

Configuring Shared Storage with VMware and a Synology NAS

Saturday, January 15, 2021 5:43 AM

Overview

Hi all – Welcome to my channel, I'm Alex Hubbard, I'm a Senior System Administrator and Cybersecurity Engineer. I have over 15 years of experience in the IT field. If you're new to the channel, please subscribe below. If you've been here before, welcome back. Be sure to check out my Instagram @ach_sysadmin.

Today we are going to take a look how to setup a Synology NAS as shared storage for a VMware vCenter cluster. My goal is to provide a full guide on how to set this configuration up in your homelab. These steps should work on just about any Synology that supports iSCSI. Hold on because this is going to be a rather...lengthy...tutorial. I will have a full write up over at my blog site, achubbard.com.

To give you a little background on my environment, I have 2 Dell hosts and a Synology DS1619xs+ NAS. My network stack is fully Ubiquiti Unifi. I have 2 Ubiquiti 10Gb switches providing the backbone for my storage network.

Network Topology

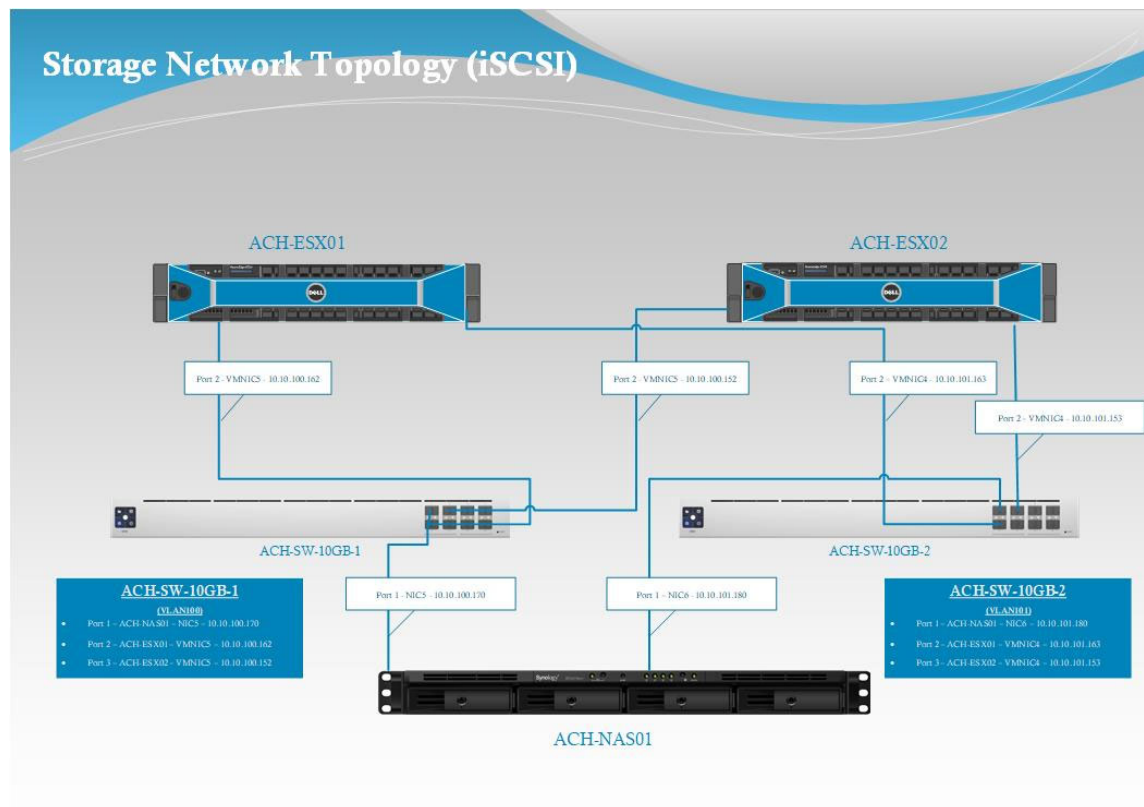
Let's start off with looking at the layout of my storage network. This Visio diagram shows how both of my hosts and my Synology DS1619xs+ are connected. I find it helpful, when I am building out a network, to see how it is laid out physically. Each host has a 2-port Intel X520-DA2 10Gb NIC. The Synology has a 2-port Synology branded 10Gb NIC. As I stated above, I have 2 Ubiquiti Unifi 10Gb switches. My 2 hosts and my Synology each connect 1 of their NICs to each switch. I have 2 VLANs for my storage network, VLAN100 and VLAN101. Each system has 1 connection VLAN100 and 1 connection VLAN101. Way overkill for a home network, I know.

It should be noted that I have chosen the below subnets (IP Ranges) for my storage network. You can use anything you'd like, but this is what I decided upon. I do not have DHCP configured on these networks, so you will need to assign static IPs.

Subnets:

VLAN100 – 10.10.100.x/24

VLAN101 – 10.10.101.x/24

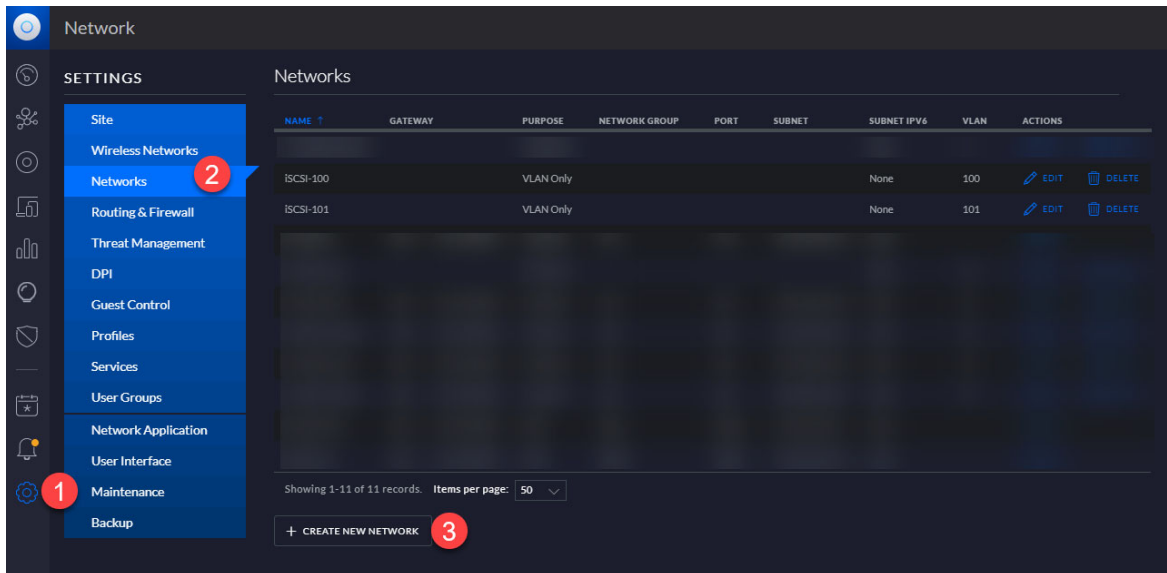


Unifi Configuration

Login to your Unifi controller. In my case, I am logged into my UDM-Pro and am running the classic interface. Keep in mind, there are some difference between the current interface and the classic one. That is another conversation for another day. We need to create our storage VLANs.

Create VLANs 100 and 101

Navigate to Settings > Networks and click on the "Create New Network" button at the bottom.



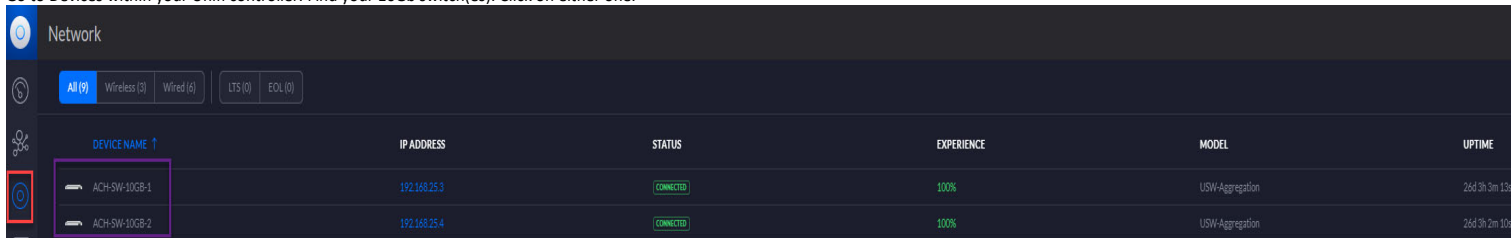
Give your VLAN a name. I opted for "ISCSI-100" - it is set to "VLAN Only" and has a VLAN number of 100. You can call this whatever you'd like. **Repeat these steps for VLAN101.**



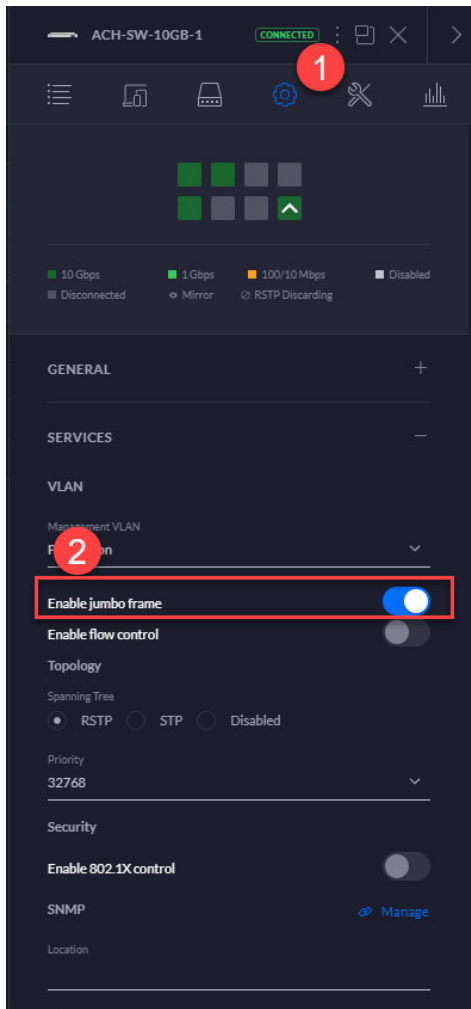
Enable Jumbo Frames on both 10GB Switches

Next, we need to enable Jumbo Frames on both of our Ubiquiti 10Gb switches. A jumbo frame has a payload that is greater than 1,500 bytes, which is the standard MTU or Maximum Transmission Unit. Since we will be configuring our MTU to be 9,000 bytes across our 10Gb storage network, we need to enable this.

Go to Devices within your UniFi controller. Find your 10Gb switch(es). Click on either one.

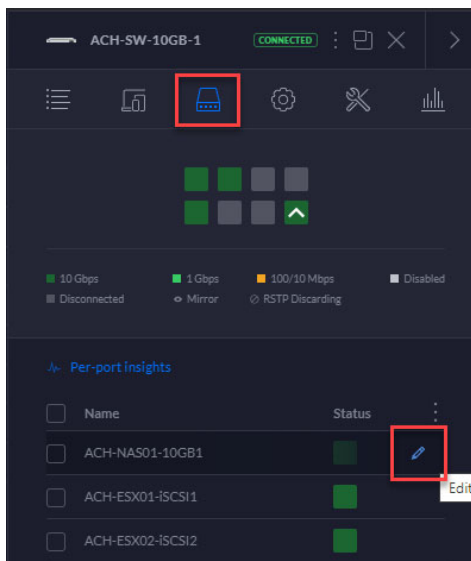


Once in the configuration panel of your 10Gb switch, move to the settings button (1) and expand the "Services" tab. Enable Jumbo Frames (2). **You will need to enable Jumbo Frames on both switches. Repeat this for both 10Gb switches.**

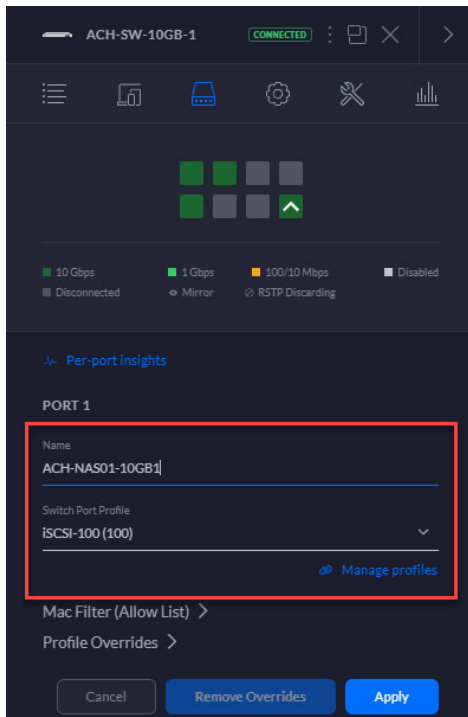


Configure Port Settings

On my first 10Gb switch, ACH-SW-10GB-1, I am using the first 3 ports for my iSCSI connections. I have configured each of the 3 ports (1 for ESX01, 1 for ESX02, 1 for SAN) that I am using to be on VLAN100. From Devices in your controller, find your first 10Gb switch. Click it. Navigate to the ports tab. Click the blue pencil edit button.

