QNAP SMI-S Provider for System Center Virtual Machine Manager 2012

Application Notes October 2013



QNAP SMI-S Provider for System Center Virtual Machine Manager 2012

About QNAP SMI-S Provider

QNAP SMI-S Provider is a required component for the support of System Center Virtual Machine Manager (SCVMM 2012). It requires a SMI-S Provider to communicate with the storage. QNAP SMI-S Provider can be used to allow the communication between SCVMM 2012 and QNAP Turbo NAS.

Audience

This guide is intended to be used by Microsoft System Center administrators and storage administrators during the installation of QNAP SMI-S Provider for SCVMM 2012. A quick start guide is also included to describe how to start using SCVMM 2012.

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1. Installation

Installation Requirements

- System Center Virtual Machine Manager 2012 with SP1
- QTS 4.0 SMB and above. QTS 4.0 for Home and SOHO are not supported
- The SMI-S Provider **must not** be installed on the server where SCVMM 2012 is running. (<u>http://technet.microsoft.com/en-us/library/gg610563.aspx</u>)
- QNAP SMI-S Provider supports Windows Server 2008 R2 and Windows Server 2012



Install Process

Download the software QNAP SMI-S Provider from <u>www.qnap.com/utility</u> and install it on an independent Windows server.

The SMI-S Provider must not be installed on the server where SCVMM 2012 is running. (<u>http://technet.microsoft.com/en-us/library/gg610563.aspx</u>)

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Start the installation software.



(Optional) Follow the installation wizard until you receive a prompt for user authentication. If left untouched, all local administrator accounts on the Windows server will be able to control the SMI-S provider through SCVMM. To limit the access to only one user, please specify the user account and password.

User Authentication	
When a user request comes through (HTTPSecure), the QSMIS Server det system. If the request does not pass processing. Enable 'Authentication' to	HTTP (HyperText Transport Protocol) or HTTPS ermines whether this is a legitimate user on the a suthentication, the request is rejected without o set Authentication Config or disable 'Authentication'.
Important : The 'Account' should be I	the user account on the local system!!!
Authentication	
Account :	
Account : Password :	
Account : Password : Confirm Password :	
Account : Password : Confirm Password : NAP, Inc.	

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Once the SMI-S Provider is installed, it will open the folder containing the documentation and start the management console.





2. Add a NAS to be managed

The management console will be opened after installation. To open the management console manually, a shortcut will be added to the desktop, or it can be found under Start> All Programs > QNAP > QSMIS Provider

QNAP SMI-S Provider is running! (Can be managed in <u>Services management console</u>)								
ease enter IP a	address	'port 🗖 U	sing SSL Ad	ld.		Scan NAS		
NAP NAS adde	d into the SMI-S	provider:				Refresh		
AS Name	Model	IP	TCP Port	SSL	Firmware	Status		

To add a NAS, simply click "Scan NAS". The console will scan for existing NAS devices on the network, and click on the NAS to add it in the SMI-S Provider. You will be prompted to confirm the connection information and credentials. These credentials will be used for every operation from SCVMM.

Innesibod2 TS-EC1279U-RP 172.17.31.218 4.0.0 Immediate Immediate Immediate Immediate Immediate Immediate Immediate Immediate <t< th=""><th>NAS Name qvm-storage PMJ/Mstore</th><th>Model TS-EC1679U-SAS-RP</th><th>IP 172.17.31.193 172.17.31.211</th><th>3.8.2 (not support)</th></t<>	NAS Name qvm-storage PMJ/Mstore	Model TS-EC1679U-SAS-RP	IP 172.17.31.193 172.17.31.211	3.8.2 (not support)
Image: State of the state	om-nasjbod2	TS-EC1279U-RP	172.17.31.218	4.0.0
Image: Credentials	1.01	1400004	10128-01	400
172.17.31.218 Use SSL Connection User Name: admin Password:				
Use SSL Connection User Name: admin Password: ********				
User Name: admin Password: *******				
Password:				

Close the NAS list Window, and you will be able to see the added NAS in the SMI-S Provider management console:



QNAP SMI-S	Provider is runni	ng! (Can be mana	ged in <u>Services</u>	: management	console)	
ease enter IP	address TCF	port 🗖 U:	aing SSLA	d.d		Scan NAS
NAP NAS adde	ed into the SMI-S	provider:				Refresh
NAS Name	Model	IP	TCP Port	SSL	Firmware	Status

You can log out from the Windows server and no additional action is necessary on the QNAP SMI-S Provider. The QNAP SMI-S Provider can now be connected from SCVMM using SMI-S CIMXML Protocol, using a local administrator account.

For More details about using SMI-S Provider from SCVMM 2012, please refer to References page 38.



3. Connect SCVMM to QNAP SMI-S Provider

Configured Environment:

- Active Directory is already installed and functional
- SCVMM 2012 Server is already installed and functional
- SCVMM 2012 Administration console is already installed and functional
- Hyper-V hosts are installed and working properly
- iSCSI Initiator service is enabled and start automatically on each Hyper-V host
- MPIO Feature is installed on each Hyper-V host

Using SCVMM Console

Login to the SCVMM console; navigate to the Fabric Configuration > Storage > Providers. Right Click on "Providers" and click "Add Storage Provider"

Administrator - pm-scvmm2012.pr	mad.local - Virtual	I Machine Mana	ager (Evaluati	on Version - 49 (days remaining)				
Home									
Create Create Create File Create	te Add	Allocate Over	view Fabric	Services	PowerShell Jobs PRO	Refresh	Rescan	Remove	Propert
Create	Add	Capacity	Sho	w	Window	Refresh	Rescan	Remove	Propert
Fabric <	Providers (0)								
> 99 Servers									_
	Name	*		 Managem 	ent Address				Arrays
 Networking 							There a	are no items	to show ir
 Storage Classification and Daple 									
Providers									
Arrays	ld Storage Devices								
📑 File Servers									
the second s									
VMs and Services									
was vivis and bervices									
Fabric									
🧮 Library									



Select "Add a storage device that is managed by an SMI-S Provider"

Select Provider Type	Select a storage provider type
Specify Discovery Scope Gather Information Select Storage Devices Summary	 Before you begin this wizard you might have to manually install a storage provider. Select the type of storage provider that is managing the storage device that you would like to add. Add a Windows-based file server as managed storage device This options brings a clustered or non-clustered Windows-based file server under management. Add a storage device that is managed by an SMI-S provider This option brings a block storage array, or network attached storage (NAS) device under management. Add a storage device that is managed by an SMP provider This option brings a block storage array device under management.
	Previous Next Cancel

Click "Next".



