Micron Technology, Inc.

Micron NVMe SSD Best Practices on Microsoft Azure Stack HCI

Windows Server 2019 Data Center + Storage Spaces Direct (as SDS) + RDMA + Micron NVMe 9300 SSD + Micron 5300 SSD

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Introduction

Microsoft released its new Azure Stack HCI solution with RDMA (Remote Direct Memory Access) with Windows Server 2019. RDMA is advanced technology which can improve the storage pool access. Windows Server 2019 can use software-defined storage, which Microsoft offers with Storage Spaces Direct. It can use multiple combinations of storage disks, such as NVMe[™] + SSD, NVMe+HDD or SSD+HDD, whatever is needed to fit into each scale. Azure Stack HCI (Microsoft's hyperconverged infrastructure solution) can use RDMA well. Microsoft recommends iWARP protocols if your network is based on a traditional TCP/IP base standard. If you are using InfiniBand, please use RoCE v2.

General Information

Network Structure

Option 1: Direct Connect

If you are using just 2 Nodes, please connect it as below. You do not need to ready any Network switch for storage access. Direct connection will be enough for you. **100GB NIC**







25GB NIC



Option 2: Switched Network

If you need to use three nodes or more, please ready the storage network switches. Micron has used Cisco-Nexus 9336c-FS2 switch, which can speak iWARP protocol to enable RDMA.



1. Network port setting

Please discuss maximum MTU size with your local network team. Cisco announced that MTU 9000 bytes will be the standard frame size for a jumbo frame for VXLAN. If you would like to use MTU 1500 bytes frame, it works fine also. MTU 9000 will enable better access to your storage pool, however.

2. VLAN

Please plan to have the below VLAN on the server:

- 1. Service VLAN
 - Your customer will access your VM on Hyper-V or via the volume/file/folder on Storage Spaces Direct as file server thought Service LAN.
- 2. Storage VLAN
 - This is for a pure storage network. Please discuss this with your network team. If you use direct connect with two nodes, you do not need to discuss the configuration below with your network team and can configure NIC setting by yourself.
 - MTU size (1500 or 9000)

HPE Ethernet 10/25G	b 2-port	621SFP2	8 Adap	ter Properties	×
General Advanced The following propert the property you war	Driver ties are av it to chan	Details vailable fo ge on the	Events or this ne e left, and	Power Managem wwork adapter. Click d then select its value	ent k ue
on the right. Property: Encapsulation Over Flow Control Interrupt Moderation iWARP Delayed Ac iWARP Recv Wind iWARP TCP Timest Jumbo Packet Large Send Offload Large Send Offload Large Send Offload Link control Locally Administered Maximum Number o Network Direct Fund NUMA node ID	head Size k ow Size (i amp V2 (IPv4) V2 (IPv6) d Address f RSS Qu tionality	eues		/alue: 1514 1514 4088 9014 9614	~
			[ОК	Cancel

- ① iWARP or InfiniBand (RoCEv2)
- ② port can be 10GB or 25GB or 50GB or 100GB
- 3. Management VLAN
 - The Management VLAN is the interface the system administrator uses to operate your server. You can use a dedicated 1 GB port or the Service VLAN for management on a SET switch. Please configure a SET switch for



management also if you do not have network port for management on server.

rtual Switches	🛛 🛃 Virtual Switch Properties —
New virtual network switch	Name:
FComputeSwitch HPE Ethernet 10/25Gb 2-port 621	ComputeSwitch
🚣 Extensions	Neter
obal Network Settings	-
MAC Address Range 00-15-5D-44-A4-00 to 00-15-5D-4	<u>^</u>
	What do you want to connect this virtual switch to?
	External network:
	HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter #4
	Allow management operating system to share this network adapter
	Fnable single-root I/O virtualization (SR-TOV)
	VLAN ID
	Enable virtual LAN identification for management operating system
	The VLAN identifier specifies the virtual LAN that the management operating
	system will use for all network communications through this network adapter. This setting does not affect virtual machine networking.
	2

- 4. Console VLAN
 - Console VLAN will be used for iLO. HPE iLO will bring remote console for you.

3. Network cable

Please find out correct network cabling with your network team. You need to investigate the network card (NIC) spec closely. I have used "25GbE SFP28 SR LC" + "LC-LC OM3 fiber cable" to support a 25GB network. However, you can use other choices as below.

- Optical Transceivers 40GbE QSFP+ with fiber cable
- Optical Transceivers 50GbE QSFP28 with fiber cable
- Optical Transceivers 100GbE QSFP28 with fiber cable
- Direct attach copper (DAC) [copper cables]
- Active optical cables (AOC) Transceivers with integrated fibers



4. Network card on Server.

A single NVMe SSD will consume 25GbE bandwidth. If you plan to have 4 x NVMe SSDs, please plan to have 4 x 25G ports. If you try to use 100GbE, please make sure of your NIC spec and motherboard. 100GbE will require a PCIe gen 4 bus. Please review below points. A PCIe Gen 3 bus will reach the limits of the hardware.

Network bandwidth requirement for Disk







PCI Express link performance^{[39][40]}

Version Introduced Line	Introduced	red Line code	Transfer rate[i][ii]	Throughput ^{[1][iii]}					
	Eine code	Transfer Face	x1	x2	x 4	x8	x16		
1.0	2003	8b/10b	2.5 GT/s	250 MB/s	500 MB/s	1.0 GB/s	2.0 GB/s	4.0 GB/s	
2.0	2007	8b/10b	5.0 GT/s	500 MB/s	1.0 GB/s	2.0 GB/s	4.0 GB/s	8.0 GB/s	
3.0	2010	128b/130b	8.0 GT/s	984.6 MB/s	1969.2 MB/s	3938.5 MB/s	7.877 GB/s	15.754 GB/s	
4.0	2017	128b/130b	16.0 GT/s	1969.2 MB/s	3938.5 MB/s	7.877 GB/s	15.754 GB/s	31.508 GB/s	
5.0	2019	128b/130b	32.0 GT/s ^[iv]	3938.5 MB/s	7.877 GB/s	15.754 GB/s	31.508 GB/s	63.015 GB/s	
6.0 (planned)	2021	128b/130b & PAM-4	64.0 GT/s	7.877 GB/s	15.754 GB/s	31.508 GB/s	63.015 GB/s	126.03 GB/s	

https://en.wikipedia.org/wiki/PCI_Express

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Hardware Information

1. Please refer to the below server hardware configuration.

Micron has used Cascade Lake with HPE DL380 Gen 10.

S2D Node (DL380 Gen10 8SFF CTO) x 2 server HW						
Category	description	Part#	Qty			
Server	DL380 Gen10 8SFF(2.5 inch) base unit	868703-B21	1			
CPU (Cascade lake)	Xeon G 6248 2.5GHz 1p20c x2 (2p/40c)	P02502-B21 P02514-L21	1 1			
memory	32GB 2Rx4 PC4-2933Y-R Smart memory kit (768GB)	P00924-B21	24			
Rear 2SFF drive cage	DL38x Gen10 2SFF(2.5inch) premier drive cage	826687-B21	1			
Boot disk	Micron 5300 SATA SSD 480GB MU SC 2.5 (RAID1)		2			
Storage controller for OS	Smartアレイ P408i-a SR Gen10 controller	804331-B21	1			
Smart Array option	Smart storage hybrid capacity 145mm	P02377-B21	1			
Drive cage	DL38x Gen10 8xNVMe Express bay kit	826689-B21	1			
Cache drive	NVMe 9300 MAX 3.2TB MU U.2 (2.5 inch, 15mm) [MTFDHAL3T2TDR-1AT1ZABYY]		2			
Secondary Riser	DL38x Gen10 Secondary NVMe x4 Riser	873732-B21	1			
Storage controller (S2D)	Smart Array P408i-p SR Gen10 controller	830824-B21	1			
Capacity drive	Micron 5300 PRO SATA SSD 3.84TB MU SC 2.5		4			
NIC for Service LAN	HPE Ethernet 10/25Gb 2-port 622FLR-SFP28 adapter	867334-B21	1			
Transceiver	10GbE SR SFP+ module	455883-B21	2			
NIC for RDMA	HPE Ethernet 10/25Gb 2-port 621-SFP28 adapter	867328-B21	2			
Transceiver	25Gb SFP28 SR 100m LC transceiver	845398-B21	4			
Power supply	800W FS Platinum LH power supply	865414-B21	2			
Fan	DL38x Gen10 high performance fan kit include 6 x Fans	867810-B21	1			
Rack mount kit	2U SFF Easy Install rack rail kit	733660-B21	1			
OS	Windows Server 2019 Data Center Edition	Micron own	-			
software	OneView Advanced (include iLO Advanced)	E5Y34A	1			

2. If you are not familiar with your hardware configuration, please find a good one from the Microsoft catalog. These servers come tested by Microsoft and the server hardware vender. You just need to consider which network card to fit into your environment, and the most compatible disk size.

https://azure.microsoft.com/en-us/products/azure-stack/hci/catalog/



 Server sizing for Azure stack HCI How many servers do you need for Azure Stack HCI? It's better to have good example. Here is one scenario to consider:

Scenario: you need to install a virtual desktop infrastructure (VDI) solution for your company to improve the user experience for remote workers.

Your company uses the following standard Linux hardware.



You would like to replace 400 Linux clients with a VDI solution, so you might choose these servers:





When you follow it, the result will be...





Four nodes should be good. But five nodes will be better to allow extra maintenance memory for the system administrator. So, you will not have only one node at that time – three nodes will be available during the maintenance. Five nodes will be best for stable operation.

- 4. How to choose the CPU
 - a. The following link has benchmark data about CPU.
 - i. http://spec.org/
 - b. Please follow the step below.



30 spec	Standar	d Performance Eva	luation Co	orporation
Home Benc	hmarks 👻 Tools 👻	Results 🕶 Contact Si	te Map Sea	nrch Help
esults Published Results Results Search Fair Use Policy	•	SPEC ACCEL SPEC Cloud IaaS 2018 SPEC Cloud IaaS 2016 SPEC CPU 2017	esults Search all SPEC	CPU 2017 results
CPU2017 Documentation Overview System Requirements Run & Reporting Rules Using SPEC CPU2017 Benchmarks		SPEC CPU 2006 SPECjbb 2015 SPECjEnterprise 2018 Web Profile SPECjEnterprise 2010	Search all SPEC Search all SPEC Search all SPEC Search all SPEC	CPU 2017 Integer Speed results SPEC CPU2017 Results These results have been submitted to SPEC; see the disclaimer before studying any res Available Results Browse
Technical Support	Configurable Search	SPECJVM 2008	ine results since	The following are sets of available results since the announcement of the benchmark in • AI CPU2017 Results Results from all publication quarters, broken out by reported metric:
	We also support a	a much more configurable interfac	e which alk s)	Speed: [SPECspeed 2017 Integer, SPECspeed 2017 Floating Point] Throughput: [SPECrate 2017 Integer, SPECrate 2017 Floating Point]
	Full Database Dumps Alternatively, you maybe dozens of	can have everything returned all fields across by hundreds of rows	together. Tl down.	Results broken out by the year and quarter wherein they were published: • 2019, Quarter: [1, 2, 3, 4] • 2018, Quarter: [1, 2, 3, 4] • 2017, Quarter: [1, 2, 3, 4] Search
	Dump All Reco Dump All Reco	rds rds As CSV		Use the CPU2017 Search Form the make dynamic selections from the available results. Home - Contact - Site Nap - Privacy - About SPEC

This suggested benchmark option was defined in 2017, but you select aother one.

c. Please input your server hardware name. SPEC/OSG Result Search Engine 1 Available Configurations: All SPEC CPU2017 Search Form Request: Simple Advanced • Gol spec CPU2017 Results -- Form This configuration offers access to summary information across all CPU2017 results. Use a benchmark specif esults, including duplication * **Configurable Request** Control the content, the ordering, and the format, of the search results. The features provided in this form Content Case-Sensitive Earlies Latest Specify what columns you want to see, and which records would qualify. Column Display Criteria Specify in v uld like to see the : Display or skip column in output If specified, display only those results that qualify Key Display • Display • Hewlett Packard Enterprise Hardware Vendor matches ProLiant DL380 Gen10 matches System Peak Result Display * Display * equals . Format Base Result equals Specify in what form the results should be returned. Output Format WHITHE3.2 Table © Preformatted Test Comma Separated Val Fatch Results Reset Form

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d. The Hypervisor may require good performance from multiple cores.

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Found 359 results (ou	t of 13999 records).		
PU2017 Integer Spee	d ←S	ingle core	performance
lardware Vendor	System	Peak Re	esult Base Result
ewlett Packard Enterprise	ProLiant DL380 Gen10 (1.70 GHz, Intel Xeon Bronze 3104)	4.17	4.06
ewlett Packard Enterprise	ProLiant DL380 Gen10 (1.70 GHz, Intel Xeon Bronze 3106)	4.34	4.20
swlett Packard Enterprise	ProLiant DL380 Gen10 (1.80 GHz, Intel Xeon Gold 6222V)		9.21
wlett Packard Enterprise	ProLiant DL 380 Gen10 (3.80 GHz, Intel Xeon Gold 5222)		9.11
wlett Packard Enterprise	ProLiant DL380 Gen10 (3.90 GHz, Intel Xeon Gold 6137)		9.52
2U2017 Floating Poin	system	Peak R	esult Rase Result
whatt Darkrand Entermeine	Deal and Ol 380 Car 10 /1 30 CHz Intel Year Brenze 3104)	37.6	27.1
wield Packard Enterprise	ProLiant DL360 Gen10 (1.70 GHz, Intel Xeon Bronze 3106)	47.2	31.2
wett Packard Enterprise	Protant DL380 Gen10 (1.70 GHz, Intel Xeon Gold 6137)	47.2	89.0
U2017 Integer Rates		single core	performance
irdware Vendor	System	Peak Re	sult Base Result
wlett Packard Enterprise	ProLiant DL380 Gen10 (1.70 GHz, Intel Xeon Bronze 3104)		33.5
wlett Packard Enterprise	ProLiant DL380 Gen10 (1.70 GHz, Intel Xeon Bronze 3106)		44.5
wlett Packard Enterprise	ProLiant DL380 Gen10 (1.80 GHz, Intel Xeon Gold 6222V)		199 Tmultiple cores performance
wlett Packard Enterprise	ProLiant DL380 Gen10 (1.80 GHz, Intel Xeon Silver 4108)		65.5
Jair Dashaad Pateradaa	Beat lane Di 200 Canito M 00 Citis Tuest Varia Calif COCO B		242
U2017 Floating Point F	lates		
rdware Vendor S	ystem Po	eak Result Base I	Result Energy Peak Result Energy Base Result # Cores # Chips Published Disclosure
wlett Packard Enterprise Pr	oLiant DL380 Gen10 (1.70 GHz, Intel Xeon Bronze 3104)	45.3	multiple correct performations 2 Jan-2018 HTML CSV PDF PS Text Config
dett Packard Enterprise Pr	oLiant DL380 Gen10 (1.70 GHz, Intel Xeon Bronze 3106)	5954	
wlatt Rackard Enterneico Pe	oLiant DL380 Gen10 (1.80 GHz, Intel Xeon Gold 6222V)	184	40 2 Aug-2019 HTML CSV PDF P5 Text Config

e. Following are details of the 2017 testing option.

SPEC® CPU2017 Integer Rate Result Copyright 2017-2019 Worked Performance Production Copyright Hervlett Packard Enterprise (Test Sponsor 10Pt)) ProLinint DL380 Gen10 SPECrosc2017_int_base = 232 ProLinint DL380 Gen10 SPECrosc2017_int_base = 202 (2.50 GHz, Intel Xeon Gold 6248) SPECrosc2017_int_peak = Not-2019 IntelSponset CRUBULIANTE: Jac (2.50 GHz, Intel Xeon Gold 6248) Mac-2019 IntelSponset CRUBULIANTE: Jac (2.50 GHz, Intel Xeon Gold 6248) Mac-2019 IntelSponset CRUBULIANTE: Jac Jac Bendrank centi gaptio are evoluble in the TEX_TEXES	Submit Notes The neutral methods and the left create the processors. The optice of the outron "submit" Production was used to had create the outron between the outron of
Hardware Software CPC Name Isoft New Gold 208 OS SUST Lizer, Estruptive Forms 15 (566, 64) Newtonic 200 Start Milz; OS SUST Lizer, Estruptive Forms 15 (566, 64) Newtonic 200 Construction Construction Construction Newtonic 200 Construction Construction Construction Restruction Construction Construction Construction Constructio	December work down at her new lacker for ktor 1 at http://www.com/download/file/ 0.108997 MF - Archiver.2007 LF (1) (1) (2) (2) (2) (2) (2) (2) (2) (2) (2) (2
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- f. If you need help determining the correct one, please ask your HPE support contacts.
- 5. How to choose the memory spec
 - a. Please refer to the link below which has detailed memory information.



- i. https://assets.ext.hpe.com/is/content/hpedam/a00019564jpn
- ii. <u>https://support.hpe.com/hpesc/public/docDisplay?docId=a00019682en_</u> <u>us&docLocale=en_US</u>

	One of the following depending on model:	One of the following depending on model:						
Memory ⁵	Туре		HPE DDR4 SmartMemory, Registered Dual In-line Memory Module (RDIMM Load Reduced Dual In-line Memory Module (LRDIMM)					
	Dual In-line Memory Module (DIMM) slots available	24	12 DIMM slots per processor, 6 channels per processor, 2 DIMMs per channel					
	Maximum capacity (LRDIMM)	3.0TB	24 x 128GB LRDIMM - 2933 MT/s					
	Maximum capacity (RDIMM)	1.54TB	24 x 64GB RDIMM - 2933 MT/s					
	Maximum capacity (HPE Persistent memory)	6.0TB	12 X 512GB Memory Modules - 2666 MT/s					
	Maximum capacityNon-Volatile Dual In-line Memory Module (NVDIMM)	192GB	12 x 16GB NVDIMM - 2666 MT/s					

- b. If you want large capacity, I recommend LRDIMM. If not, RDIMM should be OK also. And please choose memory with a high data rate specification.
- 6. How to choose the disk
 - a. Please refer to the information below. You will be able to make some choices about your disk.



- b. The following SSD selector tool may help:
 - i. https://ssd.hpe.com/recommendation
- c. Microsoft recommends write-intensive SSDs for your cache tier. You can use read-intensive or mixed-use SSDs for your capacity tier also.



d. Please design capacity.



- i. Microsoft provides guidelines for making the design.
 - 1. English: <u>https://docs.microsoft.com/en-us/windows-</u> server/storage/storage-spaces/choosing-drives
 - 2. Japanese: <u>https://docs.microsoft.com/ja-jp/windows-</u> server/storage/storage-spaces/choosing-drives

About all flash: If you have $24x \ 1.2$ TB SSD = 28.8TB for your capacity tier, you need to have $2x \ 750$ GB NVMe SSD = 1.5 TB as your cache tier (5% of capacity tier will be required).

About SSD (or NVMe) + HDD: If you have 4x 4TB HDD = 16TB for your capacity tier, you need to have 2x 800GB NVMe or SSD = 1.6 TB as cache tier (10% of capacity tier will be required).

- ii. Please select the correct SSD type/capacity for the cache tier and capacity tier.
- iii. The following is the actual Micron performance data, which may be a good reference for you.
 - 544K IOPS = 4 x NVMe 9300 as cache tier + 8 x SSD 5300 on 2 x HPE ProLiant DL380 Gen 10 servers with 100GB NIC



- 462K IOPS = 4 x NVMe 9300 as cache tier + 8 x SSD 5300 on 2 x HPE ProLiant DL380 Gen 10 servers with 25GB NIC
- 438K IOPS = 4 x NVMe 9300 as cache tier + 8 x SSD 5210 on 2 x HPE ProLiant DL380 Gen 10 servers with 100GB NIC
- 4. 431K IOPS = 4 x NVMe 9300 as cache tier + 8 x HPE HDD on
 2 x HPE ProLiant DL380 Gen 10 servers with 100GB NIC
- 113K IOPS = 4 x SSD5300 as cache tier + 8 x HPE HDD on 2 x HPE ProLiant DL380 Gen 10 servers with 100GB NIC

Note1: Note: 80 VMs (40 VM per Node) – Azure D1 size (4KB IO Block, 100% Random [67% Read / 33% Write])

Note2: 100GB NIC Mellanox MCX516A-CCAT 100GbE NIC dual port QSFP28 Note3: 25GB NIC HPE Ethernet 10/25Gb 2-port 621-SFP28 adapter [867328-B21]

- 7. How to choose disk controller
 - a. HPE offers a lot of choice for disk controllers. However, we do not need to use a high-spec one. We can use a normal disk controller because of two reasons. One is that the HPE standard disk controller has enough specifications even with the entry-level model. The other reason is that Azure Stack HCI uses the pass-through mode (HBA mode). So, no special about disk controller needed. If you have performance issue with your disk controller, I recommend you reach out to Microsoft support and contact your hardware vender. You might also think abot queue depth [QD] on your disk controller.



BIOS Configuration

Power On the server.

Please push F9 to get the below screen.





Please select System Configuration

	gows2dtest02-con	
Hewlett Packard System Utilitie	es	۶ ۶
\Uparrow System Utilities $ ight angle$		
HPE ProLiant DL380 Gen10 Server SN: JPN930001N ILO IFV4: ID6375.32 ILO IFV6: FE80::0AF1:EAFF:FE98:4E1A User Default: OFF	System Configuration One-Time Boot Menu Embedded Applications System Information System Health Exit and resume system boot Reboot the System	
Enter: Select ESC: Ext F1: Help F7: Load Defaults F10: Save F12: Save and Ext	Select Language Setup Browser Selection	English V Auto V
Ittp://www.hpie.com/grdf/ProLlantGen10UEFI-Heip	Reboot Required F7: Load Defaults POST Code : 003D	F10: Save F12: Save and Exit (?) A: SSL ♥ ○ (*)

Please select BIOS/Platform Configuration (RBSU). And Please choose Virtualization – Max Performance as below.

Japanese

https://h50146.www5.hpe.com/products/servers/document/pdf/882269-002ajpn.pdf

English

https://support.hpe.com/hpsc/doc/public/display?docId=a00018313en_us

Hewlett Packard BIOS/Platfo	orm Configuration (F	RBSU)	? 🖌
\Uparrow System Utilities $>$ System Co	nfiguration BIOS/Platform	Configuration (RBSU)	
HPE Prol jant DI 380 Gen10	BIOS/Platform Co	onfiguration (RBSI	J)
Server SN: JPN930001P	Workload Profile	Virtualization -	Max Performance 🗸 🗸
ILO IPv6: FE80::0AF1:EAFF:FE98:4D30 User Default: OFF			X
	? Question		
	A change in Workload Profile sele	ction can adjust several other options. D	o you wish to continue?
Enter: Select ESC: Exit		OK Cancel	
F1: Help F7: Load Defaulte	Embedded UEFI Shell 💿		
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Please refer to other profile options.

Workload Profile Dependencies - Intel-based servers

	General Power Efficient Compute	General Peak Frequency Compute	General Throughput Compute	Virtualizatio n - Power Efficient	Virtualization - Max Performance	Low Latency
SR-IOV	Х	Х	Х	Enabled	Enabled	Disabled
VT-D	Х	Х	Х	Enabled	Enabled	Disabled
VT-x	Х	Х	Х	Enabled	Enabled	Disabled
Power Regulator	Dynamic Power Sa∨ings	Static High Performance	Static High Performance	OS Control	Static High Performance	Static High Performance
Minimum Processor I dle Power Core C- state	C6	X	X	C6	No C-states	No C-states
Minimum Processor Idle Power Package C- state	Package C6 Retention	Package C6 Retention	Package C6 Retention	Package C6 Retention	No C-states	No C-states
Energy Performance Bias	Balanced Performance	х	Ma× Performance	Balanced Performanc e	Max Performance	Max Performance
Collaborative Power Control	Enabled	Disabled	Disabled	Enabled	Disabled	Disabled
Intel DMI Link Frequency	Auto	Auto	Auto	Auto	Auto	Auto
Intel Turbo Boost Technology	Enabled	Enabled	Enabled	×	Enabled	Disabled
Intel NIC DMA Channels (IOAT)	Enabled	Х	х	×	X	X
HW Prefetcher	Enabled	Enabled	Enabled	Х	Х	Enabled
Adjacent Sector Prefetch	Enabled	Enabled	Enabled	X	X	Enabled
DCU Stream Prefetcher	Enabled	Enabled	Enabled	Х	Х	Enabled
DCU IP Prefetcher	Enabled	Enabled	Enabled	X	X	Enabled

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Table 1: Workload Profiles General Power Efficient Compute — Low Latency

Table Continued





Please select onboard disk controller (HPE Smart Array)

Please select Array Configuration





Please select "Create Array".



Please choose both SSD disk which is installed rear side.



Please choose RAID 1.



 $\Box \Box \nu$ Hewlett Packard System Configuration ? Set Logical Drive Configuration Set RAID Level ⊟ More Forms Create Array Set Logical Drive Configuration HPE ProLiant DL380 Gen10 Server SN: JPN930001N Logical Drive Label Windows 2019 Server DC iLO IPv4: 10.163.75.33 iLO IPv6: FE80::0AF1:EAFF:FE98:4E1A User Default: OFF Strip Size / Full Stripe Size 256 KiB / 256 KiB 6 Size 745.180 Unit Size GiB V SSD Over Provisioning Optimization Disable V Acceleration Method HPE SSD Smart Path V [Submit Changes] O Changes Pending O Reboot Required Exit F7: Load Defaults F10: Save F12: Save and Exit

If you would like to label, please add what you want. Click F12: Save and Exit

Please confirm the result on Logical Drive Details screen.



Please select 25GbE in "Link Speed" if you use 25GbE NIC.

© 🗐 O	gows2dtest02-con.micron.com		
Hewlett Packard System Con	figuration		₽?
ightarrow System Utilities $ig>$ System Con	figuration	621SFP28 Adptr - NIC	
HPE ProLiant DL380 Gen10 Server SN: JPN930001N ILO IPV4: 10.183.75.33 ILO IPV5: FE80:0AF1:EAFF:FE98:4E1A User Default: OFF	HPE Eth 10/25Gb 2 Main Configuration Page Firmware Image Properties • Device Level Configuration • Port Level Configuration •	p 621SFP28 Adptr - N	IIC
	Partitioning Mode Device Name Chip Type PCI Device ID PCI Address	Default HPE Eth 10/25Gb 2p 621SFI BCM57	P28 Adptr 7940S A2 8070 13:00:01
Enter: Select ESC: Exit F1: Help F7: Load Defaults	Link Status Link Speed	Connected 25 Gbps	\sim
F12: Save and Ext	Permanent MAC Address	94;F1:28:A8:89:4D	
Exit O Changes Pendi	ng OReboot Required F7: Loa	d Defaults F10: Save F12: Sa	ve and Exit

Please check the firmware version. I recommend you install latest one (refer to the HPE web page).

	gows2atest02-con.micron.co		
Hewlett Packard System Con Enterprise	figuration		۶ ۶
\equiv More Forms $>$ HPE Eth 10/250	Sb 2p 621SFP28 Adptr - NIC	Firmware Information	
HPE ProLiant DL380 Gen10 Server SN: JPN930001N	Firmware Informa	tion	
iLO IPv4: 10.163.75.33 iLO IPv6: FE80::0AF1:EAFF:FE98:4E1A	Family Firmware Version	08.37.29	
User Default: OFF	MFW Version	08.37.15.00	
	UEFI Driver Version	04.01.06.12	
	L2B Firmware Version	08.33.01.00	
Enter: Select ESC: Exit F1: Help F7: Load Defaults F10: Save F12: Save and Exit			
http://www.hpe.com/gref.ProLiantGen10UEFI-Heip			
Exit O Changes Pendir	ng O Reboot Required F7	7: Load Defaults F10: Save	F12: Save and Exit
1024 x 768	POST Code : 0038		i 🕜 🔒 SSL 🔗 🔿 🍅



Please confirm the following points in your BIOS setting if you are not using the HPE ProLiant Gen10 model. The Gen10 model will optimize the setting automatically and does not need much configuration.

- 1. BIOS
- 2. HBA mode
 - Gen10 will optimize the setting well. but you need to set it up as HBA mode (pass through setting) on Gen8 or Gen9.

OS Installation

HPE ProLiant DL380 Gen 10 has an iLO console. If you are not familiar with iLO, please refer to:

- English
 - http://itdoc.hitachi.co.jp/manuals/ha8000v/hard/Gen10/iLO/880740-004_en.pdf
- Japanese 日本語
 - https://h50146.www5.hpe.com/lib/products/servers/proliant/manuals/880740-191_ja.pdf

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Please access the iLO console and mount the OS installation ISO file.





Press any key (space key is fine)

Ø O		gows2dtest02-con		
Press any	key to boot from CD or	- DVD		
1024 x 768		POST Code : 003E	5] 🔒 SSL 🛛 🕑 🔿 🍐	
Please wa	it several minutes.			
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NVMe SSD Best Practices on Microsoft Azure Stack HCI

Micron

Please choose your preferred setting.

Ø 📰 O	gows2dtest02-con		」 ⊾ ^ӆ ×
	🕯 Windows Setup		
	Windows Server* 2019		
	I approved to install for after difference		
	Language to instant English (United States)		
	Line and currency format English (United states)		
	Enter your language and other preferences and click "Next" to continue.		
	Next		
	2018 Microsoft Corporation. All rights reserved.		
1024 x 768		🗇 🔒 SSL	O (b)

Please click "Install now".

🖆 Windows Setup
Windows Server • 2019
Install now
<u>R</u> epair your computer © 2018 Microsoft Corporation. All rights reserved.