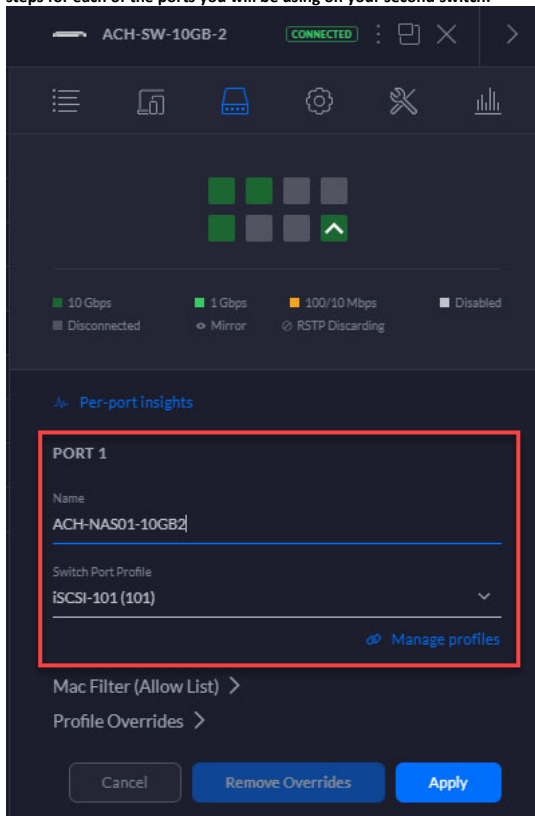


Give the port a name, this will help you distinguish it later on. Select your Switch Port Profile to be your VLAN that you created above. In this case, it will be iSCSI-100, which is my VLAN100. **Repeat this for the other 2 ports.**



On my second switch, ACH-SW-10GB-2, the process is exactly the same, with the exception of the VLAN. We will set each port to use the Switch Port Profile of iSCSI-101, or VLAN101.

Go back to devices, find your second switch, select the ports menu. Find your port and hit the blue pencil edit button next to it. Name your port and set it's Switch Port Profile to iSCSI-101. **Repeat these steps for each of the ports you will be using on your second switch.**

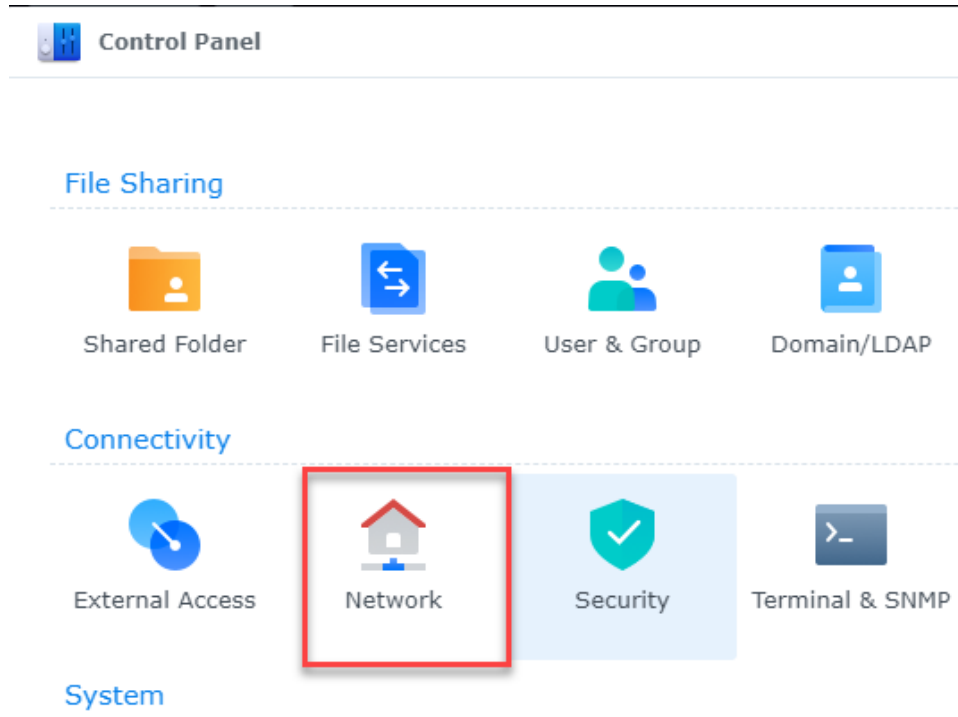


Synology Configuration

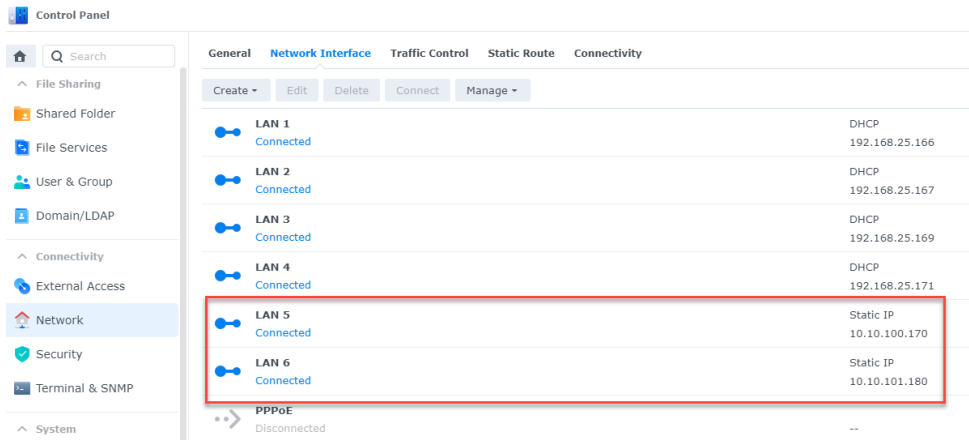
Now that we have our VLANs and switch ports configured, let's take a look at our Synology RS1619xs+. Login to the administrative interface, find the Control Panel icon and click it.



Click on the Network Icon within Control Panel.



Select Network Interface to display your network connections. On my Synology DS1619xs+, I have a 2-Port 10Gb NIC installed. It shows in DSM as LAN 5 and LAN 6. This is what we will use for our iSCSI traffic.



Start with LAN 5, highlight it by clicking on it. Hit the edit button. Assign it the IP information for VLAN100 indicated below. Click ok when you are finished populating the fields.

LAN 5 IP Information:

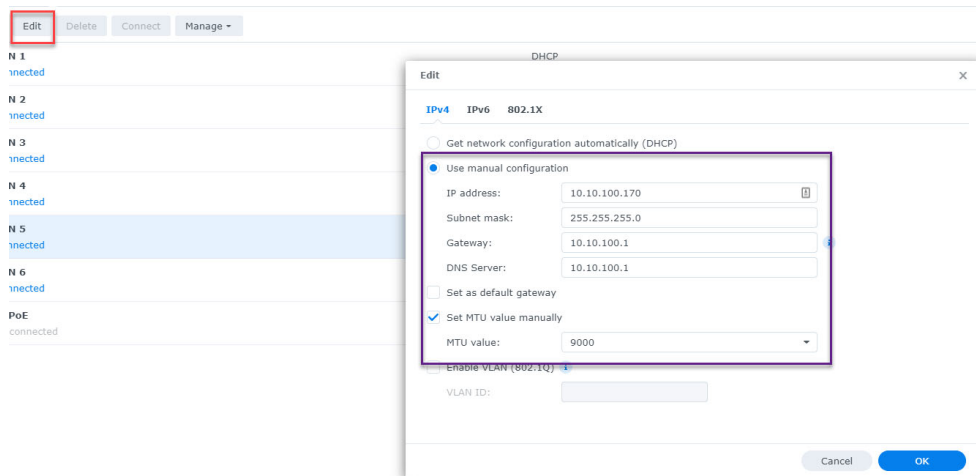
IP Address: 10.10.100.170

Subnet Mask: 255.255.255.0

Gateway: 10.10.100.1

DNS: 10.10.100.1 (Not really needed in this situation)

Additionally, you need to check off the box "Set MTU value manually" and assign it a value of 9000.



Repeat the above steps for LAN 6, they are identical, with the exception of the IP information. Populate LAN6's fields and click ok.

LAN 6 IP Information:

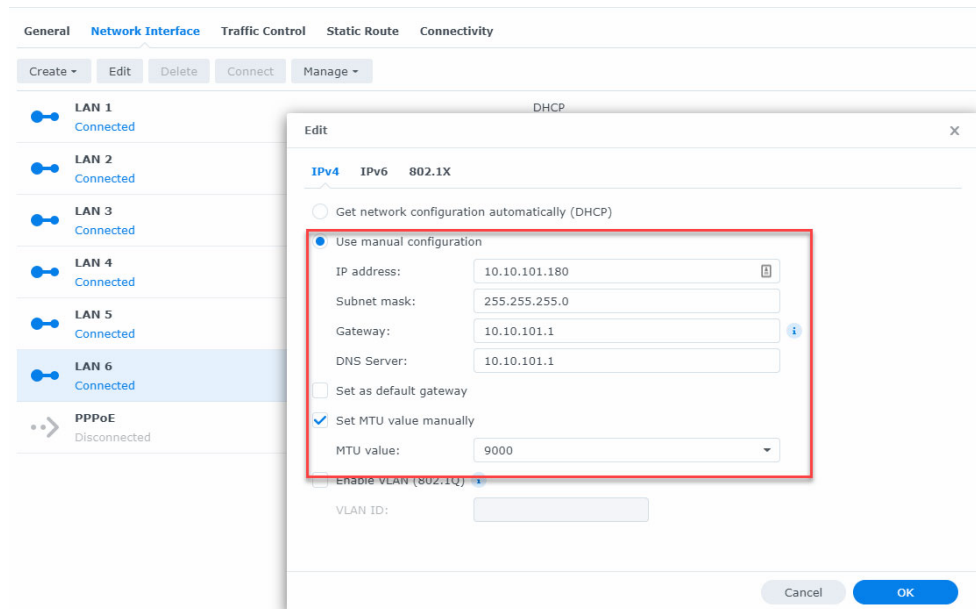
IP Address: 10.10.101.180

Subnet Mask: 255.255.255.0

Gateway: 10.10.101.1

DNS: 10.10.101.1 (Not really needed in this situation)

Additionally, you need to check off the box "Set MTU value manually" and assign it a value of 9000.

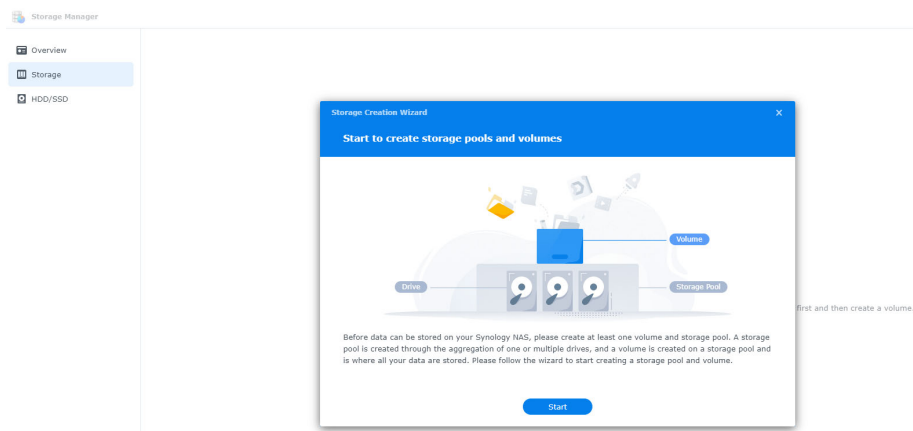


Storage Manager

Jump out of the networking section of your Synology and locate the Storage Manager icon. Click it. We need to create a storage pool and volume.



Since this is a new SAN and has nothing on it, we will need to run through the initial setup wizard. This requires us to create a storage pool, and then a volume. We need to do this prior to configuring our LUN or iSCSI target. Click the start button.



Presently I only have 2x 16TB Seagate Exos drives in my DS1619xs+, as such, I am going to select the RAID type to be RAID 1. This is a mirrored array. Friendly reminder that RAID is not a backup. Give your storage pool a description. Click the next button.

Storage Creation Wizard

Configure storage pool property

RAID is a data storage virtualization technology that aggregates multiple drives into a storage pool. Different RAID types provide different levels of performance, storage capacity, and reliability.

RAID type:

RAID 1

- Minimum number of drives: 2
- Drive fault tolerance: **Total number of drives used - 1**

RAID 1 is most often implemented with two drives. Data on the drives are mirrored, providing fault tolerance in case of drive failure. Read performance is increased while write performance is similar to that of a single drive. A single drive failure can be sustained without data loss. RAID 1 is often used when fault tolerance is key, while capacity and performance are not critical requirements. Please note that the capacity of a RAID 1 storage pool cannot be expanded by adding drives.

Storage pool description (optional):

ACH Storage Pool 1

Back

Next

Add the available drives to the storage pool array by dragging them from the left to the right. Then click the next button.

Storage Creation Wizard

Configure drives

Please drag at least 2 drives to create a storage pool with the RAID type of **RAID 1**.

RS1619xs+

2 - SATA / HDD 14.6 TB

Storage Pool (RAID Array 1)

1 - SATA / HDD 14.6 TB

Required drive

Additional drive

Additional drive

Estimated capacity: -

Back

Next

It should look like this when you are done. Click the next button again.