In the next step, select "SMI-S CIMXML Protocol" to enter the QNAP SMI-S Provider server DNS name or IP address. A DNS Name is required if the server uses DHCP and the IP address can be used if the server uses fixed IP address. The TCP Ports used are 5988 for standard connection, and 5989 for SSL connection.

B Speeny Di			ATTARE
elect Provider Type	Specify proto	col and address of the storage SMI-S prov	vider
pecify Discovery Scope	Pr <u>o</u> tocol:	SMI-S CIMXML	•
ather Information	P <u>r</u> ovider IP addre	s or FQDN:	
elect Storage Devices	pm-smis.pmad.l	cal	•
ummary	TCP/IP port:	5989 🗬	
	✓ Use Secure So	kets Layer (SSL) connection	
	R <u>u</u> n As account:		<u>B</u> rowse

Click Browse to select "Run As Account".

		٩
Name	Description	User Role
NT AUTHORITY	System	
NT AUTHORITY	LocalS	
NT AUTHORITY	Netwo	
particular.		Administrator
		Create Run As Account
		·

This account will be used to connect to the SMI-S Provider server. The account must be a **local administrator account** on the Windows server that hosts the QNAP SMI-S Provider.



If an account has not been created please create a "Run As Account" by clicking "Create Run As Account".

Name: Display Name of the user account that SCVMM will use.

User Name: Local username on the Windows server that hosts the QNAP SMI-S Provider. The user name has to be with the format SERVERNAME\USERNAME

Uncheck "Validate domain credentials" has the username is a Windows server local account.

3	Create Run As Account
Provide tł	ne details for this Run As account
Na <u>m</u> e:	QNAP SMI-S Local Administrator
D <u>e</u> scription:	QNAP SMI-S Local Administrator
User name:	nm-smis)administrator
<u>_</u>	Example: contoso\domainuser or localuser
Pass <u>w</u> ord:	•••••
Confirm pass	word:
<u>V</u> iew Script	OK Cancel .::

Click $\ensuremath{``}\ensuremath{\mathsf{OK}}''$ to create the Run As Account

Now that the Run As Account is available, select it and click OK.

elect a Run As account		
		م
Name	Description	User Role
NT AUTHORITY\System		
NT AUTHORITY\LocalService		
NT AUTHORITY\NetworkService		
a control of the second se		Automation and a
QNAP SMI-S Local Administrato	r QNAP SMI-S Local	Administrator
		Create Run As Accoun

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The selected Run As Account will be displayed :

	specify proto	col and address of the storage SMI-S provider	
Specify Discovery Scope	Pr <u>o</u> tocol:	SMI-S CIMXML	•
Gather Information	Provider IP addres	s or FQDN:	
Select Storage Devices	pm-smis.pmad.lc	cal	-
Summary	ICP/IP port:	5989	
	R <u>u</u> n As account:	QNAP SMI-S Local Administrator	Browse

 ${\sf Click}\ ``{\sf Next''}\ {\sf to}\ {\sf start}\ {\sf the}\ {\sf connection}\ {\sf and}\ {\sf discovery}\ {\sf of}\ {\sf the}\ {\sf QNAP}\ {\sf SMI-S}\ {\sf Provider}:$

£ ,	Add Storage Devices Wizard
😫 Gather Info	ormation
Select Provider Type Specify Discovery Scope	Discover and import storage device information Scan Provider
Gather Information	
Select Storage Devices	
Summary	
	Previous Next Cancel



During the discovery you may have a warning regarding the certificate. You can click "**Import**" to allow the connection. (More details at <u>http://technet.microsoft.com/en-us/library/gg610563.aspx</u>)

o verify the ider nport the storage lanager server (ntity of the storage provider, Virtual Machine Manager mu ge provider security certificate into the Virtual Machine rertificate store.	st
Certificate	Information	^
This CA Root co certificate in the	ertificate is not trusted. To enable trust, install this e Trusted Root Certification Authorities Store.	
Issued to:	QNAP	≡
Issued by:	QNAP	
Valid from:	6/10/2013 to 6/10/2014	
Serial number:	00BD89AE8368E95A4D	
Public key:	30 81 89 02 81 81 00 d2 ad 88 c2 31 66 5a 51 3e 73 5f 02 4b f7 ea b5 18 ea 98 77 cf 4e eb f2 8d 7a 4a 1f 8a 28 ce	
	ab a	\sim
The certification for the storage prov	te will be imported before Virtual Machine Manager adds ider.	the

All of the QNAP Storage added in the QNAP SMI-S Provider Manager will be listed.

Select Provider Type	Discover and import sto	rage device inf	ormation		
Specify Discovery Scope					Scan Provider
Gather Information	Storage Device	Pools	Manufacturer	Model	Capacity
Select Storage Devices	TS-EC1279U-RP:Q116I01385	Storage Pool 1	QNAP Systems, I	TS-EC1279U-RP	3,574.27 GB

Click "Next" to proceed.



