

Replace NVIDIA SN2100 switches

Cluster and storage switches

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Replace NVIDIA SN2100 switches

Replace a NVIDIA SN2100 cluster switch

Replacing a defective NVIDIA SN2100 switch in a cluster network is a nondisruptive procedure (NDU).

Before you begin

The following conditions must exist before performing the switch replacement in the current environment and on the replacement switch.

- Existing cluster and network infrastructure:
 - The existing cluster must be verified as completely functional, with at least one fully connected cluster switch.
 - All cluster ports must be up.
 - All cluster logical interfaces (LIFs) must be up and on their home ports.
 - The ONTAP cluster ping-cluster -node node1 command must indicate that basic connectivity and larger than PMTU communication are successful on all paths.
- NVIDIA SN2100 replacement switch:
 - Management network connectivity on the replacement switch must be functional.
 - Console access to the replacement switch must be in place.
 - The node connections are ports swp1 through swp14.
 - All Inter-Switch Link (ISL) ports must be disabled on ports swp15 and swp16.
 - The desired reference configuration file (RCF) and Cumulus operating system image switch must be loaded onto the switch.
 - Initial customization of the switch must be complete, as detailed in:

Any previous site customizations, such as STP, SNMP, and SSH, should be copied to the new switch.

You must execute the command for migrating a cluster LIF from the node where the cluster LIF is hosted.

About this task

The examples in this procedure use the following switch and node nomenclature:

- The names of the existing NVIDIA SN2100 switches are sw1 and sw2.
- The name of the new NVIDIA SN2100 switch is nsw2.
- The node names are node1 and node2.
- The cluster ports on each node are named e3a and e3b.
- The cluster LIF names are *node1_clus1* and *node1_clus2* for node1, and *node2_clus1* and *node2_clus2* for node2.
- The prompt for changes to all cluster nodes is cluster1::*>
- Breakout ports take the format: swp[port]s[breakout port 0-3]. For example, four breakout ports on swp1 are swp1s0, swp1s1, swp1s2, and swp1s3.



cluster1:	cluster1::*> network port show -ipspace Cluster										
Node: nod	e1										
Ignore						Speed(Mbps)	Health				
Health						speed (Hops)	iicar cii				
Port Status	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status				
e3a false	Cluster	Cluster		up	9000	auto/100000	healthy				
e3b false	Cluster	Cluster		up	9000	auto/100000	healthy				
Node: nod	e2										
Ignore						Speed(Mbps)	Health				
Health											
Port Status	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status				
e3a false	Cluster	Cluster		up	9000	auto/100000	healthy				
e3b false	Cluster	Cluster		up	9000	auto/100000	healthy				
cluster1:	:*> network i	nterface sh	now -vs	erver	Clus	ter					
	Logical	Status	Netwo	rk		Current					
Current I Vserver Home	s Interface	Admin/Ope	r Addre	ss/Ma:	sk	Node	Port				
	node1_clus	1 up/up	169.2	54.20	9.69/	16 node1	e3a				
true	node1_clus	2 up/up	169.2	54.49	.125/	16 node1	e3b				

true							
	node2_	clus1	up/up	169.254.47	.194/16	node2	e3a
true							
	node2_	clus2	up/up	169.254.19	.183/16	node2	e3b
true							
-1+1	* > -	11-		h		114	
cluster::	^> netwo	гк ае	vice-disc	overy show -	brococor	ттар	
Node/	Local	Disc	overed				
Protocol	Port	Devi	ce (LLDP:	ChassisID)	Interfa	.ce	Platform
node1	/lldp						
	e3a	sw1	(b8:ce:f6	:19:1a:7e)	swp3		-
	e3b	sw2	(b8:ce:f6	:19:1b:96)	swp3		-
node2	/lldp						
	e3a	sw1	(b8:ce:f6	:19:1a:7e)	swp4		-
	e3b	sw2	(b8:ce:f6	:19:1b:96)	swp4		_

cumulus@sw1:~\$ net show lldp											
LocalPort	Speed	Mode	RemoteHost	RemotePort							
swp3	100G	Trunk/L2	sw2	e3a							
swp4	100G	Trunk/L2	sw2	e3a							
swp15	100G	BondMember	sw2	swp15							
swp16	100G	BondMember	sw2	swp16							
		t show lldp Mode	RemoteHost	RemotePort							
		_	RemoteHost	RemotePort							
LocalPort	Speed	Mode		RemotePorte3b							
LocalPortswp3	Speed 100G	Mode	sw1								
LocalPortswp3 swp4	Speed 100G 100G	Mode Trunk/L2	sw1 sw1	e3b							

Steps

- 1. If AutoSupport is enabled on this cluster, suppress automatic case creation by invoking an AutoSupport message: system node autosupport invoke -node * -type all -message MAINT=xh where x is the duration of the maintenance window in hours.
- 2. Change the privilege level to advanced, entering **y** when prompted to continue: set -privilege

The advanced prompt (*>) appears.