Storage Pool (RAID Array 1)



1 - SATA / HDD 14.6 TB



2 - SATA / HDD 14.6 TB



Additional drive

Additional drive

Estimated capacity: **14.5 TB**

Back

Next

For this tutorial, I am going to skip the drive check as these drives brand new, and I've already run through this several times as I've taken screen shots and video. You may wish to have your Synology check your drives depending on your situation. Make your selection and hit the next button.

Storage Creation Wizard



Drive check

Performing a drive check can automatically reconfigure a drive, thereby reducing the risk of data access errors.



Perform drive check

Drive check may take a longer time because it is performed simultaneously during storage pool creation.



Skip drive check

Drive bad sectors will be reconfigured only when the bad sectors are being accessed.

Back

Next

You can enter the allocated size of the volume. I opted to hit the max button to use the full capacity. Give your volume a description and then hit the next button.

Storage Creation Wizard

Allocate volume capacity

Storage Pool:

Storage Pool 1 (RAID 1)

Total capacity:

14897.4 GB

Available capacity:

14897 GB

Modify allocated size:

14897

Max

Volume description (optional):

ACH Volume 1

Back

Next

You'll want to select your file system. I am leaving it at the default of Btrfs. Do your homework on what file system will work best for your environment.

Storage Creation Wizard

Select a file system

☒ Btrfs (recommended)

The Btrfs file system supports advanced features including shared folder snapshots and replication, shared folder quota, and advanced data integrity protection.

☐ ext4

The ext4 file system is widely used in the Linux operating system and can be easily migrated to RackStation running earlier versions of DSM.

[More information about choosing file systems](#)

Back

Next

Confirm your settings and hit the apply button.

Storage Creation Wizard

Confirm settings

Storage Pool	
Storage pool description	ACH Storage Pool 1
RAID type	RAID 1
Drive type	SATA HDD
RAID Array 1	Drive 1, Drive 2
Estimated capacity	14897 GB
Volume	
Allocated capacity	14897 GB
Volume description	ACH Volume 1
File system	Btrfs

Back

Apply

Note – when you create your storage pool and volume, any data on it will be wiped. You have been warned.

Storage Pool

Storage pool description	ACH Storage Pool 1
RAID type	RAID 1
Drive type	
RAID Array 1	
Estimated capacity	
Volume	
Allocated capacity	
Volume description	ACH Volume 1
File system	Btrfs

Back

Apply

At this point we've successfully created a storage pool and a volume. We can now move to the SAN Manager and create our target and LUN.

Storage Manager

Overview

Storage

Storage Pool 1

Volume 1

HDD/SSD

Create - Schedule Data Scrubbing Hot Spare SSD Cache Advisor Global Settings

Storage Pool 1 - ACH Storage Pool 1 14.5 TB

Healthy

Info

RAID type: RAID 1 (With data protection)

Maximum drive number per RAID: 4

Data Scrubbing

Status: Ready

Run Now

Completed on: Never performed yet

Drive Info

Device	Drive Number / Type	Drive Size	Allocation Status	Health Status
ACH-NA501	Drive 1 (HDD)	14.6 TB	Normal	Healthy
ACH-NA501	Drive 2 (HDD)	14.6 TB	Normal	Healthy

Volume 1 - ACH Volume 1

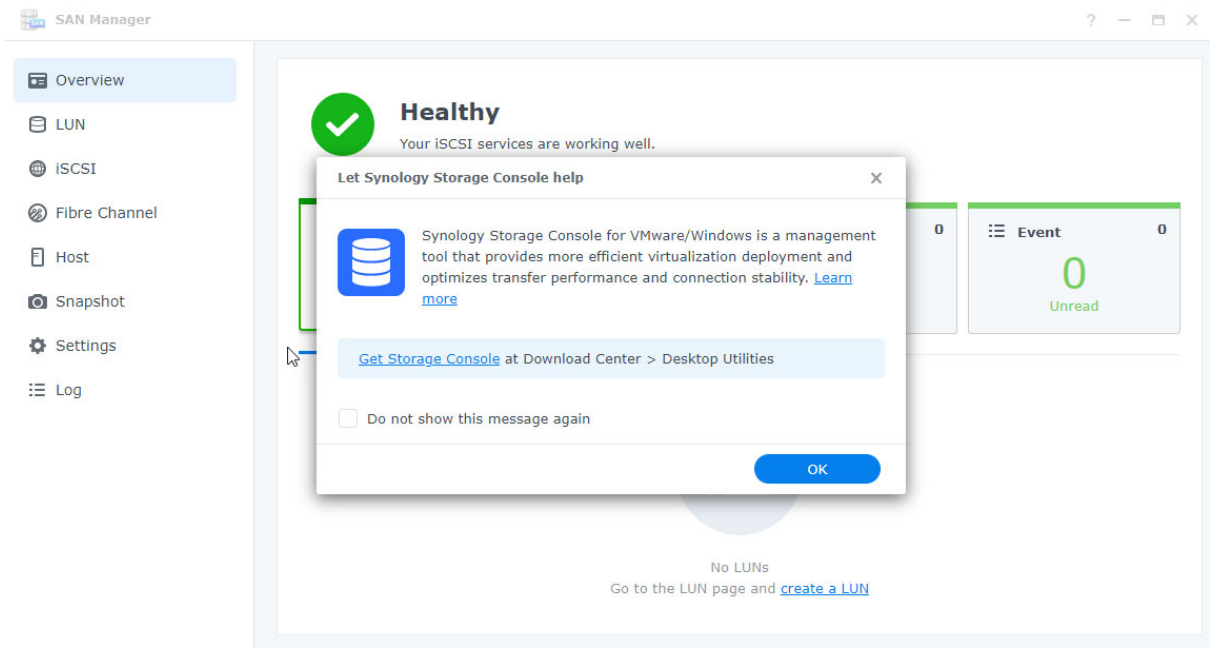
79.3 MB / 14 TB 0%

SAN Manager

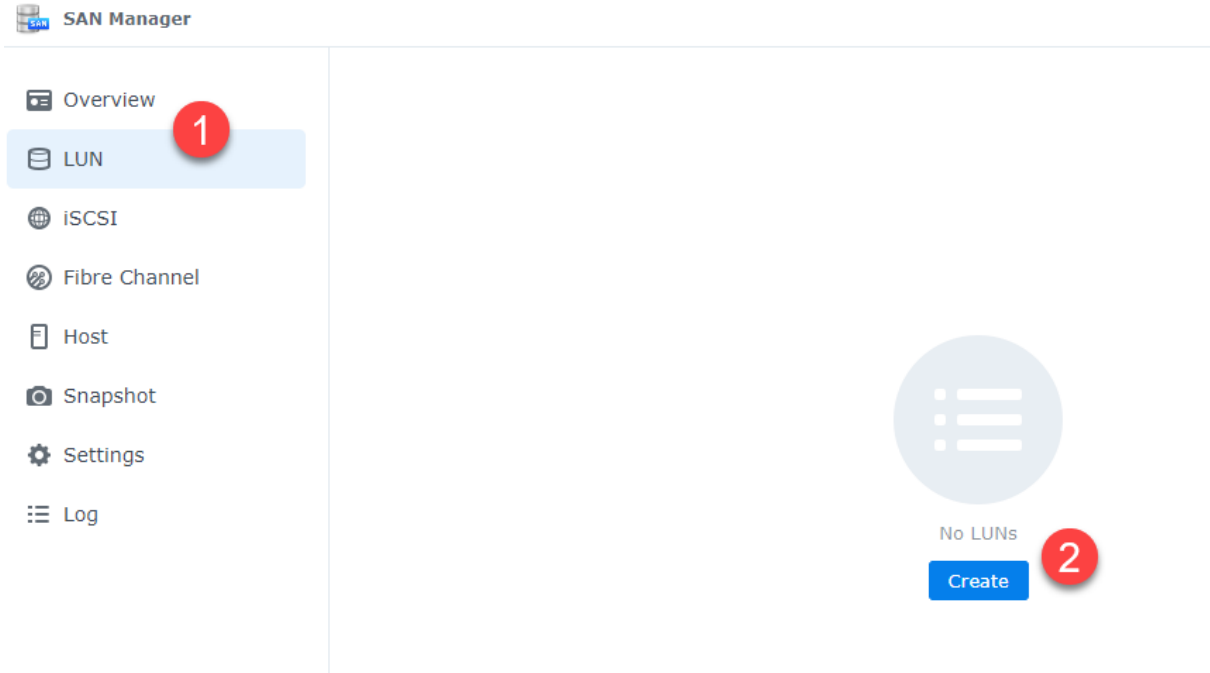
Find the SAN Manager icon on your Synology and click it.



If this is your first time opening the SAN Manager, you may see the help menu. Check off "Do not show this message again" and click ok



Click on LUN and then click the button Create.



Give your LUN a name and description. Select the volume on which your LUN will reside, it's size and space allocation. Check the box for space reclamation and hit next.

LUN Creation Wizard

Set up LUN properties

Name:

Description:

Location:

Total capacity (GB):

Space allocation:

☒ Space reclamation

7

Next

Select iSCSI and choose the target you will use. Click next

LUN Creation Wizard

Select SAN protocol for the LUN

☒ iSCSI

Choose an iSCSI target for the LUN

1

☐ Fibre Channel (No adapters detected)

We suggest mapping your LUNs to Synology iSCSI target and managing access permissions with the [host](#) feature. ([Learn more](#))

2

Back

Next

For now, select "Allow All" - we will come back later to configure permissions and tighten things up.

LUN Creation Wizard

Set the permissions

Set permissions for hosts and initiators to the LUN. [Learn more about hosts and initiators.](#)

☒ Allow all

Grant read/write permission to all hosts and initiators by default.

☐ Custom

Set permissions for each host. Initiators not added as hosts are not allowed to access the LUN.

Add New Host

Host	Operating System	Protocol	Permission
No hosts. Add a host to manage IQNs/WWPNS and LUN permissions.			

Back

Next

You will now see the summary of the changes that we've made. Click the done button.

LUN Creation Wizard

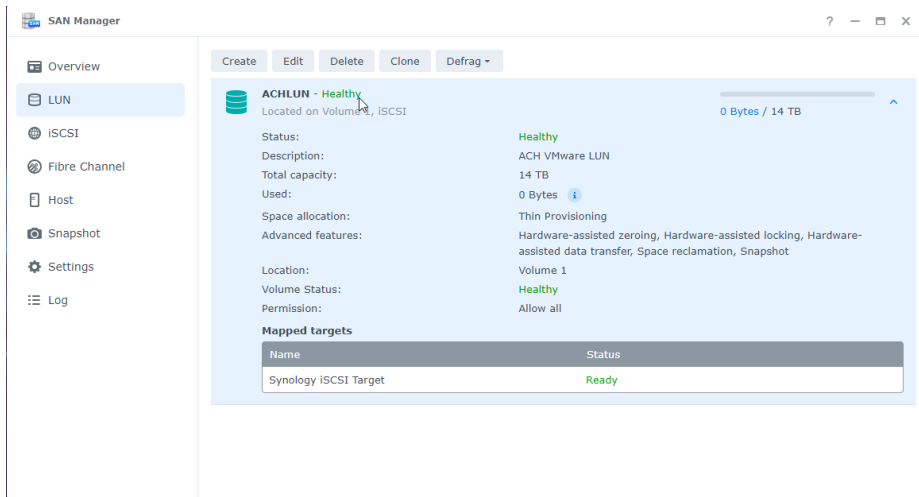
Confirm Settings

Item	Value
LUN name	ACHLUN
Description	ACH VMware LUN
Location	Volume 1 (Available capacity: 14301 GB) - btrfs
Total capacity	14301 (GB)
Space allocation	Thin Provisioning
Space reclamation	Enabled
Mapping	iSCSI (Synology iSCSI Target)
Permission	Allow all

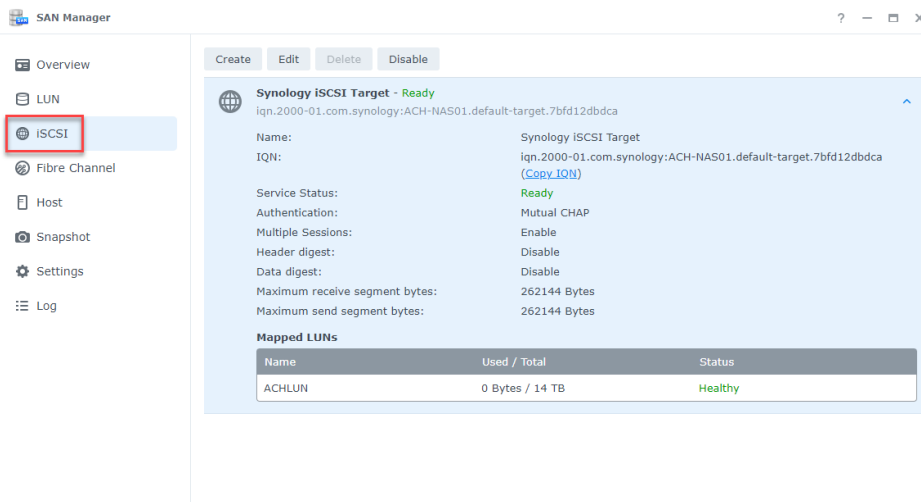
Back

Done

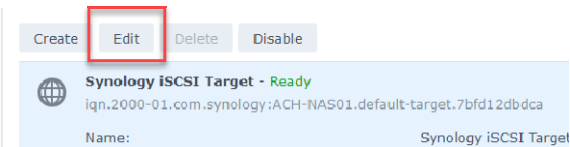
You've now created your LUN.