Select the Storage Pools you want to use for SCVMM usage. Multiple Storage Pools can be selected if available. Assign a Storage Classification for each Storage Pool. If none exists, you can create a Classification by clicking "Create classification"

Select Provider Type Specify Discovery Scope Gather Information	Sele Logi desc	ect storage pools to cal unit information will be ribes the capabilities of the	place under mar imported from the sel e selected storage poo	nagemen lected stora ils.	it ar ige p	nd assign a c ools. The assign	lassification ed classification
Select Storage Devices		Storage Device	Pool ID	Classifica	tion	Total Capacity	Available Capacity
Summary	Ξ	TS-EC1279U-RP:Q116I01	1385		*		
		✓ Storage Pool 1	QNAP:Q116/01	QNAP	•	3,574.27 GB	3,513.91 GB

Create a Classification example:

New Classification
ge classification
QNAP
QNAP Storage
A <u>d</u> d <u>C</u> ancel



Once all the steps are completed, click Finish to proceed and add the storage pools:

	Add Storage Devices Wizard	X
📤 Summary	A.	
Select Provider Type	Confirm the settings	<u>V</u> iew Script
Gather Information Select Storage Devices Summary	Resource type: Storage device Discovery scope: pm-smis.pmad.local Storage provider type: SMI-S CIMXML Managed storage pools: Storage Pool 1 Array: T5-EC1279U-RP.Q116I01385 Total capacity: 3,574.27 GB Manufacturer: QNAP Systems, Inc. Model: TS-EC1279U-RP Classification: QNAP	
	Previous Einish	Cancel

			Jobs			x
ce	ent Jobs (3)					
						٩
	Name	Status -	Start Time 🔹 👻	Result Name	Owner	~
D	Sets Storage Array	Completed	6/10/2013 6:16:38 PM	TS-EC1279U-RP:Q116I01385	PMAD\jaussadm	
D	Creates new Storage Classificat	. Completed	6/10/2013 6:15:53 PM	QNAP	PMAD\jaussadm	
î.	Adds Storage Provider	Completed w/ Info	6/10/2013 6:14:13 PM	pm-smis.pmad.local	PMAD\jaussadm	
						~
_						
-						_
10	Show this window when new obje	ects are created			<u>R</u> estart <u>C</u> ancel	



QNAP SMI-S Provider and QNAP Storage Arrays are now available from SCVMM2012:

Create Create Create File Classification Logical Unit	Create Add Resources •	Allocate Capacity	ew Fabric Resources	PowerShell	Refresh	Rescan	Remove	Properties	
Create	Add	Capacity	Show	Window	Refresh	Rescan	Remove	Properties	
99 Servers									
All Hosts	Name	•	* Man	agement Address				Arrays	Status
🕨 🧮 5th floor	👰 pm-smis.pmad.loc	cal	pm-	smis.pmad.local:5988				TS-EC1279U-RP:Q116I01385	🔮 Responding
I voenter servers									
Veniter servers VMM Server VMM Server Networking Storage Classification and Pools Providers									

Create Create Create File Create ssification Logical Unit Share Create	Add Resources • Capacity Add Capacity	Overview Fabric Resources Host/Cluster Show	BowerShell Jobs s T PRO Properties Window Properties			
ic < A	irrays (1)					
Servers						
All Hosts	Name	 Total Capacity 	Used Capacity	Pools	Provider Name	Status
5th floor	TS-EC1279U-RP:Q11601385		3,574.27 GB	60.36 GB 1 (1 managed)	pm-smis.pmad.local	🕖 Responding
Library Servers						
PXE Servers						
vCenter Servers						
VMM Server						
Networking						
Storage						
Classification and Pools						
Providers						
Arrays						
# File Servers						
L	TS-EC1279U-RP:Q116I01385					
,	Array information		Capacity information		Logical unit information	
	itatus: 🔮 Responding		Total capacity:	3,574.27 GB	Provisioned:	(
l	ast refresh: 6/10/2013 8:22:2	3 PM	Allocated capacity:	0 GB	Assigned:	(
	Manufacturer: QNAP Systems, I	nc.	In use capacity:	60.36 GB	Unassigned:	(
	Model: TS-EC1279U-RP		Capacity usage:		Logical units per array:	
1	Charles Deal 1					
1	Storage Pool 1					
VMs and Services	Storage Poor T					
VMs and Services Fabric	Storage Poor I					
VMs and Services Fabric Library	Storage Pobl I					
VMs and Services Fabric Library Jobs	Storage Pobl I					

Storage can now be allocated and provisioned to Hyper-V hosts. Please refer to Microsoft's Documentation at: http://technet.microsoft.com/en-us/library/gg610615.aspx

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Using Command Line (PowerShell)

Requirements:

- A Run As Account has already been created (named "smis" in this example.) Please refer to the previous "Create a Run As Account" when using the SCVMM console, page 10

Open the Virtual Machine Manager Command Shell:



C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Microsoft System Ce	D X	٢
C:\Windows\system32>		^
		=
		Ľ

Excecute those 2 commands :

PS C:\Windows\system32> \$RunAsAcct = Get-SCRunAsAccount -Name "smis"						
PS C:\Windows\system32> Add-SCStorageProvider -NetworkDeviceName "http://pm-smis.pmad.local" -TCPPort 5988 -Name "F						
smis.pmad.local" -RunAsAccount \$RunAsAcct						
NetworkAddress	: http://pm-smis.pmad.local					
TCPPort	: 5988					
ProviderType	: SmisCimXml					
ProviderFlags	: StorageArray					
Status	: Responding					
RunAsAccount	: smis					
IsNonTrustedDomain	: False					
StorageArrays	: {TS-1079 Pro:1075016}					
StorageFileServers	: {}					
ObjectType	: StorageProvider					
Accessibility	: Public					



Name	: pm-smis.pmad.local
IsViewOnly	: False
Description	:
AddedTime	: 10/18/2013 12:27:26 PM
ModifiedTime	: 10/18/2013 12:27:43 PM
Enabled	: True
MostRecentTask	: Adds Storage Provider
ServerConnection	: Microsoft.SystemCenter.VirtualMachineManager.Remoting.ServerConnection
ID	: 99d8514c-f693-4d19-bc73-1693a9b20052
MarkedForDeletion	: False
IsFullyCached	: True
MostRecentTaskIfLoca	l : Adds Storage Provider
PS C:\Windows\system	32>

Once executed, the Storage Provider will be available in SCVMM, in Fabric > Storage > Providers.