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Please click "Windows Server 2019 Datacenter Experience". The edition can support S2D.

NVMe SSD Best Practices on Microsoft Azure Stack HCI





Please choose "Custom: Install Windows only(advanced)".

The OS diskspace is where you configure RAID 1 with rear SSD disks.

	Name		Total size	Free space	Туре		1
a la	Drive 0 Una	llocated Space	1490.4 GB	1490.4 GB			100
a	Drive 1 Una	llocated Space	1490.4 GB	1490.4 GB			
P	Drive 2 Una	llocated Space	745.2 GB	745.2 GB	Offline	- Pro-	
a	Drive 3 Una	llocated Space	2980.8 GB	2980.8 GB		Pà	Î
P	Drive 4 Una	llocated Space	2980.8 GB	2980.8 GB			
fr Refr	esh		Eormat	<mark>₩</mark> N <u>e</u>	w		
🕑 Loa	d driver	Extend					

	Name		Total size	Free space	Туре	
0	Drive 0 Unallo	ated Space	1490.4 GB	1490.4 GB		
0	Drive 1 Unallo	ated Space	1490.4 GB	1490.4 GB		
3	Drive 2 Unallo	ated Space	745.2 GB	745.2 GB	Offline	
0	Drive 3 Unallo	ated Space	2980.8 GB	2980.8 GB		
0	Drive 4 Unalloo	ated Space	2980.8 GB	2980.8 GB		
Refre	esh		Eormat	* Ng	N	
Load	driver	Extend				
Mindau	e en elle her lander	lad on this drive /C	have data (la)			
VV ITIGOVV	s carri t be irista	ilea on this anve. (5	now details)			
Windd	Diverse Setup	ted drive is offline. to get the drive onli	The drive needs to be or ne or click Cancel to go	nline to install v back.	Windows.	
Windo	ows Setup The selec Click OK	ted drive is offline. to get the drive onli	The drive needs to be on ne or click Cancel to go	nline to install \ back.	Vindows.	
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Please wait for 25 minutes.

4	Windows Setup	×
Ir	nstalling Windows	
St	tatus	
	Copying Windows files Getting files ready for installation (0%) Installing features Installing updates Finishing up	

Please put in the password for local Administrator.

Ø 🔤 O	gows	s2dtest02-con			$_{\varkappa}^{\pi} \times$
Customize	settings				
Type a password for the	built-in administrator account that	you can use to sign in to this comp	iter.		
User name					
Password	•••••				
Reenter password	•••••	~			
Ċ+				Finish	
			k		
1024 x 768			t	ි 🔒 SSL	⊘ ○



Please login new server.





Network Information

If you are using a company network, you can click "Yes". But be sure to follow your company's security policy.



Please open Server Manager from the Start menu.







Please choose "Windows Defender Firewall with Advanced Security" from Tools.

Please click "Inbound Rules" and click "New Rule…". Select "Custom".





Pls select "All Programs".

@ 🔤			gows2dtest02-con.micron.com			
🔐 Wi	indows Defender Firewall wit	h Advanced Security				- 🗆 X
File	Action View Help					
(2 🖬 🗟 🖬					
🔐 Wir	ndows Defender Firewall witl	Inbound Rules				Actions
	Inbound Rules	Name	Group	Profile Enable	d Action ^	Inbound Rules
	Connection Security Rules	🔮 AllJoyn Router (TCP-In)	AllJoyn Router	Domai Yes	Allow	🐹 New Rule
> 🕾	New Inbound Rule Wiz	ard	Allloyn Router	Domai Vec	X llow	▼ Filter by Profile
					llow	Tilter by State
	Program				llow	Filter by Group
	Specify the full program path a	and executable name of the program that this	rule matches.		llow	View 🕨
	Steps:				llow	G Refresh
	Rule Type	Does this rule apply to all program	s or a specific program?		llow	iii Export List
	Program				llow	👔 Help
	Protocol and Ports	All programs Rule applies to all connection	as on the computer that match other	rule properties	llow	
	Scope			rate properties.	llow	
	Action	O This program path:			llow	
	Name			Browse	llow	
		Example: c:\path\prog %ProgramFil	ram.exe es%\browser\browser.exe		llow	
					llow	
		Services		Customize	llow	
		Specify which services this rule	applies to.		llow	
					llow	
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					llow	
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					Gd to Setti	ngs to activate Windows
			< Back	Next > . Cancel		IP- II - COTORO TINIO OTINI
			- Buth	2 Cancer		1:27 AM
	ک 🛱 کر					^ 〒 48 9/3/2019 - 10
1024 x 768		www.hoocompidaria				(0) 🔒 SSL 🥝 🔿 🍈

Please select ICMPv4 as below.

indows Defender Firewall witl	Inbound Rules					Actions
Outbound Rules	Name	Group	Profile	Enabled	Action ^	Inbound Rules
Connection Security Rules	AllJoyn Router (TCP-In)	AllJoyn Router	Domai	Yes	Allow	New Rule
Mew Inbound Rule Wiza Protocol and Ports Specify the protocols and ports	rd to which this rule applies.				× Ilow Ilow Ilow Ilow	 ✓ Filter by Profile ✓ Filter by State ✓ Filter by Group View
Steps:					llow	Refresh
Rule Type Program	To which ports and proto	cols does this rule apply?			llow	Export List
 Protocol and Ports 	2.1.1	10110			llow	I Hop
Scope Action	Protocol number:	Any Custom HOPOPT			llow llow llow	
ProfileName	Local port:	ICMPv4 IGMP 5 TCP UDP IPv6			llow llow llow	
	Remote port:	IPv6-Route IPv6-Frag GRE ICMPv6 IPv6-NoNd IPv6-NoNd IPv6-Dts			llow llow llow	
	Internet Control Message (ICMP) settings:	VRRP PGM L2TP			llow Ilow Ilow	
					llow llow Activate	Windows
					Go to Settir	gs to activate Windows



Please click "Next".

Vindows Defender Firewall with	Inbound Rules					Actions
Inbound Rules	Name	Group	Profile	Enabled	Action A	Inbound Rules
Outbound Rules	Alllovn Router (TCP-In)	Allloyn Router	Domai	Ves	Allow	Mew Rule
Connection Security Rules	Alllown Router (LDP-In)	Alllovn Router	Domai	Vec	Allow	
🖉 💣 New Inbound Rule Wiza	rd				× Ilow	Y Filter by Profile
Scope					llow	Filter by State
Coordination and complex IP.	addeesses to which this a la analise				llow	Filter by Group
Specily the local and remote IF	addresses to which this rule applies.				llow	View
Steps:					llow	Refresh
Rule Type					llow	Export List
Program	Which local IP addresses (loes this rule apply to?			llow	I Help
Protocol and Ports	Any IP address	weating rate upply to ?			llow	
Scope	These IP addresses				llow	
Action			Add		llow	
Profile			Photo and		llow	
Name			Edit		llow	
- Hund			Remove		llow	
					llow	
	Customize the interface types to	which this rule applies:	Customize		llow	
	Which remote IP addresses	does this rule apply to?			llow	
	Any IP address				llow	
	O These IP addresses:				llow	
			Add		llow	
					llow	
			Edit		llow	
			Remove		llow	
					Activate	Windows
			3		Go to Settin	ps to activate Windows
		< Back	Next >	Cancel		

Please click "Next".





Please check "Next".

Windows Defender Firewall with	Inhound Bules			-		Actions
Inbound Rules	Name	Group	Profile	Enabled	Action A	Inhound Rules
Outbound Rules Connection Security Rules Profile Specify the profiles for which this Steps: Rule Type Program Protocol and Ports Scope Action Profile Name	Alloyn Router (TCP-In) Alloyn Router (ILDB-In) Alloyn Router (ILDB-In) d ande apples. When does this rule apply? Domain Apples when a computer is Private Apples when a computer is Apples when a computer is Apples when a computer is	Alloyn Router Alloyn Router Allown Router	n, such as a home	Ves Vac	Allow Allow Allow Allow Allow Iow Iow Iow Iow Iow Iow Iow Iow Iow I	 New Rule Filter by Profile Filter by State Filter by Group View Refresh Export List Help
			G		Activate Go to Setti	Windows rgs to activate Windows.

Please put "ICMPv4" in Name field and add the description. Please click "Finish".

🔗 New Inbound Rule Wizard	
Name	
Specify the name and description	of this rule.
Steps:	
Rule Type	
Program	
Protocol and Ports	1722
Scope	Name: ICMPv4
Action	
Profile	Description (optional):
	< Back Finish Cancel


Confirm the results in this screen. You can ping the host now.

PS C:\Users\Administra	ator> Get-NetFirewallRule Where-Object DisplayName -Like 'ICMPv4
Name DisplayName Description DisplayGroup Group Enabled Profile Platform Direction Action EdgeTraversalPolicy LooseSourceMapping LocalOnlyMapping Owner PrimaryStatus Status EnforcementStatus PolicyStoreSource PolicyStoreSource	<pre>: {C77CF116-B080-4133-BF10-DCBDE7F92C2D} : ICMPv4 : Enable ICMPv4 : : : : : : : : : : : : : : : : : : :</pre>

PS C:\Users\Administrator> _

NVMe SSD Best Practices on Microsoft Azure Stack HCl

Please click "Setting" from the Start menu, and click "System". Choose "Remote Desktop".

Please enable Remote Desktop as below, which you can access thought Remote desktop

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now.

\leftarrow Settings	×
යි Home	Remote Desktop
Find a setting ρ	Remote Desktop
System	Remote Desktop lets you connect to and control this PC from a remote device by using a Remote Desktop client (available for Windows, Android, iOS and macOS). You'll be able to work from
🖵 Display	another device as it you were working directly on this PC.
句)) Sound	Enable Remote Desktop Off
Notifications & actions	
Focus assist	User accounts
Remote Desktop Settings	
Power & sleep Enable Remote You and users selected	Desktop? under User accounts will be able to connect to this PC remotely.
- Tablet mode	
」 Multitasking	Confirm Cancel
✓ Remote Desktop	



Please click "Network & Internet" under your Windows settings.





Please move to Network and Sharing Center. Please configure static IP address.

Please click "Embedded FlexibleLOM 1 Port 1".

Network and Sharing Center					_		×			đ	×
← → · · ↑ 🚆 « Network	and Internet > Network and Sh	aring Center	~ Č	Search	Control Panel		P				
Control Panel Home	View your basic netw	vork information and	d set up c	onnecti	ons						
Change adapter settings	View your active networks										
Change advanced sharing settings	Network Public network		Access ty Connecti	pe: In ons: III E 1	nternet mbedded Flex	ibleLOM	1 Port				
			Access ty Connecti	pe: N ons: 📮 E	No network acc	ess ibleLOM	1 Port				
	Unidentified network	Embedded Elevible	OM 1 Port 1	Propertie		V					
Embedded FlexibleLOM 1 Port	1 Status $ imes$	Wetersday and	OIW I FOIL I	rioperat	Internet Proto	col Versio	on 4 (TCP	/IPv4) Properties			>
General		Networking Sharing			General						
IPv4 Connectivity: IPv6 Connectivity: Media State: Duration:	Internet No network access Enabled 13 days 19:54:43	This connection uses the	25Gb 2-port (e following ite	ms:	Obtain	an IP add	ise, you r settings. ress autor	matically	twork ad	ninistrator	
Speed:	10.0 Gbps	Ele and Printer Ele and Printer Ele and Printer Ele and Printer	Sharing for M sheduler	icrosoft N	IP addres	s:		1.1	. 1 .	1	
Details		Internet Protoco Microsoft Netw	of Version 4 (ork Adapter M	CP/IPv4) Iultiplexor	Subnet m Default gi	ask: ateway:		255.255	. 255 .	2	
Activity Sent	Received	Internet Protoco	ol Version 6 (1	CP/IPv6)	Obtain	DNS serve	er address DNS serv	s automatically			
Bytes: 60,839,692	823,443,395	Install Description Transmission Control	Uninstal	net Protoc	Preferred	DNS serv	er: er:	3.3	.3.	3	
Properties Disable	Diagnose	wide area network pro across diverse interco	otocol that pro innected netv	vides con vorks.	Valida	te settings	upon exi	t	A	dvanced	
	Close			ОК					OK	Cano	el :

Note: If you cannot ping from another server or client, try to enable "Public" in ICMPv4 inbound rule.

Update Firmware and Driver Using Latest HPE SPP

You can download latest SPP from:

HTTPS Access: https://ftp.ext.hpe.com/hprc Login ID: sppgen10 Password: g0_Cstm+

If you need to use FTP access, use this link. ftp://sppgen10:g0_Cstm+@ftp.ext.hpe.com

Folder name: Gen10_SPP

File name: P26941_001_gen10spp-2020.03.0-SPP2020030.2020_0402.3.iso

If you would like to use previous version, access Old_SPP folder.

The ISO enables online updates. Please mount the ISO on your Windows Server and launch it to update your firmware and driver.

Please run "launch_sum.bat".

🎯 🛃 🔚 🖛		Manage	DVD Drive (D:) SPP2019090		- 🗆 X
File Home Sha	are View	Drive Tools			~ (
$\leftarrow \rightarrow \checkmark \uparrow $	This PC → DVE	Drive (D:) SPP20	19090 ~	ට Search DVD Drive	e (D:) SPP201 🔎
🖈 Quick access	Name	^	Date modified	Туре	Size
Deskton	🚽 🔤 boot		9/5/2019 9:44 AM	File folder	
	DUD		9/5/2019 8:46 AM	File folder	
Downloads	🖌 🔤 efi		9/5/2019 9:27 AM	File folder	
Documents	🕈 🔤 EULA		9/5/2019 8:46 AM	File folder	
Pictures 🤉	🖈 🔤 hp		9/5/2019 8:51 AM	File folder	
, temp	🔤 manif	est	9/5/2019 9:20 AM	File folder	
temp	packa	ges	9/5/2019 9:33 AM	File folder	
	pxe		9/5/2019 9:35 AM	File folder	
📃 This PC	restfu	l_api	9/5/2019 9:27 AM	File folder	
🔿 Network	system	n	9/5/2019 9:44 AM	File folder	
	usb		9/5/2019 9:44 AM	File folder	
	WIN_I	DRV	9/5/2019 8:49 AM	File folder	
	xml		9/5/2019 9:19 AM	File folder	
	boot.	catalog	9/5/2019 9:44 AM	CATALOG File	2 KB
	🥭 conte	nts.html	9/5/2019 9:20 AM	HTML Document	345 KB
	💿 launc	h_sum.bat	9/5/2019 9:27 AM	Windows Batch File	1 KB
	launci	h_sum.sh	9/5/2019 9:27 AM	SH File	1 KB
	🥘 READI	ME.html	12/3/2018 1:37 PM	HTML Document	7 KB





You will see below.



Please click "Localhost...".





I have used "Automatic" and "Baseline…".

Localhost Guided Update	?
Select deployment mode Automatic mode will inventory and deploy all applicable updates without user interaction on the system running SUM.	
Mode	
Mode 🔿 Interactive 💿 Automatic	
 Baseline or Install Set O iLO Installation Queue 	
Baseline selection (Optional) Select an already added baseline and/or additional package to apply to this node. The location from where SUM is running is used as the default.	
Current baseline selected	
Current additional package	
Assign different baseline	
OK	el
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🗲 🛞 📼 https://localhost.63002/index.html?BMN=1569854201146#/guided-update/show	👻 😵 Certificate error 🖒	Search	 ♪ ☆ ☆ ©
🍯 HP End-User License Agreeme 😑 Localhost Guided Update 💿 🗙 📑			_
Smart Update Manager 8.4.5 🔻			🗳 🛔 ?
Localhost Guided Update			
Step 1 Step 2 Step 3			
inventory Review Deployment			
Inventory of baseline and node			
▼ Inventory of baseline			
Sonico Pack for Drol tant Bosolino successfully added	Total components 000		
	Total components 505		
Inventory of Localhost			
localhost Inventory in progress Inventory started	•		
Next Abort Start Over Reboot			
		© Copyright 2019 Hewlet	Packard Enterprise Development LP
# ^ # 🩋 🗖 🏦 🦓 🗷 🖻		^ 탓 ∿ 。	

Troubleshooting: When you see the screen below "Failed", you must use "lanch_sum.bat" with "Run as administrator".

Step 1	Step 2	Step 3	
Inventory of baseline and	l node		
 Inventory of baseline 			
 default Failed to add baseline 	C:/Users/ad-yema/AppData the root of an SPP.	a/Local/localsum - is an invalid lo	ocation. The selected location must have one or more components or be
Inventory of Localhost			
Iocalhost Added node			
Abort Start Over			



Network and Sharing Ce	enter			٦
🚄 🔘 l 💽 📕 v l		Manage	DVD Drive (E:) SPP2020030	
File Home	Share View	Application Tools		
← → * ↑	This PC > DVD	Drive (E:) SPP2020030		_
I CONTRACTOR OF A	Name	^	Date modified	T
🖈 Quick access	hoot		4/2/2020 1-42 PM	F
E Desktop			4/2/2020 11:54 AM	F
👆 Downloads	* efi		4/2/2020 1:25 PM	F
🔮 Documents	* FULA		4/2/2020 11:54 AM	F
Pictures	* hp		4/2/2020 12:00 PM	F
	manif	est	4/2/2020 1:16 PM	F
This PC	packa	ges	4/2/2020 1:33 PM	F
Network	prerec	quisite	4/2/2020 1:16 PM	F
	pxe		4/2/2020 1:35 PM	F
	restful	api	4/2/2020 1:25 PM	F
	system	n	4/2/2020 1:42 PM	F
	usb		4/2/2020 1:42 PM	F
	WIN_E	DRV	4/2/2020 11:57 AM	F
	xml		4/2/2020 1:14 PM	F
	boot.c	catalog	4/2/2020 1:42 PM	C
	🧧 conte	nts	4/2/2020 1:16 PM	Н
	launch	h_sum	4/2/2020 1:25 PM	V
	Open		4/2/2020 1:25 PM	S
	Edit		12/3/2018 1:37 PM	Н
	Print			
	Run as administra	tor		
	Run as different u	ser		
B	Share			

If you would like to check the detail before clicking "Next". Please follow it.



Please click Generate after select report type.

Reports	?
Select Report Types	^
Select Report Types Inventory Firmware details Deploy preview Failed dependency details Deploy details Combined report Select Report Format HTML XML CSV Advanced Report Options	
Set report output path: Browse or manually enter a directory path where the reports should be generated. Enter directory path C:\cpqsystem\sum\log Browse Generate Report in Background	
Reports Center Generated * Report Firmware Deploy Failed Inventory Combined Format Node Status Generate Start Over Clos	2



Reports Center

Generated ▼ At	Report P	Path	Firmware	Deploy preview	Deploy details	Failed Dependency	Inventory	Combined report	Format	Node(s)	Status	
Sep-30-2019 07:57:45:571 am	C:\cpqsy	stem\sum\log	View Details	View Details		View Details	✓ View Details	View Details	html	localhost	Completed	×
 	log							_		×		
File Home	Share	View							~	?		
$\leftarrow \rightarrow \cdot \uparrow$	→ Thi	s PC → Local Di	sk (C:) > cp	qsystem > :	sum → log	> v	ට Searc	h log		Q		
10:1		Name		^		Date mod	lified	Туре	Size			
Quick access	s	localhost				9/30/2019	9 7:53 AM	File folder				
Desktop	A	SUM_Com	bined_Report	t_09-30-2019	_07-57-41	9/30/2019	9 7:57 AM	File folder				
👆 Downloads	5 📌	SUM_Depl	oy_preview_R	eport_09-30-	2019_07-57-	38 9/30/2019	9 7:57 AM	File folder				
🔮 Document	s 📌	SUM_Faile	dDependency	_Report_09-	30-2019_07-5	7-35 9/30/2019	9 7:57 AM	File folder				
Pictures	1	SUM_Firm	ware_Report_	09-30-2019_0	07-57-31	9/30/2019	9 7:57 AM	File folder				
temp		SUM_Inve	ntory_Report_	09-30-2019_0	07-57-28	9/30/2019	9 7:57 AM	File folder				
temp		RunRecord	0_0_0_0b			9/30/2019	9 7:36 AM	File		0		
	_	SUM_Exec	ution_Details_	09-30-2019_0	07-36-13.xml	9/30/201	9 7:57 AM	XML Document		3		
💻 This PC		📄 sum_exect	ution_log_09-	30-2019_07-3	6-13.raw	9/30/2019	9 7:36 AM	RAW File		0		
Artwork												

Please click "Next".





Please review below.

End-User License	Agreeme 🗢 Localhost Guided Update 🛛 🗢 localhost 🧔	C:\cpqsystem\sum	n\log\SUM	C:\cpqsystem\s	um\log\SUM	*	00 00 0
⊐ Smart Upda	te Manager 8.4.5 🗸						₽ ≞
Localhost	Guided Update						
							Actions
							Actions
Cha							
Ste	ory Review Deployment						
eploymen	t summary						
localhost - a	applicable components						
) Install Set ma	nagement options						
Save Compone Update the exis	nts as an Install Set on iLO Repository ting recovery set with components (BIOS, iLO, IE, ME, CPLD) from this run						
plicable Comp	onents: 25						
iggested Comp lected Compor	onents: 19 ients: 19						
Select all	Deselect all						
arch	Q						
Select Components	Package	Ready to v proceed	Туре	Criticality	Installed Version	Available Version	Reboot Required
Selected	Online ROM Flash Component for Windows x64 - HPE Integrated Lights-Out 5 (cp040393)		Firmware	Recommended	1.43	1.45	No
Selected	Online ROM Flash for Windows x64 - Advanced Power Capping Microcontroller Firmware for HPE Gen10 Servers (cp040538)	•	Firmware	Optional	View Details	1.0.7	Optional
Selected	NVMe Drive Eject NMI Fix for Intel Xeon Processor Scalable Family for Windows		Software	Optional		1.1.0.0	Required
	11701120022231						
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Localhost	Guided Update						
Selected	HPE QLogic FastLinQ 10/25/50 GbE Drivers for Windows Server x64 Editions (cp035071)		Driver	Optional	8.33.20.103	8.37.37.0	No
Selected	Integrated Smart Update Tools for Windows x64 (cp039132)	1.0	Software	Recommended		2.4.5.0	No
Selected	Matrox G200eH3 Video Controller Driver for Windows Server 2016 and Server 2019 (cp038694)	1.0	Driver	Optional		9.15.1.224	Required
Selected	HPE Smart Array SR Event Notification Service for Windows Server 64-bit Editions (cp039146)	s 🔳	Software	Recommended		1.2.1.64	Required
Selected	Identifiers for Intel Xeon Processor Scalable Family for Windows Server 2012 R2 t Server 2019 (cp038754)	10	Driver	Optional		10.1.17861.8101	No
Selected	HPE QLogic FastLinQ Online Firmware Upgrade Utility for Windows Server x64 Editions (cp035083)	1.0	Firmware	Optional	View Details	5.1.4.0	Required
Selected	Online ROM Flash Component for Windows (x64) - HPE Smart Array P408i-p, P408e-p, P408i-a, P408i-c, E208i-p, E208i-p, E208i-c, E208i-a, P408i-ab, P408e-m, P204i-c, P204i-b, P816i-a and P416ie-m SR Gen10 (cp039215)	•	Firmware	Recommended	1.98	1.99	Required
Force	Online ROM Flash Component for Windows x64 - HPE ProLiant DL380 Gen10 (U30) Servers (cp038505)	\$	Firmware	Optional	U30 2.10 - (05/21/2019)	U30 2.10 - (05/21/2019)	Required
Force	Online ROM Flash Component for Windows (x64) - VO000960JWTBK, VO001920JWTBL, VO003840JWTBN, VO007680JWTBP, MO000400JWTBQ, MO000800JWTBR, MO00160JWTET, MO005400JWTCD, E0000400JWTBV, EO000800JWTCA, EO001600JWTCB Drives (cp033369)	\$	Firmware	Critical	View Details	HPD5	Environme Depender
Force	Online Flash Component for Windows x64 - Gen10 NVMe Backplane PIC Firmware (cp037722)	\$	Firmware	Optional	View Details	1.20	No
Force	Online ROM Flash Component for Windows (x64) - MO000400JWUFT, MO000800JWUFU, MO001600JWUFV, MO003200JWUGA, MO006400JWUGB, EO000400JWUGC, EO000800JWUGD and EO001600JWUGE Drives (cp038952	¢ 2)	Firmware	Optional	View Details	HPD1	Environme Depender
Force	Online ROM Flash Component for Windows x64 - Server Platform Services (SPS) Firmware for HPE Gen10 Servers (cp039727)	\$	Firmware	Optional	View Details	04.01.04.296	Required
Force	Online ROM Flash for Windows x64 - HPE Gen10 Innovation Engine Firmware for HPE Gen10 Servers (cn039812)	r 💠	Firmware	Recommended	View Details	0.2.1.2	Required

If you do not have any concerns, please click "Select All".

	Step 2	Step 3	
Deployment summary	r		

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localhost - applicable components

iLO Install Set management options

Save Components as an Install Set on iLO Repository

Update the existing recovery set with components (BIOS, iLO, IE, ME, CPLD) from this run

Applicable Components: 25

Suggested Components: 19

Selected Components: 25

Select all Deselect all

Search O



Please click "Deploy".

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Localhost	Guided Update						
Selected	Identifiers for Intel Xeon Processor Scalable Family for Windows Server 2012 R2 to Server 2019 (cp038754)	1.1	Driver	Optional		10.1.17861.8101	No
Selected	HPE QLogic FastLinQ Online Firmware Upgrade Utility for Windows Server x64 Editions (cp035083)	•	Firmware	Optional	View Details	5.1.4.0	Required
Select	Online ROM Flash Component for Windows (x64) - HPE Smart Array P408i-p, P408e-p, P408i-a, P408i-c, E208i-p, E208e-p, E208i-c, E208i-a, P408i-sb, P408e-m, P204i-c, P204i-b, P816i-a and P416ie-m SR Gen10 (cp039215)	•	Firmware	Recommended	1.98	1.99	Required
Forced	Online ROM Flash Component for Windows x64 - HPE ProLiant DL380 Gen10 (U30) Servers (cp038505)	\$	Firmware	Optional	U30 2.10 - (05/21/2019)	U30 2.10 - (05/21/2019)	Required
Forced	Online ROM Flash Component for Windows (x64) - V0000960JWTBK, V0001920JWTBL, V0003340JWTBN, V0007680JWTBP, M0000400JWTBD, M0000800JWTBN, M0001600JWTBT, M000250JWTBJ, M000540JWTCD, EO000400JWTBV, EO000800JWTCA, EO001600JWTCB Drives (cp039369)	\$	Firmware	Critical	View Details	HPD5	Environmen Dependent
Forced	Online Flash Component for Windows x64 - Gen10 NVMe Backplane PIC Firmware (cp037722)	\$	Firmware	Optional	View Details	1.20	No
Forced	Online ROM Flash Component for Windows (x64) - MO000400JWUFT, MO000800JWUFU, MO001600JWUFV, MO003200JWUGA, MO006400JWUGB, EO000400JWUGC, EO000800JWUGD and EO001600JWUGE Drives (cp038952)	\$	Firmware	Optional	View Details	HPD1	Environmen Dependent
Forced	Online ROM Flash Component for Windows x64 - Server Platform Services (SPS) Firmware for HPE Gen10 Servers (cp039727)	\$	Firmware	Optional	View Details	04.01.04.296	Required
Forced	Online ROM Flash for Windows x64 - HPE Gen10 Innovation Engine Firmware for HPE Gen10 Servers (cp039812)	\$	Firmware	Recommended	View Details	0.2.1.2	Required
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The process is started after that.

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Localhost Guided Update						
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P Ef E Image: Comparison of the second	MN=159954201146#/guided-update/sh	IOW Step 3 heployment ploying cp039369.exe Online R(0003840.W/TEN, VO007680.W/T 0006400.W/TCD, EO000400.W/	Cerificate error C Se	*5 (x64) - VO000960.JWTEB 880JWTER_MO001600JW	<pre>wpbl 2010 Handel Backard Enternance C</pre>	20119190000 1019 ↓ 1019 ↓ 1010 ↓
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When it updates the NIC driver or firmware, you will lose your network connection.

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Smart Up	late Manager 8.4.5 🗸		• •	
Localho	t Guided Update			
cp03966	3 Agentiess Management Service for Windows X64	Success.	View log	
cp03894	HPE Smart Storage Administrator Diagnostic Utility (HPE SSADU) CLI for Windows 64-bit	Success.	View log	
cp03894	HPE Smart Storage Administrator (HPE SSA) for Windows 64-bit	Success.	View log	
cp03998	7 iLO 5 Channel Interface Driver for Windows Server 2016 and Server 2019	Success, reboot required to activate new version.	View log	
cp0374	HP Lights-Out Online Configuration Utility for Windows x64 Editions	Success.	View log	
cp03514	iLO 5 Automatic Server Recovery Driver for Windows Server 2016 and Server 2019	Success.	View log	
cp0389	2 Online ROM Flash Component for Windows (x64) - M0000400JWUFT, M0000800JWUFU, M0001600JWUFV, M0003200JWUGA, M0006400JWUGB, E0000400JWUGC, E0000800JWUGD and E0001600JWUGE Drives	Success.	View log	
cp03894	5 HPE Smart Storage Administrator (HPE SSA) CLI for Windows 64-bit	Success.	View log	
cp0405	HPE Smart Array Gen10 Controller Driver for Windows Server 2012 R2, Windows Server 2016, and Windows Server 2019	Success, reboot required to activate new version.	View log	
cp0350	1 HPE QLogic FastLinQ 10/25/50 GbE Drivers for Windows Server x64 Editions	Success.	View log	
cp03913	2 Integrated Smart Update Tools for Windows x64	Success.	View log	
cp0386	Matrox G200eH3 Video Controller Driver for Windows Server 2016 and Server 2019	Success, reboot required to activate new version.	View log	
cp03914	HPE Smart Array SR Event Notification Service for Windows Server 64-bit Editions	Success.	View log	
cp0387	Identifiers for Intel Xeon Processor Scalable Family for Windows Server 2012 R2 to Server 2019	Success.	View log	
cp03508	3 HPE QLogic FastLinQ Online Firmware Upgrade Utility for Windows Server x64 Editions	Success, reboot required to activate new version.	View log	
cp03972	Online ROM Flash Component for Windows x64 - Server Platform Services (SPS) Firmware for HPE Gen10 Servers	Success, reboot required to	View log	

If you click "View log", you can see the detail.