Click on iSCSI on the left.



Click on the Edit button.



Check off both "Enable CHAP" and "Enable Mutual CHAP" - Give each one a name and password

Edit

X

General Advanced Mapping Network Binding

Name: Synology iSCSI Target

IQN: iqn.2000-01.com.synology:ACH-NAS

☒ Enable CHAP

Name: sanchap

Password:

☒ Enable Mutual CHAP

Name: sanmutchap

Password:

Cancel

Save

Move over to the Advanced tab. Check off the box "Allow multiple sessions from one or more iSCSI initiators" - this will allow you to present this LUN to both of your ESXi hosts.

Edit

X

General Advanced Mapping Network Binding

CRC Checksum

- ☐ Header digest
- ☐ Data digest

☒ Allow multiple sessions from one or more iSCSI initiators

To avoid risk of significant data corruption, please make sure you are operating in a cluster aware filesystem.

Maximum receive segment bytes: 262144

Maximum send segment bytes: 262144

Cancel

Save

Moving over to the Network Binding tab, check off the NICs that you will be using to present this LUN to VMware. Click the Save button. You want to make sure it is limited to just your 10Gb NICs (if that is what you are using) - otherwise your Synology will use any of the available links.

General Advanced Mapping **Network Binding**

You can select specific network interfaces to access this iSCSI target.

- ☐ All network interfaces
- ☒ Only selected interfaces

<input type="checkbox"/>	Network Interface ^	Status	IP address
<input type="checkbox"/>	LAN 2	Connected	192.168.25.167
<input type="checkbox"/>	LAN 3	Connected	192.168.25.169
<input type="checkbox"/>	LAN 4	Connected	192.168.25.171
<input checked="" type="checkbox"/>	LAN 5	Connected	10.10.100.170
<input checked="" type="checkbox"/>	LAN 6	Connected	10.10.101.180

Cancel

Save

Vmware Network Configuration

Login to your vCenter appliance. Select your first host. In my lab, I am using ACH-ESX01.

You'll need to duplicate these steps on your second host.

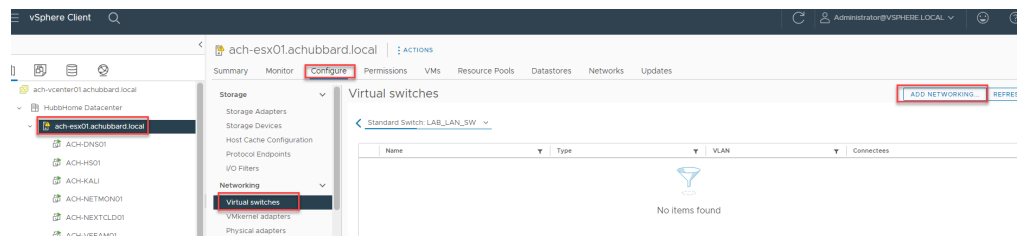
ACH-ESX01 - iSCSI01 IP: 10.10.100.162

ACH-ESX01 - iSCSI02 IP: 10.10.101.163

ACH-ESX02 - iSCSI01 IP: 10.10.100.152

ACH-ESX02 - iSCSI02 IP: 10.10.101.153

Navigate to the configure tab. Scroll down until you find the Virtual switches section. Then click on Add Networking.



Select Vmkernel Network Adapter and click next.

1 Select connection type

2 Select target device

3 Port properties

4 IPv4 settings

5 Ready to complete

Select connection type

Select a connection type to create.

•

VMkernel Network Adapter

The VMkernel TCP/IP stack handles traffic for ESXi services such as vSphere vMotion, iSCSI, NFS, FCoE, Fault Tolerance, vSAN, host management and etc.

Virtual Machine Port Group for a Standard Switch

A port group handles the virtual machine traffic on standard switch.

Physical Network Adapter

A physical network adapter handles the network traffic to other hosts on the network.

CANCEL

BACK

NEXT

Select New Standard Switch. Set the MTU to 9000. Click next.

ach-esx01.achubbard.local - Add Networking

×

✓ 1 Select connection type

2 Select target device

3 Create a Standard Switch

4 Port properties

5 IPv4 settings

6 Ready to complete

Select target device

Select a target device for the new connection.

Select an existing network

BROWSE ...

Select an existing standard switch

BROWSE ...

•

New standard switch

MTU (Bytes)

9000

CANCEL

BACK

NEXT

Click the + sign to add your physical network adapter to your virtual switch. We will select vmnic5 for iSCSI01. We will use vmnic4 when repeating these steps for iSCSI02.

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✓ 1 Select connection type

✓ 2 Select target device

3 Create a Standard Switch

4 Port properties

5 IPv4 settings

6 Ready to complete

Create a Standard Switch

Assign free physical network adapters to the new switch.

Assigned adapters

+ ✕ ↑ ↓

Active adapters

Standby adapters

Unused adapters

Select a physical network adapter from the list to view its details.

CANCEL

BACK

NEXT

Select your network card. Click ok.

Add Physical Adapters to the Switch**Network Adapters**

vmnic3

vmnic4

vmnic5

All Properties CDP LLDP

Adapter Intel(R) 82599 10 Gigabit Dual Port Network Connection
Name vmnic5
Location PCI 0000:06:00.1
Driver ixgben

Status

Status Connected
Actual speed, Duplex 10 Gbit/s, Full Duplex
Configured speed, Duplex 10 Gbit/s, Full Duplex
Networks No networks

Network I/O Control

Status Allowed

SR-IOV

Status Disabled

Cisco Discovery Protocol

① Cisco Discovery Protocol is not available on this physical network adapter

Link Layer Discovery Protocol

① Link Layer Discovery Protocol is not available on this physical network adapter

CANCEL

OK

Click next.

- ✓ 1 Select connection type
- ✓ 2 Select target device
- 3 Create a Standard Switch**
- 4 Port properties
- 5 IPv4 settings
- 6 Ready to complete

Create a Standard Switch

Assign free physical network adapters to the new switch.

Assigned adapters

+ | ✖ ↑ ↓

Active adapters

(New) vmnic5

Standby adapters**Unused adapters**

All Properties CDP LLDP

Adapter	Intel(R) 82599 10 Gi
Name	vmnic5
Location	PCI 0000:06:00.1
Driver	ixgben

Status

Status	Connected
Actual speed, Duplex	10 Gbit/s, Full Duplex
Configured speed, Duplex	10 Gbit/s, Full Duplex
Networks	No networks

Network I/O Control

Status	Allowed
--------	---------

SR-IOV

Status	Disabled
--------	----------

Cisco Discovery Protocol

CANCEL

BACK

NEXT

Give your Vmkernel a label. I am labeling this one as iSCSI01. Click next.

- ✓ 1 Select connection type
- ✓ 2 Select target device
- ✓ 3 Create a Standard Switch
- 4 Port properties**
- 5 IPv4 settings
- 6 Ready to complete

Port properties

Specify VMkernel port settings.

VMkernel port settings

Network label

iSCSI01

VLAN ID

None (0)

IP settings

IPv4

MTU

Get MTU from switch 9000

TCP/IP stack

Default

Available services

Enabled services

- ☐ vMotion
- ☐ Provisioning
- ☐ Fault Tolerance logging
- ☐ Management
- ☐ vSphere Replication
- ☐ vSphere Replication NFC
- ☐ vSAN
- ☐ vSphere Backup NFC

CANCEL

BACK

NEXT

Enter the IP information for iSCSI01 and click next. You can ignore the default gateway and DNS settings for this tutorial.

IP Information:

ACH-ESX01 - iSCSI01 IP: 10.10.100.162
ACH-ESX01 - iSCSI02 IP: 10.10.101.163

ACH-ESX02 - iSCSI01 IP: 10.10.100.152
ACH-ESX02 - iSCSI02 IP: 10.10.101.153

ach-esx01.achubbard.local - Add Networking

×

✓ 1 Select connection type

✓ 2 Select target device

✓ 3 Create a Standard Switch

✓ 4 Port properties

5 IPv4 settings

6 Ready to complete

IPv4 settings

Specify VMkernel IPv4 settings.

☐ Obtain IPv4 settings automatically

☒ Use static IPv4 settings

IPv4 address

10.10.100.162

Subnet mask

255.255.255.0

Default gateway

☐ Override default gateway for this adapter

192.168.25.254

DNS server addresses

192.168.25.252

CANCEL

BACK

NEXT

Verify your settings. You're creating a new virtual switch called vSwitch1 (we'll rename this later) and it is using physical NIC, vmnic5. It's MTU is set to 9000. A new port group, iSCSI01, will be created. The port group will have an IP of 10.10.100.162. If you're satisfied with your settings, click the finish button.

ACH-ESX01 - iSCSI01 Summary

ach-esx01.achubbard.local - Add Networking

×

✓ 1 Select connection type

✓ 2 Select target device

✓ 3 Create a Standard Switch

✓ 4 Port properties

✓ 5 IPv4 settings

6 Ready to complete

Review your settings selections before finishing the wizard.

New standard switch

vSwitch1

Assigned adapters

vmnic5

Switch MTU

9000

New port group

iSCSI01

VLAN ID

None (0)

vMotion

Disabled

Provisioning

Disabled

Fault Tolerance logging

Disabled

Management

Disabled

vSphere Replication

Disabled

vSphere Replication NFC

Disabled

vSAN

Disabled

vSphere Backup NFC

Disabled

NVMe over TCP

Disabled

NVMe over RDMA

Disabled

NIC settings

MTU

9000

TCP/IP stack

Default

IPv4 settings

IPv4 address

10.10.100.162 (static)

Subnet mask

255.255.255.0

CANCEL

BACK

FINISH

ACH-ESX01 - iSCSI02 - Summary

Repeat the above steps with these settings.

ach-esx01.achubbard.local - Add Networking

Review your settings selections before finishing the wizard.

- ✓ 1 Select connection type
- ✓ 2 Select target device
- ✓ 3 Create a Standard Switch
- ✓ 4 Port properties
- ✓ 5 IPv4 settings
- 6 Ready to complete**

New standard switch	vSwitch2
Assigned adapters	vmnic4
Switch MTU	9000
New port group	iSCSI02
VLAN ID	None (0)
vMotion	Disabled
Provisioning	Disabled
Fault Tolerance logging	Disabled
Management	Disabled
vSphere Replication	Disabled
vSphere Replication NFC	Disabled
vSAN	Disabled
vSphere Backup NFC	Disabled
NVMe over TCP	Disabled
NVMe over RDMA	Disabled

NIC settings	
MTU	9000
TCP/IP stack	Default

IPv4 settings	
IPv4 address	10.10.101.163 (static)
Subnet mask	255.255.255.0

CANCEL BACK FINISH

ACH-ESX02 - iSCSI01 - Summary

ach-esx02.achubbard.local - Add Networking

Review your settings selections before finishing the wizard.

- ✓ 1 Select connection type
- ✓ 2 Select target device
- ✓ 3 Create a Standard Switch
- ✓ 4 Port properties
- ✓ 5 IPv4 settings
- 6 Ready to complete**

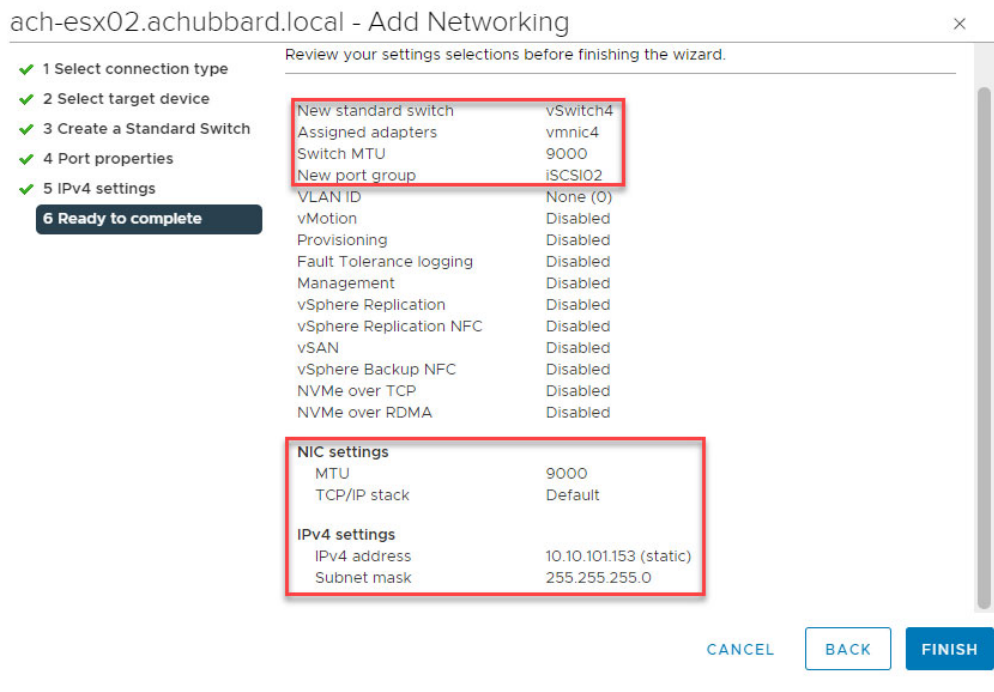
New standard switch	vSwitch3
Assigned adapters	vmnic5
Switch MTU	9000
New port group	iSCSI01
VLAN ID	None (0)
vMotion	Disabled
Provisioning	Disabled
Fault Tolerance logging	Disabled
Management	Disabled
vSphere Replication	Disabled
vSphere Replication NFC	Disabled
vSAN	Disabled
vSphere Backup NFC	Disabled
NVMe over TCP	Disabled
NVMe over RDMA	Disabled