3. Install the appropriate RCF and image on the switch, nsw2, and make any necessary site preparations.

If necessary, verify, download, and install the appropriate versions of the RCF and Cumulus software for the new switch. If you have verified that the new switch is correctly set up and does not need updates to the RCF and Cumulus software, continue to step 4. See Setup and configure the NVIDIA SN2100 switches for further details.

- a. You can download the applicable Cumulus software for your cluster switches from the *NVIDIA Support* site. Follow the steps on the Download page to download the Cumulus Linux for the version of ONTAP software you are installing.
- b. The appropriate RCF is available from the *NVIDIA Cluster and Storage Switches* page. Follow the steps on the Download page to download the correct RCF for the version of ONTAP software you are installing.
- 4. On the new switch nsw2, log in as admin and shut down all of the ports that will be connected to the node cluster interfaces (ports swp1 to swp14).

If the switch that you are replacing is not functional and is powered down, go to Step 5. The LIFs on the cluster nodes should have already failed over to the other cluster port for each node.

```
cumulus@nsw2:~$ net add interface swp1s0-3, swp2s0-3, swp3-14 link down cumulus@nsw2:~$ net pending cumulus@nsw2:~$ net commit
```

5. Disable auto-revert on the cluster LIFs: network interface modify -vserver Cluster -lif * -auto-revert false

```
cluster1::*> network interface modify -vserver Cluster -lif * -auto -revert false

Warning: Disabling the auto-revert feature of the cluster logical interface may effect the availability of your cluster network. Are you sure you want to continue? \{y|n\}: y
```

6. Shut down the ISL ports swp15 and swp16 on the SN2100 switch sw1:

```
cumulus@sw1:~$ net add interface swp15-16 link down cumulus@sw1:~$ net pending cumulus@sw1:~$ net commit
```

- 7. Remove all the cables from the SN2100 sw1 switch, and then connect them to the same ports on the SN2100 nsw2 switch.
- 8. Bring up the ISL ports swp15 and swp16 between the sw1 and nsw2 switches.

The following commands enable ISL ports swp15 and swp16 on switch sw1:

```
cumulus@sw1:~$ net del interface swp15-16 link down
cumulus@sw1:~$ net pending
cumulus@sw1:~$ net commit
```

The following example shows that the ISL ports are up on switch sw1:

The following example shows that the ISL ports are up on switch nsw2:

9. Verify that port e3b is up on all nodes: network port show -ipspace Cluster

The output should be similar to the following:

cluster1:	:*> network p	ort show -:	ipspace	Clus	ter		
Node: nod	e1						
Ignore						Speed(Mbps)	Health
Health						opeed (nope)	iicai cii
Port Status	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
e3a false	Cluster	Cluster		up	9000	auto/100000	healthy
e3b false	Cluster	Cluster		up	9000	auto/100000	healthy
Node: nod	e2						
Ignore							
Health						Speed (Mbps)	Health
	IPspace	Broadcast	Domain	Link	MTU	Admin/Oper	Status
e3a false	Cluster	Cluster		up	9000	auto/100000	healthy
	Cluster	Cluster		up	9000	auto/100000	healthy

^{10.} The cluster ports on each node are now connected to cluster switches in the following way, from the nodes' perspective:

cluster1::*> network device-discovery show -protocol lldp											
Node/	Local	Disco	overed								
Protocol	Port	Devi	ce (LLDP: ChassisID)	Interface	Platform						
node1	/lldp										
	e3a	sw1	(b8:ce:f6:19:1a:7e)	swp3	-						
	e3b	nsw2	(b8:ce:f6:19:1b:b6)	swp3	-						
node2	/lldp										
	e3a	sw1	(b8:ce:f6:19:1a:7e)	swp4	-						
	e3b	nsw2	(b8:ce:f6:19:1b:b6)	swp4	-						

11. Verify that all node cluster ports are up: net show interface

cumulu	s@nsw2:~\$ net	show	interfa	ce		
State	Name	Spd	MTU	Mode	LLDP	Summary
UP	swp3	100G	9216	Trunk/L2		Master:
bridge	(UP)					
UP	swp4	100G	9216	Trunk/L2		Master:
bridge	(UP)					
UP	swp15	100G	9216	BondMember	swl (swp15)	Master:
cluste	r_isl(UP)					
UP	swp16	100G	9216	BondMember	swl (swp16)	Master:
cluste	r_isl(UP)					