Administrator - pm-scvmm2012.	pmad.local - Virtual Machine	e Manager (Evaluation Version - 10	0 days remaining)	
Home Home				^ @
Create Create Create File Cr Classification Logical Unit Create File Cr Create	Add Allocate Capacity Add Capacity	Overview Fabric Show	PowerShell Jobs Refresh Res Window Refresh Res	an Remove Properties
Fabric	< Providers (1)			
4 99 Servers				٦
A 🗋 All Hosts	Name	 Management Address 	Arrays	Status
🚆 test	👰 pm-smis.pmad.local	pm-smis.pmad.local:5988	(🔮 Responding
🕨 🕎 pm-hvha				
🎥 Library Servers				
PXE Servers				
Update Server				
VMM Server				
h A Naturalina				
· · · · · · · · · · · · · · · · · · ·				
Storage Classification and Baols				
Providers				*
³ Arrays				
📑 File Servers				
🔯 VMs and Services				
Pabric				
📕 Library	-			
E lobs				
✓- Settings				
	•			



The provider has been added using HTTP. It is possible to add the SMI-S Provider with SSL connection. In this example:

- "smis" is the RunAsAccount
- "pm-smis.pmad.local" is the the SMI-S Provider FQDN.

: 9d9dc08c-64ab-47c0-a211-aae4be7c8efb

PS C:\Windows\system:	32> \$RunAsAcct = Get-SCRunAsAccount -Name "smis"
PS C:\Windows\system	32> \$CRT = Get-SCCertificate -Computername "pm-smis.pmad.local" -TCPPort 5989
PS C:\Windows\system	n32> Add-SCStorageProvider -NetworkDeviceName "https://pm-smis.pmad.local:5989" -TCPPort 5989 -Name "pm-
smis.pmad.local" -Run	nAsAccount \$RunAsAcct -Certificate \$CRT
NetworkAddress	: https://pm-smis.pmad.local
TCPPort	: 5989
ProviderType	: SmisCimXml
ProviderFlags	: StorageArray
Status	: Responding
RunAsAccount	: smis
IsNonTrustedDomain	: False
StorageArrays	: {TS-1079 Pro:1075016}
StorageFileServers	: {}
ObjectType	: StorageProvider
Accessibility	: Public
Name	: pm-smis.pmad.local
IsViewOnly	: False
Description	:
AddedTime	: 10/18/2013 2:18:06 PM
ModifiedTime	: 10/18/2013 2:18:21 PM
Enabled	: True
MostRecentTask	: Adds Storage Provider
ServerConnection	: Microsoft.SystemCenter.VirtualMachineManager.Remoting.ServerConnection

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ID

MarkedForDeletion : False IsFullyCached : True

PS C:\Windows\system32>

MostRecentTaskIfLocal : Adds Storage Provider

Annex: How to start with SCVMM 2012

Please refer to Microsoft's Documentation for a complete description of SCVMM functionalities and usage: <u>http://technet.microsoft.com/en-us/library/gg610615.aspx</u>

You can use the following guide to help you start using SCVMM with QNAP SMI-S Provider.

Connect the Hyper-V hosts to the NAS

Connect all the Hyper-V hosts to the newly added managed storage: Your QNAP Turbo NAS

Now that the Turbo NAS has been added to the SMI-S Provider, it can be managed directly from SCVMM 2012. The next step is to give access to the Hyper-V hosts to the storage array by creating a iSCSI Session on each Hyper-V host.

- Open SCVMM console, in the Fabric
- Select the first Hyper-V host in Servers > All Hosts

Fabric	< Hosts (1)	
 Market Servers 		
🔺 🚞 All Hosts	Name	Hos
pm-hvha pm-hv1 pm-hv2	pm-hv1.pr	nad.local
鷭 Library Servers		
PXE Servers		
눩 Update Server		
vCenter Servers		

- -
- Right Click on the host and select "Properties"
- In Storage, click "Add" then select "Add iSCSI Array"

	pm-hv1.pm	ad.local Properties
General	Storage	
Status	👍 Add 🗙 Remove	
Hardware	Add Disk	Logical unit: Logical unit ID: 6001405DC763258D33C7D44E9D9D4CDD
Host Access	Add File Share	Array:
Virtual Machine Paths	\\.\PHYSICALDRIVE1 512.00 GB (502.75 GB	Pool name:
Reserves	\\\PHYSICALDRIVE2 30.00 GB (12.73 GB av	Classification: Partition style: MBR
Storage	\\.\PHYSICALDRIVE3 1.00 GB (0.94 GB avail	Status: i) Reserved
Virtual Switches	iSCSI Arrays	Volume Label Total Capacity Mount Points
Migration Settings	Fibre Channel Arrays	Quorum 1.00 GB Q:\\\?\Volume[1f14031f-f42c
Discoment	SAS Arrays	
Flacement	⊟ File Shares	
Servicing Windows		
Custom Properties		
Manu Carlos	1	Or Court
view script		OK Cancel



8	Create New iSCSI Session
Array:	*
SM name:	TS-879U-RP:Q116I01355
Total capacity:	TS-EC1279U-RP:Q116I01385
Storage pools:	
Use advanced Target portal:	settings
Initiator IP:	· · · · · · · · · · · · · · · · · · ·
View Script	Create Cancel

- The List of NAS added in the SMI-S Provider will be displayed.
- Select the desired NAS and click "Create"

8	pm-hv1.pma	ad.local Properties
General	Storage	
Status	🖶 Add 🗙 Remove	
Hardware	Disk	Array name: TS-EC1279U-RP:Q116I01385
Host Access	\\.\PHYSICALDRIVE0 232.89 GB (195.22 GB	SM name: QNAP:Q116/01385 Total capacity: 976.89 GB
Virtual Machine Paths	\\.\PHYSICALDRIVE1 512.00 GB (502.75 GB	Storage pools: 1 (1 managed)
Reserves	\\.\PHYSICALDRIVE2 30.00 GB (12.73 GB av	The target supports multiple sessions, you can create additional session by clicking Create Session.
Storage	\\\PHYSICALDRIVE3 1.00 GB (0.94 GB avail	<u>C</u> reate session
Virtual Switches	ISCSI Arrays	
Migration Settings	TS-EC1279U-RP:Q116I 976.89 GB (1 pools)	
Placement	Fibre Channel Arrays	
Servicing Windows	SAS Arrays	
Custom Properties	□ File Shares	
View Script		OK Cancel

- -
- The Hyper-V host has now access to the NAS, and the Storage allocation and provisioning can be done through SCVMM.
- Repeat this setting for each Hyper-V Host.