NIC settings	
MTU	9000
TCP/IP stack	Default

IPv4 settings	
IPv4 address	10.10.100.152 (static)
Subnet mask	255.255.255.0

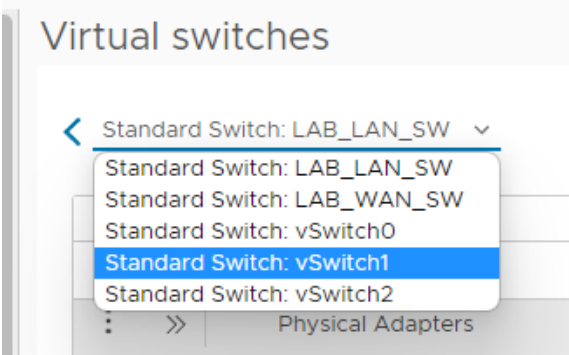
CANCEL BACK FINISH

ACH-ESX02 - iSCSI02 - Summary

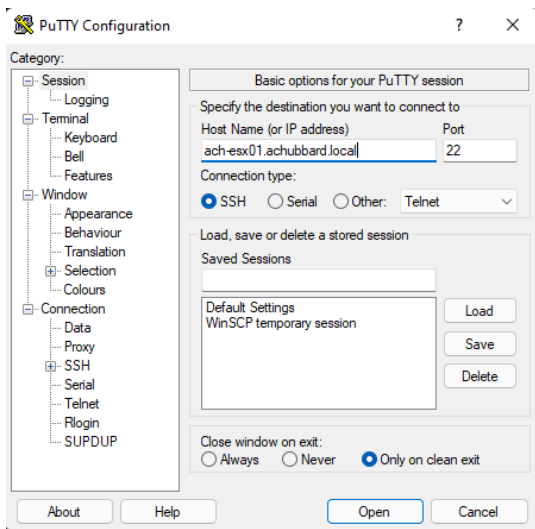


Renaming Virtual Switches - *OPTIONAL STEP*

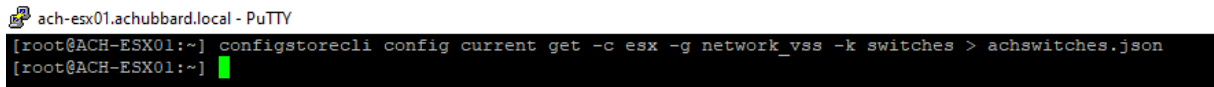
If you pull the drop down, you'll see our 2 new switches, vSwitch1 and vSwitch2. You can leave them as is, or, if you're like me, and that general name drives you crazy, we can rename them. One thing you should note, if you are doing this right on ESXi, you can name these switches. But when building this out in vCenter, it doesn't let you name the switch. To try and reduce the length of this tutorial, I am only showing how to rename vSwitch1 and vSwitch2 on ACH-ESX01. The process is identical for ACH-ESX02.



Open up PuTTY and SSH to your host.

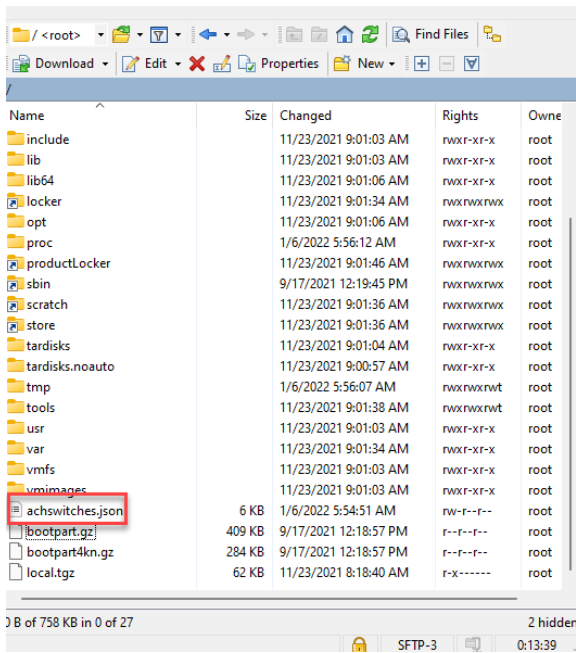


Run the command:
 configstorecli config current get -c esx -g network_vss -k switches > achswitches.json



This will create a json file. You can then use WinSCP to grab the file. Open up WinSCP and connect to your host.

Locate the file named: achswitches.json and copy that to your desktop.



Open the .json file in Notepad++, locate your vSwitch1 and vSwitch2. These are our iSCSI vSwitches.

vSwitch1 = iSCSI-SW01
vSwitch2 = iSCSI-SW02

```

153      "nics": [
154        "vmnic5"
155      ],
156    },
157    "mtu": 9000,
158    "name": "vSwitch1",
159    "policy": {
160      "nic_teaming": {
161        "active_nics": [
162          "vmnic5"
163        ],
164        "link_criteria_beacon": "IGNORE",
165        "notify_switches": true,
166        "policy": "LOADBALANCE_SRCID",
167        "rolling_order": false,
168        "standby_nics": []
169      },
170      "security": {
171        "allow_promiscuous": false,
172        "forged_transmits": true,
173        "mac_changes": true
174      },
175      "traffic_shaping": {
176        "enabled": false
177      }
178    },
179    "port_groups": [
180      {
181        "name": "iSCSI-PG01",
182        "vlan_id": 0
183      }
184    ],
185  },
186  {
187    "bridge": {
188      "link_discovery_protocol": {
189        "operation": "LISTEN",
190        "protocol": "CDP"
191      },
192      "nics": [
193        "vmnic4"
194      ]
195    },
196    "mtu": 9000,
197    "name": "vSwitch2",
198    "policy": {
199      "nic_teaming": {
200        "active_nics": [

```

Rename the switches and save the file. Copy it back to your ESXi host with WinSCP.


```

153      "nics": [
154        "vmnic5"
155      ],
156    },
157    "mtu": 9000,
158    "name": "iSCSI-SW01",
159    "policy": {
160      "nic_teaming": {
161        "active_nics": [
162          "vmnic5"
163        ],
164        "link_criteria_beacon": "IGNORE",
165        "notify_switches": true,
166        "policy": "LOADBALANCE_SRCID",
167        "rolling_order": false,
168        "standby_nics": []
169      },
170      "security": {
171        "allow_promiscuous": false,
172        "forged_transmits": true,
173        "mac_changes": true
174      },
175      "traffic_shaping": {
176        "enabled": false
177      }
178    },
179    "port_groups": [
180      {
181        "name": "iSCSI-PG01",
182        "vlan_id": 0
183      }
184    ],
185  },
186  {
187    "bridge": {
188      "link_discovery_protocol": {
189        "operation": "LISTEN",
190        "protocol": "CDP"
191      },
192      "nics": [
193        "vmnic4"
194      ]
195    },
196    "mtu": 9000,
197    "name": "iSCSI-SW02",
198    "policy": {
199      "nic_teaming": {
200        "active_nics": [
201          "vmnic4"
202        ],

```

Jump back into your PuTTY session. Run the following command:

```
configstorecli config current set -c esx -g network_vss -k switches -i achswitches.json --overwrite
```

```

ach-esx01.achubbard.local - PuTTY
[root@ACH-ESX01:~] configstorecli config current set -c esx -g network_vss -k switches -i achswitches.json --overwrite
Set: completed successfully
[root@ACH-ESX01:~]

```

This will update the switch names. You can check this by running:

```
configstorecli config current get -c esx -g network_vss -k switches
```

Look at the output, it should reflect the changes that you made. You should now see iSCSI-SW01 and iSCSI-SW02. ***You will need to reboot your host for these changes to take effect and for you to see them in the vCenter web GUI***

```

    },
    "mtu": 9000,
    "name": "iSCSI-SW01",
    "policy": {
      "nic_teaming": {
        "active_nics": [
          "vmnic5"
        ],
        "link_criteria_beacon": "IGNORE",
        "notify_switches": true,
        "policy": "LOADBALANCE_SRCID",
        "rolling_order": false,
        "standby_nics": []
      },
      "security": {
        "allow_promiscuous": false,
        "forged_transmits": true,
        "mac_changes": true
      },
      "traffic_shaping": {
        "enabled": false
      }
    },
    "port_groups": [
      {
        "name": "iSCSI-PG01",
        "vlan_id": 0
      }
    ]
  },
  {
    "name": "iSCSI-SW02",
    "policy": {
      "nic_teaming": {
        "active_nics": [
          "vmnic4"
        ],
        "link_criteria_beacon": "IGNORE",
        "notify_switches": true,
        "policy": "LOADBALANCE_SRCID",
        "rolling_order": false,
        "standby_nics": []
      },
      "security": {
        "allow_promiscuous": false,
        "forged_transmits": true,
        "mac_changes": true
      },
      "traffic_shaping": {
        "enabled": false
      }
    },
    "port_groups": [
      {
        "name": "iSCSI-PG02",
        "vlan_id": 0
      }
    ]
  }
]

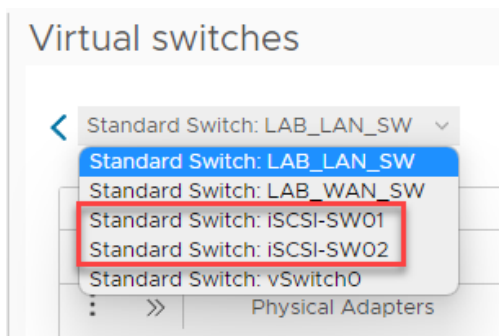
```

```

"mtu": 9000,
"name": "iSCSI-SW02",
"policy": {
  "nic_teaming": {
    "active_nics": [
      "vmnic4"
    ],
    "link_criteria_beacon": "IGNORE",
    "notify_switches": true,
    "policy": "LOADBALANCE_SRCID",
    "rolling_order": false,
    "standby_nics": []
  },
  "security": {
    "allow_promiscuous": false,
    "forged_transmits": true,
    "mac_changes": true
  },
  "traffic_shaping": {
    "enabled": false
  }
},
"port_groups": [
  {
    "name": "iSCSI-PG02",
    "vlan_id": 0
  }
]

```

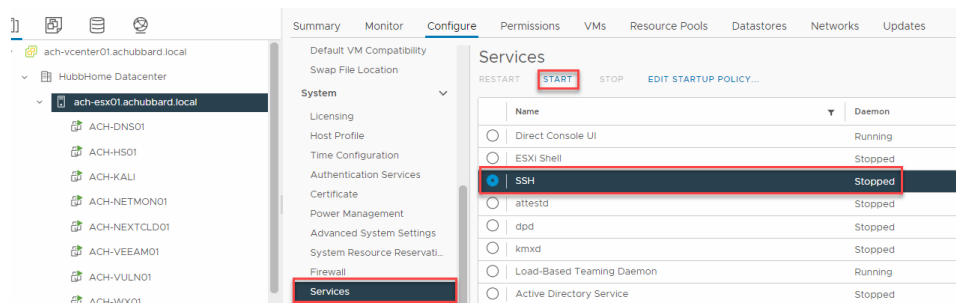
If you can, go ahead and reboot your host and verify the changes in vCenter.



Testing iSCSI Network Connectivity

Since we've gotten the network portion of our configuration up, we should probably test and verify that it is working. You'll need PuTTY for this. Your hosts should have SSH enabled.

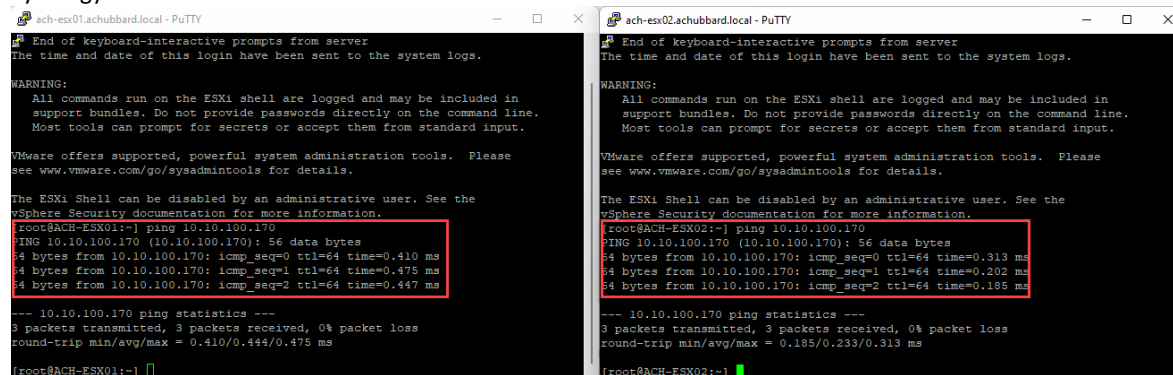
Do this on both hosts. Go to Configure > Services > SSH and click the Start button.