12. Verify that both nodes each have one connection to each switch: net show lldp

The following example shows the appropriate results for both switches:

cumulus@sw1:~\$ net show lldp LocalPort Speed Mode RemoteHost RemotePort ----swp3 100G Trunk/L2 node1 e3a 100G Trunk/L2 node2 100G BondMember nsw2 swp4 e3a swp15 swp15 swp16 100G BondMember nsw2 swp16 cumulus@nsw2:~\$ net show lldp LocalPort Speed Mode RemoteHost RemotePort swp3 100G Trunk/L2 node1 swp4 100G Trunk/L2 node2 e3b e3b swp15 100G BondMember sw1 swp15 swp16 100G BondMember sw1 swp16

- 13. Enable auto-revert on the cluster LIFs: cluster1::*> network interface modify -vserver Cluster -lif * -auto-revert true
- 14. On switch nsw2, bring up the ports connected to the network ports of the nodes.

```
cumulus@nsw2:~$ net del interface swp1-14 link down cumulus@nsw2:~$ net pending cumulus@nsw2:~$ net commit
```

15. Display information about the nodes in a cluster: cluster show

This example shows that the node health for node1 and node2 in this cluster is true:

```
Node Health Eligibility
-----
node1 true true
node2 true true
```

16. Verify that all physical cluster ports are up: network port show ipspace Cluster

cluster1:	:*> network	port show -ipspace	Clust	er		
Node node	1					
					Speed (Mbps)	Health
Health Port	TPspace	Broadcast Domain	Tink	МПІІ	Admin/Oper	Status
Status	irspace	Broadcast Domarn	ПТПК	MIO	AdiiIII/Oper	Status
	Cluster	Cluster	up	9000	auto/10000	healthy
false	Cluster			0000		h 1 + h
false	Cluster	Cluster	up	9000	auto/10000	nealthy
Node: nod	e2					
Ignore						
					Speed (Mbps)	Health
Health Port	TPspace	Broadcast Domain	Tink	МПІІ	Admin/Oper	Status
Status	II space	DIOAGCAST DOMAIN	ПТПК	MIO	Admini, oper	Scacus
	G.1	0.1		0000	/10000	1 7.1
e3a false	Cluster	Cluster	up	9000	auto/10000	nealthy
	Cluster	Cluster	up	9000	auto/10000	healthy

17. Verify that the cluster network is healthy:

cumulus@sw	cumulus@sw1:~\$ net show lldp											
LocalPort	Speed	Mode	RemoteHost	RemotePort								
swp3	100G	Trunk/L2	node1	e3a								
swp4	100G	Trunk/L2	node2	e3a								
swp15	100G	BondMember	nsw2	swp15								
swp16	100G	BondMember	nsw2	swp16								

18. Enable the Ethernet switch health monitor log collection feature for collecting switch-related log files, using the commands: system switch ethernet log setup-password and system switch ethernet log enable-collection

 $\pmb{\mathsf{Enter}} \colon \mathsf{system} \ \mathsf{switch} \ \mathsf{ethernet} \ \mathsf{log} \ \mathsf{setup-password}$

```
cluster1::*> system switch ethernet log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
sw1
nsw2
cluster1::*> system switch ethernet log setup-password
Enter the switch name: sw1
RSA key fingerprint is e5:8b:c6:dc:e2:18:18:09:36:63:d9:63:dd:03:d9:cc
Do you want to continue? {y|n}::[n] y
Enter the password: <enter switch password>
Enter the password again: <enter switch password>
cluster1::*> system switch ethernet log setup-password
Enter the switch name: nsw2
RSA key fingerprint is 57:49:86:a1:b9:80:6a:61:9a:86:8e:3c:e3:b7:1f:b1
Do you want to continue? {y|n}:: [n] y
Enter the password: <enter switch password>
Enter the password again: <enter switch password>
```

Followed by: system switch ethernet log enable-collection

```
cluster1::*> system switch ethernet log enable-collection

Do you want to enable cluster log collection for all nodes in the cluster?
{y|n}: [n] y

Enabling cluster switch log collection.

cluster1::*>
```



If any of these commands return an error, contact NetApp support.