For more details about the iSCSI Session creation, you can refer to Microsoft's documentation: How to Configure Storage on a Hyper-V Host in VMM: <u>http://technet.microsoft.com/en-us/library/gg610696</u>





Allocate Storage Pool to Hyper-V Host Groups

In order to utilize the storage in SCVMM for some hosts, you must allocate storage pools to some host groups. After this procedure, the Hyper-V hosts member of that host group will be suitable for LUN provisioning and LUN creation, only for the selected storage pools.

For more details, please refer to:

- How to Allocate Storage Pools to a Host Group in VMM (http://technet.microsoft.com/en-us/library/gg610635.aspx)

In Fabric, and in the Server Section, select the storage host group on which you want to allocate the storage pool. Right click > Properties





In Storage section, click "Allocate Storage Pools..."

8	MyHosts Properties
General	Storage
Placement Rules	Storage capacity for this host group includes storage allocated to the parent host groups.
Host Reserves	Storage capacity for hosts in this host group
	Local Remote
Dynamic Optimization	Total capacity: 0 GB Total capacity: 1,520.77 GB
Network	Available capacity: 0 GB Available capacity: 1,365.62 GB
	Allocated storage for this host group
Storage	Logical units
Custom Properties	Number of logical units: 0
	Total capacity: 0 GB Allocate Logical Un
	Available capacity: 0 GB
	Storage pools:
	Name Classification Total Capacity Description
View Script	OK Cance



Select the NAS Storage pool and click Add, then click OK.

This will allocate the NAS Storage Pool to a Storage Host Group, so that it can be used by the Hyper-V Hosts.

		Alloca	te Storage Pools	5	×
Allocate sto	rage to this	host group	for virtual mach	nine workloads	
The storage allo	cated to a host	t from an individu	ual storage pool is u	sed only for virtual mac	hine workloads.
Display as av	ailable only sto	orage arrays that	are visible to any ho	ost in the host group	
Available <u>s</u> torag	e pools:				٩
Storage Pool	Classification	Total Capacity	Available Capacity	Description	
Storage Pool 1	QNAP	976.89 GB	943.98 GB	Storage Pool 1	
				\mathbf{i}	
				Add	<u>R</u> emove
Allocated storag	e pools:			Add	<u>R</u> emove
Allocated storag Storage Pool	e <u>p</u> ools: Classification	Total Capacity	Available Capacity	<u>A</u> dd Host Groups	Remove
Allocated storag Storage Pool	e pools: Classification	Total Capacity	Available Capacity	<u>A</u> dd Host Groups	<u>R</u> emove
Allocated storag Storage Pool	e <u>p</u> ools: Classification	Total Capacity	Available Capacity	Add Host Groups	P
Allocated storag Storage Pool	e <u>p</u> ools: Classification	Total Capacity	Available Capacity	Add Host Groups	<u>R</u> emove
Allocated storag Storage Pool	e <u>p</u> ools: Classification	Total Capacity	Available Capacity	Add Host Groups	<u>R</u> emove P
Allocated storag Storage Pool	e <u>p</u> ools: Classification	Total Capacity	Available Capacity	Add Host Groups	P
Allocated storag Storage Pool	e pools: Classification	Total Capacity	Available Capacity	Add Host Groups	P
Allocated storag Storage Pool	e pools: Classification	Total Capacity	Available Capacity	Add Host Groups	P P Cancel

The Storage pool is now allocated to the host group:

Storage Storage capacity for his host group includes storage allocated to the parent host groups. Placement Rules Storage capacity for hosts in this host group Host Reserves Local Remote Dynamic Optimization Total capacity: 0 GB Vetwork Allocate dorage for this host group Logical units: Indicate storage for this host group Logical units: Indicate storage Rool Storage pool: Number of logical units: 0 Number of logical units: Allocate Logical Units Storage pool: Name Classification Total Capacity Storage Pool 1 QNAP							
Placement Rules Storage capacity for this host group includes storage allocated to the parent host groups. Host Reserves Storage capacity for hosts in this host group Dynamic Optimization Include and the parent host group Vetwork Available capacity: 0 GB Total capacity: 1,520.77 GB Available capacity: 0 GB Available capacity: 1,365.62 GB Custom Properties Logical units: 0 Total capacity: 0 GB Allocate Storage Pool Custom Properties Total capacity: 0 GB Storage pools: Allocate Logical Units Name Classification Storage Pool 1 QNAP 976.89 GB	Seneral	Storage					
Host Reserves Local Local Cola Local Cola Cola Cola Cola Cola Cola Cola Co	Placement Rules	Storage capacity	for this host g	roup includes st	orage allocated to the	parent ho	ist groups.
Dynamic Optimization Network torage Local Remote Total capacity: 0 GB Total capacity: 1,520.77 GB Available capacity: 0 GB Allocate storage for this host group Logical units Logical units Allocate storage Pool Number of logical units: 0 Total capacity: 0 GB Storage pools: Name Classification Total Capacity Description Storage Pool 1 QNAP 976.89 GB Storage Pool 1	Host Reserves	Storage capacit	y for hosts in	this host group			
Dynamic Optimization Total capacity: 0.GB Total capacity: 1,520.77 GB Available capacity: 0.GB Available capacity: 1,365.62 GB Allocate storage for this host group Logical units Allocate Storage Pool Lustom Properties Number of logical units: Allocate Storage Pool Number of logical units: 0 GB Allocate Logical Units Storage pools: Name Classification Name Classification Total Capacity Storage Pool 1 QNAP 976.89 GB		Local			Remote		
Network Available capacity: 0 GB Available capacity: 1,365.62 GB Allocated storage for this host group Logical units Allocate Storage Pool Lustom Properties Number of logical units: 0 Allocate Logical Units Total capacity: 0 GB Allocate Logical Units Storage pools: Name Classification Name Classification Total Capacity Storage Pool 1 QNAP 976.89 GB	Dynamic Optimization	Total capacity:	0 GB		Total capacity:	1,520.7	7 GB
Allocated storage for this host group Allocate Storage Pool Logical units Allocate Storage Pool Custom Properties Number of logical units: 0 Total capacity: 0 GB Available capacity: 0 GB Storage pools: Name Name Classification Storage Pool 1 QNAP 976.89 GB Storage Pool 1	Vetwork	Available capacit	ty: 0 GB		Available capacity	γ: 1,365.6	2 GB
Logical units Allocate Storage Pool Custom Properties Number of logical units: 0 Total capacity: 0 GB Available capacity: 0 GB Storage pools: Name Classification Total Capacity Storage Pool 1 QNAP 976.89 GB Storage Pool 1		Allocated stora	ge for this hos	t group			
Custom Properties Number of logical units: 0 Total capacity: 0 GB Available capacity: 0 GB Storage pools: Name Classification Total Capacity Description Storage Pool 1 QNAP 976.89 GB Storage Pool 1	Storage	Logical units					
Total capacity: 0 GB Available capacity: 0 GB Storage pools: Name Classification Total Capacity Description Storage Pool 1 QNAP 976.89 GB Storage Pool 1	Custom Properties	Number of logic	al units: 0				Allocate Storage Pools
Available capacity: 0 GB Storage pools: Name Classification Total Capacity Description Storage Pool 1 QNAP 976.89 GB Storage Pool 1		Total capacity:	0 GB				Allocate Logical Units
Storage pools: Total Capacity Description Name Classification Total Capacity Description Storage Pool 1 QNAP 976.89 GB Storage Pool 1		Available capacit	ty: 0 GB				
Name Classification Total Capacity Description Storage Pool 1 QNAP 976.89 GB Storage Pool 1		Storage <u>p</u> ools:					
Storage Pool 1 QNAP 976.89 GB Storage Pool 1		Name	Classification	Total Capacity	Description		
		Storage Pool 1	QNAP	976.89 GB	Storage Pool 1		
View Script OK Cancel	View Script						OK Cancel