Open a PuTTY session to each host. Run the following command:

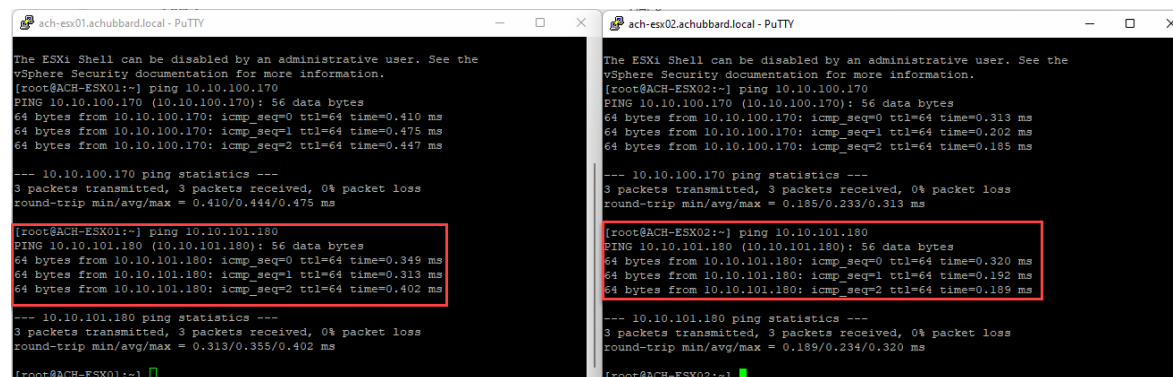
Ping 10.10.100.170

This will test the connectivity between both hosts and LAN5 on our Synology.



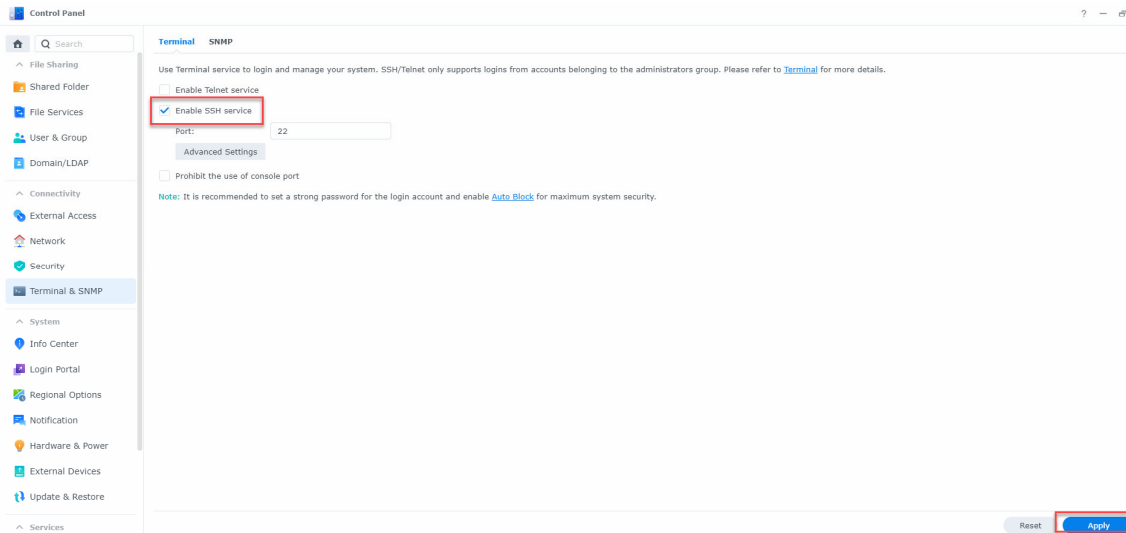
Now, run the same command, but this time use LAN6's IP

Ping 10.10.101.180



We can take it one step further and run a similar check from our Synology. We will also need to enable SSH on that box as well. Login to the management interface of your Synology. Open Control Panel > Terminal & SNMP.

Check off the box "Enable SSH service" and click apply.



Open PuTTY and connect to the management interface of your Synology and login.

Let's test the connection to ACH-ESX01 first.

Run the commands:

Sudo ping 10.10.100.162

Sudo ping 10.10.101.163

```
192.168.25.166 - PuTTY
altach@ACH-NAS01:/$ sudo ping 10.10.100.162
PING 10.10.100.162 (10.10.100.162) 56(84) bytes of data.
64 bytes from 10.10.100.162: icmp_seq=1 ttl=64 time=0.395 ms
64 bytes from 10.10.100.162: icmp_seq=2 ttl=64 time=0.369 ms
64 bytes from 10.10.100.162: icmp_seq=3 ttl=64 time=0.407 ms
64 bytes from 10.10.100.162: icmp_seq=4 ttl=64 time=0.393 ms
--- 10.10.100.162 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 0.369/0.391/0.407/0.013 ms
altach@ACH-NAS01:/$ sudo ping 10.10.101.163
PING 10.10.101.163 (10.10.101.163) 56(84) bytes of data.
64 bytes from 10.10.101.163: icmp_seq=1 ttl=64 time=0.400 ms
64 bytes from 10.10.101.163: icmp_seq=2 ttl=64 time=0.374 ms
64 bytes from 10.10.101.163: icmp_seq=3 ttl=64 time=0.402 ms
64 bytes from 10.10.101.163: icmp_seq=4 ttl=64 time=0.275 ms
--- 10.10.101.163 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 4ms
rtt min/avg/max/mdev = 0.275/0.362/0.402/0.056 ms
altach@ACH-NAS01:/$
```

Finally, let's test the connection to ACH-ESX02.

Run the commands:

Sudo ping 10.10.100.152

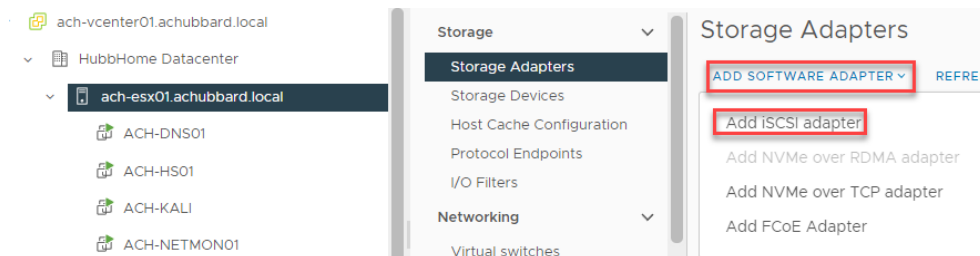
Sudo ping 10.10.101.153

```
192.168.25.166 - PuTTY
altach@ACH-NAS01:/$ sudo ping 10.10.100.152
PING 10.10.100.152 (10.10.100.152) 56(84) bytes of data.
64 bytes from 10.10.100.152: icmp_seq=1 ttl=64 time=0.125 ms
64 bytes from 10.10.100.152: icmp_seq=2 ttl=64 time=0.147 ms
64 bytes from 10.10.100.152: icmp_seq=3 ttl=64 time=0.146 ms
64 bytes from 10.10.100.152: icmp_seq=4 ttl=64 time=0.146 ms
^C
--- 10.10.100.152 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 1002ms
rtt min/avg/max/mdev = 0.125/0.141/0.147/0.009 ms
altach@ACH-NAS01:/$ sudo ping 10.10.101.153
PING 10.10.101.153 (10.10.101.153) 56(84) bytes of data.
64 bytes from 10.10.101.153: icmp_seq=1 ttl=64 time=0.124 ms
64 bytes from 10.10.101.153: icmp_seq=2 ttl=64 time=0.097 ms
64 bytes from 10.10.101.153: icmp_seq=3 ttl=64 time=0.092 ms
64 bytes from 10.10.101.153: icmp_seq=4 ttl=64 time=0.103 ms
^C
--- 10.10.101.153 ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3ms
rtt min/avg/max/mdev = 0.092/0.104/0.124/0.012 ms
altach@ACH-NAS01:/$
```

We've proved out our network connections and that they're functioning. We can now start to configure our iSCSI connections on our hosts.

VMware iSCSI Configuration

We are getting close to the end of our journey here. We've got to add an iSCSI adapter to our hosts so that we can create a new datastore. Navigate to Storage Adapters, click Add Software Adapter and then click Add iSCSI Adapter. ***Note this procedure is the same for your second host, ACH-ESX02***



Click Ok.

Add Software iSCSI adapter | ach-esx01.achubbard.local

A new software iSCSI adapter will be added to the list. After it has been added, select the adapter and use the Adapter Details section to complete the configuration.

CANCEL

OK

You will see a new adapter listed under storage adapters.

ADD SOFTWARE ADAPTER ▾ REFRESH RESCAN STORAGE RESCAN ADAPTER REMOVE						
	Adapter ▾	Model ▾	Type ▾	Status ▾	Identifier ▾	
<input checked="" type="radio"/>	vmhba64	iSCSI Software Adapter	iSCSI	Online	iscsi_vmk(iqn.1998-01.com.v...	1
<input type="radio"/>	vmhba0	Patsburg 6 Port SATA AHCI Controller	Block SCSI	Unknown	--	1
<input type="radio"/>	vmhba1	PERC H710P Mini (for monolithics)	SAS	Unknown	--	3
<input type="radio"/>	vmhba32	USB Storage Controller	Block SCSI	Unknown	--	1
EXPORT						

Select our new adapter, vmhba64. Select the Static Discovery tab and click on the Add button.

Storage Adapters

ADD SOFTWARE ADAPTER ▾ REFRESH RESCAN STORAGE RESCAN ADAPTER REMOVE

	Adapter ▾	Model ▾	Type ▾	Status ▾	Identifier ▾	
<input checked="" type="radio"/>	vmhba64	iSCSI Software Adapter	iSCSI	Online	iscsi_vmk(iqn.1998-01.com.v...	1
<input type="radio"/>	vmhba0	Patsburg 6 Port SATA AHCI Controller	Block SCSI	Unknown	--	1
<input type="radio"/>	vmhba1	PERC H710P Mini (for monolithics)	SAS	Unknown	--	3
<input type="radio"/>	vmhba32	USB Storage Controller	Block SCSI	Unknown	--	1

EXPORT ▾

Properties Devices Paths Dynamic Discovery **Static Discovery** Network Port Binding Advanced Options

ADD REMOVE AUTHENTICATION ADVANCED...

☐ iSCSI server ▾ Target Name

This is where we will add the two targets to our Synology.

Note - The iSCSI target name can be obtained by logging into your Synology, opening the SAN Manager application, click on iSCSI. Find the "Copy IQN" link. You will paste that into both iSCSI targets.

IQN: iqn.2000-01.com.synology:ACH-NAS01.default-target.7bfd12dbdca
(Copy IQN)

Fill out the pertinent information:

- 1 - The iSCSI Server IP is the IP of LAN 5 on my Synology, 10.10.100.170
- 2 - iSCSI Target Server Name - this is the IQN link we copied above. Paste it here.
- 3 - Uncheck "Inherit authentication settings from parent"
- 4 - Set the Authentication Method to "Use bidirectional CHAP" (This requires both the SAN and the Host to authentication against each other)
- 5 - Enter the CHAP name and password
- 6 - Enter the Mutual CHAP name and password
- 7 - Click OK

Add Static Target Server
vmhba64

1
ISCST Server
10.10.100.170

Port
3260

2
ISCST Target Name
iqn.2000-01.com.synology:ACH-NAS01.default

3
☐ Inherit authentication settings from parent

4
Authentication Method
Use bidirectional CHAP

Outgoing CHAP Credentials (target authenticates the initiator)

5
Name
☐ Use initiator name
sanchap

Secret
.....

Incoming CHAP Credentials (initiator authenticates the target)

6
Name
☐ Use initiator name
sanmutchap

Secret
.....

7

CANCEL
OK

Fill out the pertinent information:

- 1 - The iSCSI Server IP is the IP of LAN 6 on my Synology, 10.10.101.180
- 2 - iSCSI Target Server Name - this is the IQN link we copied above. Paste it here.
- 3 - Uncheck "Inherit authentication settings from parent"
- 4 - Set the Authentication Method to "Use bidirectional CHAP" (This requires both the SAN and the Host to authentication against each other)
- 5 - Enter the CHAP name and password
- 6 - Enter the Mutual CHAP name and password
- 7 - Click OK

Add Static Target Server
vmhba64

1
ISCST Server
10.10.101.180

Port
3260

2
ISCST Target Name
iqn.2000-01.com.synology:ACH-NAS01.default

3
☐ Inherit authentication settings from parent

4
Authentication Method
Use bidirectional CHAP

Outgoing CHAP Credentials (target authenticates the initiator)

5
Name
☐ Use initiator name
sanchap

Secret
.....

Incoming CHAP Credentials (initiator authenticates the target)

6
Name
☐ Use initiator name
sanmutchap

Secret
.....

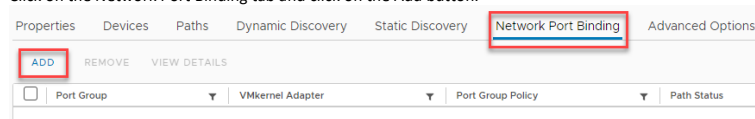
7

CANCEL
OK

Under Static Discovery, you should now see both entries that you created.