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Please click "Reboot".

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cp039987	iLO 5 Channel Interface Driver for Windows Server 2016 and Server 2019	Success, reboot required to activate new version.	View log
cp037416	HP Lights-Out Online Configuration Utility for Windows x64 Editions	Success.	View log
cp035140	iLO 5 Automatic Server Recovery Driver for Windows Server 2016 and Server 2019	Success.	View log
cp038952	Online ROM Flash Component for Windows (x64) - MO000400.JWUFT, MO000800.JWUFU, MO001600.JWUFV, MO003200.JWUGA, MO006400.JWUGB, EO000400.JWUGC, EO000800.JWUGD and EO001600.JWUGE Drives	Success.	View log
cp038945	HPE Smart Storage Administrator (HPE SSA) CLI for Windows 64-bit	Success.	View log
cp040553	HPE Smart Array Gen10 Controller Driver for Windows Server 2012 R2, Windows Server 2016, and Windows Server 2019	Success, reboot required to activate new version.	View log
cp035071	HPE QLogic FastLinQ 10/25/50 GbE Drivers for Windows Server x64 Editions	Success.	View log
cp039132	Integrated Smart Update Tools for Windows x64	Success.	View log
cp038694	Matrox G200eH3 Video Controller Driver for Windows Server 2016 and Server 2019	Success, reboot required to activate new version.	View log
cp039146	HPE Smart Array SR Event Notification Service for Windows Server 64-bit Editions	Success.	View log
cp038754	Identifiers for Intel Xeon Processor Scalable Family for Windows Server 2012 R2 to Server 2019	Success.	View log
cp035083	HPE QLogic FastLinQ Online Firmware Upgrade Utility for Windows Server x64 Editions	Success, reboot required to activate new version.	View log
cp039727	Online ROM Flash Component for Windows x64 - Server Platform Services (SPS) Firmware for HPE Gen10 Servers	Success, reboot required to activate new version.	View log
cp039812	Online ROM Flash for Windows x64 - HPE Gen10 Innovation Engine Firmware for HPE Gen10 Servers	Success, reboot required to activate new version.	View log
Start Over	Abort Reboot		



Please click "Yes".



Join Company AD Domain

Please open Server Manager.





Please click "Local Server".

Server Manager					
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NVMe SSD Best Practices on Microsoft Azure Stack HCI





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Please input your host name and domain name.

You will be able to join the domain as below.



The server will be rebooted.

System Propertie	s	×
Computer Name	Hardware Advanced Remote	
Wind on the	ows uses the following information to identify your compute network.	r
Computer descr	ption:	
	For example: "IIS Production Server" or "Accounting Server".	
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changes		
Before resta	rting, save any open files and close all	programs.



Install All of the MS-Patches

Please move to "Settings".

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Server Manager • Dash	board • (🕄 🚩 Manage Tools View Help
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Please click "Updates & Security".

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Please confirm that you do not have any other patching.



Configure Network Adaptor

Please rename current NIC's adaptor to "MgmtNet".





Please check the network cable diagram, then rename the Network adaptor for your storage network as StorageNet1 and StorageNet2 on each node.

StorageNet1 [PCI Slot 2 Port 1 on Node 1 <==> PCI Slot 2 Port 2 on Node 2] StorageNet2 [PCI Slot 2 Port 2 on Node 1 <==> PCI Slot 2 Port 1 on Node 2] StorageNet3 [PCI Slot 3 Port 1 on Node 1 <==> PCI Slot 3 Port 2 on Node 2] StorageNet4 [PCI Slot 3 Port 2 on Node 1 <==> PCI Slot 3 Port 1 on Node 2]

StorageNet1 (PCI slot 2 Port 1 on gows2dtest01)	StorageNet1 ((PCI slot 2 Port 2 on gows2dtest02)
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StorageNet2 (PCI slot 2 Port 2 on gows2dtest01)	StorageNet2 ((PCI slot 2 Port 1 on gows2dtest02)
192.168.20.121/24	192.168.20.122/24
StorageNet3 (PCI slot 3 Port 1 on gows2dtest01)	StorageNet3 ((PCI slot 3 Port 2 on gows2dtest02)
192.168.30.131/24	192.168.30.132/24
StorageNet4 (PCI slot 3 Port 2 on gows2dtest01)	StorageNet4 ((PCI slot 3 Port 1 on gows2dtest02)
192.168.40.141/24	192.168.40.142/24







Please test the network connection after setting up a closed network (Storage Network for

RDMA).

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Organize 🔻			
Name	Status	Device Name	
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Embedded FlexibleLOM 1 Port 2	Unidentified network	HPE Ethernet 10/25Gb 2-port 622FLR-SFP28 Converged Network Adapte	
🚇 Embedded LOM 1 Port 1	Network cable unplugged	Broadcom NetXtreme Gigabit Ethernet	
🚇 Embedded LOM 1 Port 2	Network cable unplugged	Broadcom NetXtreme Gigabit Ethernet #2	
🚇 Embedded LOM 1 Port 3	Network cable unplugged	Broadcom NetXtreme Gigabit Ethernet #3	
🚇 Embedded LOM 1 Port 4	Network cable unplugged	Broadcom NetXtreme Gigabit Ethernet #4	
StorageNet1PCle Slot 3 Port 1	Unidentified network	HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter #3	
StorageNet2PCle Slot 3 Port 2	Unidentified network	HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter #4	
StorageNet3PCIe Slot 2 Port 1 Unidentified network HPE Ethernet 10/25Gb 2-port 6215FP28 Adapter #2			
StorageNet4PCle Slot 2 Port 2	Unidentified network	HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter	
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Please select RDMA as below on each Network adaptor for the storage network. Please open property, click Configure…, Move to the Advanced tab and change the setting to iWARP in RDMA mode. The setting is at the port level. Please configure all the ports for the storage network.

 \times

StorageNet4 Properties	\times		
Networking Sharing			Device Name
Connect using:		ble unplugged	Broadcom NetXtreme Gigabit Ethernet #3
PRE Ethernet 10/25Gb 2-port 621SFP28 Adapter #3		ble unplugged	Broadcom NetXtreme Gigabit Ethernet
Configure		ble unplugged ble unplugged	Broadcom NetXtreme Gigabit Ethernet #4 Broadcom NetXtreme Gigabit Ethernet #2
This connection uses the following items:	_	om	HPE Ethernet 10/25Gb 2-port 622FLR-SFP28
 ✓ Interpretation ✓ Interpretation	^	d network d network	HPE Ethernet 10/25Gb 2-port 621SFP28 Ada HPE Ethernet 10/25Gb 2-port 621SFP28 Ada
Internet Protocol Version 4 (TCP/IPv4) Internet Protocol Version 4 (TCP/IPv4) Internet Protocol Network Adapter Multiplexor Protocol Internet Protocol Driver		d network d network	HPE Ethernet 10/23GB 2-port 6213FP28 Add HPE Ethernet 10/25GB 2-port 621SFP28 Add Hyper-V Virtual Ethernet Adapter
Install Uninstall Properties	~	StorageNet4	×
Description Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.		You have made ch If you proceed yo Do you wish to p	nanges to the properties of this connection. our changes will be lost. proceed?
OK Can	cel		Yes No

HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter #2 Properties

General	Advanced	Driver	Details	Events	Power Mana	gement
General The foll the prop on the r Property RDMA RDMA Receiv Receiv Receiv Recv 3 Recv 3 Recv 3 Recv 4 Recv	Advanced owing propert erty you war ight. /: of Service Max QPs Nu Mode re Buffers (0= re Side Scalir Segment Coa Segment Coa Segment Coa	Driver ties are a tt to char mber Auto) ng lescing (l lescing (Pv4) Pv6)	Events for this net e left, and Va	Power Mana work adapter. then select its lue: WARP	gement Click s value
RSSPr Speed SR-IO TCP/L TCP/L Transn	ofile & Duplex / IDP Checksu IDP Checksu it Buffers (0=	m Offloa m Offloa Auto)	d (IPv: d (IPv1			
					ОК	Cancel



Please configure VLAN ID also. If you use a switched network, the VLAN ID will be provided by your Network team.

VLAN 10 for Storage Net1

VLAN 20 for Storage Net2 VLAN 30 for Storage Net3

VLAN 40 for Storage Net4

Network Connections

Diagnose this connection Rename this connection View status of this connection Organize 🔻 Disable this network device HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter #3 Properties Х Name Status General Advanced Driver Details Events Power Management Embedded FlexibleLOM 1 Port 1 ds.micron. Embedded FlexibleLOM 1 Port 2 Unidentifie The following properties are available for this network adapter. Click the property you want to change on the left, and then select its value Embedded LOM 1 Port 1 Network ca on the right. Embedded LOM 1 Port 2 Network ca Property: Value: Embedded LOM 1 Port 3 Network ca Recv Segment Coalescing (IPv4) 10 • 🔎 Embedded LOM 1 Port 4 Recv Segment Coalescing (IPv6) RoCE MTU Size Network ca StorageNet1PCle Slot 3 Port 1 Unidentified RSSProfile Speed & Duplex StorageNet2PCle Slot 3 Port 2 Unidentifie SR-IOV TCP/UDP Checksum Offload (IPv4 StorageNet3PCle Slot 2 Port 1 Unidentifie TCP/UDP Checksum Offload (IPv! StorageNet4PCle Slot 2 Port 2 Unidentified Transmit Buffers (0=Auto) Virtual Machine Queues Virtual Switch RSS /LAN VXLAN Encapsulated Task Offload VXLAN UDP destination port numb OK Cancel



Please change the Jumbo Packet to MTU9000. You can put 9000 or 9216 in the below field, but the network switch should have MTU9216. If the value is lower than server side, the packet will be dropped. If you need to select other values in a field, like below, choose number great than 9000. 9014 is a good example, below.



When you change them, you will see some packet loss (you will have 3 or 4 ping losses).

Please enable SR-IOV with the command below for each node.

PS> Enable-NetAdapterSriov NIC1

PS> Enable-NetAdapterSriov NIC2

Note: You can confirm the status with Get-NetAdapterSriov in Windows PowerShell.



Enable RDMA

You can confirm current status with the below command.

Get-NetAdapterRdma

PS C:\windows\system32> C	et-NetAdapterRoma			
Name	InterfaceDescription	Enabled	PFC	ETS
StorageNet3	HPE Ethernet 10/25Gb 2-port 621SFP28	False	False	False
MgmtNet	HPE Ethernet 10/25Gb 2-port 622FLR-SF	False	False	False
StorageNet2	HPE Ethernet 10/25Gb 2-port 621SFP28	False	False	False
Embedded FlexibleLOM 1	HPE Ethernet 10/25Gb 2-port 622FLR-SF	False	False	False
StorageNet4	HPE Ethernet 10/25Gb 2-port 621SFP28	False	False	False
PCIe Slot 2 Port 1	HPE Ethernet 10/25Gb 2-port 621SFP28	False	False	False

PS C:\Windows\system32> _

Note: You can see "False" in "Enabled" field.

Please run below PowerShell command.





- Enable-NetAdapterRdma -Name StorageNet*
 - ➤ Sample :
 - ♦ Enable-NetAdapterRdma -Name StorageNet1
 - ♦ Enable-NetAdapterRdma -Name StorageNet2
 - ♦ Enable-NetAdapterRdma -Name StorageNet3
 - ♦ Enable-NetAdapterRdma -Name StorageNet4

Please confirm below command after that.

• Get-NetAdapterRdma

🔀 Administrator: Windows PowerShell

PS C:\Users\Administrator> Enable-NetAdapterRdma -Name StorageNet1 PS C:\Users\Administrator> Enable-NetAdapterRdma -Name StorageNet2 PS C:\Users\Administrator> Enable-NetAdapterRdma -Name StorageNet3 PS C:\Users\Administrator> Enable-NetAdapterRdma -Name StorageNet4 PS C:\Users\Administrator> Get-NetAdapterRdma							
Name	InterfaceDescription	Enabled	PFC	ETS			
 StorageNet1	HPE Ethernet 10/25Gb 2-port 621SFP28	True	False	True			
StorageNet2	HPE Ethernet 10/25Gb 2-port 621SFP28	True	False	True			
AgmtNetEmbedded Flexib	HPE Ethernet 10/25Gb 2-port 622FLR-SF	False	False	False			
- StorageNet4	HPE Ethernet 10/25Gb 2-port 621SFP28	True	False	True			
StorageNet3	HPE Ethernet 10/25Gb 2-port 621SFP28	True	False	True			
Ethernet (HPE Etherne	Hyper-V Virtual Ethernet Adapter	False	NA	NA			
mbedded FlexibleLOM 1	HPE Ethernet 10/25Gb 2-port 622FLR-SF	False	False	False			
(Internal)	Hyper-V Virtual Ethernet Adapter #2	False	NA	NA			

Result: You can see "True" in "Enabled" field.

If you enable the wrong network adaptor, please disable with this process:

PS C:\Windows\system32> G	et-NetAdapterRdma			
Name	InterfaceDescription	Enabled	PFC	ETS
Embedded FlexibleLOM 1 StorageNet2PCIeSlot3Port2 StorageNet3PCIeSlot2Port2 StorageNet1PCIeSlot3Port1 PCIe Slot 2 Port 1 Embedded FlexibleLOM 1 PS C:\Windows\system32> d: PS C:\Windows\system32> G	HPE Ethernet 10/25Gb 2-port 622FLR-SF HPE Ethernet 10/25Gb 2-port 621SFP28 HPE Ethernet 10/25Gb 2-port 621SFP28 HPE Ethernet 10/25Gb 2-port 621SFP28 HPE Ethernet 10/25Gb 2-port 621SFP28 HPE Ethernet 10/25Gb 2-port 622FLR-SF	True True True True True True ort 1"	False False False False False False	False False False False False False
Name	InterfaceDescription	Enabled	PFC	ETS
Embedded FlexibleLOM 1 StorageNet2PCIeSlot3Port2 StorageNet3PCIeSlot2Port2 StorageNet1PCIeSlot3Port1 PCIe Slot 2 Port 1 Embedded FlexibleLOM 1	HPE Ethernet 10/25Gb 2-port 622FLR-SF HPE Ethernet 10/25Gb 2-port 621SFP28 HPE Ethernet 10/25Gb 2-port 621SFP28 HPE Ethernet 10/25Gb 2-port 621SFP28 HPE Ethernet 10/25Gb 2-port 621SFP28 HPE Ethernet 10/25Gb 2-port 622FLR-SF	True True True True False True	False False False False False False	False False False False False False False

PS C:\Windows\system32> _

disable-NetAdapterRdma -Name "PCIe Slot 2 Port 1"



disable-NetAdapterRdma -Name "Embedded FlexibleLOM 1 Port 1" disable-NetAdapterRdma -Name "Embedded FlexibleLOM 1 Port 2" disable-NetAdapterRdma -Name "PCIe Slot 2 Port 2" disable-NetAdapterRdma -Name "Embedded FlexibleLOM 1 Port 1" disable-NetAdapterRdma -Name "Embedded FlexibleLOM 1 Port 2"

Install Features

Please open Server Manager from the Start menu, then click "Add roles and features".





Please click "Next".



Micron

Please click "Next".

Server Manager		-	ð X
€ Server Manager • Dashbo	ard • 🕑 I	Manage Tools V	/iew Help
Dashboard WELCOME TO SERVER Local Server All Servers	MANAGER		
File and Storage Services 🚡 Add Roles and Features Wizard	- 🗆 ×		
Select destination	SETVER		
Before You Begin Installation Type Server Selection	Select a server or a virtual hard disk on which to install roles and features.		
Server Roles Features Confirmation	Server Pool Filter.		Hide
Results	Name IP Address Operating System gows2dtest01		
	< Previous Next > Install Cancel		
	,		
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 $\label{eq:Please select} \ensuremath{\mathsf{Please}}\xspace \ensuremath{\mathsf{select}}\xspace \ensuremath{\mathsf{File}}\xspace \ensuremath{\mathsf{and}}\xspace \ensuremath{\mathsf{SCSI}}\xspace \ensuremath{\mathsf{Services}}\xspace \ensuremath{\mathsf{select}}\xspace \ensuremath{\mathsf{$

"Next".


📥 Add Roles and Features Wizard		– 🗆 X
Select features		DESTINATION SERVER GOWS2DTEST04
Before You Begin Installation Type Server Selection Server Roles Features Confirmation Results	Select one or more features to install on the selected server. Features Image: NET Framework 3.5 Features Image: NET Framework 4.7 Features (2 of 7 installed) Image: Background Intelligent Transfer Service (BITS) Image: BitLocker Drive Encryption BitLocker Drive Encryption BitLocker Network Unlock BranchCache Client for NFS Containers Data Center Bridging Direct Play Enhanced Storage Failover Clustering Group Policy Management Host Guardian Hyper-V Support I/O Quality of Service IIS Hostable Web Core IIS Hostable Web Core IP Address Management (IPAM) Server IP Address Management (IPAM) Server	Description .NET Framework 3.5 combines the power of the .NET Framework 2.0 APIs with new technologies for building applications that offer appealing user interfaces, protect your customers' personal identity information, enable seamless and secure communication, and provide the ability to model a range of business processes.
	< Previous Nex	t > Install Cancel
Please click "Install"		
📥 Add Roles and Features Wizard		- 🗆 X
Confirm installation	on selections	DESTINATION SERVER GOWS2DTEST03
Before You Begin Installation Type Server Selection Server Roles Features Confirmation Results	To install the following roles, role services, or features on s CREAT The destination server automatically if required Optional features (such as administration tools) might be obeen selected automatically. If you do not want to install t their check boxes. File and Storage Services File and iSCSI Services File Server Export configuration settings	elected server, click Install. d displayed on this page because they have hese optional features, click Previous to clear
	Specify an alternate source path	
	< Previous	Next > Install Cancel



Please click "Close".

📥 Add Roles and Features Wiz	ard – 🗆 🗙
Installation prog	CPESS DESTINATION SERVER GOWS2DTEST03.
Before You Begin	View installation progress
Installation Type	() Feature installation
Server Roles	Installation succeeded on GOWS2DTEST03.
Features	File and Storage Services
Confirmation	File and iSCSI Services
	You can close this wizard without interrupting running tasks. View task progress or open this
	page again by clicking Notifications in the command bar, and then Task Details. Export configuration settings
	< Previous Next > Close Cancel

Please do the same thing for Hyper-V. When you select Hyper-V, you will see below.





Please click "Add Features".

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<complex-block></complex-block>	<complex-block></complex-block>		Installation Type	Add features that are required for Hyper-V?	ption		
			Server Selection Server Roles	The following tools are required to manage this feature, but do not have to be installed on the same server.	V provides the services that n use to create and manage		
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Add Features Cancel	P Hi C ■ ■			IIS Hostable Web Core Internet Printing Client	Include management tools (if application)	ble)	
C Previous Next> Install Cancel				IP Address Management (IPAM) Server iSNS Server service	A	dd Features Cancel	
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Server Manager • Da	ashboard 🔹 🕫 🖉 Manage Tools View Help
E Dashboard WELCOME TO S	SERVER MANAGER
Local Server	
All Servers File and Storage Service: Add Roles and Feature	Ward - X
Liberton M	DESTINATION SERVER
Hyper-v	
Before You Begin Installation Type	Hyper-V allows you to virtualize your server workloads by running those workloads on virtual machines. You can use virtual machines to consolidate multiple workloads on one physical server, to improve server availability, and to imprase efficiency in developing and testing onlymate.
Server Selection	Things to note:
Features	Before you install this role, you should identify which network connections on this server you want to use for setting up virtual switches.
Hyper-V Virtual Switches	 After you install Hyper-V, you can use Hyper-V Manager to create and configure your virtual machines.
Migration Default Stores	
Confirmation	
Resours	
	Note information about hyper v
	< <pre>< Previous Next > Install Cancel</pre>
	533 AM
	· → → · · · · · · · · · · · · · · · · ·
You can create Virtu	ual Switches with ServiceNet. Don't need Management Port.
🛓 🚡 Add Roles and Features Wizard	- 🗆 ×
Create Virtual Swi	tches DESTINATION SERVER
	GOWSZDIESITI.
Refere Veu Regin	Virtual machines require virtual switches to communicate with other computers. After you install this
Before You Begin	role, you can create virtual machines and attach them to a virtual switch.
Installation Type	One virtual switch will be created for each network adapter you select. We recommend that you create
Server Selection	at least one virtual switch now to provide virtual machines with connectivity to a physical network. You can add, remove, and modify your virtual switches later by using the Virtual Switch Manager.
Server Roles	can dad, remove, and mouny your virtual switches later by using the virtual switch wanagen
Features	Network adapters:
Hyper-v	Name Description
Virtual Switches	StorageNet1 Mellanov ConnectY-5 Adapter
Migration	
Coofficentian	
Coniirmauon	We recommend that you reserve one network adapter for remote access to this server. To reserve a network adapter do not select it for use with a virtual switch.
Results	internet despect, de net decer net de man a made smaller
	< Previous Next > Install Cancel

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Add Roles and Features Wizard X DESTINATION SERVER Create Virtual Switches GOWS2DTEST03. Virtual machines require virtual switches to communicate with other computers. After you install this role, you can create virtual Before You Begin machines and attach them to a virtual switch. Installation Type One virtual switch will be created for each network adapter you select. We recommend that you create at least one virtual switch now Server Selection to provide virtual machines with connectivity to a physical network. You can add, remove, and modify your virtual switches later by using the Virtual Switch Manager. Server Roles Features Network adapters: Hyper-V Name Description Virtual Switches ☑ Embedded FlexibleLOM 1 Port 2 HPE Ethernet 10/25Gb 2-port 622FLR-SFP28 Converged Netwo Embedded FlexibleLOM 1 Port 1 HPE Ethernet 10/25Gb 2-port 622FLR-SFP28 Converged Netwo Migration StorageNet3PCIe Slot 2 Port 1 HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter Default Stores Confirmation 👔 We recommend that you reserve one network adapter for remote access to this server. To reserve a network adapter, do not select it for use with a virtual switch.

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Please ignore and do not set this up. Please click "Next".



NVMe SSD Best Practices on Microsoft Azure Stack HCI



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Please select "Restart Option".

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If you did not choose the option, you will see below.





Please click "Install".



Please configure it on another node also.



Configure Failover Cluster

Please run Server Manager and click "Failover Cluster Manager" under Tools.



NVMe SSD Best Practices on Microsoft Azure Stack HCI

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When you see the screen below, please click "View Report".





The report will be opened with Internet Explorer.

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Please check the detail. The Microsoft web page has more technical information.

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(<-)(-⇒)	s\Administrator\AppData\Local\Temp\1\tmp2D2F.tmp.htm	- 0	Search	命 ☆ 戀 🤇
Ge Failover Cluster Valid	ation R ×			
Microsoft Home				
	Failove	er Cluster Validation Report		
Node: Node: Started Completed	90ws2dfett01 9/x/2019 7:04:16 AM 9/x/2019 7:35:16 AM		Validated Validated	
The Validate a Configurat	ion Wizard must be run after any change is made to the configuration of the c	uster or hardware. For more information, see <u>https://go.microsoft</u> ,	com/fwlink/p/?LinkId=280145.	
Results by Cate	egory			
Name		Result Summary	Description	
Hyper-V Configuration			Failed	
Inventory			Success	
Network			Failed	
Storage			Not Applicable	
System Configuration			Failed	
Hyper-V Config	guration			
Name		Result	Description	
List Information About Se	ervers Running Hyper-V		Success	
Validate Compatibility of	Virtual Fibre Channel SANs for Hyper-V		Success	
Validate Hyper-V Memor	v Resource Pool Compatibility		Success	
Validate Hyper-V Networ	k Resource Pool And Virtual Switch Compatibility		Failed	
Validate Hyper-V Process	or Resource Pool Compatibility		Success	
Validate Hyper-V Role In:	stalled		Success	
Validate Hyper-V Storage	Resource Pool Compatibility		Success	
Validate Matching Proces	isor Manufacturers		Success	
🖶 🔎 🖽	🧀 🚍 💺 🧠		~ 뛷	ds c [#] ENG 7:42 AM □

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When you pass the validation, please enter "Cluster Name" as below.



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Please enter Cluster name and IP address.

Preate Cluster Wi	oint for Admini	stering the Cluster		×
Before You Begin Select Servers Access Point for Administering the Cluster Confirmation	Type the name you Cluster Name: The NetBIOS na automatically. address.	want to use when administering Please put cluster name. ame is limited to 15 characters. For each network to be used, m	the cluster. One or more IPv4 addresses could ake sure the network is selected, a	not be configured ind then type an
Creating New Cluster Summany		Networks	Address	
			< Previous Next >	Cancel



You will see below. please remove the check box of "Add all eligible storage to the cluster.". Please click "Next". Note: If you enable the check box, you may re-create the Storage Spaces Direct with power shell command.

🍄 Create Cluster Wizard					
Confirma	tion				
Before You Begin Select Servers Access Point for	You are ready to create a cluster. The wizard will create your cluster with the following settings:				
Administering the Cluster	Cluster				
Confirmation	gos2dcluster2				
Creating New Cluster	Node				
Summary	GOWS2DTEST03 GOWS2DTEST04				
	Cluster registration				
	DNS and Active Directory Domain Services				
	Add all eligible storage to the cluster.				
	To continue, click Next.				
	< Previous Next > Cancel				
Please click "	Finish".				

韂 Create Cluster Wizard

Summary	
Before You Begin Select Servers	You have successfully completed the Create Cluster Wizard.
Administering the Cluster	Node GOWS2DTEST03
Confirmation	GOWS2DTEST04
Creating New Cluster	Cluster
Summary	gos2dcluster2
	IP Address
	To view the report created by the wizard, click View Report. To close this wizard, click Finish.
	Finish





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Troubleshooting:

If you do not have enough AD permission to do organization units (OU), you will see the screen below. Ask your Windows domain admins to input a credential for you with enough permissions.





🗄 Failover Cluster Manager	Failover Cluster Manager	Actions
nover vlaket namege	Carter Cluster Valuates Content later Content later	Actions Failover Cluster Manager Failover Cluster Manager Const Cluster View Conset to Cluster View Refresh Properties Help
tion launches a wizard that		

Please confirm new cluster is working well or not with below process. Please open the failover cluster manager. Please click the new one which you created. Please check the summary.

Kailover Cluster Manager Sologe Golds Golds Golds Sotrage Sotrage Disks Disks Dols Enclosures Networks Networks Statuser Events	Cluster gos2dcluster2 gos2dcluster2 has 0 clustered roles and 2 nodes. Name: gos2dcluster2 Current Host Server: GOWS2DTEST03 Recent Cluster Events: Error: 8, Warning: 8 Witness: None	Networks Subnets:	s: Cluster Network 1, Cluster Network 2, Cluster Network 3, Cluster Network 4, Clu : 5 IPv4 and 1 IPv6
태 Cluster Events	Configure Configure high availability for a specific clustered role, add one o Windows Server. Corfigure Role Validate Cluster Add Node Cooy Cluster Roles Ouster-Aware Updating	r more servers (nodes), or copy roles fro	om a cluster running Windows Server 2019 or supported previous versions of ar cluster topics on the Web
	Navigate Roles Quster Events	Storage	Networks

Please click the "Nodes" in left pain. Please confirm all node are UP.









Witness for Cluster

If you are not familiar with Witness, the below link has more detail about it.

English

https://docs.microsoft.com/en-us/windows-server/failover-clustering/deploy-cloudwitness#cloud-witness-overview Japanese

https://docs.microsoft.com/ja-jp/windows-server/failover-clustering/deploy-cloudwitness#cloud-witness-overview

Please open Failover Cluster Manager. Right click on cluster as shown.

📲 Failover Cluster Manager Cluster gos2dcluster2. gos2dcluster2. Roles Configure Role... gos2dcluster2 Nodes Validate Cluster... ered roles and 2 nodes. ✓ <a>E <a>✓ <a>✓</ View Validation Report Netw 📇 Disks EST03 Subn Pools 📑 Add Node... 8, Warning: 8 Enclosures Close Connection Networks 😣 Cluster Events Reset Recent Events More Actions Σ Configure Cluster Quorum Settings... py role View > Copy Cluster Roles... 👔 Fa Refresh Shut Down Cluster... Properties Destroy Cluster... Move Core Cluster Resources > Help Cluster-Aware Updating... **Cluster-Aware Updating**

Please click "Configure Cluster Quorum Settings"



Configure Cluster	Quorum Wizard	×
Before Yo	bu Begin	
Before You Begin Select Quorum Configuration Option Configure Cluster Quorum Settings Summary	This wizard guides you through configuring the quorum for your failover cluster. The relevant cluster elements are the nodes and, in some quorum configurations, a disk witness or file share witness. The quorum configuration affects the availability of your cluster. A sufficient number of cluster elements must be online, or the cluster 'loses quorum' and must stop running. Note that the full function of a cluster depends not only on the quorum, but also on the capacity of each node to support the clustered roles. Important: Run this wizard only if you have determined that you need to change the quorum configuration for your cluster. When you create a cluster, the cluster software automatically chooses a quorum configuration that will provide the highest availability for your cluster. To continue, click Next. Failover Cluster Quorum and Witness Configuration Options Do not show this page again	
	Next > Cancel]

Please choose "Select the quorum witness".