SCVMM will now be able to create and allocate a LUN in this storage pool for the host member of the host group.



Create a LUN for a standalone Hyper-V host.

First, make sure that at least 1 storage pool has been allocated to the host group (see above). Open SCVMM 2012 and navigate to the Fabric. Under Servers select the desired Hyper-V host.

*	+				0	1		O	0	1
reate	Add Resources •	Overview	Fabric Resourc	Compliance	Scan	Remediate	Compliance Properties	Update Agent	Reassociati	e Cor via
reate	Add		Show	w		Complia	nce	ł	Agent	
oric			<	Hosts (1)						
33.0										
All I	Hosts			Name			Host Status		Ŧ	Role
1 30							OK			Hest
- <u> </u>	uster			pm-hv3.pm	1ad.local					TUSL
4 🗃	uster pm-hvha			pm-hv3.pm	1ad.local		UK			HUSI
	uster pm-hvha PM-HV1			m-hv3.pn	nad.local		UK			HUSL
- 0	uster pm-hvha PM-HV1 PM-HV2			pm-hv3.pn	1ad.local		UK			HOSE
4 💭	uster pm-hvha I PM-HV1 PM-HV2 andalone			pm-hv3.pm	nad.local		UK			nost
4 😨 1 4 🖀 1 4 💁	uster pm-hvha PM-HV1 PM-HV2 andalone pm-hv3			pm-hv3.pm	nad.local		UK .			HOSE
Libr	uster pm-hvha PM-HV1 PM-HV2 andalone pm-hv3 ary Servers			pm-hv3.pm	1ad.local		UK			HOSI
St Clibr	uster pm-hvha PM-HV1 PM-HV2 andalone pm-hv3 ary Servers Servers			pm-hv3.pm	nao.local		<u>UK</u>			HOSI
St Libr PXE	uster pm-hvha PM-HV1 PM-HV2 andalone pm-hv3 ary Servers Servers late Server			pm-hv3.pm	ad.local		UK			nost
St Libr PXE Upc	uster pm-hvha PM-HV1 PM-HV2 andalone pm-hv3 ary Servers Servers late Server nter Servers			pm-hv3.pm	ad.local		UK			nost

Right click on the host and select properties. In the "Storage" section, click "Add" and "Add Disk"

1385 /ou can create additional
1385 rou can create additional
1385 rou can create additional
vou can create additional
vou can create additional
ou can create additional
Create session

The left part of the window will updated and display the possible actions.







Click "Create Logical Unit"

■ Disk	-	Logical unit:	▼ Create Lo	gical Unit	
0 GB (0 GB available) (\\PHYSICALDRIVE2 0 GB (0 GB available) (\\PHYSICALDRIVE3 0 GB (0 GB available) (\\PHYSICALDRIVE4 0 GB (0 GB available) New Volume	E	Logical unit ID: Array: Classification: Size: Format new disk Format new disk Format this volume Partition style: Volume [abel: Allocation unit size:	as NTFS volume with the f New Volume Default	ollowing set	E
iSCSI Arrays TS-EC1279U-RP:Q1 4,690.72 GB (3 pools)	_	Quick format Force format eve Mount point Assign the following Mount in the follow	n if a filesystem is found drive letter: ing empty NTFS folder:	•	



The LUN Creation Wizard will appear:

	Create Logical Unit
Specify the set	ttings for the new logical unit
<u>S</u> torage pool:	Storage Pool 1
Classification:	QNAP Production
Available capacity:	8,003.32 GB
Allocation percenta	age: 6 %
<u>N</u> ame:	MyFirstLUN
Description:	
Size (GB):	200 🛋
Gire (GD)	200
 Create thin stor 	age logical unit with capacity committed on demand
Create a fixed s	ize storage logical unit with capacity fully committed
View Script	OK Cancel

- Select the storage pool where you want to create the LUN. Only storage pools that have been allocated to the host group will be visible.
- Give a Name to the LUN
- Choose the Size of the LUN
- Select thin provisioning or fixed size (Instant allocation)
- Click OK

The LUN will be created, and the option will display the LUN information. Select the partition type, volume name, format option, and drive letter that will be used on the Hyper-V host. (Drive V in this example)