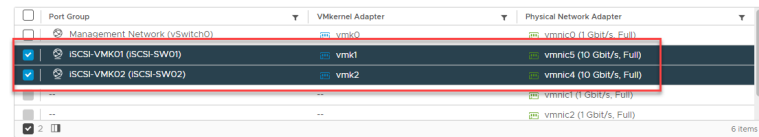
Properties	Devices	Paths	Dynamic Discovery	Static Discovery	Network Port Binding	Advanced Options
ADD	REMOVE	AUTHENTICATION	ADVANCED...			
<input type="checkbox"/>	iSCSI server			Target Name		
<input type="checkbox"/>	10.10.100.170:3260			iqn.2000-01.com.synology:ACH-NAS01.default-target.7b6d12dbdca		
<input type="checkbox"/>	10.10.101.180:3260			iqn.2000-01.com.synology:ACH-NAS01.default-target.7b6d12dbdca		

Click on the Network Port Binding tab and click on the Add button.



Select both of your 10Gb NICs/vSwitches/Port Groups and click ok.

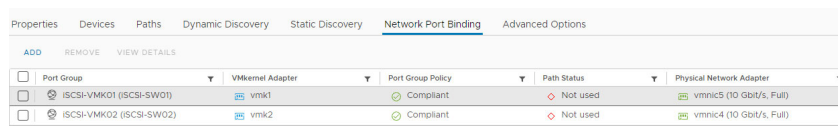
Bind vmhba64 with VMkernel Adapter



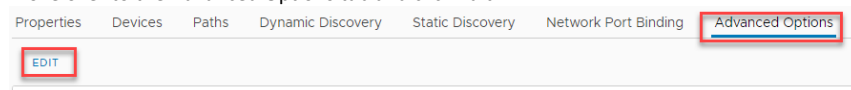
Multiple items selected

CANCEL OK

You will see the path status as Not Used, this will change shortly.



Move over to the Advanced Options tab and click Edit.



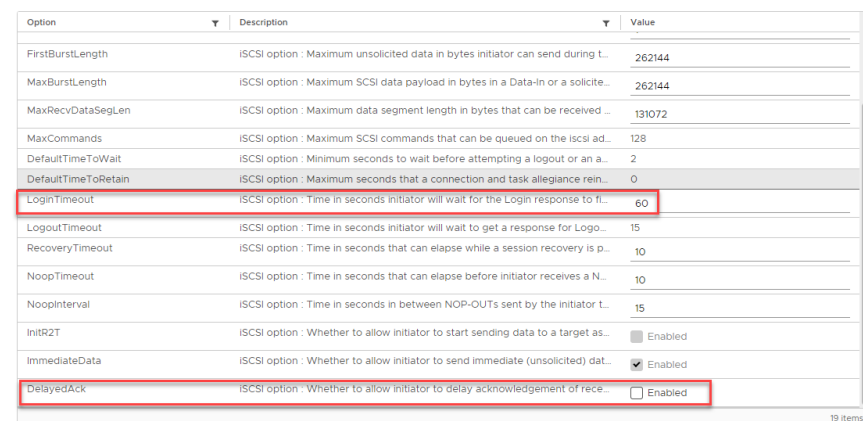
Find the following values and set them accordingly:

LoginTimeout = 60

DelayedAck = Unchecked (Disabled)

Click Ok.

Advanced Options



19 items

CANCEL OK

Rescan the storage adapter after you've made the changes.

Storage Adapters

⚠ Due to recent configuration changes, a rescan of "vmhba64" is recommended.

ADD SOFTWARE ADAPTER ▾ REFRESH RESCAN STORAGE **RESCAN ADAPTER** REMOVE

Adapter ▾ Model ▾ Type ▾ Status

You will see that the Path Status is now set as Active.

Storage Adapters

Adapter	Model	Type	Status	Identifier	Targets	Devices	Paths
vmhba64	ICSI Software Adapter	ISCSI	Online	iccsi_vmkOpn1998-01.com.v	2	1	2
vmhba0	Pasarg 6 Port SATA AHCI Controller	Block SCSI	Unknown	--	1	1	1
vmhba1	PERC H710P Mini (for monolithics)	SAS	Unknown	--	3	3	3
vmhba32	USB Storage Controller	Block SCSI	Unknown	--	1	1	1

Properties Devices Paths Dynamic Discovery Static Discovery **Network Port Binding** Advanced Options

ADD REMOVE VIEW DETAILS

Port Group	VMkernel Adapter	Port Group Policy	Path Status	Physical Network Adapter
ISCSI-VMK01 (ISCSI-SW01)	vmk1	Compliant	Active	vmnic5 (10 Gbit/s, Full)
ISCSI-VMK02 (ISCSI-SW02)	vmk2	Compliant	Active	vmnic4 (10 Gbit/s, Full)

Recent Tasks

Task Name	Target	Status	Details	Initiator	Queued For	Start Time	Completion Time	Server
Rescan HBA	ach-esx01.achubbar...	Completed		VSPHERE LOCAL\Administrator	3 ms	01/06/2022, 8:27:38 ...	01/06/2022, 8:27:41 A...	ach-vcenter01.achubbar...
Update Internet SCSI adv...	ach-esx01.achubbar...	Completed		VSPHERE LOCAL\Administrator	3 ms	01/06/2022, 8:27:01 ...	01/06/2022, 8:27:01 ...	ach-vcenter01.achubbar...
Add virtual NIC to ISCSI ...	ach-esx01.achubbar...	Completed		VSPHERE LOCAL\Administrator	2 ms	01/06/2022, 8:24:29 ...	01/06/2022, 8:24:29 ...	ach-vcenter01.achubbar...
Add virtual NIC to ISCSI ...	ach-esx01.achubbar...	Completed		VSPHERE LOCAL\Administrator	3 ms	01/06/2022, 8:24:28 ...	01/06/2022, 8:24:28 ...	ach-vcenter01.achubbar...

After rescanning your adapter, if you move over to the Storage Devices menu, you should see your Synology iSCSI Disk. We can work on create a datastore.

Storage Devices

Name	LUN	Type	Capacity	Datastore	Operational State	Hardware Acceleration	Drive Type	Tr
Local DELL Disk (naa.66083f6c0a8c500276c6aa0d537934)	0	disk	4.09 TB	ACH-DS02	Attached	Not support...	HDD	S...
Local DELL Disk (naa.66083f6c0a8c500276c6aa0d537934)	0	disk	272.25 GB	ACH-DS03	Attached	Not support...	HDD	S...
Local USB Direct-Access (mpx.vmhba32.C0.T0.L0)	0	disk	14.59 GB	Not Consumed	Attached	Not support...	HDD	B...
SYNOLOGY (iSCSI) Disk (naa.6001405c8f99194d6d934657d8520d)	1	disk	13.97 TB	Not Consumed	Attached	Supported	HDD	B...

Creating your datastore

We have to create the datastore on one host, then it will be presented to both hosts. I will use ACH-ESX01 to create the datastore. In the actions menu at the top, to the right of your hostname, click it and find the Storage menu. Click New Datastore to run through the datastore wizard.

ach-esx01.achubbar.local

Summary Monitor **Configure** Permissions

Storage

Storage Adapters

Storage Devices

Host Cache Configuration

Protocol Endpoints

I/O Filters

Networking

Virtual switches

VMkernel adapters

Physical adapters

TCP/IP configuration

Virtual Machines

VM Startup/Shutdown

Actions - ach-esx01.achubbar.local

- New Virtual Machine...
- Deploy OVF Template...
- New Resource Pool...
- New vApp...
- Import VMs
- Maintenance Mode
- Connection
- Power
- Certificates
- Storage**
 - New Datastore...**
 - Rescan Storage...
- Add Networking...

Select VMFS and click Next.

New Datastore

1 Type

2 Name and device selection

3 Partition configuration

4 Ready to complete

Type

Specify datastore type.

☒ VMFS

Create a VMFS datastore on a disk/LUN.

☐ NFS

Create an NFS datastore on an NFS share over the network.

☐ vVol

Create a Virtual Volumes datastore on a storage container connected to a storage provider.

CANCEL

NEXT

Give your datastore a name. Keeping with my naming schemes, I am going with ACH-SAN-DS01. Select the Synology iSCSI Disk and click next.

New Datastore

1 Type

2 Name and device selection

3 VMFS version

4 Partition configuration

5 Ready to complete

Name and device selection

Specify datastore name and a disk/LUN for provisioning the datastore.

Name

ACH-SAN-DS01

	Name	LUN	Capacity	Hardware Acceleration	Drive Type	Sector Format	Clustered VMDK Supported
<input checked="" type="checkbox"/>	SYNOLOGY iSCSI Disk (na...	1	13.97 TB	Supported	HDD	512n	No

1 item

CANCEL

BACK

NEXT

Select VMFS 6 and hit next.

New Datastore

1 Type

2 Name and device selection

3 VMFS version

4 Partition configuration

5 Ready to complete

VMFS version

Specify the VMFS version for the datastore.

☒ VMFS 6

VMFS 6 enables advanced format (512e) and automatic space reclamation support.

☐ VMFS 5

VMFS 5 enables 2+TB LUN support.

CANCEL

BACK

NEXT

I am going to use all of the available space for this Datastore. If you were going to split it up, this is where you would do so. Adjust the size of your Datastore and hit the next button.

New Datastore

1 Type

2 Name and device selection

3 VMFS version

4 Partition configuration

5 Ready to complete

Partition configuration

Review the disk layout and specify partition configuration details.

Partition Configuration

Use all available partitions

Datastore Size

14301 GB

Block size

1 MB

Space Reclamation Granularity

1 MB

Space Reclamation Priority

Low

Empty 14.0 TB

CANCEL

BACK

NEXT

Just like in the vSwitch section, VMware doesn't give you the option to name your Datastore. Take a look at the summary page and verify your settings are correct. Hit the finish button.

New Datastore

1 Type

2 Name and device selection

3 VMFS version

4 Partition configuration

5 Ready to complete

Ready to complete

Review your selections before finishing the wizard

Name and device selection

Datastore name

Datastore

Disk/LUN

SYNOLOGY iSCSI Disk (naa.6001405c8f59194db6d9d4b57d8520d7)

VMFS version

Version

VMFS 6

Partition configuration

Datastore size

13.97 TB

Partition format

GPT

Block size

1 MB

Space reclamation granularity

1 MB

Space reclamation priority

Low: Deleted or unmapped blocks are reclaimed on the LUN at low priority

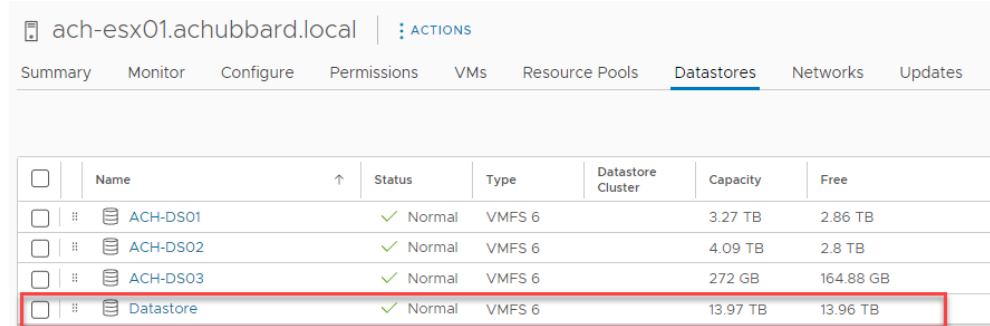
CANCEL

BACK

FINISH

Configuring Shared Storage with VMware and a Synology NAS Page 35

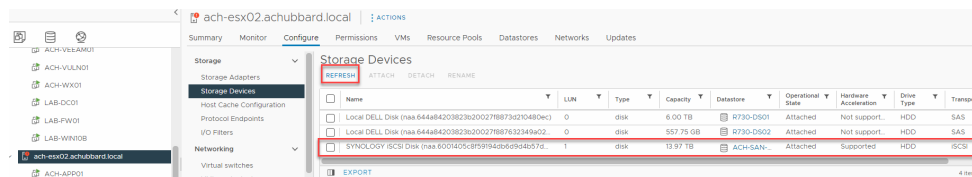
You'll now see your brand new Datastore and can begin using it if you'd like.



	Name	Status	Type	Datastore Cluster	Capacity	Free
<input type="checkbox"/>	ACH-DS01	✓ Normal	VMFS 6		3.27 TB	2.86 TB
<input type="checkbox"/>	ACH-DS02	✓ Normal	VMFS 6		4.09 TB	2.8 TB
<input type="checkbox"/>	ACH-DS03	✓ Normal	VMFS 6		272 GB	164.88 GB
<input type="checkbox"/>	Datastore	✓ Normal	VMFS 6		13.97 TB	13.96 TB

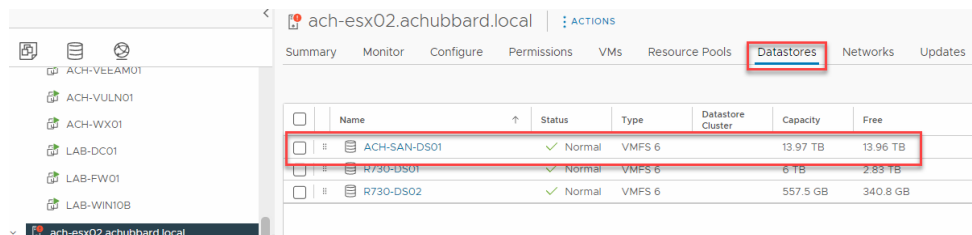
At this point, ACH-ESX01 should see your new datastore and be able to use it. You can migrate or create VMs on it. Let's add our new datastore to ACH-ESX02.