📲 Configure Cluster	r Quorum Wizard	×
Select Qu	uorum Configuration Option	
Before You Begin Select Quorum Configuration Option Select Quorum Witness Confirmation Configure Cluster Quorum Settings Summary	Select a quorum configuration for your cluster. Use default quorum configuration The cluster determines quorum management options, including the quorum witness. Select the quorum witness You can add or change the quorum witness. The cluster determines the other quorum management options. Advanced quorum configuration You determine the quorum management options, including the quorum witness. Failover Cluster Quorum and Witness Configuration Options	

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You will see below options.

Configure Cluster	Quorum Wizard	×
Before You Begin Select Quorum Configuration Option Select Quorum Witness	Select a quorum witness option to add or change the quorum witness for your cluster configuration. As a best practice, configure a quorum witness to help achieve the highest availability of the cluster.	
Configure Storage Witness Confirmation Configure Cluster Quorum Settings Summary	 Configure a file share witness Adds a quorum vote of the file share witness Configure a cloud witness Adds a quorum vote of the cloud witness Do not configure a quorum witness 	
	Failover Cluster Quorum and Witness Configuration Options < Previous	

However, you only have two options. One is cloud Witness, and one is "Configure a file share witness".

Note: Configure a Disk Witness will consume your DAS so the first option is not available with Azure stack HCI.

If you have cloud environment, it will be best choice. If not, please select "a file share witness" option.



📲 Configure Cluster Quorum Wizard

Select Q	uorum Witness
Before You Begin Select Quorum Configuration Option Select Quorum Witness	Select a quorum witness option to add or change the quorum witness for your cluster configuration. As a best practice, configure a quorum witness to help achieve the highest availability of the cluster. Configure a disk witness Adds a quorum vote of the disk witness
Configure File Share Witness Confirmation Configure Cluster Quorum Settings Summary	 Configure a file share witness Adds a quorum vote of the file share witness Configure a cloud witness Adds a quorum vote of the cloud witness Do not configure a quorum witness Do not configure a quorum witness Failover Cluster Quorum and Witness Configuration Options

Please create new shared folder. And Please point it as below.

遣 Configure Cluster	Quorum Wizard	×
Configure	File Share Witness	
Before You Begin Select Quorum Configuration Option	Please select a file share that will be used by the file share witness resource. This file share must not be hosted by this cluster. It can be made more available by hosting it on another cluster.	
Select Quorum Witness	File Share Path:	
Configure File Share Witness	\\gowyema2016\Quorum Browse	
Confirmation		
Configure Cluster Quorum Settings		
Summary		
	< Previous Next > Cancel	

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If it is working well, you will see below result. Please click "Next".

Configure Cluster	r Quorum Wizard		×
Confirma	tion		
Before You Begin Select Quorum Configuration Option	You are ready to configure the quorum settings of th	ne cluster.	_
Select Quorum	Configure Cluster Quorum Settings	^	•
Witness	File Share Witness	\\gowyema2016\Quorum	
Configure File Share Witness	Cluster Managed Voting	Enabled	
Confirmation	Voting Nodes:		
Configure Cluster Quorum Settings	All nodes are configured to have quorum votes		
Summary			
	To continue, click Next.		_
		< Previous Next > Cancel	

Please click "Finish".

遣 Configure Cluste	r Quorum Wizard	\times
Summary	,	
Before You Begin Select Quorum Configuration Option	You have successfully configured the quorum settings for the cluster.	
Select Quorum Witness Configure File Share Witness Confirmation Configure Cluster Quorum Settings Summary	Cluster Managed Voting Enabled Witness Type File Share Witness Witness Resource \\gowyema2016\Quorum	
	To view the report created by the wizard, click View Report. To close this wizard, click Finish.]



When you click "View report", you can see the results.



Configure Cluster Quorum Settings

Witness Type:	File Share Witness
Witness Resource:	\\gowyema2016\Quorum2
Cluster Managed Voting:	Enabled
Started	1/23/2020 12:10:23 AM
Completed	1/23/2020 12:10:23 AM

All nodes are configured to have quorum votes

Your cluster quorum configuration will be changed to	the configuration shown above.		
Node votes	Old Value	New Value	Status
GOWS2DTEST03	1	1	Unchanged
GOWS2DTEST04	1	1	Unchanged

Please click Finish.

You can check the result with Windows Admin Center if you already have it. Open it and click "Add" in Failover cluster Manager as below.

If you are not familiar with Windows Admin Center (WAC), please refer to the link below. You can access more details, including how to install it, and its many powerful functions.

English

https://www.microsoft.com/en-us/windows-server/windows-admin-center

Japanese

https://www.microsoft.com/ja-jp/windows-server/windows-admin-center



Please put correct credential.

Lonnection	tags ()
+ Add	tags
Add clust	er Import clusters
luster nam	e*
gos2dcl	uster2
Acces conn crede	ss was denied to "gos2dcluster2". You can still add it to your ections list, but you'll need to provide administrator entials to connect to the cluster.
	Use my Windows account for this connection
	Use Local Administrator Password Solution with a randomized password (must already be set up) Local administrator account name
	administrator
\bigcirc	Use another account for this connection
	Username *
	Enter username
	Password *
	Enter password.



NVMe SSD Best Practices on Microsoft Azure Stack HCI

You can see the status regarding witness on Failover cluster tool as below.

Cluster Core Resources			
Name	Status	Information	^
Server Name			
🗉 📑 Name: gos2dcluster	Online		
Storage			
🗉 📇 Cluster Virtual Disk (ClusterPerformanceHistory)	Online		
File Share Witness			
🔐 File Share Witness (\\gowyema2016\Quorum)	🕥 Online		~

Storage Spaces Direct (S2D)

Please check the current status with below Power shell command.

Get-ClusterS2D

If you enable it during making a new cluster, S2D is enabled as below.





If the result as below, you can configure it with these steps.

赵 Administrator: Windows Po	werShell
Windows PowerShell Copyright (C) Microsoft C	orporation. All rights reserved.
PS C:\Windows\system32> g	et-clusters2d
CacheMetadataReserveBytes CacheModeHDD CacheModeSSD CachePageSizeKBytes CacheState Name ScmUse State	: 34359738368 : ReadWrite : WriteOnly : 16 : Enabled : gos2dcluster6 : Cache : Disabled
PS C:\Windows\system32\	

Please check whether your disks are available or not with Get-Physicaldisk on Powershell. You can see all disks on cluster as below.

Number	FriendlyName	SerialNumber	MediaType	CanPool	OperationalStatus	HealthStatus	Usage	Size
2	HPE LOGICAL VOLUME	PFJHDØARCC60VP	SSD	False	ОК	Healthy	Auto-Select	894.22 GB
6	ATA Micron_5210_MTFD	1940242A9B7E	SSD	False	{Transient Error, Lost Communication}	Unhealthy	Auto-Select	3.49 TB
	Micron_9300_MTFDHAL3T2TDR	0000_0000_0000_0001_00A0_7501_251F_FC1D.	SSD	False	Lost Communication	Warning	Journal	2.91 TB
1	Micron_9300_MTFDHAL3T2TDR	0000_0000_0000_0001_00A0_7501_251F_FBE6.	SSD	False	Lost Communication	Warning	Journal	2.91 TB
3	ATA Micron_5210_MTFD	1940242A9AC9	SSD	False	{Transient Error, Lost Communication}	Unhealthy	Auto-Select	3.49 TB
4	ATA Micron_5210_MTFD	1940242A9AAB	SSD	False	{Transient Error, Lost Communication}	Unhealthy	Auto-Select	3.49 TB
	ATA Micron_5300_MTFD	1939251704C2	SSD	False	{Lost Communication, Transient Error}	Unhealthy	Auto-Select	3.49 TB
0	Micron_9300_MTFDHAL3T2TDR	0000_0000_0000_0001_00A0_7501_251F_FC0E.	SSD	False	Lost Communication	Warning	Journal	2.91 TB
	ATA Micron_5300_MTFD	1939251704A6	SSD	False	{Lost Communication, Transient Error}	Unhealthy	Auto-Select	3.49 TB
	Micron_9300_MTFDHAL3T2TDR	0000_0000_0000_0001_00A0_7501_251F_FC6D.	SSD	False	Lost Communication	Warning	Journal	2.91 TB
	ATA Micron_5300_MTFD	1939251704B3	SSD	False	{Lost Communication, Transient Error}	Unhealthy	Auto-Select	3.49 TB
5	ATA Micron_5210_MTFD	1940242A9BBC	SSD	False	{Transient Error, Lost Communication}	Unhealthy	Auto-Select	3.49 TB
1	ATA Micron_5300_MTFD	193925170476	SSD	False	{Lost Communication, Transient Error}	Unhealthy	Auto-Select	3.49 TB

Note: When you check it with the command before making cluster. You can see DAS only.

riceId FriendlyName	SerialNumber	MediaType	CanPool	OperationalStatus	HealthStatus	Usage	Siz
ATA Micron 5300 MTED	1939251704CE	SSD	True	ОК	Healthy	Auto-Select	3.49 T
Micron 9300 MTFDHAL3T2TDR	0000 0000 0000 0001 00A0 7501 251F FBE6.	SSD	True	OK	Healthy	Auto-Select	2.91 T
ATA Micron 5300 MTFD	1939251704C4	SSD	True	OK	Healthy	Auto-Select	3.49 T
ATA Micron_5300_MTFD	19392517049F	SSD	True	OK	Healthy	Auto-Select	3.49 T
HPE LOGICAL VOLUME	PFJHDØARCC6ØVP	SSD	False	OK	Healthy	Auto-Select	894.22 0
Micron_9300_MTFDHAL3T2TDR	0000_0000_0000_0001_00A0_7501_251F FC0E.	SSD	True	OK	Healthy	Auto-Select	2.91
ATA Micron_5300_MTFD	1939251704CA	SSD	True	OK	Healthy	Auto-Select	3.49 1
:\Users\ad-yema≻ _							
C:\Users\ad-yema>							

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Troubleshooting:

If you cannot see your disks, please delete the cluster you created.

🖏 Failover Cluster Manager									
File Action View Help									
🔶 🔿 🖄 📰 🚺									
Failover Cluster Manager Cluster gos2dcluster2.									
Roles	Configure Role	ster gos2dcluster2							
Nodes	Validate Cluster	clustered roles and 2 nodes.							
V 📇 Storage	View Validation Report	n.com							
Pools	Add Node	S2DTEST03							
Enclosures 🚆 Networks	Close Connection	\\gowyema2016\Quorum2)							
Cluster Events	Reset Recent Events								
	More Actions >	Configure Cluster Quorum Settings							
	View >	Copy Cluster Roles							
	Refresh	Shut Down Cluster							
	Properties	Destroy Cluster							
	Help	Move Core Cluster Resources >							
	Cluster-Aware Updating	Cluster-Aware Updating							

Please click "Yes".





Please check current status on Disk Management. If you re-use NVMe/SSD/HDD from other production servers or clusters, the disk may have previous data as below which you must delete.

📅 Disk Managen	nent				— (×	
File Action View Help								
() () () () () () () () () ()	🗊 🔎 🗹							
Volume (C:) (Disk 0 partition (Disk 1 partition (Disk 2 partition (Disk 2 partition	Layout Type File Sys Simple Basic NTFS 1) Simple Basic 1) Simple Basic 1) Simple Basic 2) Simple Basic	tem Status Capacity Healthy (B 893,62 GB Healthy (S 32.00 GB Healthy (S 32.00 GB Healthy (R 499 MB Healthy (E 100 MB	Free Spa % Free 833.22 GB 93 % 32.00 GB 100 % 32.00 GB 100 % 499 MB 100 % 100 MB 100 %					
- Disk 0 Basic				S2D on gos2dcluster5			-	
2980.82 GB Online	2948.82 GB Unallocated			32.00 GB Healthy (Storage Spaces Protective Partition)				
— Disk 1 Basic 2980.82 GB Online	2948.82 GB Unallocated S2D on gos2dcluster5 32.00 GB Healthy (Storage Spaces Protective Partition)							
- Disk 2 Basic 894.21 GB Online	499 MB Healthy (Recovery Partition) 100 MB Healthy (EFI System Partitic Healthy (Boot, Page File, Crash Dump, Primary Partition)							
C Disk 3 Unknown 1788.50 GB Offline	1788.50 GB Unallocated							
*O Disk 4 Unknown 1788.50 GB Offline	1788.50 GB Unallocated							
*O Disk 5 Unknown 1788.50 GB Offline	1788.50 GB Unallocated							
C Disk 6 Unknown 1788.50 GB Offline	1788.50 GB Unallocated							
Unallocated	Primary partition							



Please run "cmd" as administrator mode.



Please run "diskpart".





Please follow the step.

📾 Administrator: Command Prompt - diskpart
Microsoft Windows [Version 10.0.17763.1282] (c) 2018 Microsoft Corporation. All rights reserved.
C:\Windows\system32>diskpart
Microsoft DiskPart version 10.0.17763.1
Copyright (C) Microsoft Corporation. On computer: GOWS2DTEST12
DISKPART> list disk
Disk ### Status Size Free Dyn Gpt
Disk 0 Online 2980 GB 2948 GB * Disk 1 Online 2980 GB 2948 GB * Disk 2 Online 894 GB 0 B * Disk 3 Offline 1788 GB 1788 GB * Disk 4 Offline 1788 GB 1788 GB * Disk 5 Offline 1788 GB 1788 GB * Disk 6 Offline 1788 GB 1788 GB *
DISKPART> select disk 0
Disk 0 is now the selected disk.
DISKPART> list partition
Partition ### Type Size Offset Partition 1 Unknown 31 GB 2948 GB
DISKPART> select Partition 1
Partition 1 is now the selected partition.
DISKPART> delete partition override
DiskPart successfully deleted the selected partition.
DISKPART> list partition
There are no partitions on this disk to show.
DISKPART> select disk 1
Disk 1 is now the selected disk.
DISKPART> list partition
Partition ### Type Size Offset
Partition 1 Unknown 31 GB 2948 GB
DISKPART> select Partition 1
Partition 1 is now the selected partition.
DISKPART> delete partition override
DiskPart successfully deleted the selected partition.
DISKPART> list partition
There are no partitions on this disk to show.



When you clean them up, you can see all disks well as below. And you can see normal status with Get-PhysicalDisks on Powershell.

Administrator: Command Prompt - diskpart	TDisk Management - 🗆 🗙						
Microsoft Windows [Version 10.0.17763.1282] (c) 2018 Microsoft Corporation, All rights reserved.	File Action View Help						
C:\Windows\system32>diskpart							
Nicrosoft DiskBart version 10 0 17762 1	Volume	Layout Type File System Status Capacity Free Simple Bair NTES Healthy (B., 83.62 GB 83.322 GB 93.%					
	 (Disk 2 partition 1) 	Simple Basic Healthy (R., 499 MB 499 MB 100 %					
Copyright (C) Microsoft Corporation. On computer: GOWS2DTEST12	(Disk 2 partition 2)	Simple Basic Healthy (E 100 MB 100 MB 100 %					
DISKPART> list disk							
Disk ### Status Size Free Dyn Gpt							
Disk 0 Online 2980 GB 2948 GB * Disk 1 Online 2980 GB 2943 GB * Disk 2 Online 884 GB 0 B * Disk 3 Offline 1788 GB 1788 GB Disk 4 Offline 1788 GB 1788 GB Disk 5 Offline 1788 GB 1788 GB	= Dick 0	~					
DTSKPARTS select disk A	Basic 2980 82 GB	700 07 CP					
Disk 0 is now the selected disk.	Online U	nallocated					
DISK 0 IS NOW the Selected disk.							
	Disk 1 Basic						
Partition ### Type Size offset	2980.82 GB 2 Online U	380.82 GB nallocated					
Partition 1 Unknown 31 GB 2948 GB							
DISKPART> select Partition 1	- Disk 2						
Partition 1 is now the selected partition.	894.21 GB 4	99 MB 100 MB 83.62 GB NTFS					
DISKPART> delete partition override							
DiskPart successfully deleted the selected partition.	"O Disk 3	Visik 3					
DISKPART> list partition	Unknown 1788.50 GB 1	1788.50 GB					
There are no partitions on this disk to show.	Offline 🚺 🛛 U	nallocated					
DISKPART> select disk 1	Dirk 4						
Disk 1 is now the selected disk.	Unknown 1788 50 GB	1700 50 / 0					
DISKPART> list partition	Offline 🚺 U	Unallocated					
Partition ### Type Size Offset	Dick 5						
Partition 1 Unknown 31 GB 2948 GB	Unknown	70 50 50					
DISKPART> select Partition 1	Offline ()	785.30 UD nallocated					
Partition 1 is now the selected partition.							
DISKPART> delete partition override	"O Disk 6 Unknown						
DiskPart successfully deleted the selected partition.	1788.50 GB 11 Offline 1 U	788.50 GB nallocated					
DISKPART> list partition							
There are no partitions on this disk to show.	Unallocated Pri	mary partition v					

🔁 Administrator: Windows PowerShell

PS C:\Windows\system32> Get-PhysicalDisk

Number FriendlyName SecialNumber MediaType CanPool OperationalStatus Size
 HTECHOLYNMMC
 Def USTNAMMCF

 HPE LOGICAL VOLUME
 PFJHDAARCC604P

 ATA Micron_S210_MTFD
 1940242A987E

 Micron_9306_MTFDHAL3T2TDR 0000_0000_0000_0001_00A0_7501_251F_FC1D.

 Micron_5210_MTFD
 1940242A987E

 ATA Micron_5210_MTFD
 1940242A987E

 ATA Micron_5210_MTFD
 1940242A9A82

 ATA Micron_5300_MTFD
 1940242A9A82

 ATA Micron_5300_MTFD
 193925170426

 Micron_9300_MTFD
 193925170445

 ATA Micron_5300_MTFD
 193925170446

 Micron_9300_MTFD
 193925170446

 Micron_5300_MTFD
 193925170446

 Micron_5300_MTFD
 193925170446

 Micron_5300_MTFD
 193925170446

 Micron_5300_MTFD
 193925170446

 OK
 Healthy

 OK
 Healthy

 (Transient Error, Lost Communication)
 Whealthy

 Lost Communication
 Warning

 (Transient Error, Lost Communication)
 Unhealthy

 (Transient Error, Lost Communication)
 Unhealthy

 (Lost Communication, Transient Error)
 Unhealthy

 Lost Communication, Transient Error)
 Whealthy

 Lost Communication, Transient Error)
 Unhealthy

 Auto-Select 894.22 GB Journal 2.91 TB Journal 2.91 TB Auto-Select 3.49 TB Auto-Select 3.49 TB Auto-Select 3.49 TB Journal 2.91 TB Journal 2.91 TB Journal 2.91 TB Auto-Select 3.49 TB Auto-Select 3.49 TB Auto-Select 3.49 TB Auto-Select 3.49 TB SSD SSD SSD SSD SSD False SSD SSD SSD SSD SSD SSD SSD SSD PS C:\Windows\system32> Get-PhysicalDisk Number FriendlyName SerialNumber MediaType CanPool OperationalStatus HealthStatus Usage Size
 Micron_9300_MTFDHAL3T2TDR
 0000_0000_0000_0000_0000_00A0_7501_251F_FBE6.
 SSD

 HPE LOGICAL VOLUME
 PF3HD0ARCC60VP
 SSD

 Micron_9300_MTFDHAL3T2TDR
 0000_0000_0000_0001_00A0_7501_251F_FC8E.
 SSD

 ATA Micron_9210_MTFD
 1940242A987E
 SSD

 ATA Micron_5210_MTFD
 1940242A987E
 SSD

 ATA Micron_5210_MTFD
 1940242A98469
 SSD

 ATA Micron_5210_MTFD
 1940242A9840
 SSD

 ATA Micron_5210_MTFD
 1940242A9840
 SSD

 ATA Micron_5210_MTFD
 1940242A9841
 SSD

 ATA Micron_5210_MTFD
 1940242A9841
 SSD

 ATA Micron_5210_MTFD
 1940242A9845
 SSD

 ATA Micron_5210_MTFD
 1940242A9841
 SSD

 ATA Micron_5210_MTFD
 1940242A9845
 SSD

 ATA Micron_5210_MTFD
 1940242A9845
 SSD

 ATA Micron_5210_MTFD
 1940242A94845
 SSD

 ATA Micron_5210_MTFD
 1940242A9846
 SSD

 ATA Micron_5210_MTFD
 1940242A94847
 SSD
 Auto-Select 2.91 TB Auto-Select 2.91 TB Auto-Select 2.91 TB Auto-Select 2.91 TB Auto-Select 1.75 TB Healthy PS C:\Windows\system32>



📐 Ad	Z Administrator: Windows PowerShell								
PS C:∖	PS C:\Windows\system32> Get-PhysicalDisk								
Number	FriendlyName	SerialNumber	MediaType	CanPool	OperationalStatus	HealthStatus	Usage	Size	
1	Micron_9300_MTFDHAL3T2TDR	0000_0000_0000_0001_00A0_7501_251F_FC1D.	SSD	True	ОК	Healthy	Auto-Select	2.91 TB	
2 0	HPE LOGICAL VOLUME Micron_9300_MTFDHAL3T2TDR	PFJHD0ARCC60V5 0000_0000_00001_00A0_7501_251F_FC6D.	SSD SSD	False True	ок ок	Healthy Healthy	Auto-Select Auto-Select	894.22 GB 2.91 TB	
6 3	ATA Micron_5210_MTFD ATA Micron 5210 MTFD	1940242A9B7E	SSD SSD	True True	ОК	Healthy Healthy	Auto-Select	1.75 TB 1.75 TB	
4	ATA Micron_5210_MTFD	1940242A9AAB	SSD	True	OK OK	Healthy	Auto-Select	1.75 TB	
3	ATA Micron_5210_MTFD	1940242A9B4D 1940242A9C23	SSD	True	OK OK	Healthy	Auto-Select	1.75 TB	
5 5	ATA Micron_5210_MTFD ATA Micron_5210_MTFD	1940242A9AE1 1940242A9BBC	SSD SSD	True True	ок ОК	Healthy Healthy	Auto-Select Auto-Select	1.75 TB 1.75 TB	
4	ATA Micron_5210_MTFD	1940242A9BA7	SSD	True	ОК	Healthy	Auto-Select	1.75 TB	
PS C:∖	PS C:\Windows\system32> _								

If you have seen this situation several times, please try to create cluster with below command.

New-Cluster -name CLUSTER NAME -node NODE1,NODE2 -NoStorage -StaticAddress

192.168.xxx.xxx

Example:

Cluster name : S2DTEST NODE1: WINS2DTEST01 [server host name] NODE2: WINS2DTEST02 [server host name] Static IP address : 192.168.1.111

New-Cluster -name S2DTEST-node WINS2DTEST01, WINS2DTEST02 -NoStorage -StaticAddress 192.168.1.111


Please refer below example also.

New-Cluster -name gos2dcluster2-node gows2dtest03, gows2dtest04 -NoStorage -

StaticAddress

-NoStorage option is important.

Please run the above command with Administrator mode on Power shell as below.

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🔀 Administrator: Windows PowerShell	-		×
Windows PowerShell Copyright (C) Microsoft Corporation. All rights reserved.			^
PS C:\Windows\system32> New-Cluster -name gos2dcluster2 -node gows2dtest03,gows2dtest04 -NoStorage -Sta	ticAddr	ress 📕	



Administrator: Windows PowerShell	_	×
Windows PowerShell Copyright (C) Microsoft Corporation. All rights reserved.		^
New-Cluster Forming cluster 'gos2dcluster2'. . [

You cloud create it well.

Administrator: Windows PowerShell	-		×
Windows PowerShell Copyright (C) Microsoft Corporation. All rights reserved.			Â
PS C:\Windows\system32> New-Cluster -name gos2dcluster2 -node gows2dtest03,gows2dtest04 -NoStorage -Sf	taticAddr	ress :	
gos2dcluster2			
PS C:\Windows\system32> _			

You can see all disks as below.

🗵 Administ	trator: Windows PowerShell				_	o x
Windows Pow Copyright (erShell C) Microsoft Corporation	n. All rights reserved.				^
PS C:∖Windo	ws\system32> New-Cluster	 name gos2dcluster2 -node gows2dtest03, 	gows2dtest(04 -NoSto	orage -StaticAddre	ss en s e
gos2dcluste	er2					
_						
		a at - c				
PS C:\Windo	ws\system32> get-physica	lidisk				
DeviceId Fr	iendlyName	SerialNumber	MediaType	CanPool	OperationalStatus	HealthS tatus
1 M1	CCON_9300_MIFDHAL3121DR	0000_0000_0000_0001_00A0_/501_251F_FBE6.	SSD	Irue	OK	Healthy
2 11	COOR AL VOLUME	PET JHUUAKLLOUVP	220	Tous	OK	Healthy
6 AT	A Micron 5300 MTED	1939251704CF	550	True	OK	Healthy
3 AT	A Micron 5300 MTFD	1939251704C4	SSD	True	OK	Healthy
4 AT	A Micron 5300 MTFD	19392517049F	SSD	True	OK	Healthy
6 AT	A Micron_5300_MTFD	1939251704C2	SSD	True	ОК	Healthy
3 АТ	A Micron_5300_MTFD	1939251704A6	SSD	True	ОК	Healthy
5 AT	A Micron_5300_MTFD	1939251704B3	SSD	True	OK	Healthy
5 AT	A Micron_5300_MTFD	1939251704CA	SSD	True	OK	Healthy
4 AT	A Micron_5300_MTFD	193925170476	SSD	True	OK	Healthy
DE CULLARD						
PS C:\Windo	ws(systemsz)					



Please enable Storage Spaces Direct with below command. The powerful command will recognize your disk well. and it configure cache tier and capacity tier well.



PS C:\Windows\system32> Enable-ClusterStorageSpacesDirect -Verbose_

Please select "[A] Yes to All".

Administrator: Windows PowerShell



The process will be completed in 5 mins.

Administrator: Windows PowerShell × PS C:\Windows\system32> Enable-ClusterStorageSpacesDirect SE: 2020/01/23-04:20:50.010 Ensuring that all nodes support S2D Enable-ClusterStorageSpacesDirect -Verbose Enabling cluster Storage Spaces Direct Waiting until physical disks are claimed 15% Complete ERBOSE: 2020/01/23-04:22:03.181 Setting cluster property ERBOSE: 2020/01/23-04:22:03.181 Setting default fault domain awareness on clustered storage subsystem ERBOSE: 2020/01/23-04:22:03.251 Waiting until physical disks are claimed ERBOSE: 2020/01/23-04:22:06.259 Number of claimed disks on node 'GOWS2DTEST03': 0/6



You can check the result with log file. Please check

file://C:¥Windows¥Cluster¥Reports¥EnableClusterS2D.