8	pm-hv3.p	ma	d.local Properties			
General	Storage					
Status	👍 Add 🗙 Remove					
Hardware	□ Disk	Â	Logical unit:	MyFirstLU Create Logical Unit		•
Host Access	\\.\PHYSICALDRIVE0 149.05 GB (120.37		Logical unit ID: Array:	6e843b69265082ed6647d4781d86a TS-EC1279U-RP:Q116l01385	bc	
Virtual Machine Paths	V\\PHYSICALDRIVE1 0 GB (0 GB available)		Classification: Size:	QNAP 200.00 GB		
Reserves	V\.\PHYSICALDRIVE2 0 GB (0 GB available)		Format new disk		-	
Storage	\\.\PHYSICALDRIVE3 0 GB (0 GB available)	W.	Partition style:	GPT	et •	=
Virtual Switches	\\.\PHYSICALDRIVE4 0 GB (0 GB available)		Volume label:	MyVMs		
Migration Settings	I MyVMs		Allocation unit size: Quick format	Default	•	
Placement	iSCSI Arrays		Force format ev	en if a filesystem is found	_	
Servicing Windows	TS-EC1279U-RP:Q1 4,690.72 GB (3 pools)		Assign the followin	g drive letter:	•	
Custom Properties	Fibre Channel Arrays		Mount in the follow	wing empty NTFS folder: Browse		Ŧ
View Script				OK	Canc	el

- Click OK

The procedure will need some time to allocate the LUN to the host and format the disk, depending on the options that have been chosen.

	1
ie.	VMs and Services
2	Fabric
5	Library
-	Jobs
-	Settings
	-

The progress can be followed in the "Jobs" section where all the SCVMM activities are recorded:



Once the new disk has been created, the LUN can be seen in the Fabric, Storage, Classification and Pools:

Create Create Create File Create Classification Logical Unit Share Create	Add Resources • Add	Allocate Capacity Capacity	Fabrice Resources Show	 PowerShell Jobs PRO Window 	Remove	Properties Properties				
ric 4	Classifications (2),	StoragePools (3),	and Logical Units (1)							
TT Servers	Name		т Туре	Total Capaci	ty		Available Capacity	Assigned	Description	Provisioning Typ
3 Storage	netapp		Classification			0 GB	0 GB		0010.0	
Classification and Pools	E QNAP		Classification			4,690.72 GB	4,507.91 GB		QNAP Storage	
🕵 Providers	Storage MyFirst	LUN	Logical unit			200.00 GB	848.48 GB 0 GB	Yes	Storage Pool 1	Thin

A remote login on the Hyper-V host can help to verify that the disk has been created and is available:



New disk V: , 200 GB, as were the option when the LUN has been created from SCVMM 2012.



Create a LUN for the Hyper-V Cluster.

The procedure to create a LUN for a cluster is a little bit different

- Step 1 : create and assign the LUN
- Step 2 has two possibilities:
 - \circ allocate the LUN to a new VM → to be used as a Cluster Disk for High Availability (not described)
 - \circ convert the LUN to a CSV volume \rightarrow to be used as a Cluster Shared Volume for High Availability

In details:

In the Fabric, Servers, select the cluster where you want to create a new LUN, right click on the cluster and select "properties".

abric		<	Hosts (2)		
Servers					
🔺 🚞 All Hosts			Name		Host Status
🔺 🧮 Cluster			PM-HV2.pm	nad.local	OK
🔺 💭 pm-hvha			III D.4.1044	.local	OK
PM-HV1	*	Create Servi	ce		
PM-HV2		Create Virtu	al Machine		
🔺 🚞 Standalone	Q	Refresh			
🛛 pm-hv3		Optimize Ho	osts		
	1	Move to Ho	st Group		
PXE Servers		Uncluster			
눩 Update Server	-	Add Cluster	Node		
vCenter Servers	N	Validate Clu	ster		
VMM Server		View Netwo	rking	-	
🕨 📥 Networking		Remove			
🔺 ј Storage		Properties	-		



In "Available Storage" click "Add..."

General	Available Stora	ge (0)				
Status	Volume Name	Drive	Capacity	Free Space	Total Space	Cluster Resource
Available Storage						1
File Share Storage						
Shared Volumes						
Virtual Switches						
Migration Settings						
Custom Properties						
				1		
				/	-	
				Add	Remove	Convert to CS\
View Script					OK	Cancel

In the Cluster Disk wizard, click "Create Logical Unit...":

lame	Classification	Size	Partition Style	File System	Volume Label	Quick Format	Force Format
							/
							/



Storage pool:	Storage Pool 1
Classification:	QNAP Production
Available capacity:	8,003.32 GB
Allocation percentag	ge: 6 %
<u>N</u> ame:	MyVMDisk
Description:	
S <u>i</u> ze (GB):	300 💌
 Create thin stora Create a fixed size 	ge logical unit with capacity committed on demand ze storage logical unit with capacity fully committed

- Give a Name

_

- Choose the size of the LUN
- Select thin provisioning or fixed size (Instant allocation)
- Click OK

Select the format option that will be use for the cluster disk :

	Classification	Size	Partition St	yle	File System	Volume Label	Quick Format	Forc
MyVMdisk	QNAP	300.00 GB	GPT	•	NTFS 🔻	MyVM		

Click OK.



eneral	Available Stora	ge (1)				
atus	Volume Name	Drive	Capacity	Free Space	Total Space	Cluster Resource
vailable Storage	MyVM			300.00 GB	300.00 GB	
le Share Storage						
ared Volumes						
rtual Switches						
igration Settings						
stom Properties						
			[<u>A</u> dd	<u>R</u> emove	Convert to CSV

Click OK

i.	VMs and Services
2	Fabric
5	Library
	Jobs
~ -	Settings
	*

The progress can be followed in the "Jobs" section where all the SCVMM activities are recorded:



After the LUN creation for the cluster, a new Volume will be available in "Available Storage" in the Cluster.

	Volume Name	Drive	Canacity	Free Space	Total Space	Cluster Resource
vailable Storage	MyVM	\\?e4ce652e	copacity	299.73 GB	299.87 GB	Cluster Disk 4
le Share Storage						
nared Volumes						
irtual Switches						
igration Settings						
ustom Properties						
				A 11		C



Use a Cluster Disk as a Cluster Shared Volume for High Availability

This part is not a detailed instruction, but just an overview to show possible use of the LUN created with the SMI-S Provider.