In vCenter, select host ACH-ESX02. Click on Configure and go to Storage Devices. You MAY need to hit the Refresh button in order to see the Synology iSCSI Disk.



	Name	LUN	Type	Capacity	Datastore	Operational State	Hardware Acceleration	Drive Type	Transport
<input type="checkbox"/>	Local DELL Disk (naa.644a842038236200278873210480dc)	0	disk	6.00 TB	R730-DS01	Attached	Not support...	HDD	SAS
<input type="checkbox"/>	Local DELL Disk (naa.644a842038236200278873210480dc)	0	disk	557.75 GB	R730-DS02	Attached	Not support...	HDD	SAS
<input type="checkbox"/>	SYNLOGY iSCSI Disk (naa.6001405c8f991946b6954b57d...)	1	disk	13.97 TB	ACH-SAN-...	Attached	Supported	HDD	iSCSI

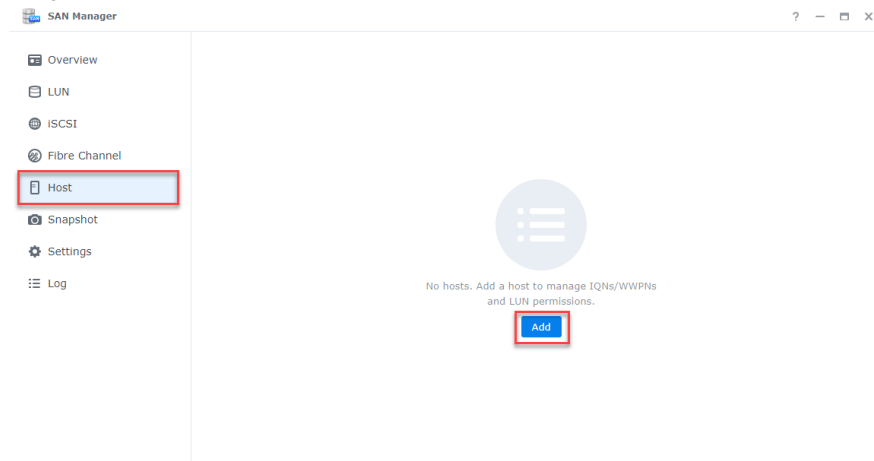
Now, if you move over to the Datastores tab, you should see the Datastore, ACH-SAN-DS01, that we created above. Now both hosts can see and use the Datastore.



	Name	Status	Type	Datastore Cluster	Capacity	Free
<input type="checkbox"/>	ACH-SAN-DS01	✓ Normal	VMFS 6		13.97 TB	13.96 TB
<input type="checkbox"/>	R730-DS01	✓ Normal	VMFS 6		6 TB	2.83 TB
<input type="checkbox"/>	R730-DS02	✓ Normal	VMFS 6		557.5 GB	340.8 GB

Synology Hosts

At this point, your setup is functioning. You can use it as it is. But I want to take a little further. Let's tighten up our configuration. This will allow only the configured hosts access to the SAN. Within the SAN Manager, click on Host and then Add.




Click Start.

Add Host

Host

Hosts help you configure LUN permissions and set an alias for initiators on your VMware ESXi, Windows, and other servers. You won't need to memorize the long IQNs or WWPNs that represent your servers when managing them.



Start

Enter the name of the host and a description. I will start with ACH-ESX01. Leave the operating system as Vmware ESXi and the protocol as iSCSI. Check off one of your initiators. Click next.

Add Host

Specify host properties

Name:

ACH-ESX01

Description:

ACH-ESX01

Operating System:

VMware ESXi

Protocol:

iSCSI

Select an initiator for the host from the list below. If the initiator you want is not listed, you can add it manually.

Add Initiator

<input type="checkbox"/>	Initiator (IQN/WWPN)	Type
<input checked="" type="checkbox"/>	iqn.1998-01.com.vmware:ach-esx01.achubbard.lo...	Discovered
<input type="checkbox"/>	iqn.1998-01.com.vmware:ach-esx02.achubbard.lo...	Discovered

Note: Initiators already assigned to other hosts are not listed above.

Back

Next

Set the LUN permissions as Read/Write and click next.

Add Host
X

Set LUN permissions

LUN	Description	Permission
ACHLUN	ACH VMware LUN	Read/Write

Back
Next

Confirm your settings and click done.

Add Host
X

Confirm Settings

Item	Value
Host	ACH-ESX01
Description	ACH-ESX01
Operating System	VMware ESXi
Protocol	iSCSI
Initiator	iqn.1998-01.com.vmware:ach-esx01.achubb...
Permission	ACHLUN (Read/Write)

Back
Done

Repeat this process for ACH-ESX02. Click the Add button and run through the above steps to add ACH-ESX02.

SAN Manager

Overview
LUN
iSCSI
Fibre Channel
Host

Add
Edit
Remove

Host	Description	Operating System	Protocol
ACH-ESX01	ACH-ESX01	VMware ESXi	iSCSI

ACH-ESX02 Synology Host Summary

Add Host

X

Confirm Settings

Item	Value
Host	ACH-ESX02
Description	ACH-ESX02
Operating System	VMware ESXi
Protocol	iSCSI
Initiator	iqn.1998-01.com.vmware:ach-esx02.achubb...
Permission	ACHLUN (Read/Write)

Back

Done

You should now see the hosts (ACH-ESX01 and ACH-ESX02) that you just added in the host section of your Synology.

SAN Manager

?

-

+

X

Overview

LUN

iSCSI

Fibre Channel

Host

Snapshot

Settings

Log

Add

Edit

Remove

Host	Description	Operating System	Protocol	Initiator	LUN
ACH-ESX01	ACH-ESX01	VMware ESXi	iSCSI	1	1
ACH-ESX02	ACH-ESX02	VMware ESXi	iSCSI	1	1

ACH-ESX01

?

Initiator

iqn.1998-01.com.vmware:ach-esx01.achubbard.local:1416674791:64

LUN

LUN	Permission	Status
ACHLUN	Read/Write	Healthy

Still in SAN Manager, click the LUN button on the left hand side. You should notice under the permission section it is currently set to allow all. This will allow any initiator to communicate with the LUN. We want to lock it down so that only our hosts can connect to it. Click the edit button.

SAN Manager

?

-

+

X

Overview

LUN

iSCSI

Fibre Channel

Host

Snapshot

Settings

Log

Create

Edit

Delete

Clone

Defrag

ACHLUN - Healthy

Located on Volume 1, iSCSI

270.5 MB / 14 TB

Status: Healthy

Description: ACH VMware LUN

Total capacity: 14 TB

Used: 270.5 MB

Space allocation: Thin Provisioning

Advanced features: Hardware-assisted zeroing, Hardware-assisted locking, Hardware-assisted data transfer, Space reclamation, Snapshot

Location: Volume 1

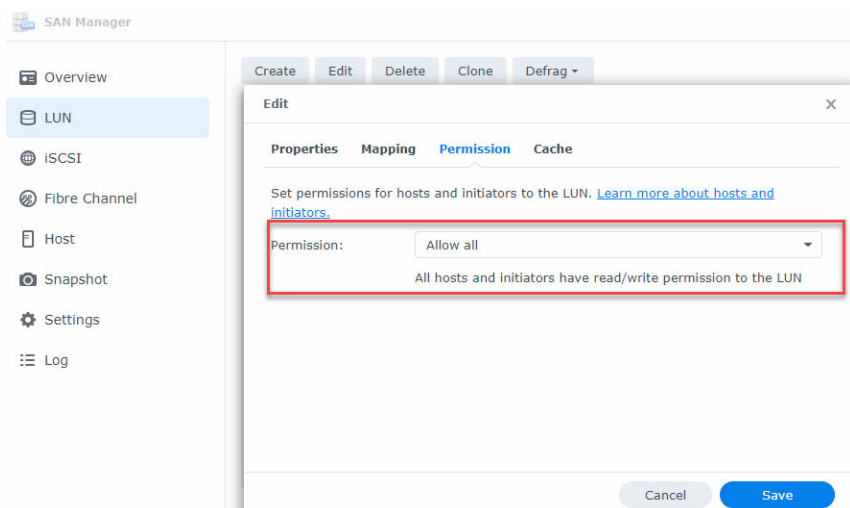
Volume Status: Healthy

Permission: Allow all

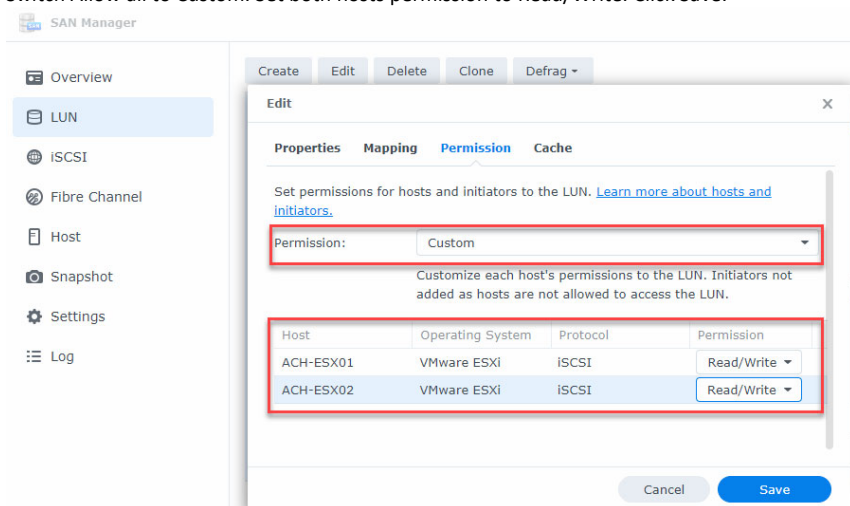
Mapped targets

Name	Status
Synology iSCSI Target	Connected

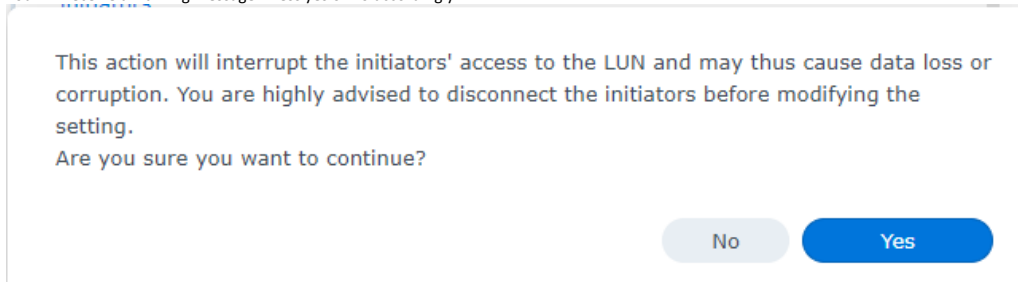
Go to the Permission tab. Again, you will see that it is set to Allow all.



Switch Allow all to Custom. Set both hosts permission to Read/Write. Click Save.



You will receive a warning message. Press yes or no accordingly.



Looking at the LUN section of the SAN Manager, you can now see under the permission section that only ACH-ESX01 has access to this LUN.

ACHLUN - Healthy
Located on Volume 1, iSCSI

270.5 MB / 14 TB

Status: **Healthy**

Description: ACH VMware LUN

Total capacity: 14 TB

Used: 270.5 MB

Space allocation: Thin Provisioning

Advanced features: Hardware-assisted zeroing, Hardware-assisted locking, Hardware-assisted data transfer, Space reclamation, Snapshot

Location: Volume 1

Volume Status: **Healthy**

Host	Description	Status
ACH-ESX01	ACH-ESX01	Read/Write
ACH-ESX02	ACH-ESX02	Read/Write

Mapped targets

Name	Status
Synology iSCSI Target	Connected

If you go to the iSCSI tab in the left hand column, under Service Status, you should see both of your hosts listed.

Synology iSCSI Target - Connected
iqn.2000-01.com.synology:ACH-NAS01.default-target.7bfd12dbdca

Name: Synology iSCSI Target

IQN: iqn.2000-01.com.synology:ACH-NAS01.default-target.7bfd12dbdca (Copy IQN)

Service Status:	
ACH-ESX02 (10.10.100.152)	
ACH-ESX02 (10.10.101.153)	
ACH-ESX01 (10.10.101.163)	
ACH-ESX01 (10.10.100.162)	

Authentication: Mutual CHAP

Multiple Sessions: Enable

Header digest: Disable

Data digest: Disable

Maximum receive segment bytes: 262144 Bytes

Maximum send segment bytes: 262144 Bytes

Mapped LUNs

Name	Used / Total	Status
ACHLUN	270.5 MB / 14 TB	Healthy

Summary

In summary, I hope this guide helps you get shared storage with your Synology and VMware cluster setup in your environment. If you liked this video, please consider subscribing and liking it below. You can follow along in two places, on Instagram @ach_sysadmin and on my blog site, achubbard.com where I will have a full write up on the project. Thanks for watching and I will see you in the next video.