📐 Admi	ninistrator: Windows PowerShell —	· 🗆	\times
DS CONNI	indows/system32% Enable_ClusterStonageSpacesDirect _Verbose		
VEDBOSE	1000 (System)27 Chapter 200 Case in a construction of the support S2D		
VERBOSE :	2020/01/22-04-20-50 010 Linau ing characterinformation		
VERBOSE :	· 2020/01/23 04-20-50 301 Guttying scharge interact (Fact to slow): NVMa SSD Number of types preser	+ 2	
VERBOSE :	2020/01/23-04-20-30-301 Solice unsk types present (tast to stow), while solic types present		
VERBOSE:	2020/01/23-04-20-50-386 Checking that all disks support the desired cache state		
VERDOJE.	· 2020/01/25-04.20.300 Checking that all uisks support the desired tache state		
Confirm			
Are you	sure you want to perform this action?		
Performi	ing operation 'Enable Cluster Storage Spaces Direct' on Target 'gos2dcluster2'.		
[V] Yes	[A] Yes to All [N] No [1] No to All [S] Suspend [2] Help (default is "V"): A		
VERBOSE	- 2020/01/23-04-22-02 816 (reating health resource		
VERBOSE :	2020/01/23-04-22-03 181 Setting cluster property		
VERBOSE :	200/01/23-04:22:03.181 Setting default fault domain awareness on clustered storage subsystem		
VERBOSE :	200/01/23-04:22:03.251 Waiting until physical disks are claimed		
VERBOSE :	2020/01/23-04:22:06.259 Number of claimed disks on pode 'GOWS2DTEST03': 0/6		
VERBOSE :	: 2020/01/23-04:22:09.267 Number of claimed disks on pode 'GOWS2DTEST04': 0/6		
VERBOSE :	: 2020/01/23-04:22:12.274 Number of claimed disks on node 'GOWS2DTEST03': 2/6		
VERBOSE :	2020/01/23-04:22:15.282 Number of claimed disks on pode 'GOWS2DTEST04': 6/6		
VERBOSE :	: 202/01/23-04:22:18.289 Number of claimed disks on pode 'GOWS2DTEST03': 6/6		
VERBOSE :	: 2020/01/23-04:22:18.294 Node 'GOWS2DTEST03': Waiting until cache reaches desired state (HDD:'ReadW	Irite'	
SSD: Wri	iteOnly')	_	
VERBOSE :	2020/01/23-04:22:18.296 SBL disks initialized in cache on node 'GOWS2DTEST03': 6 (6 on all nodes)		
VERBOSE :	: 2020/01/23-04:22:18.299 Cache reached desired state on GOWS2DTEST03		
VERBOSE :	: 2020/01/23-04:22:19.300 Node 'GOWS2DTEST04': Waiting until cache reaches desired state (HDD:'Readw	Irite'	
SSD:'Wri	iteOnly')		
VERBOSE :	: 2020/01/23-04:22:19.303 SBL disks initialized in cache on node 'GOWS2DTEST04': 6 (12 on all nodes)		
VERBOSE:	: 2020/01/23-04:22:19.306 Cache reached desired state on GOWS2DTEST04		
VERBOSE :	: 2020/01/23-04:22:20.307 Waiting until SBL disks are surfaced		
VERBOSE:	: 2020/01/23-04:22:23.321 Disks surfaced on node 'GOWS2DTEST03': 12/12		
VERBOSE:	: 2020/01/23-04:22:23.334 Disks surfaced on node 'GOWS2DTEST04': 12/12		
VERBOSE:	: 2020/01/23-04:22:26.645 Waiting until all physical disks are reported by clustered storage subsyst	em	
VERBOSE:	: 2020/01/23-04:22:29.839 Physical disks in clustered storage subsystem: 12		
VERBOSE:	: 2020/01/23-04:22:29.839 Querying pool information		
VERBOSE :	: 2020/01/23-04:22:30.083 Starting health providers		
VERBOSE :	: 2020/01/23-04:22:37.455 Checking that all disks support the desired cache state		
VERBOSE :	: 2020/01/23-04:22:37.481 Required steps for this action completed successfully		
Node	EnableReportName		
GOWS2DTE	EST03 C:\Windows\Cluster\Reports\EnableClusterS2D on 2020.01.23-04.22.37.htm		
1.0			

PS C:\Windows\system32> 🛓



C:\Windows\Cluster\Reports\EnableClusterS2D on 2020.01.23-04.22.37.htm
 EnableClusterS2D x

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220/12/-04200.00% Concepts that is dis support the desired cache state. 200/12/-04220.01% Checking heath resource. 200/12/-04220.01% Checking heath resour	2020/01/23-04:20:50.381 C	hecking that nodes support the desired cache state.
2020/12/3-0220.216 f certing heath resource. 2020/12/3-0220.217 humber of certing disks on node COVSDITETID 10. 2020/12/3-0220.227 humber of certing disks on node COVSDITETID 10. 2020/12/3-0220.227 humber of certing disks on node COVSDITETID 10. 2020/12/3-0220.227 humber of certing disks on node COVSDITETID 10. 2020/12/3-0220.227 humber of certing disks on node COVSDITETID 10. 2020/12/3-0220.228 humber of certing disks on node COVSDITETID 10. 2020/12/3-0220.228 humber of certing disks on node COVSDITETID 10. 2020/12/3-0220.228 humber of certing disks on node COVSDITETID 10. 2020/12/3-0220.228 humber of certing disks on node COVSDITETID 10. 2020/12/3-0220.228 humber of certing disks on node COVSDITETID 10. 2020/12/3-0220.228 humber of certing disks on node COVSDITETID 10. 2020/12/3-0220.228 humber of certing disks on node COVSDITETID 10. 2020/12/3-0220.228 humber of certing disks on node COVSDITETID 10. 2020/12/3-0220.228 humber of certing disks on node COVSDITETID 10. 2020/12/3-0220.228 humber of certing disks on node COVSDITETID 11. 2020/12/3-0220.228 humber of certing disks on node COVSDITETID 11.	2020/01/23-04:20:50.386 C	hecking that all disks support the desired cache state.
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2020/1/2-042206.259 Number of daimed disks on node 'GOWSZDTEST04': 0/6. 2020/1/2-042206.257 Number of daimed disks on node 'GOWSZDTEST03': 2/6. 2020/1/2-042216.252 Number of daimed disks on node 'GOWSZDTEST03': 6/6. 2020/1/2-042216.259 Number of daimed disks on node 'GOWSZDTEST03': 6/6. 2020/1/2-042216.259 Number of daimed disks on node 'GOWSZDTEST03': 6/6. 2020/1/2-042216.259 CoWSZDTEST03': Windon onde 'GOWSZDTEST03': 6/6. 2020/1/2-042216.259 CoWSZDTEST03': Windon onde 'GOWSZDTEST03': 6/6. 2020/1/2-042216.259 CoWSZDTEST03': Windon on node 'GOWSZDTEST03': 6/6. 2020/1/2-042216.259 CoWSZDTEST03': Windon on node 'GOWSZDTEST03': 6/6. 2020/1/2-042216.259 CoWSZDTEST03': Windon on node 'GOWSZDTEST03': 6/6. 2020/1/2-042216.259 CoWSZDTEST04': Walting until coche reaches desired state (nDO: ReadWrite 'SDI: WriteOn'). 2020/1/2-042216.350 Coche reached desired state (nDO: ReadWrite 'SDI: WriteOn'). 2020/1/2-042216.350 Node 'GOWSZDTEST04': Walting until coche reached seired state (nDO: ReadWrite 'SDI: WriteOn'). 2020/1/2-042216.350 Node 'GOWSZDTEST04': Walting until coche reached desired state (nDO: ReadWrite 'SDI: WriteOn'). 2020/1/2-042219.350 Loiks initialized in cache non node 'GOWSZDTEST04': (12 on all nodes). 2020/1/2-04222.351 Disk surfaced on node 'GOWSZDTEST03': 12/1. 2020/1/2-04222.352 Disk surfaced on node 'GOWSZDTEST03': 12/1. 2020/1/2-04222.352 Disk surfaced on node 'GOWSZDTEST04': 12/1.<	2020/01/23-04:22:03.251 W	Jailling until physical disks are claimed.
22201/32-042292.67 Number of dalmed disks on node 'GOWS2DTEST04' 0/6. 20201/32-042215.282 Number of dalmed disks on node 'GOWS2DTEST04' 6/6. 20201/32-042216.289 Number of dalmed disks on node 'GOWS2DTEST03' 6/6. 20201/32-042216.289 Cohe reached desined state on GOWS2DTEST03' 6 (is on all nodes). 20201/32-042216.390 Node 'GOWS2DTEST04' Walfing until cache reached desined state (nDD'.ReadWrite 'SD: WriteOnly). 20201/32-042216.390 Node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-042216.300 Node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-042219.300 Cohe reached desined state on GOWS2DTEST04' (i 2 on all nodes). 20201/32-042219.300 Cohe reached desined state on GOWS2DTEST04' (i 2 on all nodes). 20201/32-04223.310 Node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-042223.321 Disks surfaced on node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-04225.331 Disks surfaced on node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-04225.331 Disks surfaced on node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-04225.331 Disks surfaced on node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-04225.331 Disks surfaced on node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-04225.331 Disks surfaced on node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-04225.331 Disks surfaced on node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-04225.331 Disks surfaced on node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-04225.331 Disks surfaced on node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-04225.331 Disks surfaced on node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-04225.331 Disks surfaced on node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-04225.331 Disks surfaced on node 'GOWS2DTEST04' (i 2 on all nodes). 20201/32-04225.342 Disks surfaced on node 'GOWS2DTEST04' (i 2 on all nodes). 2	2020/01/23-04:22:06.259 N	umber of claimed disks on node 'GOWS20TEST03': 0/6.
2020/1/23-442212.274 Number of claimed disks on node 'GOWS2DTEST93: 2/6. 2020/1/23-442215.282 Number of claimed disks on node 'GOWS2DTEST93: 6/6. 2020/1/23-442218.289 Node 'GOWS2DTEST93: Yalling until cache reaches desired state (HDD:ReadWrite'SD:WriteOnly). 2020/1/23-442218.289 Stuckis Initialized in cache on node 'GOWS2DTEST93: 6 (6 on all node). 2020/1/23-442218.289 Stuckis Initialized in cache on node 'GOWS2DTEST93: 6 (6 on all node). 2020/1/23-442218.299 Cache reached desired state on GOWS2DTEST93: 6 (6 on all node). 2020/1/23-442219.209 Cache reached desired state on GOWS2DTEST93: 6 (6 on all node). 2020/1/23-442219.209 Cache reached desired state on GOWS2DTEST93: 6 (6 on all node). 2020/1/23-442219.309 Node 'GOWS2DTEST94: Yalling until cache reaches desired state (HDD:ReadWrite'SDI:WriteOnly). 2020/1/23-442219.309 Node 'GOWS2DTEST94: Yalling until cache reaches desired state (HDD:ReadWrite'SDI:WriteOnly). 2020/1/23-442219.309 Node 'GOWS2DTEST94: Yalling until cache reaches desired state (HDD:ReadWrite'SDI:WriteOnly). 2020/1/23-442219.309 Stuckis Initialized in cache on node 'GOWS2DTEST94: 6 (1 2 on all nodes). 2020/1/23-442219.309 Stuckies dasis initialized in cache on node 'GOWS2DTEST94: 6 (1 2 on all nodes). 2020/1/23-442223.319 Node 'GOWS2DTEST94: F (1 2 on all nodes). 2020/1/23-442223.321 Disks surfaced on node 'GOWS2DTEST94: 6 (1 2 on all nodes). 2020/1/23-442223.321 Disks surfaced on node 'GOWS2DTEST94: 1 (1 2 on all nodes). 2020/1/23-442223.321 Disks surfaced on node 'GOWS2DTEST94: 1 (1 2 on all nodes). 2020/1/23-442223.321 Disks surfaced on node 'GOWS2DTEST93: 1 (2 no all nodes). 2020/1/23-442223.334 Disks surfaced on node 'GOWS2DTEST93: 1 (2 no all nodes). 2020/1/23-442224.339 Physical disk in clatered storage subsystem: 2 2020/1/23-442224.399 Physical disk in clatered storage subsystem: 1. 2020/1/23-442224.399 Physical disk in clatered storage subsystem: 2 2020/1/23-442224.399 Physical disk in clatered storage subsystem: 2 2020/1/23-442224.399 Stucking health providers. 2020/1/23-442224.399 Stu	2020/01/23-04:22:09.267 N	umber of claimed disks on node 'GOWS20TEST04': 0/6.
2020/07/23-042215282 Number of claimed class on node 'GOWS2DTEST03': 6/6. 2020/07/23-0422163298 Number of claimed class on node 'GOWS2DTEST03': 6/6 on all nodes). 2020/07/23-0422163296 Still class in tablatized in cache on node 'GOWS2DTEST03'. 6 (6 on all nodes). 2020/07/23-0422163299 Cache reached desired state on GOWS2DTEST03. 2020/07/23-0422163299 Cache reached desired state on GOWS2DTEST03. 2020/07/23-0422163299 Cache reached desired state on GOWS2DTEST04. 2020/07/23-042219.300 Node 'GOWS2DTEST04': (20 all nodes). 2020/07/23-042219.303 El class initialized in cache on node 'GOWS2DTEST04': (10 - nel nodes). 2020/07/23-042219.303 El class initialized in cache on node 'GOWS2DTEST04': (10 - nel nodes). 2020/07/23-042219.303 El class initialized in cache on node 'GOWS2DTEST04': (12 - nel nodes). 2020/07/23-0422219.303 El class initialized in cache on node 'GOWS2DTEST04': (12 - nel nodes). 2020/07/23-042223.303 El class initialized in cache on node 'GOWS2DTEST04': (12 - nel nodes). 2020/07/23-042223.310 Kiss surfaced on node 'GOWS2DTEST04': (12 - nel nodes). 2020/07/23-042223.310 Kiss surfaced on node 'GOWS2DTEST03': 12/12. 2020/07/23-042223.321 Diks surfaced on node 'GOWS2DTEST03': 12/12. 2020/07/23-042223.321 Diks surfaced on node 'GOWS2DTEST03': 12/12. 2020/07/23-042223.323 Diks initialized in class responted by dustered storage subsystem. 2020/07/23-042223.3289 Physicial disk in clustered storage subsystem: 12.<	2020/01/23-04:22:12.274 N	umber of claimed disks on node 'GOWS20TEST03': 2/6.
222017/23-042218.289 Number of claimed disks on node 'GOWS2DTEST03: K/6. 202017/23-042218.294 Node 'GOWS2DTEST03: Waiting until cache eraches desired state (HDD:ReadWrite 'SD:WriteOnly). 202017/23-042218.295 SBL disks initialized in cache on node 'GOWS2DTEST03: 6 (6 on all nodes). 202017/23-042218.299 Cache reached desired state on GOWS2DTEST03. 202017/23-042219.300 Node 'GOWS2DTEST04: Waiting until cache eraches desired state (HDD:ReadWrite 'SD:WriteOnly). 202017/23-042219.305 SBL disks initialized in cache on node 'GOWS2DTEST04: 6 (12 on all nodes). 202017/23-042219.305 Cache reached desired state on GOWS2DTEST04: 6 (12 on all nodes). 202017/23-042219.305 Cache reached desired state on GOWS2DTEST04: 6 (12 on all nodes). 202017/23-0422219.305 Cache reached desired state on GOWS2DTEST04: 6 (12 on all nodes). 202017/23-04222.312 Disks surfaced on node 'GOWS2DTEST04: 6 (12 on all nodes). 202017/23-04222.332 Disks surfaced on node 'GOWS2DTEST04: 2 (2 on all nodes). 202017/23-04222.332 Disks surfaced on node 'GOWS2DTEST04: 2 (2 on all nodes). 202017/23-04222.332 Disks surfaced on node 'GOWS2DTEST04: 2 (2 on all nodes). 202017/23-04222.332 Disks surfaced on node 'GOWS2DTEST04: 2 (2 on all nodes). 202017/23-04222.332 Disks surfaced on node 'GOWS2DTEST04: 1 (2 / 2 on all nodes). 202017/23-04222.332 Disks surfaced on node 'GOWS2DTEST04: 1 (2 / 2 on all nodes). 202017/23-04222.332 Disks surfaced on node 'GOWS2DTEST04: 1 (2 / 2 on all nodes). 202017/23-04222.332 Disks surfaced on node 'GOWS2DTEST04: 1 (2 / 2 on all nodes). 202017/23-04222.333 Disks surfaced on node 'GOWS2DTEST04: 1 (2 / 2 on all nodes). 202017/23-04222.333 Disks surfaced on node 'GOWS2DTEST04: 1 (2 / 2 on all nodes). 202017/23-04222.333 Disks surfaced on node 'GOWS2DTEST04: 1 (2 / 2 on all nodes). 202017/23-04222.333 Disks surfaced on node 'GOWS2DTEST04: 1 (2 / 2 on all nodes). 202017/23-04222.333 Disks surfaced on node 'GOWS2DTEST04: 1 (2 / 2 on all nodes). 202017/23-04223.333 Disks surfaced on node 'GOWS2DTEST04: 1 (2 / 2 on all nodes). 202017/23-04223	2020/01/23-04:22:15.282 N	umber of claimed disks on node 'GOWS20TEST04': 6/6.
2020/1/23-04/2218.294 Node 'GOWS2DTEST03': Witting until cache reaches desired state (HDD:'ReadWrite' SSD:'WittGONy). 2020/1/23-04/2218.299 Cache reached desired state on GOWS2DTEST03': 6 (6 on all nodes). 2020/1/23-04/2219.200 Node 'GOWS2DTEST04': Witting until cache reaches desired state (HDD:'ReadWrite' SSD:'WittGONy). 2020/1/23-04/2219.305 SBL disks initialized in cache on node 'GOWS2DTEST04': 6 (12 on all nodes). 2020/1/23-04/2219.306 Cache reached desired state on GOWS2DTEST04': 6 (12 on all nodes). 2020/1/23-04/2219.306 Cache reached desired state on GOWS2DTEST04': 6 (12 on all nodes). 2020/1/23-04/2219.306 Cache reached desired state on GOWS2DTEST04': 6 (12 on all nodes). 2020/1/23-04/2219.306 Cache reached desired state on GOWS2DTEST04': 6 (12 on all nodes). 2020/1/23-04/2219.306 Cache reached desired state on GOWS2DTEST04': 6 (12 on all nodes). 2020/1/23-04/2219.306 Cache reached desired state on GOWS2DTEST04': 6 (12 on all nodes). 2020/1/23-04/22.319 Disks surfaced on node 'GOWS2DTEST04': 6 (12 on all nodes). 2020/1/23-04/22.331 Disks surfaced on node 'GOWS2DTEST03': 12/1. 2020/1/23-04/22.332 Disks surfaced on node 'GOWS2DTEST03': 12/12. 2020/1/23-04/22.26.845 Walting until all physical disks are reported by dustered storage subsystem. 2020/1/23-04/22.8389 Querying pool information. 2020/1/23-04/22.8389 Querying pool information. 2020/1/23-04/22.3088 Starting health providers. 2020/1/23-04/22.3155 Checking that all disks support the desired cache state. 2020/1/23-04/22.3147 Sto Checking that all disks support the desired states state.	2020/01/23-04:22:18.289 N	umber of claimed disks on node 'GOWS20TEST03': 6/6.
2020/1/23-04/2216296 SBL disks initialized in cache on node 'GOWS2DTEST03': 6 (6 on all nodes). 2020/1/23-04/2216299 Cache reached desired state on GOWS2DTEST03. 2020/1/23-04/2219300 Node 'GOWS2DTEST04': Witting until cache reaches desired state (HDD:'ReadWrite' SSD:'WitteOnly). 2020/1/23-04/2219305 SBL disks initialized in cache on node 'GOWS2DTEST04': 6 (12 on all nodes). 2020/1/23-04/2219306 Cache reached desired state on GOWS2DTEST04': 6 (12 on all nodes). 2020/1/23-04/2219306 Cache reached desired state on GOWS2DTEST04': 6 (12 on all nodes). 2020/1/23-04/2219306 Cache reached desired state on GOWS2DTEST04': 6 (12 on all nodes). 2020/1/23-04/2219306 Cache reached desired state on GOWS2DTEST04': 6 (12 on all nodes). 2020/1/23-04/2219307 Waiting until SBL disks are surfaced. 2020/1/23-04/2233321 Disks surfaced on node 'GOWS2DTEST03': 12/12. 2020/1/23-04/223334 Disks surfaced on node 'GOWS2DTEST03': 12/12. 2020/1/23-04/2226.845 Waiting until all physical disks are reported by dustered storage subsystem. 2020/1/23-04/226.845 Waiting until all physical disks are reported by dustered storage subsystem. 2020/1/23-04/226.845 Waiting until all physical disks are reported by dustered storage subsystem. 2020/1/23-04/226.845 Waiting until all physical disks are reported by dustered storage subsystem. 2020/1/23-04/226.845 Waiting until all physical disks are reported by dustered storage subsystem. 2020/1/23-04/226.845 Waiting until all physical disks are reported by dustered storage subsystem. 2020/1/23-04/226.845 Waiting until all shys support the desired cache state. 2020/1/23-04/226.845 Waiting that all disks support the desired cache state. 2020/1/23-04/226.7461 Reaulied steps for this action completed successfully.	2020/01/23-04:22:18.294 N	ode 'GOWS2DTEST03' Walting until cache reaches desired state (HDD: ReadWitte' SSD:WriteOnly).
2020/1/23-04/22/19.200 Node 'GOWS2DTESTO4': Walting until cache reaches desired state (HDD:'ReadWrite' SSD:'WriteOnly). 2020/01/23-04/22/19.305 SBL disks initialized in cache on node 'GOWS2DTESTO4': 6 (12 on all nodes). 2020/01/23-04/22/19.306 Cache reached desired state on GOWS2DTESTO4': 6 (12 on all nodes). 2020/01/23-04/22/19.306 Cache reached desired state on GOWS2DTESTO4: 6 (12 on all nodes). 2020/01/23-04/22/19.306 Cache reached desired state on GOWS2DTESTO4: 6 (12 on all nodes). 2020/01/23-04/22/3.307 Walting until SBL disks are surfaced. 2020/01/23-04/22/3.310 Disks surfaced on node 'GOWS2DTESTO3': 12/12. 2020/01/23-04/22/3.340 Disks surfaced on node 'GOWS2DTESTO3': 12/12. 2020/01/23-04/22/3.340 Disks surfaced on node 'GOWS2DTESTO3': 12/12. 2020/01/23-04/22/3.840 Hign until all physical disks are reported by dustered storage subsystem. 2020/01/23-04/22/8.849 Querying pool information. 2020/01/23-04/22/8.849 Querying pool information. 2020/01/23-04/22/3.0452 Sarting health providers. 2020/01/23-04/22/3.7455 Checking that all disks support the desired cache state. 2020/01/23-04/22/3.7457 Checking that all disks support the desired states estate.	2020/01/23-04:22:18.296 5	BL disks initialized in cache on node 'GOWS2DTEST03'6 (6 on all nodes).
2020/1/23-04/2219300 Node 'GOWS2DTESTO4': Waiting until cache reaches desired state (HDD:'ReadWrite' SSD:'WriteOnly'). 2020/01/23-04/2219305 SBL disks initialized in cache on node 'GOWS2DTESTO4': 6 (12 on all nodes). 2020/01/23-04/2219306 Cache reached desired state on GOWS2DTESTO4': 6 (12 on all nodes). 2020/01/23-04/2219306 Cache reached desired state on GOWS2DTESTO4. 2020/01/23-04/2223321 Disks surfaced on node 'GOWS2DTESTO3': 12/12. 2020/01/23-04/22233321 Disks surfaced on node 'GOWS2DTESTO3': 12/12. 2020/01/23-04/22283324 Disks surfaced on node 'GOWS2DTESTO3': 12/12. 2020/01/23-04/22283324 Disks surfaced on node 'GOWS2DTESTO4': 12/12. 2020/01/23-04/2228392 Physical disks are reported by dustered storage subsystem. 2020/01/23-04/22283939 Physical disks in clustered storage subsystem. 2020/01/23-04/2283939 Physical disks in clustered storage subsystem: 12. 2020/01/23-04/228083 Starting health providers. 2020/01/23-04/228083 Starting health providers. 2020/01/23-04/22837455 Checking that all disks support the desired cache state. 2020/01/23-04/22837455 Checking that all disks support the desired states states.	2020/01/23-04:22:18.299 C	ache reached desired state on GOWS2DTEST03.
2020/01/23-04/2219.305 SBL disks initialized in cache on node 'GOWS2DTEST04': 6 (12 on all nodes). 2020/01/23-04/2219.306 Cache reached desired state on GOWS2DTEST04: 6 (12 on all nodes). 2020/01/23-04/2223.307 Waiting until SBL disks are surfaced. 2020/01/23-04/2223.321 Disks surfaced on node 'GOWS2DTEST03': 12/12. 2020/01/23-04/2223.334 Disks surfaced on node 'GOWS2DTEST04': 12/12. 2020/01/23-04/2226.845 Waiting until all physical disks are reported by dustered storage subsystem. 2020/01/23-04/2228.839 Physical disks in clustered storage subsystem. 2020/01/23-04/2228.839 Querying pool information. 2020/01/23-04/229.083 Starting health providers. 2020/01/23-04/223.045 Starting health providers. 2020/01/23-04/223.7455 Checking that all disks support the desired cache state. 2020/01/23-04/223.7481 Required steps for this action completed successfully.	2020/01/23-04:22:19.300 N	lode 'GOWS2DTEST04': Walting until cache reaches desired state (HDD: ReadWitte' SSD: WriteOnty).
2020/01/23-04/22/19.306 Cache reached desired state on GOWS2DTEST04. 2020/01/23-04/22/03.07 Waiting until S8L disks are surfaced. 2020/01/23-04/22/03.321 Disks surfaced on node 'GOWS2DTEST03': 12/12. 2020/01/23-04/22/03.342 Disks surfaced on node 'GOWS2DTEST04': 12/12. 2020/01/23-04/22/03.893 Physical disks are reported by dustered storage subsystem. 2020/01/23-04/22/03.893 Physical disks are reported by dustered storage subsystem. 2020/01/23-04/22/03.893 Physical disks in clustered storage subsystem: 12. 2020/01/23-04/22/03.893 Starting health providers. 2020/01/23-04/22/30.893 Starting health providers. 2020/01/23-04/22/37.495 Checking that all disks support the desired cache state. 2020/01/23-04/22/37.491 Required steps for this action completed successfully.	2020/01/23-04:22:19.303 5	BL disks initialized in cache on node 'GOWS2DTESTO4': 6 (12 on all nodes).
2020/01/23-04/2220.307 Waiting until S8L disks are surfaced. 2020/01/23-04/2223.321 Disks surfaced on node 'GOWS2DTEST03'; 12/12. 2020/01/23-04/2226.545 Waiting until all physical disks are reported by dustered storage subsystem. 2020/01/23-04/2226.845 Waiting until all physical disks are reported by dustered storage subsystem. 2020/01/23-04/2226.845 Waiting until all physical disks are reported by dustered storage subsystem. 2020/01/23-04/2226.845 Waiting until all physical disks are reported by dustered storage subsystem. 2020/01/23-04/2226.845 Waiting until all physical disks are reported by dustered storage subsystem. 2020/01/23-04/226.845 Waiting until all physical disks are reported by dustered storage subsystem. 2020/01/23-04/226.845 Waiting until all sits support the desired cache state. 2020/01/23-04/22/37.455 Checking that all disks support the desired cache state. 2020/01/23-04/22/37.481 Required steps for this action completed successfully.	2020/01/23-04:22:19.306 C	ache reached desired state on GOWS2DTEST04.
2020/01/23-04/22/23.32 Disks surfaced on node 'GOWS2DTEST03': 12/12. 2020/01/23-04/22/23.34 Disks surfaced on node 'GOWS2DTEST04': 12/12. 2020/01/23-04/22/26.645 Waiting until all physical disks are reported by clustered storage subsystem. 2020/01/23-04/22/28.839 Physical disks in clustered storage subsystem: 12. 2020/01/23-04/22/28.839 Querying pool Information. 2020/01/23-04/22/30.803 Starting health providers. 2020/01/23-04/22/37.455 Checking that all disks support the desired cache state. 2020/01/23-04/22/37.481 Required steps for this action completed successfully.	2020/01/23-04:22:20.307 W	Jailing until SEL disks are surfaced.
2020/01/23-04/22/334 Disks surfaced on node 'GOWS2DTEST04': 12/12. 2020/01/23-04/22/26.645 Waiting until all physical disks are reported by clustered storage subsystem. 2020/01/23-04/22/9.839 Physical disks in clustered storage subsystem: 12. 2020/01/23-04/22/9.839 Querying pool Information. 2020/01/23-04/22/9.083 Starting health providers. 2020/01/23-04/22/37.455 Checking that all disks support the desired cache state. 2020/01/23-04/22/37.481 Required steps for this action completed successfully.	2020/01/23-04:22:23.321 D	isks surfaced on node 'GOW\$20TE\$T03: 12/12.
2020/01/23-04-2226.645 Waiting until all physical disks are reported by clustered storage subsystem. 2020/01/23-04-2229.839 Physical disks in clustered storage subsystem: 12. 2020/01/23-04-2229.839 Querying pool information. 2020/01/23-04-22:30.803 Starting health providers. 2020/01/23-04-22:37.455 Checking that all disks support the desired cache state. 2020/01/23-04-22:37.481 Required steps for this action completed successfully.	2020/01/23-04:22:23.334 D	isks surfaced on node 'GOWS2DTESTD4': 12/12.
2020/01/23-04-22:29.839 Physical disks in clustered storage subsystem: 12. 2020/01/23-04-22:29.839 Querying pool information. 2020/01/23-04-22:30.883 Starting health providers. 2020/01/23-04-22:37.485 Checking that all disks support the desired cache state. 2020/01/23-04-22:37.481 Required steps for this action completed successfully.	2020/01/23-04:22:26.645 W	Valling until all physical disks are reported by clustered storage subsystem.
2020/01/23-04:22:28:39 Querying pool information. 2020/01/23-04:22:30:83 Starting health providers. 2020/01/23-04:22:37:455 Checking that all disks support the desired cache state. 2020/01/23-04:22:37:481 Required steps for this action completed successfully.	2020/01/23-04:22:29.839 P	hysical disks in clustered storage subsystem: 12.
2020/01/23-04:22:30.083 Starting health providers. 2020/01/23-04:22:37.455 Checking that all disks support the desired cache state. 2020/01/23-04:22:37.481 Required steps for this action completed successfully.	2020/01/23-04:22:29.839 C	uerying pool information.
2020/01/23-04:22:37:455 Checking that all disks support the desired cache state. 2020/01/23-04:22:37:481 Required steps for this action completed successfully.	2020/01/23-04:22:30.083 5	tarting health providers.
2020/01/23-04:22:37.481 Required steps for this action completed successfully.	2020/01/23-04:22:37.455 C	hecking that all disks support the desired cache state.
	2020/01/23-04:22:37.481 R	equired steps for this action completed successfully.

