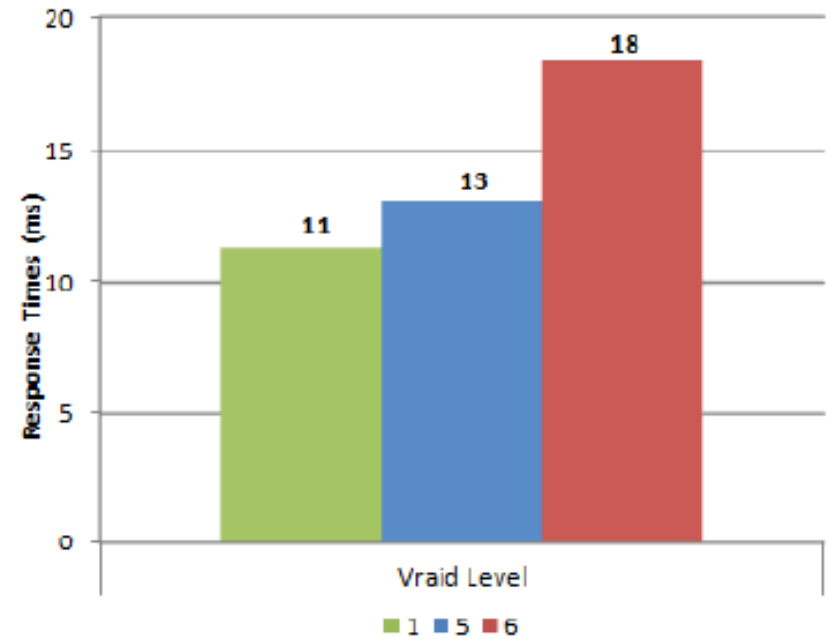
- VM (guest) operating systems cannot be clustered in this configuration. To include the guest OS in a cluster, iSCSI storage must be used.
- EVA performance best practices suggest using as few disk groups as possible.
- For ease of management, faster migrations, and excellent performance, use Cluster Shared Volumes in your clustered Hyper-V environment. If very few Vdisks (LUNs) are used on the EVA, consider increasing HBA queue depths for possible performance improvements.
- For the highest performance and availability, use Vraid1 for EVA Vdisks. For lower performance or availability requirements, consider using Vraid5 or Vraid6.



IOPS by Vraid Level



Response Times (ms) by Vraid Level





- For optimal performance, balance usage of the EVA controllers by specifically placing each LUN on a desired controller based on the LUN's expected workload.
- Use CV-EVA and EVAPerf to monitor the managing controller for each LUN and rebalance the LUNs across the controllers with CV-EVA or SSSU, if necessary.
- Use fixed VHDs rather than dynamically expanding VHDs for production environments where performance is critical. Where capacity is more of a concern, or for general use, use dynamically expanding disks.
- Use differencing disks for test and development environments to rapidly deploy similar VMs and to test compatibility. To avoid performance degradation, do not use differencing disks in a production environment or in environments that share a disk group with a production system.



- Use Hyper-V snapshots for test and development environments before installing new patches, updates, or software. To avoid performance degradation, and because VMs must be shut down to properly remove differencing disks (.avhd files), do not use snapshots in production environments or on a disk group shared with a production system.
- Keep at least 512 MB free on volumes holding virtual machine VHDs or configuration data. If dynamically expanding VHDs, differencing disks, or snapshots are used, keep sufficient disk space free for unexpected sudden increases in VHD or AVHD size. The necessary capacity depends on the workloads applied.



- Because VHDs offer functionality above what is available with pass-through disks, do not use pass-through disks for OS boot disks. Use pass-through disks only when application performance is of extreme importance, when the application vendor recommends allowing raw access to the disk, or when a single disk needs a capacity greater than 2 TB.
- If necessary, VHDs and some pass-through disks can be expanded. Before expanding a disk, be sure to have a current backup of the disk and pause the I/O traffic to that disk to avoid data corruption.
- Use HP Storage Essentials or Microsoft System Center Operations Manager (SCOM) to monitor free disk capacity on volumes that hold VM VHDs or configuration files.



HP Best Practices Hyper-V R2 met HP EVA

- The boot disk for a Hyper-V VM must use a virtual IDE controller. For ease of management and to use the hot-add or hot-remove disk feature of Hyper-V R2, place application and data disks on virtual SCSI disk controllers.
- Integrate System Center Operations Manager with System Center Virtual Machine Manager to generate Performance and Resource Optimization (PRO) tips to increase availability and performance.
- To avoid server name conflicts when deploying virtual machines based on existing operating system images or clones, run the Sysprep command with the /generalize and /shutdown options prior to creating the image or clone.
- To avoid copying large quantities of unused disk capacity across the network, for all required P2V disk conversions, convert to dynamically expanding VHDs instead of fixed VHDs.



Vragen?