In the Fabric> Servers, select the cluster where you have just created the new LUN, right click on the cluster and select "Properties".

In "Available Storage", select the Cluster Disk and click "Convert to CSV" and click OK:

1	pm	n-hvha.pmad.local Prop	perties			X
eneral	Available Storag	je (1)				
Status	Volume Name	Drive	Capacity	Free Space	Total Space	Cluster Resource
Available Storage	MyCSV	\\?9cf08b3f		399.84 GB	400.00 GB	Cluster Disk 5
ile Share Storage						
hared Volumes						
'irtual Switches						
Migration Settings						
ustom Properties						
						/
				Add	Remove	Convert to CSV
View Script					OK	Cancel

i @	VMs and Services
1	Fabric
s	Library
=	Jobs
-	Settings
	-

The progress can be followed in the "Jobs" section where all the SCVMM activities are recorded:



When the job is completed, the Hyper-V hosts member of the cluster will have a new Cluster Shared Volume that can be used to store the VM.

The result can be seen in the cluster Property, in the "Shared Storage" section:

tatus	CSV Path	Current Owner	Capacity F	ree Space	Total Space	Cluster Resource
vailable Storage	C:\ClusterStorage\Volume1	PM-HV2		12.85 GB	29.87 GB	Cluster Disk 3
valiable storage	C:\ClusterStorage\Volume2	PM-HV1		399.84 GB	400.00 GB	Cluster Disk 5
ile Share Storage						
Shared Volumes						
Virtual Switches						
Migration Settings						
Custom Properties						
		A	\dd	<u>R</u> emove	Convert to	Available Storage



Create a LUN on the NAS and allocate it from SCVMM 2012

The LUN can be created on the NAS first. SCVMM will be able to allocate and connect the LUN created on the NAS to the hypervisors.

- Login to the NAS as an administrator
- Create an "iSCSI LUN only" on the NAS, and do not map it to any target. The LUN can use Thin Provisioning or Thick Provisioning
- In this example we will create an Instant Allocation LUN named "MyThickLUN".



- -
- Login into SCVMM 2012
- In the Fabric > Servers, right click on a host group , select "Properties"
- In Storage, Click "Allocate Logical Units..."
- Right click on the QNAP SMI-S Provider and rescan the SMIS Provider :



- -
 - In the Fabric, on a host group, allocate the LUN :



General	Storage
Placement Rules	Storage capacity for this host group includes storage allocated to the parent host groups.
Host Reserves	Storage capacity for hosts in this host group
	Local Remote
Dynamic Optimization	Total capacity: 0 GB Total capacity: 349.05 GB
Network	Available capacity: 0 GB Available capacity: 320.12 GB
0	Allocated storage for this host group
Storage	Logical units
Custom Properties	Number of logical units: 1
	Total capacity: 200.00 GB Allocate Logical Units
	Available capacity: 0 GB
	Storage pools:
	Name Classification Total Capacity Description
View Script	OK Cancel

- -
 - Select the LUN "MyThickLUN" and click "Add":

<u>Display as available only s</u>	the host group torage arrays th	can be assigned at are visible to	any host in	usters, or virtu the host grou	ip	ines.
Available logical units:	Classification	That Canadity				~
Rool Name: Storage Por		I ptar Capacity	Logical Ur	iit.		
TS-FC1279U-RP:0116/0138	5 ONAP	300.00 GB	MyThick!	IN		
					1	
				Ad	ld	Remove
				Ad	ld	<u>R</u> emove
Allocated logical <u>u</u> nits:	Classification	Total Canacity	Assigned	Host Group	ld logical	<u>R</u> emove
Allocated logical <u>u</u> nits: Array I Pool Name: Storage Pool	Classification	Total Capacity	Assigned	Host Group	ld Logical	<u>R</u> emove م Unit
Allocated logical <u>u</u> nits: Array □ Pool Name: Storage Poo TS-EC1279U-RP:Q116101383	Classification	Total Capacity 200.00 GB	Assigned Yes	Host Group Standalone	ld Logical MyFirst	Remove
Allocated logical <u>u</u> nits: Array □ Pool Name: Storage Poo TS-EC1279U-RP:Q116I01385	Classification 1 5 QNAP	Total Capacity 200.00 GB	Assigned Yes	Host Group Standalone	ld Logical MyFirst	Remove P Unit
Allocated logical <u>u</u> nits: Array ☐ Pool Name: Storage Poo TS-EC1279U-RP:Q116I0138:	Classification I 1 5 QNAP	Total Capacity 200.00 GB	Assigned Yes	Host Group Standalone	ld Logical MyFirst	Remove
Allocated logical <u>u</u> nits: Array ☐ Pool Name: Storage Poo TS-EC1279U-RP:Q116I0138:	Classification I 1 5 QNAP	Total Capacity 200.00 GB	Assigned Yes	Host Group Standalone	ld Logical MyFirst	Remove

Now the LUN created manually on the NAS can be used by the Hyper-V hosts member of the host group.



References

- QNAP SMI-S Provider at <u>www.qnap.com/utility</u>
- How to Add and Classify SMI-S and SMP Storage Devices in VMM : <u>http://technet.microsoft.com/en-us/library/gg610563.aspx</u>
- Administering System Center 2012 Virtual Machine Manager : <u>http://technet.microsoft.com/en-us/library/gg610615.aspx</u>
- Configuring Storage in VMM Overview (<u>http://technet.microsoft.com/en-us/library/gg610600.aspx</u>)
- How to Add and Classify SMI-S and SMP Storage Devices in VMM (<u>http://technet.microsoft.com/en-us/library/gg610563.aspx</u>)
- How to Provision Storage Logical Units in VMM (http://technet.microsoft.com/en-us/library/gg696973.aspx)
- How to Allocate Storage Logical Units to a Host Group in VMM (<u>http://technet.microsoft.com/en-us/library/gg610686.aspx</u>)
- How to Allocate Storage Pools to a Host Group in VMM (<u>http://technet.microsoft.com/en-us/library/gg610635.aspx</u>)
- How to Configure Storage on a Hyper-V Host in VMM: <u>http://technet.microsoft.com/en-us/library/gg610696</u>

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