Disks claimed summary

Node	Friendly Name	Count
GOWS2DTEST03	Micron_9300_MTFDHAL3T2TDR	2
GOWS2DTEST03	ATA Micron_5300_MTFD	4
GOWS2DTEST04	Micron_9300_MTFDHAL3T2TDR	2
GOWS2DTEST04	ATA Micron_5300_MTFD	4

Disks claimed

Node	Disk	Friendly Name	Disks used for cache
GOWS2DTEST03	28cca1f6-5162-ade5-739d-bc61f3302f19	Micron_9300_MTFDHAL3T2TDR	True
GOWS2DTEST03	83fe6816-2592-f42d-ca43-3fb546149401	Micron_9300_MTFDHAL3T2TDR	True
GOWS2DTEST03	120d983f-4f2b-ea61-053b-e1e8b40cf78d	ATA Micron_5300_MTFD	False
GOWS2DTEST03	45492849-188f-092f-e436-28104bd951aa	ATA Micron_5300_MTFD	False
GOWS2DTEST03	49d9efaf-53e6-3313-c8af-ff19de407e3c	ATA Micron_5300_MTFD	False
GOWS2DTEST03	d3a21f93-7916-95b5-0168-405a67d566e4	ATA Micron_5300_MTFD	False
GOWS2DTEST04	1db08e07-2631-2de2-517b-cdec239f05ab	Micron_9300_MTFDHAL3T2TDR	True
GOWS2DTEST04	90f9d448-4d24-e502-d4d9-6fd5997797d4	Micron_9300_MTFDHAL3T2TDR	True
GOWS2DTEST04	59efe28c-086f-f4d4-d772-e2be20c947f1	ATA Micron_5300_MTFD	False
GOWS2DTEST04	8e3c5dc8-051d-de40-a116-f8533bd82cef	ATA Micron_5300_MTFD	False
GOWS2DTEST04	bdfffbb2-6582-5194-1486-5d1999422397	ATA Micron_5300_MTFD	False
GOWS2DTEST04	dc35b5bd-00db-0fdd-a36e-0e1c76bdda10	ATA Micron_5300_MTFD	False

Disks not claimed summary

All disks were claimed



_____ @ ☆ @ When you check disk status again. You will see "False" in CanPool category. These disks are used as S2D. so it cannot use for other purpose now.

eviceId	FriendlyName	SerialNumber	MediaType	CanPool	OperationalStatus	Health tatus
	HPE LOGTCAL VOLUME	PEJHDØARCC6ØVP	SSD	False	ОК	Health
006	ATA Micron 5300 MTFD	1939251704CE	SSD	False	OK	Health
001	Micron 9300 MTFDHAL3T2TDR	0000 0000 0000 0001 00A0 7501 251F FC1D.	SSD	False	OK	Health
001	Micron_9300_MTFDHAL3T2TDR	0000_0000_0000_0001_00A0_7501_251F_FBE6.	SSD	False	OK	Health
.003	ATA Micron_5300_MTFD	1939251704C4	SSD	False	ОК	Health
004	ATA Micron_5300_MTFD	19392517049F	SSD	False	ОК	Health
006	ATA Micron_5300_MTFD	1939251704C2	SSD	False	ОК	Health
000	Micron_9300_MTFDHAL3T2TDR	0000_0000_0000_0001_00A0_7501_251F_FC0E.	SSD	False	OK	Health
003	ATA Micron_5300_MTFD	1939251704A6	SSD	False	ОК	Health
000	Micron_9300_MTFDHAL3T2TDR	0000_0000_0000_0001_00A0_7501_251F_FC6D.	SSD	False	ОК	Health
005	ATA Micron_5300_MTFD	1939251704B3	SSD	False	ОК	Health
.005	ATA Micron_5300_MTFD	1939251704CA	SSD	False	OK	Health
004	ATA Micron_5300_MTFD	193925170476	SSD	False	ОК	Health

You can see the category changed to Fales from True as below.

🔁 Ad	ministrator: Windows PowerShell							
PS C:\	Windows\system32> Get-Phys	icalDisk						
Number	FriendlyName	SerialNumber	MediaType	CanPool	OperationalStatus	HealthStatus	Usage	Size
1 2 6 3 4 6 3 5	Micron_9300_MTFDHAL3T2TDR HFE LOGICAL VOLUME Micron_9300_MTFDHAL3T2TDR ATA Micron_5210_MTFD ATA Micron_5210_MTFD ATA Micron_5210_MTFD ATA Micron_5210_MTFD ATA Micron_5210_MTFD ATA Micron_5210_MTFD ATA Micron_5210_MTFD	0000_0000_0000_0001_00A0_7501_251F_FBE6. PFJHD0ARCC60VP 00000_0000_0000_0001_00A0_7501_251F_FC0E. 19402422A9AC9 1940242A9AC9 1940242A9AAB 1940242A9AAB 1940242A9AAB 1940242A9AAB 1940242A9AAB 1940242A9AAB 1940242A9AAB 1940242A9AAB 1940242A9AAB 1940242A9AAB	SSD SSD SSD SSD SSD SSD SSD SSD SSD SSD	True False True True True True True True True	ОК ОК ОК ОК ОК ОК ОК ОК	Healthy Healthy Healthy Healthy Healthy Healthy Healthy Healthy	Auto-Select Auto-Select Auto-Select Auto-Select Auto-Select Auto-Select Auto-Select Auto-Select Auto-Select	2.91 TB 894.22 GB 2.91 TB 1.75 TB 1.75 TB 1.75 TB 1.75 TB 1.75 TB 1.75 TB 1.75 TB
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Confin Are yoo Perfor [Y] Ye VERBOS	u sure you want to perform ming operation 'Enable Clu E [A] Yes to All [M] No E: 2020/07/01-02:47:52.816 E: 2020/07/01-02:47:53.166 E: 2020/07/01-02:47:53.166 E: 2020/07/01-02:47:53.210 E: 2020/07/01-02:47:56.218 E: 2020/07/01-02:48:62.234 E: 2020/07/01-02:48:62.234 E: 2020/07/01-02:48:68.258 E: 2020/07/01-02:48:13.283 E: 2020/07/01-02:48:13.283 E: 2020/07/01-02:48:13.283 E: 2020/07/01-02:48:13.283 E: 2020/07/01-02:48:13.283 E: 2020/07/01-02:48:19.785 E: 2020/07/01-02:48:20.034 E: 2020/07/01-02:48:27.437	this action? ther Storage Spaces Direct' on Tanget 'go [1] No to All [5] Suspend [?] Help (de Creating health resource Setting cluster property Setting default fault domain awareness o Whiting until physical disks are claimed Number of claimed disks on node 'GOMS2DT Number of claimed disks on node 'GOMS2DT Node 'GOMS2DTEST12': Waiting until cache SBL disks initialized in cache on node ' Cache reached desired state on GOMS2DTEST14': L Disks surfaced on node 'GOMS2DTEST14': L Disks surfaced on node 'SOMS2DTEST14': L	s2dcluster fault is " n clustere EST11: 0/ EST12: 0/ EST12: 0/ EST12: 6/ EST11: c/ EST12: 6/ EST12: c/ CoMS2D1EST 11 reaches d GOMS2DTEST 12 2/12 2/12 2/12 2/12 2/12 2/12 2/12	6'. Y"): A d storag 6 6 6 6 6 6 6 6 6 6 6 8 11': 6 (esired s 12': 6 (lustered state 11y	e subsystem tate (HDD:'ReadWrif 6 on all nodes) tate (HDD:'ReadWrif 12 on all nodes) storage subsystem	te' SSD:'Writ te' SSD:'Writ	eOnly') eOnly')	
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PS C:\I	Windows\system32> Get-Phys	icalDisk						
Number	FriendlyName	SerialNumber	MediaType	CanPool	OperationalStatus	HealthStatus	Usage	Size
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PS C:\	Windows\system32>							

NVMe SSD Best Practices on Microsoft Azure Stack HCI

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Troubleshooting:

If you cannot see cache tire, the PowerShell command wrong to setup it. Please try to use below command. Auto-Select will be change to Journal. And please check disk inventory on WAC. It should be changed to Cache tier.

Get-PhysicalDisk – FriendlyName 'Micron_9300*' | Set-PhysicalDisk – Usage Journal



Install Windows Admin Center (WAC)

If you would like to understand WAC, the following poster may be good. You can download it from Microsoft page.



https://docs.microsoft.com/ja-jp/windows-server/manage/windows-admin-center/media/wac1910poster_thumb.png

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Please download latest MSI file from Microsoft Page.

English

https://docs.microsoft.com/en-us/windows-server/manage/windows-admincenter/overview

Japanese

https://docs.microsoft.com/ja-jp/windows-server/manage/windows-admincenter/overview

Please put the file to somewhere on Node.





Please click "Next".

Use Microsoft Update to help keep your computer secure and ther Microsoft products, including Windows Admin Center. Updates are diversed using your Automatic Updates settings, or you can visit the diversoft Update when I check for updates Use Microsoft Update when I check for updates Image: Ima	🖁 Windows Admin Center Setup - 🗆 🗙							
Microsoft Update offers security and important updates for Windows and other Microsoft Update when I check for updates (recommended) (a) don't want to use Microsoft Update] See the Microsoft Update FAQ Read our Privacy Statement online Back Next Cancel Please click "Next". Configure Gateway Endpoint — Cacce Use a gateway server to: Sconnect from any PC with a supported browser Annage computers on a private network Or you can install on your PC to manage directly from it. See installation scenarios at https://aka.ms/WindowsAdminCenter-Install Back Next Cancel Back Next Cancel	Use Microsoft Update to help keep your computer secure and up-to-date							
Use Microsoft Update when I check for updates Image: Construction of the second sec	Microsoft Update offers security and important updates for Windows and other Microsoft products, including Windows Admin Center. Updates are delivered using your Automatic Updates settings, or you can visit the Microsoft Update Web site.							
 I don't want to use Microsoft Update. See the Microsoft Update FAQ Read our Privacy Statement online Back Next Cancel Please click "Next". Configure Gateway Endpoint — (X) Install Windows Admin Center on Windows Server Use a gateway server to: Enable access for multiple admins Connect from any PC with a supported browser Manage computers on a private network Or you can install on your PC to manage directly from it. See installation scenarios at https://aka.ms/WindowsAdminCenter-Install <u>Back Next Cancel</u> <u>Back Next Cancel</u> <u>Plack Next Cancel</u>	O Use Microsoft Update when I check for updates (recommended)							
See the Microsoft Update FAQ Read our Privacy Statement online Back Next Cancel Please click "Next". Configure Gateway Endpoint — Install Windows Admin Center on Windows Server Use a gateway server to: Sea gateway server to: Connect from any PC with a supported browser Connect from any PC with a supported browser Manage computers on a private network Or you can install on your PC to manage directly from it. See installation scenarios at Fittps://aka.ms/WindowsAdminCenter_Install Back Next Cancel	I don't want to use Microsoft Update.							
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Back Mext Cancel Please click "Next". Configure Gateway Endpoint — — — — — — — — — — — — — — — — — — —	Read our Privacy Statement online							
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Please click "Next".

	Installing Windows Admin Center
	Allow Windows Admin Center to modify this machine's trusted hosts settings
	Use WinRM over HTTPS only
	Back Next Cancel
yc	ou would like to change the port, pls put preferred port number in below
7	Configure Gateway Endpoint – 🗌 🗙
	Installing Windows Admin Center
	Select a port for the Windows Admin Center site
	443
	Generate a self-signed SSL certificate. This certificate will expire in 60 days.
	Generate a self-signed SSL certificate. This certificate will expire in 60 days. Use an SSL certificate installed on this computer
	 Generate a self-signed SSL certificate. This certificate will expire in 60 days. Use an SSL certificate installed on this computer Provide the thumbprint for the gateway SSL certificate
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	 Generate a self-signed SSL certificate. This certificate will expire in 60 days. Use an SSL certificate installed on this computer Provide the thumbprint for the gateway SSL certificate Redirect HTTP port 80 traffic to HTTPS



Please click "Yes".





Please connect new cluster on WAC.

Here converged cluster connections <u< th=""><th>Windows Admin Center — Hyper-Converged Cluster Manager \checkmark</th><th></th><th>Hicrosoft</th><th></th><th>≿ ¢ ⊗ ?</th></u<>	Windows Admin Center — Hyper-Converged Cluster Manager \checkmark		Hicrosoft		≿ ¢ ⊗ ?
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Please confirm all your disks are working fine as below.

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Tips: some of major company create own plug-in for WAC. It may be good for managing

your infrastructure.



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dows Admin Center Set	ttings 🗸		- Microsoft			\geq	¢	٢
ettings								
User 옷 Account 낲 Personalization	 Extensions We might have to restart the Wind gateway. 	ows Admin Center gatev	vay after installing an extension, temp	porarily affecting availability f	or anyone els	se currently	using t	his
🔅 Language / Region	Available extensions Installe	ed extensions Feeds						
Q Suggestions	🗐 Install			28 items	Search			
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Extensions	Active Directory (Preview)	0.63.0	Microsoft	Windows Admin Center Feed	4	Available		
Azure	Azure Cloud Shell (Preview)	1.10.0	Microsoft	Windows Admin Center Feed	4	Available		
Internet Access	Azure Extended Network (Preview)	0.24.1	Microsoft	Windows Admin Center Feed	4	Available		
Development	Azure Security Center	1.0.37	Microsoft	Windows Admin Center Feed		Update		
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	HPE Azure Stack HCI WAC Extensi	0.1.0	Hewlett Packard Enterprise	Windows Admin Center Feed	4	Available		
	HPE Server WAC Extension (Previe	0.2.0	Hewlett Packard Enterprise	Windows Admin Center Feed	4	Available		
	Lenovo XClarity Integrator	2.0.3	Lenovo	Windows Admin Center Feed	4	Available		
	msft.iis.iis-management	0.1.3042563	Microsoft	Windows Admin Center Feed	A	Available		

The following "Cluster Creation" tool is powerful also. Please try it on your environment.

lings			
User	Extensions		
- Personalization	We might have to restart the Windows Admin	Center gateway after installing an exter	sion, temporarily affecting availability for anyone else current
	Available extensions Installed extension	ns Feeds	
s Language / Region			
Suggestions	Name 1	Version	Created by
Gateway	Active Directory (Preview)	0.63.0	Microsoft
LATENSIONS	Azure Cloud Shell (Preview)	1.10.0	Microsoft
Azure	Azure Extended Network (Preview)	0.24.1	Microsoft
Internet Access	Azure Security Center	1.0.37	Microsoft
Development	BiitOps Changes	2.0.23	BiitOps
3 Advanced	Cluster Creation (Preview)	1.2.0	Microsoft
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Micron

Get Started (2) Networking	(3) Clustering (4) Storage		
Prerequisites	Enter an account		
2 Enter an account [●]	The account must be a domain account th	at's a member of the local Administrators group on e	ach server.
3 Add servers	Username*		
Install features			
Nestal i selvers	Password *		
Back Next Indows Admin Center Cluster Cr Deploy hyperconverged in	ation ∨ frastructure PREVIEW ⊙	Microsoft	Exit ≻_ C♥ ⊗
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Back Next Indows Admin Center Cluster Cr Deploy hyperconverged in (2) Networking 1 Get Started (2) Networking 1.1 Prerequisites (2) Networking 1.3 Add servers (2) Networking .4 Install features (3) Networking .5 Restart servers (2) Networking	Pation > frastructure PREVIEW () ③ Clustering ④ Storage Add servers Add servers Add servers one at a time, entering the full server.example.domain.com C Refresh Server name State No records found No records found State	Microsoft Ily-qualified domain name of each server. Add us Operating system Server model	Exit >
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Create Volume, and Configure Cluster Share Volume (CVS)

Please click "Volumes", and click "Inventory", and click "Create".

🖻 🕫 🖯 Volumes - Cluster Mana × 🕂	\checkmark
\leftarrow \rightarrow \circlearrowright \textcircled{a} https://localhost:	:6516/clustermanager/connections/hcicluster/gos2dcluster5.micron.com/tools/hcivolur
Windows Admin Center Cluster Manager	r ~
gos2dcluster5.	
Tools <	Volumes
Search Tools	Summary Inventory
û Dashboard	+ Create 🗁 Open ∠ ^ス Expand ① Online ④ Offline
Compute	□ Name ↑ Status
Virtual machines	ClusterPerformanceHistory 🔗 OK
Servers	
Storage	
Drives	
I Storage Replica	

Please input below info for making new volume. This is test. You can put preferred name in below. Please click "Create".



Name*		
HCILAB		
Resiliency		
Two-way mirror		\sim
Size on SSD *	Size units	
800	GB	\sim
Estimated footprint on SSD		
1.56 TB		
Available on SSD		
27.9 TB		
More options		\sim
Use deduplication and compression To use deduplication and compression	on ompression, install the Data Dedup	olication
Use deduplication and compression To use deduplication and compression role on every server	on ompression, install the Data Dedup	lication
Use deduplication and compression To use deduplication and compression role on every server Integrity checksums	on ompression, install the Data Dedup	lication
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Use deduplication and compression To use deduplication and corrole on every server Integrity checksums Use integrity checksums	ompression, install the Data Dedup	lication



Upper right. You can see the progress.



When it is completed, you can see new volume [CSV] as below.

📅 Disk Manager	ment								÷	×
File Action V	/iew Help									
(+ +) 🖬 🛛	🗖 💌 📧									
Volume	Layout	Туре	File System	Status	Capacity	Free Spa	% Free			
💻 (C:)	Simple	Basic	NTFS	Healthy (B	893.62 GB	828.79 GB	93 %			
💻 (Disk 2 partitio	on 1) Simple	Basic		Healthy (R	499 MB	499 MB	100 %			
💳 (Disk 2 partitio	on 2) Simple	Basic		Healthy (E	100 MB	100 MB	100 %			
HCILAB	Simple	Basic	CSVFS	Healthy (P	799.94 GB	792.54 GB	99 %			
= 0: 1.2						1				
Basic						((;)				
894.21 GB	499 MB			100 MB		893.62 GB NTF	5			
Online	Healthy (Recov	ery Partition)		Healthy (EFI Syste	em Partition)	Healthy (Boot,	Page File, Crash	Dump, Primary Partition)		
	1]				
Disk 7										
Basic	HCILAR									
799.98 GB	799.98 GB CSVF	s								
Reserved	Healthy (Prima	y Partition)								

Please create one more with deduplication.



Name *		
HCILABdeduplication		
Enter a unique volume name.		
Resiliency		
Two-way mirror		\sim
Size on SSD *	Size units	
500	GB	\sim
stimated footprint on SSD		
1000 GB		
Available on SSD		
27.9 TB		
Deduplication and compression		·
Deduplication and compression Use deduplication and compression To use deduplication and compression role on every server	ression, install the Data	Deduplication
Deduplication and compression Use deduplication and compression To use deduplication and compression role on every server ntegrity checksums	ression, install the Data	Deduplication
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Deduplication and compression Use deduplication and compression To use deduplication and compression To use deduplication and compression Integrity checksums Use integrity checksums	ression, install the Data	Deduplication
Deduplication and compression Use deduplication and compression To use deduplication and compression role on every server ntegrity checksums Use integrity checksums	ression, install the Data	Deduplication



If you did not install the function, please install it at first. It was same way when you install Hyper-V tool to the node. But you must install the function to all Nodes. Please enable "Deduplication and compression".

▲ ■ File and Storage Services (3 of 12 installed)

4		File and iSCSI Services (2 of 11 installed)
		 File Server (Installed)
		BranchCache for Network Files
		 Data Deduplication (Installed)
		DFS Namespaces
		DFS Replication
		File Server Resource Manager
		File Server VSS Agent Service
		iSCSI Target Server
		iSCSI Target Storage Provider (VDS and VSS
		Server for NFS
		Work Folders
	\checkmark	Storage Services (Installed)

You can check it as below after creating it.

📅 Disk Managen File Action Vi	nent ew Help										_	×
(= =) 🖬 🛛	FT 🗩 🗉	-										
Volume		Layout	Туре	File System	Status	Capacity	Free Spa	% Free				
- (C:)		Simple	Basic	NTFS	Healthy (B	893.62 GB	827.28 GB	93 %				
(Disk 2 partition	n 1)	Simple	Basic		Healthy (R	499 MB	499 MB	100 %				
ClusterPerform	n 2) JanceHistony	Simple	Basic	ReFS	Healthy (E	11 94 GB	10 74 GB	00 %				
- HCILABdedupl	ication	Simple	Basic	CSVFS	Healthy (P	499.94 GB	495.60 GB	99 %				
-Disk 2					-							
Basic							(C:)					
894.21 GB Online	499 MB	ocovory Dart	tition)		100 MB	rtom Dartition)	893.62	GB NTFS v (Poot Dago File	Crach Dump, Drimany Da	rtition)		
	rieditity (it	ecovery Fan	uuuuij		r realtry (Err Sy	stern Partition)	ricalu	y (boot, rage rile	, clash bump, eninary ea	rationy		
							- 12					
- Disk 7										l l		
Basic	ClusterPer	formanceH	listory									
Reserved	Healthy (P	ers rimary Partit	tion)									
	incutiny (i	initially i area	liony									
- Disk 8												
Basic	HCILABde	duplication										
499.98 GB Reserved	499.98 GB	CSVFS rimony Dortit	tion)									
incocrect a	rieditity (F	innary Parti	lionj									
	<u></u>											
	Primany nad	tition										
	r mary pan	autori -										



Install New VM for Client

Please click "Virtual Machine" on Windows Admin Center as below. And Please click "new in Inventory".



Please put below info. You can put preferred name/setting.



New virtual machine

Name *
Client1
Seneration
Generation 2 (Recommended)
lost
gows2dtest18 (Recommended) V
Path ()
C:\ClusterStorage\Collect (496 GB availab V Browse
VM configuration: C:\ClusterStorage\Collect\Hyper-V\Client1 Virtual hard disks: C:\Users\Public\Documents\Hyper-V\Virtual Hard Disks
Virtual processors
Count
2
 Enable nested virtualization Simultaneous multithreading is enabled for increased performance.
Memory
Startup memory (GB) *
8
Use dynamic memory Minimum memory (GB)
2
Maximum memory (GB)
8
Network
Network adapter



 \checkmark

Not connected

Storage

New disk 1	<u></u>
Create an empty virtual hard disk Size (GB)	
40	
O Use an existing virtual hard disk Path:*	
Browse	
+ Add	
perating system	
perating system	
 Dperating system Install an operating system later Install an operating system from an image file (.iso) Path:* 	
Operating system Install an operating system later Install an operating system from an image file (.iso) Path:* C:\ClusterStorage\Collect\Software\SW_ ×	rowse

You can see new VM as below. Please check new VM and click "Start".

Tools <	Virtual machines	
Search Tools	Summary Inventory	
☆ Dashboard	🕂 New 🚿 Connect 🛛 🐯 Settings	Start
Compute	□ Name ↑	State
Virtual machines	✓ <u>GoldVMFleet4</u>	Stopped

Please click "Connect" and install OS.



Tools	<	Virtual machines
Search Tools	Q	Summary Inventory
☆ Dashboard		🕂 New 🚿 Connect 🛛 🐯 Settings
Compute		□ Name ↑
Virtual machines		

You can do same operation on Hype-V manager also.

Hyper-V Manager									-	×
File Action View Help										
🗢 🄿 🙍 📰 📓 🖬										
Hyper-V Manager	Virtual Machines							Actions		
CONSERVENTO	Name	State	CPU Usage	Assigned Memory	Uptime	Status	Configurati	GOWS2DTEST10		-
	Client01	Running	0%	8192 MB	02:26:24		9.0	New		•
								import Virtual Machine		
								Hyper-V Settings		
								Virtual Switch Manager		-
								🔒 Virtual SAN Manager		
								🛃 Edit Disk		
								Inspect Disk		
								Stop Service		
								🗙 Remove Server		
								Refresh		
	Checkpoints						(View		•
			The	selected virtual machine l	has no checkpoints.			👔 Help		
								Client01		-
								📲 Connect		
								Settings		
								Turn Off		
								Shut Down		

You can use PXE boot if your company is using the way for installing OS.



Performance Test Using Official Microsoft Tool





Micron

It will be better to test your cluster before promoting it to production. You can plan to do the scale-out well with good actual information.



Please create new volume

Windows Admin Center Cluster Manag	ger 🗸 🗧 📙 Micro
gos2dcluster2.	
Tools <	Volumes
Search Tools	Summary Inventory
☆ Dashboard	+ Create ▷ Open ↗ Expand ③ Online
Compute	Name↑ Status File system
Virtual machines	ClusterPerformanceHis 📀 OK ReFS
Servers Storage	
O Volumes	
Drives	
Networking	

The name will be "Collect".

Create volume

Name*		
Collect		
Resiliency		
Two-way mirror		\sim
Size on SSD*	Size units	
500	GB	\sim
Estimated footprint on SSD		
1000 GB		
Available on SSD		
27.9 TB		
More options $>$		
Deduplication and compression, in	tegrity checksums	

Create	Cancel



Please confirm new volume is created on WAC.

Volumes

	Summary Inv	entory					
Н	- Create 🗁 (Open 🖉 Expand	① Online	🕑 Offline 🗴 🗎 Delete		2 items 💍	Search
	Name 个	Status	File system	Resiliency	Size	Storage us	age IOPS
	ClusterPerformance	<u>:His</u> 🥑 OK	ReFS	Two-way mirror	11.9 GB	10% 💻	
	Collect	📀 ок	CSVFS_ReFS	Two-way mirror	500 GB	1%	

Please create other Volume with your Node name (Server host name).

This is for Node01.

Create volume

Name*		
Node01		
Resiliency		
Two-way mirror		\sim
Size on SSD*	Size units	
300	GB	\sim
Estimated footprint on SSD 600 GB		
Available on SSD		
21.5 10		
More options >		

Deduplication and compression, integrity checksums

Create	Cancel



This is for Node02.

Create volume

Name*

Node02

Resiliency

Two-way mirror

Size on SSD*

Size units

- 22	n	\sim
- 5	υ	υ

GB	\sim

 \sim

Estimated footprint on SSD

600 GB

Available on SSD

27.9 TB

More options >

Deduplication and compression, integrity checksums

	Create	Cancel	
NVMe SSD Best Practices on Microsoft Azure Stack Ho	ci 137		Micron

Please confirm both volumes are available or not on WAC.

Volumes

Summary	Inventory					
+ Create	⇒ Open ∠ ⁷ Expand	🗇 Online 🕑	Offline 🗎 Delete		4 items 🕐 Sea	arch
□ Name ↑	Status	File system	Resiliency	Size	Storage usage	IOPS
<u>ClusterPerforma</u>	anceHis 🥑 OK	ReFS	Two-way mirror	11.9 GB	10%	
Collect	📀 ок	CSVFS_ReFS	Two-way mirror	500 GB	1%	0
Node01	📀 ОК	CSVFS_ReFS	Two-way mirror	300 GB	1%	0
Node02	📀 ОК	CSVFS_ReFS	Two-way mirror	300 GB	1%	

You can create CSV with PowerShell command also. Please try to use below if you want.

New-Volume -StoragePoolFriendlyName "S2D*" -FriendlyName Collect -FileSystem CSVFS_ReFS -Size 500GB

New-Volume -StoragePoolFriendlyName "S2D*" -FriendlyName Node01 -FileSystem CSVFS_ReFS -Size 300GB

New-Volume -StoragePoolFriendlyName "S2D*" -FriendlyName Node02 -FileSystem CSVFS_ReFS -Size 300GB



★ 6 contributors
Find file
Clone or download ▼
Clone with HTTPS ⑦
Use Git or checkout with SVN using the web URL.
https://github.com/microsoft/diskspd.git
Prince Download ZIP

Extract Zip file to file://C:¥temp on Node01.

📙 🛃 📑 🖛 disksp	d-master			
File Home Sh	are View			
← → · ↑ <mark>·</mark> ·	This PC > Local Disk (C:) > Temp > disk	kspd-master >		
4 Quick accord	Name	Date modified	Туре	Size
	CmdLineParser	1/23/2020 8:13 AM	File folder	
	CmdRequestCreator	1/23/2020 8:13 AM	File folder	
Downloads	Common	1/23/2020 8:13 AM	File folder	
Documents	🖈 🔄 diskspd_vs	1/23/2020 8:14 AM	File folder	
Pictures	🖈 🔜 Frameworks	1/23/2020 8:13 AM	File folder	
This PC	IORequestGenerator	1/23/2020 8:14 AM	File folder	
	ResultParser	1/23/2020 8:14 AM	File folder	
💣 Network	- UnitTests	1/23/2020 8:14 AM	File folder	
	XmlProfileParser	1/23/2020 8:14 AM	File folder	
	, XmlResultParser	1/23/2020 8:14 AM	File folder	
	gitignore	1/23/2020 8:13 AM	GITIGNORE File	3 KB
	diskspd.wprp	1/23/2020 8:13 AM	WPRP File	3 KB
		1/23/2020 8:13 AM	File	2 KB
	Process-DiskSpd	1/23/2020 8:13 AM	Windows PowerS	9 KB
	README.md	1/23/2020 8:13 AM	MD File	7 KB

Please download VM Fleet from Github. <u>https://github.com/Microsoft/diskspd</u>



You ready to install VM Fleet thought Internet. You need to change the policy for PowerShell.

Please run below command.



Please click "A -Yes to All" again.

Administrator: Windows PowerShell



You can ready to install VM Fleet to your cluster. Please move to below directory.

File://C:¥Temp¥diskspd-master¥Frameworks¥VMFleet

Run below command

.¥install-vmfleet.ps1 -source C:¥temp¥diskspd -ma

-master¥Frameworks¥VMFleet

Please click





_

Х

The file will be installed to below folder.

File://C:¥ClusterStorage¥collect¥control

Administra								
5 C.1.2 C.++	ator: Windows PowerSł	nell						
s c:\> set-	ExecutionPolicy U	nrestricted						
xecution Po he executio ou to the s ttps:/go.mi Y] Yes [A] S C:\> cd C S C:\Temp\d	licy Change on policy helps pr ecurity risks des crosoft.com/fwlin Yes to All [N] :\Temp\diskspd-ma liskspd-master\Fra	otect you from scr cribed in the abou k/?LinkID=135170. No [L] No to All ster\Frameworks\VM meworks\VMFleet>	ripts that nt_Executio Do you wan [S] Suspe IFleet \install-v	you do not tr n_Policies he t to change t nd [?] Help mfleet.ps1 -:	rust. Changing Elp topic at the execution p (default is "N source C:\temp\	the execution po olicy? "): A diskspd-master\H	olicy might exp rameworks\VMF	pose leet
ecurity war un only scr omputer. If essage. Do)) Do not r	ning ipts that you tru you trust this s you want to run C un [R] Run once	st. While scripts cript, use the Unb :\Temp\diskspd-mag [S] Suspend [?]	from the i lock-File ter\Framew Help (defa	nternet can b cmdlet to all orks\VMFleet\ ult is "D"):	pe useful, this Low the script ∖install-vmflee R	script can poto to run without f t.ps1?	entially harm y his warning	your
- cupity was	ning							
omputer. If essage. Do D] Do not r	Fipts that you tru you trust this s you want to run C un [R] Run once	st. While scripts cript, use the Unb :\temp\diskspd-mas [S] Suspend [?]	from the i lock-File ter\Framew Help (defa	nternet can b cmdlet to all orks\VMFleet\ ult is "D"):	pe useful, this low the script \update-csv.ps1 R	script can pote to run without † ?	entially harm y his warning	your
Director	y: C:\ClusterStor	age\collect\contro)1					
ode	LastWrite	Time Lengt	h Name					
	1/23/2020 8:3 1/23/2020 8:3 1/23/2020 8:3 1/23/2020 8:31:25	1 AM 1 AM 1 AM AM	result flag tools					
S C:\Temp\d	liskspd-master\Fra nare View	meworks\VMFleet>					-	٥
- → · ↑ 📙 ›	This PC > Local Disk (C:) > Cluster	erStorage > Collect > control	Tune	Size		``	Search control	
📌 Quick access	flag	1/23/2020 8:31 AM	File folder	3126				
Desktop Downloads	result	1/23/2020 8:31 AM	File folder					
Documents	* analyze-cputarget	1/23/2020 8:31 AM 1/23/2020 8:13 AM	File folder Windows PowerS	4 KB				
Pictures	* 📄 check-outlier	1/23/2020 8:13 AM	Windows PowerS	7 KB				
💻 This PC	check-pause check-vmfleet	1/23/2020 8:13 AM 1/23/2020 8:13 AM	Windows PowerS Windows PowerS	3 KB 2 KB				
💣 Network	ilear-pause	1/23/2020 8:13 AM	Windows PowerS	2 KB				
	create-vmfleet	1/23/2020 8:13 AM 1/23/2020 8:13 AM	Windows PowerS Windows PowerS	13 KB 3 KB				
	destroy-vmfleet	1/23/2020 8:14 AM	Windows PowerS	4 KB				
	get-cluspc	1/23/2020 8:14 AM	Windows PowerS	9 KB 4 KB				
	get-log	1/23/2020 8:14 AM	Windows PowerS	3 KB				
	install-vmfleet	1/23/2020 8:14 AM	Windows PowerS	3 KB				
	a master	1/23/2020 8:14 AM	Windows PowerS	7 KB				
	📓 run	1/23/2020 8:31 AM	Windows PowerS	3 KB				
	iun-demo-7030	1/23/2020 8:14 AM	Windows PowerS	2 KB				
	iun-demo-9010	1/23/2020 8:14 AM	Windows PowerS	2 KB				
	In run-sweentemplate	1/23/2020 8:14 AM	Windows PowerS Office Open XML	3 KB . 46 KB				
	s2d-vmfleet	1/23/2020 8:14 AM						
	s2d-vmfleet	1/23/2020 8:14 AM 1/23/2020 8:14 AM	Microsoft Edge P	1,019 KB				
	s2d-vmfleet s2d-vmfleet s2d-vmfleet set-pause set-storagegos	1/23/2020 8:14 AM 1/23/2020 8:14 AM 1/23/2020 8:31 AM 1/23/2020 8:34 AM	Microsoft Edge P Windows PowerS Windows PowerS	1,019 KB 2 KB 2 KB				
	s2d-vmfleet s2d-vmfleet set-pause set-storageqos set-storageqos set-vmfleet	1/23/2020 8:14 AM 1/23/2020 8:14 AM 1/23/2020 8:31 AM 1/23/2020 8:14 AM 1/23/2020 8:14 AM	Microsoft Edge P Windows PowerS Windows PowerS Windows PowerS	1,019 KB 2 KB 2 KB 6 KB				
	 s2d-vmfleet s2d-vmfleet s2d-vmfleet set-pause set-storageqos set-vmfleet start-sweep start-sweep 	1/23/2020 8:14 AM 1/23/2020 8:14 AM 1/23/2020 8:14 AM 1/23/2020 8:14 AM 1/23/2020 8:14 AM 1/23/2020 8:14 AM	Microsoft Edge P Windows PowerS Windows PowerS Windows PowerS Windows PowerS Windows PowerS	1,019 KB 2 KB 2 KB 6 KB 14 KB 2 KB				
	 \$24-vmfleet \$24-vmfleet \$24-vmfleet \$et-pause \$et-storageqos \$et-vmfleet \$stat-sweep \$stat-vmfleet \$stat-vmfleet \$star-vmfleet \$star-vmfleet 	1/23/2020 8:14 AM 1/23/2020 8:14 AM 1/23/2020 8:14 AM 1/23/2020 8:14 AM 1/23/2020 8:14 AM 1/23/2020 8:14 AM 1/23/2020 8:14 AM	Microsoft Edge P Windows PowerS Windows PowerS Windows PowerS Windows PowerS Windows PowerS Windows PowerS	1,019 KB 2 KB 6 KB 14 KB 2 KB 2 KB				
	s2d-vmfleet c2d-vmfleet set-pause set-totoageqos set-vmfleet start-sweep star	1/23/2020 8:14 AM 1/23/2020 8:14 AM	Microsoft Edge P Windows PowerS Windows PowerS Windows PowerS Windows PowerS Windows PowerS Windows PowerS Windows PowerS	1,019 KB 2 KB 6 KB 14 KB 2 KB 2 KB 8 KB 35 KP				
	s2d-vmfleet c2d-vmfleet s2d-vmfleet set-vmfleet-vmfleet set-vmfleet-vmfleet set-vmfleet-vmfleet set-vmfleet-vmfleet set-vmfleet-vmfleet set-vmfleet-vmfleet set-vmfleet-vmfleet set-vmfleet-vmfleet set-vmfleet-	1/23/2020 8:14 AM 1/23/2020 8:14 AM	Microsoft Edge P Windows PowerS Windows PowerS Windows PowerS Windows PowerS Windows PowerS Windows PowerS Windows PowerS Windows PowerS	1,019 KB 2 KB 6 KB 14 KB 2 KB 2 KB 8 KB 25 KB 5 KB				
	s2d-wmfleet c2-cd-wmfleet set-storageqos set-storaget set-storag	1/23/2020 8:14 AM 1/23/2020 8:14 AM	Microsoft Edge P Windows PowerS Windows PowerS Windows PowerS Windows PowerS Windows PowerS Windows PowerS Windows PowerS Windows PowerS	1,019 KB 2 KB 2 KB 6 KB 14 KB 2 KB 2 KB 8 KB 5 KB 5 KB 2 KB 2 KB				
	s2d-vmfleet s2d-vmfleet set-pause set-storageqos set-stringedos set-stringedos set-stringedos	1/23/2020 8:14 AM 1/23/2020 8:14 AM 1/23/2020 8:31 AM 1/23/2020 8:14 AM 1/23/2020 8:14 AM 1/23/2020 8:14 AM	Microsoft Edge P Windows PowerS Windows PowerS Windows PowerS Windows PowerS	1,019 KB 2 KB 2 KB 6 KB 14 KB				



Please download diskspd from below link. If you cannot access it. Please find out it using WEB search engine.

https://gallery.technet.microsoft.com/DiskSpd-A-Robust-Storage-6ef84e62

Please extract it under C:¥temp.

🛃 🚽 amd64							
File Home Shar	re View						
← → × ↑ <mark>→</mark> → 1	← → ✓ ↑ 🔄 → This PC → Local Disk (C:) → tmp → DiskSpd-2.0.21a → amd64						
🖈 Quick access	Name ^	Date modified	Type	Size			
📃 Desktop 🛛 🖈	uskspu	1/23/2020 1.20 AM	Application	233 Kb			

Please copy diskspd under amd64 folder to <u>file://C:\CusterStorage\Collect\Control\Tools</u>.

📊 🛛 🚽 🚽 🚽 tools				
Home Sha	are View			
← → ~ ↑	This PC > Local Disk (C:) > ClusterStorage	> Collect > control > too	ls	
	Name	Date modified	Туре	Size
✓ A Quick access ■ Desktop	🔳 diskspd	1/23/2020 7:26 AM	Application	235 KB

Please put your OS installation ISO file to C:¥ClusterStorage¥Collect¥Software. You will use Windows Server 2019 Core. (no need desktop experience).

Create the gold image – Please create new VM on WAC.

Windows Admin Center	Cluster Manager	V Microsoft
gos2dcluster2.		
Tools	<	Virtual machines
Search Tools	Q	A Help protect your VMs from disasters by using Azure Site Recovery. Update now
ሰ Dashboard		Summary Inventory
Compute		+ New > Connect
Servers Storage		No records found



Please follow below.

New virtual machine

Name*
GoldVMFleet
Generation
Generation 2 (Recommended)
Host
gows2dtest03. (Recommended) 🗸
Path ①
C:\ProgramData\Microsoft\Windows\Hyp >> Browse
The VM configuration and virtual hard disks are saved under C:\ProgramData\Microsoft\Windows\Hyper-V\GoldVMFleet
Virtual processors
Count
2
 Enable nested virtualization Simultaneous multithreading is enabled for increased performance.
Memory
Startup memory (GB) *
4
Use dynamic memory Minimum memory (GB)
4
Maximum memory (GB)
8
Network
Network adapter
Not connected V



Storage

New disk 1		Ē
Create an empty virtual hard disk Size (GB)]
20		
Dath: *		
Faul.		
	Browse	

+ Add

Operating system

- 🔘 Install an operating system later
- Install an operating system from an image file (.iso)

Path: *

C:\ClusterStorage\Collect\Software\SW_DVD

		Create		Car	ncel		
Select an image file							
C: > ClusterStorage > Coll	ect > Software 🛛 🖉						
🖵 New Folder 🛛 个 Up			1 item	U	Search		9
Name	Date Modified	Тур	pe		Size		
SW_DVD9_Win_Server_STD_CORE_201	28/11/2018, 16:12:36	File			4,729,508 KB		
File name		File extens	ion		Dire incore fil	or († 10)	
	SW_DVD9_Win_Server	r_STD_C			Disc image fil	es (*.iso)	<u>~</u>
					OK	Cano	el:

Browse


You can observe the progress around upper right.



Please confirm whether it is created or not on WAC.

Virtual machines

1	A Help protect your VMs from disasters by using Azure Site Recovery. Update now											Learn more ⊏'	
	Summary Inventory												
-	New × Connect	() ()	Settings	▷ Start	More \vee		1 item	Ö	\mathbb{Y}	Searc	h	Q	
	Name \uparrow	St	Host ser	CPU usa	Memory press	Memory dema	Assigned mem	Upti	Hea	rtb	Disaster Recovery sta	Та	
	GoldVMFleet	Sto	GOWS2D	-	-	-	-	-	Unl	nown	Not signed in		

Please click "Start".

Tools	<	Virtual machines								
Search Tools	Search Tools $ ho$ Help protect your VMs from disasters by using Azure Site Recovery. Update now									
û Dashboard		Summary Inventor	у							
Compute		+ New × Connec	t 🔅 Settings	Start	More ∨		1 iten			
Servers		✓ GoldVMFleet	Sto GOWS2D		-	-	-			
Volumes										
m				Start	virtual machine	I machina 'Gold\/MElaat'	×			
Virtual machines				host g	gows2dtest03		00.21.44			
A Help protect your VMs	from disasters by	using Azure Site Recovery. L	<u>Ipdate now</u>	gows	Zutestosi					
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+ New $>$ Connect	Settings	\rightarrow Start More \sim		1 item	🖰 🍸 Sear	ch	Q			
✓ Name ↑ S	it Host ser	CPU usa Memory press I	Memory dema Assig	ned mem U	pti Heartb	Disaster Recovery sta	. Ta			
✓ <u>GoldVMFleet</u> F	lun GOWS2D	0 % 0 %	DB 4 GB	0:	00:0 No cont	Not signed in				
Please click "Conr	nect".									
Virtual machines										
A Help protect your VM	ls f									
Summary Inventory										
+ New > Connect	Ę									
✓ Name ↑	St.									
	NU									



Please click "Connect".

Virtual machines \ GoldVMFleet \ **VM Connect** Basic Session ①

imes Disconnect

Do you want to connect using the certificate presented by gos2dcluster2	
Thumbprint 04 e8 fa 2b 1e 07 cf 05 5e 57 f9 2f b3 b7 61 fb 13 0b 07 d3	*
Subject CN=GOWS2DTEST03.	l
lssuer CN=GOWS2DTEST03.	
Extended Usage TLS Web Server Authentication	l
Issued Date Jan 22 06:39:03 2020 GMT	1
Eunivation Data	*
Do not ask again me again for connections to this computer Connect Cancel]

Please input administrator password.

Enter credentials for the Remote Desktop connection
Username:
administrator
Password:





Windows Setup 🕞 🕬									
Windows Server* 2019									
Windows Server 2019									
Windows Server* 2019									
Install now									
<u>R</u> epair your computer									
© 2018 Microsoft Corporation. All rights reserved.									
C. Windows Schup									
windows setup									
Select the operating system you want to install									
Operating system Architecture Date modified									
Windows Server 2019 Standard x64 10/29/2018 Windows Server 2019 Standard (Deskton Experience) x64 10/29/2018									
Windows Server 2019 Datacenter x64 10/29/2018									
Windows Server 2019 Datacenter (Desktop Experience) x64 10/29/2018									
Description: (Recommended) This option omits most of the Windows graphical environment. Manage with a									
command prompt and PowerShell, or remotely with Windows Admin Center or other tools.									
Next									
	<u></u>								
	x								
🚱 🔬 Windows Setup									
Applicable notices and license terms									
Your use of this software is subject to the terms and conditions of the license									
agreement by which you acquired this software. If you are a volume license									
customer, use of this software is subject to your volume license agreement. You									
software from Microsoft or its licensed distributors.									
EULAID:Sept2018_V_en-us									
✓ I accept the license terms									
Next									

Please start to install Windows Server 2019 Datacenter (not Desktop Experience).

NVMe SSD Best Practices on Microsoft Azure Stack HCI 147



Please change the password as below.





🖉 📙 =			Mai	nage	Virtual Hard [Disks			
File Home	Share	View	Disc Ima	ige Tools					
← → ~ ↑	« Use	ers → Public	> Public	Document	s → Hyper-V	> Virtual hard	d disks →	GoldVMFleet > V	ïrtual Hard Disks
📥 Quick access		Name		^		Date modif	ied	Туре	Size
Desktop	*	🕳 GoldVI	MFIe-+	Mount		1/22/2020.0	44 AM	Hard Disk Image I	F 5,902,336 KB
👆 Downloads	*		B	Share					
🔮 Documents	*			Open with					
Pictures	A			Give acces	s to	>			
💻 This PC				Restore pre	evious versions				
i Network				Send to		>			
				Cut					
				Сору					
				Create sho	rtcut				
				Delete					
				Rename					
				Properties					

Please copy the VHDX to file://C:\ClusterStorage\Collect.

You are ready to deploy VMs to your cluster.

📙 🛛 🛃 🗖 🖛 🛛 contro	I										
File Home Share View											
← → × ↑ 📙 > This PC > Local Disk (C:) > ClusterStorage > Collect > control >											
	Name	Date modified	Туре	Size							
A Quick access	flag	1/23/2020 8:31 AM	File folder								
Desktop	result	1/23/2020 8:31 AM	File folder								
👆 Downloads	* tools	1/23/2020 8:39 AM	File folder								
Documents	analyze-cputarget.ps1	1/23/2020 8:13 AM	Windows PowerS	4 KB							
Pictures	🖈 📓 check-outlier.ps1	1/23/2020 8:13 AM	Windows PowerS	7 KB							
	keck-pause.ps1	1/23/2020 8:13 AM	Windows PowerS	3 KB							
	keck-vmfleet.ps1	1/23/2020 8:13 AM	Windows PowerS	2 KB							
💣 Network	🙀 clear-pause.ps1	1/23/2020 8:13 AM	Windows PowerS	2 KB							
	i create-vmfleet.ps1	1/23/2020 8:13 AM	Windows PowerS	13 KB							
	📓 demo.ps1	1/23/2020 8:13 AM	Windows PowerS	3 KB							
	📓 destroy-vmfleet.ps1	1/23/2020 8:14 AM	Windows PowerS	4 KB							
	📓 get-cluspc.ps1	1/23/2020 8:14 AM	Windows PowerS	9 KB							
	🙀 get-linfit.ps1	1/23/2020 8:14 AM	Windows PowerS	4 KB							
	🙀 get-log.ps1	1/23/2020 8:14 AM	Windows PowerS	3 KB							
	🙀 install-vmfleet.ps1	1/23/2020 8:14 AM	Windows PowerS	3 KB							
	🙀 launch-template.ps1	1/23/2020 8:14 AM	Windows PowerS	2 KB							
	🙀 master.ps1	1/23/2020 8:14 AM	Windows PowerS	7 KB							
	🙀 run.ps1	1/23/2020 8:31 AM	Windows PowerS	3 KB							
	🙀 run-demo-100r.ps1	1/23/2020 8:14 AM	Windows PowerS	2 KB							
	🙀 run-demo-7030.ps1	1/23/2020 8:14 AM	Windows PowerS	2 KB							
	🙀 run-demo-9010.ps1	1/23/2020 8:14 AM	Windows PowerS	2 KB							
	run-sweeptemplate.ps1	1/23/2020 8:14 AM	Windows PowerS	3 KB							
	s2d-vmfleet.docx	1/23/2020 8:14 AM	Office Open XML	46 KB							



Please run below command. Please change below red color t ocorrect one which you put. .¥create-vmfleet.ps1 -basevhd "C:¥ClusterStorage¥Collect¥GoldVMFleet.vhdx" -VMs 20 adminpass Password -connectuser administrator -connectpass Password

PS C:\Temp\diskspd-master\ PS C:\ClusterStorage\Colle	<pre>#Frameworks\UNFleet> cd C:\ClusterStorage\Collect\control ct\control> .\create-vmfleet.ps1 -basevhd "C:\ClusterStorage\Collect\GoldVMFleet.vhdx" -VMs 40 -adminpass</pre>
convert C:\ClusterStorage\	Collect\GoldVWFleet.vhdx to fixed via C:\ClusterStorage\Collect\tmp-GoldVWFleet.vhdx
Name SwitchType NetAda	upterInterfaceDescription PSComputerName
Internal Internal Internal Internal	GONS2DTEST09 GONS2DTEST10
ifIndex : PSComputerName : RunspaceId : Caption : ElementName : InstanceID : CommunicationStatus : DetailedStatus : DetailedStatus :	56 GONS2DTEST10 216cec8b-436e-43c6-905f-5319951b2e79
InstallDate : Name : OperatingStatus : OperationalStatus : PrimaryStatus :	;@C8 8;8;55?@55;55;
Status StatusDescriptions : AvailableRequestedStates : EnabledDefault : EnabledState : OtherEnabledState : RequestedState :	2
TransitioningToState TransitioningToState CreationClassName SystemCreationClassName SystemName NameFormat OtherTypeDescription	12
ProtocollFlype : ProtocolType : Address :	
AddressUrigin AddressType	
IPv6Address : IPVersionSupport : IPVersintLength : SubnetMask : AddressFamily : InterfaceAlias :	16 2 1 vtthernet (Internal)
InterfaceIndex : IPAddress : PreferredLifetime : PrefixOrigin	56 169.254.1.1 10675199.02:48:05.4775807
SkipAsSource	False 1
SuffixOrigin : Type : ValidLifetime :	1 1 10675199.02:48:05.4775807
ifIndex : PSComputerName : RunspaceId : Caption : Description : ElementName :	56 GONS2DTEST09 a84e5833-fa7a-464c-a44e-49b5ecb1dbbc
InstanceID : CommunicationStatus : DetailedStatus : HealthState : InstallDate : Name :	-20°R/ >>R·557855-55;
OperatingStatus : OperationalStatus : PrimaryStatus : StatusDescriptions :	
AvailableRequestedStates : EnabledDefault : EnabledState : OtherEnabledState : RequestedState	2
TimeOfLastStateChange : TransitioningToState : CreationClassName : SystemCreationClassName	12
SystemName : NameFormat :	

The script will create VMs automatically.

Please set all VMs to 2 x vCPU and 4GB static memory with below command.

Set-VMfleet.ps1 –ProcessorCount 2 –MemoryStartupBytes 4GB –MeMoryMaximumBytes 4GB –MemoryMinimumBytes 4GB



If VM is running, the script will not work as below. Pls stop all VMs. You will apply the setting after that as below.

PS C:\ClusterStorage Cannot alter VM sizi PS C:\ClusterStorage PS C:\ClusterStorage	<pre>\Collect\control> Set-VMfleet.p: ng on running VMs () \Collect\control> Set-VMfleet.p: \Collect\control> _</pre>	s1 -PròcessorCount 2 -Me s1 -ProcessorCount 2 -Me	moryStartupBytes moryStartupBytes	4GB -MeMoryMa 4GB -MeMoryMa	ximumBytes 4GB ximumBytes 4GB	-MemoryMinimumByte -MemoryMinimumByte	s 4GB s 4GB
The script is	located at below fold	der.					
📙 🗹 📙 🗢 control							
File Home Shar	e View						
← → ~ ↑ → T	his PC > Local Disk (C:) > ClusterStorag	e > Collect > control					
🔹 Quick access	Name	Date modified	Type windows Powers	Size 4 NP			
Deckton	a qet-log.ps1	1/23/2020 8:14 AM	Windows PowerS	3 KB			
Desktop *	install-vmfleet.ps1	1/23/2020 8:14 AM	Windows PowerS	3 KB			
Uownloads 🖉	aunch-template.ps1	1/23/2020 8:14 AM	Windows PowerS	2 KB			
🚆 Documents 🛛 🖈	master.ps1	1/23/2020 8:14 AM	Windows PowerS	7 KB			
📰 Pictures 🛛 🖈	🙀 run.ps1	1/23/2020 8:31 AM	Windows PowerS	3 KB			
This PC	🙀 run-demo-100r.ps1	1/23/2020 8:14 AM	Windows PowerS	2 KB			
	🙀 run-demo-7030.ps1	1/23/2020 8:14 AM	Windows PowerS	2 KB			
💣 Network	📓 run-demo-9010.ps1	1/23/2020 8:14 AM	Windows PowerS	2 KB			
	run-sweeptemplate.ps1	1/23/2020 8:14 AM	Windows PowerS	3 KB			
	s2d-vmfleet.docx	1/23/2020 8:14 AM	Office Open XML	46 KB			
	s2d-vmfleet.pdf	1/23/2020 8:14 AM	Microsoft Edge P	1,019 KB			
	📓 set-pause.ps1	1/23/2020 8:31 AM	Windows PowerS	2 KB			
	📓 set-storageqos.ps1	1/23/2020 8:14 AM	Windows PowerS	2 KB			
	iset-vmfleet.ps1	1/23/2020 8:14 AM	Windows PowerS	6 KB			
	📓 start-sweep.ps1	1/23/2020 8:14 AM	Windows PowerS	14 KB			
	start-vmfleet.ps1	1/23/2020 8:14 AM	Windows PowerS	2 KB			
	stop-vmfleet.ps1	1/23/2020 8:14 AM	Windows PowerS	2 KB			
	🔊 sweep-cputarget.ps1	1/23/2020 8:14 AM	Windows PowerS	8 KB			
	📓 test-clusterhealth.ps1	1/23/2020 8:14 AM	Windows PowerS	25 KB			
	📓 update-csv.ps1	1/23/2020 8:14 AM	Windows PowerS	5 KB			
	🔊 wait-result.ps1	1/23/2020 8:14 AM	Windows PowerS	2 KB			
	🔊 watch-cluster.ps1	1/23/2020 8:14 AM	Windows PowerS	18 KB			
	🙀 watch-cpu.ps1	1/23/2020 8:14 AM	Windows PowerS	6 KB			

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36 items 1 item selected 5.58 KB

You can destroy all VM also. If needed, please use the command below.

🔁 Administrator: Windows PowerShell			\times
PS C:\ClusterStorage\Collect\control> .\destroy-vmfleet.ps1 Destroying VM Fleet Removing VM ClusterGroups Removing ClusterGroup for vm-base-GOWS2DTEST09-1			
Removing ClusterGroup for vm-base-GOWS2DTEST09-2 Removing ClusterGroup for vm-base-GOWS2DTEST10-1 Removing ClusterGroup for vm-base-GOWS2DTEST10-2 Removing VM for vm-base-GOWS2DTEST10-1 @ GOWS2DTEST10 Removing VM for vm-base-GOWS2DTEST10-2 @ GOWS2DTEST10			
Removing VM for VM-base-GOWS2DTESTD9-2 @ GOWS2DTESTD9 Removing VM for vm-base-GOWS2DTEST09-1 @ GOWS2DTEST09 Removing VM for vm-base-GOWS2DTEST09-2 @ GOWS2DTEST09 Removing Internal VMSwitch Removing CSV content for VMs Removing CSV content for vm-base-GOWS2DTEST09-1 @ C:\ClusterStorage\GOWS	S2DTEST	09\vm-b	ase
-GOMS2DTEST09-1 Removing CSV content for vm-base-GOWS2DTEST09-2 @ C:\ClusterStorage\GOW: -GOWS2DTEST09-2 Removing CSV content for vm-base-GOWS2DTEST10-1 @ C:\ClusterStorage\GOW!	S2DTEST	09\vm-b 10\vm-b	ase ase
-GOWS2DTEST10-1 Removing CSV content for vm-base-GOWS2DTEST10-2 @ C:\ClusterStorage\GOW: -GOWS2DTEST10-2 Name OwnerNode State	S2DTEST	10\vm-b	ase
vm-base-GOWS2DTEST09-1 GOWS2DTEST09 Offline vm-base-GOWS2DTEST09-2 GOWS2DTEST09 Offline vm-base-GOWS2DTEST10-1 GOWS2DTEST10 Offline vm-base-GOWS2DTEST10-2 GOWS2DTEST10 Offline			
PS C:\ClusterStorage\Collect\control>			



Please run start-vmfleet.ps1. all VM will be started.

PS C:\ClusterStorage\Co PS C:\ClusterStorage\Co	llect\control; llect\control;	> .\sta	op-vmfleet.ps1 art-vmfleet.ps1
Name	OwnerNode	State	PSComputerName
vm-base-GOWS2DTEST09-1	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST09-2	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST09-3	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST09-4	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST09-5	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DIES109-6	GOWS2DTEST09		GOWS2DTEST09
	GOUS2DIEST09		GOUS2DTEST09
vm-base-GOWS2DTEST09-9	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST09-10	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST09-11	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-1	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST10-2	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST10-3	GOWS2DTEST10		GOWS2DTEST10
Vm-base-GOWS2DTEST10-4	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST10-5	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST10-7	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST10-8	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST10-9	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST10-10	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST10-11	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST10-12	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-12	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST09-13	GOWS2DTEST10		GOWS2DTEST09
vm-base-GOWS2DTEST10-14	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-14	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-15	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-15	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-16	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-16	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-17	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST10-18	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-18	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-19	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-19	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-20	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-20	GOWS2DTEST09		GOWS2DTEST09
Vm-base-GOWS2DTEST09-21	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-21	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST09-22	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-23	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-23	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-24	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-24	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-25	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST10-26	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST09-26	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-27	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-27	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-28	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-28	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTESTI0-29	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST10-29	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-30	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-31	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-31	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-32	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-32	GOWS2DTEST09		GOWS2DTEST09
Vm-base-GOWS2DTESTI0-33	GOWS2DTEST10		GOWSZDTEST10
vm-base-GOWS2DTEST09-33	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-34	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-35	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-35	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-36	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-36	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST10-37	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-37	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTESTI0-38	GOWS2DTESTI0		GOWS2DTEST09
vm-base-GOWS2DTEST10-39	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST10-40	GOWS2DTEST10		GOWS2DTEST10
vm-base-GOWS2DTEST09-39	GOWS2DTEST09		GOWS2DTEST09
vm-base-GOWS2DTEST09-40	GOWS2DTEST09		GOWS2DTEST09

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Pls customize below PowerShell script (watch-cluster.ps1) to monitor actual performance.

The script is located same with set-vmfleet.ps1.

watch-cluster - Notepad File Edit Format View Help

DISKSPD - VM Fleet

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}

```
param(
    $Cluster = ".",
    $SampleInterval = 2,
    [ValidateSet("CSV FS", "SSB Cache", "SBL", "SBL Local", "SBL Remote", "SBL*", "S2D BW", "Hyper-V LCPU", "SMB SRV", "SMB Transport", "*")]
    [string[]] $Sets = "CSV FS",
    $Log = $null
    )
    if ($null -ne $log) {
        del -Force $log -FrrorAction SilentlyContinue
    }
}
```

Please change the point to "*".

watch-cluster-yema - Notepad File Edit Format View Help DISKSPD - VM Fleet Copyright(c) Microsoft Corporation All rights reserved. MIT License Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions: The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software. THE SOFTWARE IS PROVIDED *AS IS*, WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE. #> param(\$Cluster = "." \$SampleInterval = 2, [ValidateSet("CSV FS","SSB Cache","SBL","SBL Local","SBL Remote","SBL*","S2D BW","Hyper-V LCPU","SMB SRV","SMB Transport","*")] [string[]] \$Sets = "*", \$Log = \$null) if (\$null -ne \$log) { del -Force \$log -ErrorAction SilentlyContinue }

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Micron

Please check how many VMs are running on your cluster with below command.

Administrator: Windows PowerShell



Please run Start-Sweep.ps1 for testing. You can set some parameters.

b: list of buffer sizes (KiB)

t: list of thread counts

o: list of outstanding IO counts

w: list of write ratios

warm: duration of pre-measurement warmup (seconds)

d: duration of measured interval (seconds)

p: list of patterns (random: r, sequential: s, sequential interlocked: si)

cool: duration of post-measurement cooldown (seconds)



The following is for 4KB IO Block, 100% Random (100% Read / 0% Write)

PS C:\ClusterStorage\Collect\control> .\Start-Sweep.ps1 -b 4 -t 2 -o 16 -w 0 -d 600

The following is for 4KB IO Block, 100% Random (67% Read / 33% Write)



You can see the actual performance as below.



I prefer to check raw data with the performance monitor also. The filter below may be a good to monitor it.

"PhysicalDisk"



"RDMA Activity"

"SMB Direct Connection"

Farmer Tools Cathorn Marrie Main					6 +9	D Volumes - Cluste	er Marie × + ~					
ханиет константира масток нер → 💽 📰 👽 📼 🛝 🕫 🖉					÷ -		A https://localhosts/	516/clustermanager/	connections/hcicluster/gos2d	cluster5.micron.com/tookyhcivoiumes		Le
Sessions Very Split MultiDue: Tunneling Packages Settings Heip					Manda	an Admin Contex	Churter Manager				×	() a ·
😭 🖉 68. pzws2dtes129 ([ad-yema)	a sows2dtest10([ed	dyema)			Willuo	ws Aumin Center	Cluster Manager	×	Micr	oson	~	÷ ©
e scaling 😋 Pullscreen 🚇 Pit to window size 🔍 Set connection password	🕴 Hide bar 🛛 🗙 Disconr	mect			gosi	2dcluster5.n	nicron.com					
(8) Performance Monitor	19 Task Manager				1,	Volumes						Feedback ()
S File Action View Window Help	File Options View											
	Processes Performance	e Users Details Services			P	Summary	Inventory					
M = M + + + × / 4 B [] =	O CPU	CPU		Int	e l							
\\GOWS2DTEST09	77% 3.18 GHz	Logical processors				Status				Alerts (Total 0)		
PhysicalDiskTotal % Disk Read Time 308.579	 Memory 202/768 GB (2650) 	54% 53% 70%	68% 83% 46% 79% 57%	82% 57% 85% 50%		8						
% Disk Time 1,092.582 % Disk Write Time 699.003	O Ethernet	61% 93% 50%	85% 62% 102% 63% 93%	61% 74% 58% 76%								
% Idle Time 72.831 Ave. Disk Bytes/Read 4 096.000	S: 32.0 Kbps R: 0 K	Kaps and the tree		1000 100 000 100	0	Total volumes						
Avg. Disk Bytes/Transfer 4,096.563 Avg. Disk Bytes/Write 4,097.255	 Ethernet 	02/4 10/4 10/4	728 1004 1778 10076 1076	140/2 1416 2016 1228	P							
Avg. Disk Queue Length 120.140 Avg. Disk Queue Length 120.140	5: 0 Kbps F: 8.0 Kb	bps 79% 09% 03%	100% 71% 100% 75% 100%	70% 90% 72% 95%							There are no alerts	
Avg. Disk soc/Read 0.000	C Ethernet	99% 71% 91%	80%		- 10	Healthy	Critical	Warning	Other			
Avg. Disk sec/Transfer 0.000 Avg. Disk sec/Write 0.000		Utilization Speed	Base speed: 2.45	I GHz	35	8	0	0	0			
Avg. Disk Write Queue Length 76.362 Current Disk Queue Length 48.000	Ethernet S: 0 Kbps R: 32.0 K	Khps 77% 3.18 C	Hz Sockets 2 Cores 40		φ							
Disk Bytes/sec 2,231,313,608 Disk Read Bytes/sec 1,283,826,079	Ethernet	Processes Threads	Handles Logical processors: 90									
Disk Reads/sec 313,434.101 Disk Transfers/sec 544.679,419	S: 96.0 Kbps F: 8.0	0 Kbps 169 4028	94173 Infusization: Line L1 caches 2.51	bled MS	6							
Disk Write Dytes/sec 947,487,528,449 Disk Wolfsmoor 231,246,317	Ethernet	0:09:18:26	L2 cache 40.0 L3 cache 46.0	MB	8	Performance						
Split IO/Sec 0.000	S: 1.2 Mbps R: 1.0	Mbps			0							
Processor InformationTotal	🔿 Fewer details 🛞	Open Resource Moritor									Hour Day Week Mo	nth Year
% Processor time 46.063						IOPS				Latency		
RDMA Activity HPE Ethemet 10-25Gb 2-por RDMA Accepted Connections	rt 621SFP28 Adapter HF 216.000	PE Ethernet 10-25Gb 2-port 6215FP28 Ar	apter #2 HPE Ethernet 10-25Gb 2-p 0.000	ort 6215FP28 Adapter #3 HP 216.000	E I	Total				Average		
RDMA Active Connections RDMA Completion Queue Errors	8.000		0.000	8.000		462 k				4.23 ms		
RDMA Connection Errors RDMA Failed Connection Attempts	0.000		0.000	0.000								
RDMA Inbound Bytes/sec RDMA Inbound Framers/sec	486,616,803,644 844,537,215		0.000	487,302,988.172 826.529.794					<u> </u>			~
RDMA Initiated Connections RDMA Outbound Bytes/sec	20.000		0.000	20.000								
RDMA Outbound Frames/sec	849,965.745		0.000	824,717.224								
SMB Direct ConnectionTotal	Manistrator: Wind	dows PowerShell										
Bytes RDMA Written/sec 1,271,648,067	CSV FS 20P2 Total 463	5 Reads Mrites	EN (NE/S) Read MPite	Read Lat (NS) Write								
Bytes Sent/sec 79,238,702.499	G06520TEST18 235	,ee2 158,075 76,927	956 641 315	3.830 4.900								
Memory Regions 0.000 RCQ Notification Events/vec 40,285,955	SSB Cache Hit,		Cache (HB/s) RdPop HrPop									0
RDMA Registrations/sec 307,335,205 Receives/sec 618,243,995	GONS20TEST09 GONS20TEST10		624 624 623 623			1 hour ago			Now	1 hour ago		Now
Remote Invalidations/sec 307,101.565 SCO Notification Events/sec 84.490.216	SEL IOP		RW (MR/s) Read Write	Road Lat (ns) Write								
Sends/sec 618,290.497 Stalk (RDMA Read)/sec 20,103,151	Total 612 GOMS20TEST09 309	,305 308,375 303,990 ,747 155,051 153,797	2,549 1,263 1,246 1,269 639 630			Throughput						
Stalls (RDMA Registrationsl/sec 0.000 Stalls (Sand CracRibling 1.206.075	GONS 20TEST10 302	,618 152,424 150,194	1,240 624 616	0.205 0.558		Total						
Stalls (Send Queue)/sec 103,055.770	SEL Local 10P lots1 400	S Reads Moltes 1,447 308,429 152,017	1,650 1,203 023	Road Lat (ns) Moite		1.76 GB/	/s					
	000520165100 252	,559 152,454 75,105	932 624 398	0.247 0.065					~			
	SEL Remote IOP	S Reads Mrites	BW (MB/s) Read Write									
	G06520TEST09 76,1 006520TEST10 75,	896 76,896 137 75,137	315 315 368 398	0.666 0.931 0.669 3.649								
	SHE SRV TOP		Data EN (HE/s) Read Write	Total EN (MB/s) Rev								
	Total 012 GOMS2DTESTED 303	1,634 300,406 204,146 1,689 155,995 152,693										
	006520105110 304	,545 152,491 152,654										
	510 BV CSV Tots1 1,81	(H6/5) Read Mrite S8L (H 190 1,200 024 2,500	(5) Read Mrite Cathe (A 1,263 1,246 1,246	8/5) Read Write Di 1,240 2,								
	GGN520TEST10 955	041 315 1,240	624 616 623		2				0			
		cical Total% Guest% Hypervisor%	Root Total% Guest% Hypervis	or% Remote%		1 hour ago			Now			
	60x520TEST09 59.0 G0x520TEST10 59.0	85 54.24 5.62 49 54.34 5.15	49.02 47.01 2.01 49.10 47.31 1.78	0.00 0.00								
	SHE Transport Real	d IOPS Write 8090 Read Writ										

You can check the performance on WAC also.

When the script is completed, it will install a log file in the below location.

File://C:¥ClusterStorage¥Collect¥control¥result

View	
s PC → Local Disk (C:) → ClusterStorage → Collect → control → result	
Name	L D
 เองแกะมหน่อยางพระมายสระวงทางสระวงจพระมายรากงารงาทางสระวงจพระมายรากงาร 	v 4
result-b4t2o16w33pr-base-vm-base-GOWS2DTEST10-31+vm-base-GOWS2DTEST10-3	1 4
result-b4t2o16w33pr-base-vm-base-GOWS2DTEST10-32+vm-base-GOWS2DTEST10-3	2 4
result-b4t2o16w33pr-base-vm-base-GOWS2DTEST10-33+vm-base-GOWS2DTEST10-3	3 4
result-b4t2o16w33pr-base-vm-base-GOWS2DTEST10-34+vm-base-GOWS2DTEST10-3	4 4
result-b4t2o16w33pr-base-vm-base-GOWS2DTEST10-35+vm-base-GOWS2DTEST10-3	5 4
result-b4t2o16w33pr-base-vm-base-GOWS2DTEST10-36+vm-base-GOWS2DTEST10-3	6 4
result-b4t2o16w33pr-base-vm-base-GOWS2DTEST10-37+vm-base-GOWS2DTEST10-3	7 4
result-b4t2o16w33pr-base-vm-base-GOWS2DTEST10-38+vm-base-GOWS2DTEST10-3	8 4
result-b4t2o16w33pr-base-vm-base-GOWS2DTEST10-39+vm-base-GOWS2DTEST10-3	9 4
result-b4t2o16w33pr-base-vm-base-GOWS2DTEST10-40+vm-base-GOWS2DTEST10-4	0 4
result-b4t8o32w0pr-base-vm-base-GOWS2DTEST09-1+vm-base-GOWS2DTEST09-1	4
result-b4t8o32w0pr-base-vm-base-GOWS2DTEST09-2+vm-base-GOWS2DTEST09-2	4
result-b4t8o32w0pr-base-vm-base-GOWS2DTEST09-3+vm-base-GOWS2DTEST09-3	4
result-b4t8o32w0pr-base-vm-base-GOWS2DTEST09-4+vm-base-GOWS2DTEST09-4	4
result-b4t8o32w0pr-base-vm-base-GOWS2DTEST09-5+vm-base-GOWS2DTEST09-5	4
	4
result-b4t8o32w0pr-base-vm-base-GOWS2DTEST09-7+vm-base-GOWS2DTEST09-7	4

If you would like to do the same test again, you have to delete the previous results. I always copy them to aother location before deleting them.



If you would like to confirm the NIC power, I recommend using the below tool. This is created by Microsoft. I tested my own NIC to confirm it had enough power.

ethr.exe

You can download it from below. https://github.com/microsoft/ethr

Please extract zip file to file://C:¥temp.

Please run below command on your Node 1.

ethr.exe -s -ui

🔤 Administrator: Command Prompt - ethr.exe -s -ui	– 🗆 ×
Ethr v0.2.1	
Test Results RemoteAddress Proto Bits/s Conn/s Pkts/s Latency 168.60.162 TCP 41.74G	Statistics if: Embedded FlexibleLOM Tx 1.44Kbps Rx 5.44Kbps Tx 0pps Rx 0pps
	if: Local Area Connection Tx 0bps Rx 0bps Tx 0pps Rx 0pps Rx 0pps
	if: StorageNet5 Tx 3.44Kbps Rx 3.38Kbps Tx 2pps Rx 2pps Rx 2pps
	if: StorageNet6 Tx 88.30Mbps Rx 42.05Gbps Tx 166.26Kpps Rx 577.08Kpps
	if: vEthernet (Internal) Tx 1.38Kbps Rx 0bps Tx 0pps Rx 0pps
	if: vEthernet (MgmtNetwor Tx 118.70Kbps Rx 16.68Kbps Tx 22pps Rx 17pps
	Tcp Retrans: 0
Messages Starting TCP Bandwidth test from 192.168.50.152 Ending Bandwidth test from 192.168.50.152 New control connection from 192.168.60.162, port 63657 Starting TCP Bandwidth test from 192.168.60.162 Ending Bandwidth test from 192.168.60.162, port 63787 New control connection from 192.168.60.162, port 63787 Starting TCP Bandwidth test from 192.168.60.162	Errors

157



Command Pron	pt - ethr.	exe -s -ui				-		x t
						Ethr v0.2.1		
RemoteAddress	Proto TCP	Bits/s 93.85G	Conn/s	Pkts/s	Latency	Test Results - Stat - if: Embedded TX 5.65Kbps - - RX 7.14kbps - TX 0pps - RX 0pps	istic Flex	s ibleLOM
						if: Local Ar Tx θbps Rx θbps Tx θpps Rx θpps Rx θpps	ea Co	nnection
						if: StorageN Tx 94.23Mbps Rx 94.66Gbps Tx 189.55Kp Rx 1.30Mpps	let5	
						if: vEtherne Tx 2.75Kbps Rx 0bps Tx 0pps Rx 0pps	et (In	ternal)
						if: vEtherne Tx 49.76Kbps Rx 11.94Kbps Tx 12pps Rx 10pps	et (Mg	mtNetwor
						Tcp Retrans:	0	

Please run the command bellow on your Node 2. If you point the IP address of Node 1 with the below reference command. You can see the network performance.

- ethr.exe -c <server ip> -n 8
- ethr.exe -c <server ip> -n 16
- ethr.exe -c <server ip> -n 32
- ethr.exe -c <server ip> -n 64
- ethr.exe -c <server ip> -n 128
- ethr.exe -c 192.168.10.111 -n 128

the following is optional for the client side.

Option	Description
-c <server ip=""></server>	Client mode. Destination server IP address
-t <b c="" l="" p="" ="">	Test items (default is bandwidth)
	b: bandwidth
	c: connections/s
	p: packets/s
	I: latency
-p <tcp http="" https="" icmp="" udp="" =""></tcp>	Protocol (default is TCP)
-n <number></number>	Number of Session/thread
-l <number></number>	Buffer size
-l <number></number>	Number of repeats for latency test



The log will be stored with ethrs.log. If you want, please check it. If you want to know more, please try to use -h to access help. Or visit download page for more detail.

C:\S2D12temp>cd ethr_windows

C:\S2D12temp\ethr_windows>ethr.exe -c 192.168.10.111 -n 128 dial tcp 192.168.10.111:8888: connectex: A connection attempt failed because the connected party did not properly respon d after a period of time, or established connection failed because connected host has failed to respond.

Command Prompt

C:\TE	MP\ethr	_windo	ws>ethr.	exe - (192.2	168.50.	151		4			
Conne	cting t	to host	[192.16	8.50.1	151],	port 99	999					
[384]	local	192.16	8.50.152	port	55156	connec	ted	to	192.168	.50.151	port	9999
[396]	local	192.16	8.50.152	port	55159	connec	ted	to	192.168	.50.151	port	9999
[392]	local	192.16	8.50.152	port	55157	connec	ted	to	192.168	.50.151	port	9999
[404]	local	192.16	8.50.152	port	55158	connec	:ted	to	192.168	.50.151	port	9999
[ID]	Prot	tocol	Interv	al	Bit	s/s						
3841	T	CP	000-001	sec	5.0	56G						
13961	T	CP	000-001	sec	6.9	94G						
3921	T	CP.	000-001	sec	10.	176						
4041	T	CP	000-001	sec		9G						
I SUM1	T	CP.	000-001	sec	31.3	77G						
[384]	T(CP	001-002	sec	8.0	94G						
[396]	T	CP	001-002	sec	8.8	34G						
[392]	T	CP	001-002	sec	8.	31G						
[404]	T(CP	001-002	sec	8.	28G						
[SUM]	T	OP	001-002	sec	33.4	17G						
[384]	T(CP	002-003	sec	9.3	38G						
[396]	T(CP	002-003	sec	5.	34G						
[392]	T	CP	002-003	sec	7.	L4G						
[404]	T	CP	002-003	sec	11.0	94G						
[SUM]	T	CP.	002-003	sec	32.9	90G						
[384]	T	CP	003-004	sec	9.	33G						
[396]	T	CP	003-004	sec	7.3	24G						
[392]	T	CP	003-004	sec	7.0	57G						
[404]	T	CP	003-004	sec	9.8	32G						
[SUM]	T	CP	003-004	sec	34.0	96G						
 [20/1	 T(001 005									
[384]		CP CD	004-005	sec	0.	396						
[380]		LP DD	004-005	sec	9.9	180						
[392]		LP DD	004-005	sec	9.	16						
[404]	10	CP	004-005	sec	6.3	10G						
[SUM]	10	CP	004-005	sec	32.3	18G						
[201]	T(005-006	500		106						
[204]	T(CP CD	005-000	sec	7.4	+90						
[202]	T(005-000	Sec	· · ·	260						
[292]	T	n n	005-000	sec	9.1	796						
[404]	-	or PD	005-000	sec	9.							
[204]			005-000	sec		500						
[384]	т	0P	006-007	sec	8.4	14G						
13961	т	Γ Ρ	006-007	sec	7 (966						
[302]	т	D	006-007	sec	8	556						
[101]	т	D	006-007	sec	0	186						
I SUM1	т	D D	006-007	sec	34 4	146						
		444										
[384]	т	CP	007-008	sec	7.	32G						
3961	T	CP	007-008	sec	6.9	91G						
3921	Т	CP C	007-008	sec	8.0	95G						
[404]	Т	CP	007-008	sec	10	15G						
[SUM]	т	CP	007-008	sec	33.8	33G						
[384]	T	CP	008-009	sec	9.0	91G						
[396]	T	CP	008-009	sec	8.	29G						
[392]	T	CP	008-009	sec	7.8	36G						
[404]	T	CP	008-009	sec	8.9	91G						
[SUM]	т	CP	008-009	sec	34.0	96G						
[384]	TC	LP	009-010	sec	7.	33G						
[396]	T	CP	009-010	sec	8.3	19G						
[392]	T(CP	009-010	sec	9.0	57G						
[404]	T	CP	009-010	sec	8.9	97G						
[SUM]	T	CP	009-010	sec	34.3	16G						
Ethr	done, d	duratio	n: 10s.									
	MP\ethr	r windo	ws>_									

You can use the network performance monitor tool with VM Fleet and performance monitor as below.



Performance Monitor		Task Manager					- 0	X 🛃 Ad	Iministrator: Wind	ows PowerShell						
Sile Action View Window Help		File Options View						ve-base	e-GOMS2DTEST1	-33 GOWS2DTES	T11 GOM	S2DTEST11				
💠 🖈 🙇 🗊 🖾 🗰 📓 🚥		Processes Performance Users Details	Services					ve-base	e-604520TEST1	-35 GOWS2DTES	11 606	6201E5111				
M = M + A ¥ / A D B B	II N							ve-base	e-GOMS2DTEST1 e-GOMS2DTEST1	1-36 00W520TES 1-37 GOW520TES	111 00% 111 60%	4520TEST11 4520TEST11				
		CPU 56% 3 18 GH+	CPU	Int	el(R) Xeon(R) Gold 6248	3 CPU @ 2.50G	Hz ve-base	e-GOMS2DTEST1	-38 GOWS2DTES	111 60k	eS2DTEST11				
\\GOWS2DTEST11		3010 3.10 GHz	I poiral processors					ve-base	e-GOMS2DTEST1	-48 GOWS2DTES	111 606	S2DTEST11				
PhysicalDisk	Total	I Manager	AND 170 AND 170 1000 310	A10 A10		-		vn-base	e-GOMS2DTEST1	-33 GOWS2DTES	112 606	IS2DTEST12				
% Disk Read Time	509.034	203/768 GB (26%)					134 314 144	ve-base	e-GOMS2DTEST1	-35 GOWS2DTES	112 606	S2DTEST12				
% Disk Time % Disk Write Time	9,067.814		16% 66% 24% 33% 75% 92%	52% 92% 5	50% 84% 3	33% 82%	27% 78% 27	76 ve-base	e-GOMS2DTEST1	-36 60W52DTE5	112 606	S2DTEST12				
% Idle Time	66.656	FILLER FL Ethornot	56% 70% 79% 32% 87% 30%	6 72% 39% (65% 67% 1	79% 63%	77% 37% 85	vii-basi	e-G04520TEST1	-38 GOWS2DTES	112 604	S20165112				
Avg. Disk Bytes/Read	4,096.000	S 0 Kbps R: 40.0 Kbp	29% 67% 41% 78% 27% 79	37% 62% /	54% 52%	65% 79%	25% 64% 44	ve-base	e-GOMS2DTEST1	-39 GONS2DTES	112 606	S2DTEST12				
Avg. Disk Bytes/Transfer	4,098.385	MINDUMU						Vil-Dasi	e-000520105111	1-40 GUW5201C5	112 604	1520105112				
Avg. Disk Bytes/Write Avg. Disk Queue Length	4,101.718	Ethernet	94% 32% 76% 23% 74% 27	7 71% S47%	20%	637% 25%	39% 23% 6									
Avg. Disk Read Queue Length	45.813	S: 64.0 Kbps R: 0 Kbs	27% 60% 52% 50% 28%					PS CIA	clusterstorage	I/COTTect/cont	rols ./Stant-	-Sweep.ps1 -0 4	-t 2 -0 16	W 55 - 0 68		
Avg. Disk sec/Read	0.000	Enterthic	Itilization Frend Reserve	2.60.61	4.			RUN SPI								
Avg. Disk sec/Transfer	0.002	Ethernet	CON 2 40 CU- Sockets	2	12				o = 16 d = 689							
Avg. Disk Write Queue Length	770.290	S: 344 Kbps R: 80.0 K	50% 5.18 GHZ Cores:	40												
Current Disk Queue Length	261.000	interference interference	Processes Threads Handles Logical	processors: 80												
Disk Bytes/sec	2,092,339,039	Ethernet	174 3919 95469 Virtuals	ation: Enabler	d											
Disk Reads/sec	297 527,649	S: 0 Kbps R: 0 Kbps	Un time	2.5 MB												
Disk Transfers/sec	510,527.620		0-10-25-20	40.0 ME	B											
Disk Write Bytes/sec	873,665,789.244	Ethernet	0.10.25.50	2 40.0 Mb	5			Canana	iops - \$null	1. 0 7/1/2020	9-38-93 48					
Solit IO/Sec	212,999.9/1	S 1.3 Mhrs R: 1.0 M						START (Go Epoch: 0 @	7/1/2020 9:30						
		A Fewer details S Open Resource M	Aonitor					CLEAR	PAUSE @ 7/1/20	20 9:30:03 AM						
Processor Information	Total															
26 Processor Time	\$1.305		if: Local Area Connection	🛃 Administrator:	Windows Power	rShell										
RDMA Activity	Mellanox ConnectX-5 Adapter	Mellanox ConnectX-5 Adapter #2	Tx 600bps	CSV FS	IOPS	Reads	Writes	BW (MB/s)	Read Mrit	e Read La	t (ms) Write	Read QAve	Write			
RDMA Accepted Connections	4.000	4.000	Rx 688bps	Fotel GOUS20TEST11	430,000	288,742	73.259	1,762	1,180 561	0.222	9,916	33,139	726.455			
RDMA Completion Queue Errort	8.000	8.000	Tx 1pps	GCMS2DTEST12	208,018	139,350	68,667	852		0.218	9.966	30.447	6841345			
RDMA Connection Errors	0.000	0.000	nx apps	SSR Carbo	Hit/Sec	Hiss/Ser	Doman/Sec	Cache (HR/s)		n Destage	(HR/s) Undat	e Total (Des	Standby I			Diety
RDMA Failed Connection Attempts	0.000	0.000	if: MgmtNet													0 2.125+8
RDMA Inbound Bytes/sec	165,133,475.877	158,090,654,184	Tx 292.70Kbps	GOMS2DTEST11			1	581	581			3.84E+8	2.785+8 2	78E+8 0.0	0E+0 0.00E+	0 1.06E+8
RDMA Initiated Connections	180.000	180.000	Tx 43pps													
RDMA Outbound Bytes/sec	165,948,942.805	180,879,464.057	Rx 33pps	SBL Totol	10PS	Reads	Writes	BW (MB/s)	Read Writ	e Read La	: (ms) Write	Read QAvg				
RDMA Outbound Frames/sec	208,328.468	214,002.688	16. 64	GOWS2DTEST11	295,182	148,616	146,566	609		0.160	4:936	23.784	723.594			
SMB Direct Connection	Total		Tr 3.44Kbos	GOMS2DTEST12	276,584	139,316	137,268	1,133		0.153	4.966	1 21.340	681.687			
Bytes RDMA Read/sec	574,790,236.511		Rx 3.38Kbps			Reads					: (ms) Write	Read QAve				
Bytes RDMA Written/sec	0.000		Tx 2pps	Total CONSIDIESTIN	429,863	267,938	141,933	1,761	1,179 582	0.150	0.054	23 285	4 005			
Bytes Sent/sec	19,485,707,774		RX Zpps	GOWS2DTEST12	207,975	139,308	68,667				0.055	21.340				
Memory Regions	0.000		if: StorageNet2	SRL Remote	TOPS	Reads	Weites		Read Mrit	e Read La	(ms) Write	I Read Olive	Write			
RCQ Notification Events/sec	5,574.426		Tx 4.41Kbps		141,934		141,934									
Receives/sec	142,529,081		Tx 3ops	00W520TEST11 60W520TEST12	681617		68,617	281	281	0.000	9,613	0.000	678,234			
Remote Invalidations/sec	73,021.393		Rx 3pps					Data Bit (100								
SCQ Notification Events/sec Sends/ser	12,146.781		16. Stabarras (UDC Sabar	Total	141,037	Reaus	141,937	582	St News	2 614	60 (HD/S) RC					
Stalls (RDMA Read)/sec	49,796.612		Tx 1.38Kbos	GOM520TEST11	68,693		68,693	281	28	1 296	29	0 6				
Stalls (RDMA Registrations)/sec	0.000		Rx 1.38Kbps	000520155112												
Stalls (Send Credit)/sec	8,097.189		Tx Opps	S2D BN	CSV (MB/s)	Read Writ	te SBL (MB)	(s) Read W	rite Cache	(MB/s) Read	Write	Disk (MB/s) Re	d Write			
Stails (Selid Queue)/sec	23,070.833		RX Opps	GOWS2DTEST11	910	610 300	689		581		581	1,198 68	581			
			if: vEthernet (Internal)	GOWS2DTEST12			1,133	571 56	62 581			1,152 57				
			Tx 1.19Mbps	Hypen-V LCPU	Logical Tota	al% Guest%	Hypervisor#		Guest% Hyper	visor% Remote						
			Tx 558pps	Total Scuspotestia	42.78	38.46	4,62	35.02	31.90 1.12	0100						
			Rx 779pps	GOWS20TEST12	41.62	37.33	4.29	32.09	30.97 1.12	0.00						
			Teo Roteoner 1	SHB Transport	Read TOPS	Weite Lar	DHA Read Melter									
			icp Recrans: 1	Total		141,851	141,									
				GOMS2DTEST11 GOMS2DTEST12		75,534	73,3	54 17								
				and the second												



Troubleshoot:

If you cannot run Powershel script. Please try to do the below.

Enable-PSRemoting -Force

Administrator: Windows PowerShell Windows PowerShell Copyright (C) Microsoft Corporation. All rights reserved. Loading personal and system profiles took 1460ms. PS C:\WINDOWS\system32> Enable-PSRemoting -Force WinRM is already set up to receive requests on this computer. WinRM is already set up for remote management on this computer.

Winrm s winrm/config/client "@{TrustedHosts="host name"}"



Set-NetFirewallRule -Name WINRM-HTTP-In-TCP -RemoteAddress Any





Afterword

Thank you for downloading this installation guide and reference architecture. Yes, you can install Azure Stack HCI by yourself. As you may know, Microsoft has an easier way than this to set up Azure Stack HCI. But Micron IT offers these kinds of detailed installation manuals to help build an understanding of the solution and benefits of Micron flash storage and memory. This document does not cover how to promote Azure Stack HCI to enterprise level in your company. To do that, it is better to access and review the instructions below:

- 1. Major operation manual
- 2. Server maintenance include cluster maintenance
- 3. MS-Patching
- 4. Monitoring
- 5. Major troubleshooting
- 6. VM backup
- 7. File/folder backup
- 8. Logging
- 9. Security
- 10. Capacity management
- 11. Performance forecast
- 12. Scale up
- 13. Scale out
- 14. Training for internal system administrators
- 15. Convert existing VM to Azure Stack HCI for VM tiering
- 16. Collaboration with Azure Cloud Server platform
- 17. Collaboration with Azure Services

Advanced points:

- 18. Azure Stack HCI OS for branch office [small office]
- 19. Windows Admin Center with server/storage vender plugin tool
- 20. Azure stack HCI community [external] for getting the latest info/trouble
- 21. Collaboration with existing system at your company
 - A) BI report system
 - B) Support ticket management system and more



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Benchmark software and workloads used in performance tests may have been optimized for performance on specified components and have been documented here where possible. Performance tests, such as HClbench, are measured using specific computer systems, components, software, operations and functions. Any change to any of those factors may cause the results to vary. You should consult other information and performance tests to assist you in fully evaluating your contemplated purchases, including the performance of that product when combined with other products.

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