19. Initiate the switch log collection feature: system switch ethernet log collect -device *

Wait for 10 minutes and then check that the log collection was successful using the command: system switch ethernet log show

- 20. Change the privilege level back to admin: set -privilege admin
- 21. If you suppressed automatic case creation, re-enable it by invoking an AutoSupport message: system node autosupport invoke -node * -type all -message MAINT=END

Replace a NVIDIA SN2100 storage switch

You must be aware of certain configuration information, port connections and cabling requirements when you replace NVIDIA SN2100 storage switches.

Before you begin

You must verify that the following conditions exist before installing the Cumulus software and RCFs on a NVIDIA SN2100 storage switch:

- Your system can support NVIDIA SN2100 storage switches.
- You must have downloaded the applicable RCFs.
- The Hardware Universe provides full details of supported ports and their configurations.

About this task

The existing network configuration must have the following characteristics:

- Ensure that all troubleshooting steps have been completed to confirm that your switch needs replacing.
- · Management connectivity must exist on both switches.



Make sure that all troubleshooting steps have been completed to confirm that your switch needs replacing.

The replacement NVIDIA SN2100 switch must have the following characteristics:

- Management network connectivity must be functional.
- Console access to the replacement switch must be in place.
- The appropriate RCF and Cumulus operating system image must be loaded onto the switch.
- Initial customization of the switch must be complete.

Procedure summary

This procedure replaces the second NVIDIA SN2100 storage switch sw2 with the new NVIDIA SN2100 switch nsw2. The two nodes are node1 and node2.

Steps to complete:

- Confirm the switch to be replaced is sw2.
- · Disconnect the cables from switch sw2.
- · Reconnect the cables to switch nsw2.
- Verify all device configurations on switch nsw2.

Steps

- 1. If AutoSupport is enabled on this cluster, suppress automatic case creation by invoking an AutoSupport message: system node autosupport invoke -node * -type all message MAINT=xh
 - *x* is the duration of the maintenance window in hours.
- 2. Change the privilege level to advanced, entering **y** when prompted to continue: set -privilege advanced
- 3. Check on the health status of the storage node ports to make sure that there is connection to storage switch S1:

storage port show -port-type ENET

Clubtell >	storage	e port	show -po		∋ ENET		
				Speed			VLAN
Node	Port	Type	Mode	(Gb/s)	State	Status	ID
node1							
	e3a	ENET	storage	100	enabled	online	30
	e3b	ENET	storage	0	enabled	offline	30
	e7a	ENET	storage	0	enabled	offline	30
	e7b	ENET	storage	100	enabled	online	30
node2							
	e3a	ENET	storage	100	enabled	online	30
	e3b	ENET	storage	0	enabled	offline	30
	e7a	ENET	storage	0	enabled	offline	30
	e7b	ENET	storage	100	enabled	online	30
cluster1::*>							

4. Verify that storage switch sw1 is available: network device-discovery show

5. Run the net show interface command on the working switch to confirm that you can see both nodes and all shelves: net show interface

cumulu	s@sw1:~\$	net s	how in	terface			
State	Name	Spd	MTU	Mode	LLDP		Summary
UP	swp1	100G	9216	Trunk/L2	nodel (e3a)		Master:
bridge	(UP)						
UP	swp2	100G	9216	Trunk/L2	node2 (e3a)		Master:
bridge	(UP)						
UP	swp3	100G	9216	Trunk/L2	SHFFG1826000112	(e0b)	Master:
bridge	(UP)						
UP	swp4	100G	9216	Trunk/L2	SHFFG1826000112	(e0b)	Master:
bridge	(UP)						
UP	swp5	100G	9216	Trunk/L2	SHFFG1826000102	(e0b)	Master:
bridge	(UP)						
UP	swp6	100G	9216	Trunk/L2	SHFFG1826000102	(e0b)	Master:
oridge	(UP))						

6. Verify the shelf ports in the storage system: storage shelf port show -fields remote-device, remote-port

```
cluster1::*> storage shelf port show -fields remote-device, remote-port
shelf id remote-port remote-device
     __ _____
____
3.20 0 swp3
               sw1
3.20 1 -
3.20 2 swp4 sw1
3.20
     3 -
                   _
3.30 0 swp5 sw1
3.20 1 - -
3.30 2 swp6
                sw1
3.20 3 -
cluster1::*>
```

- 7. Remove all cables attached to storage switch sw2.
- 8. Reconnect all cables to the replacement switch nsw2.
- 9. Recheck the health status of the storage node ports: storage port show -port-type ENET

<pre>cluster1::*> storage port show -port-type ENET</pre>										
				Speed			VLAN			
Node	Port	Type	Mode	(Gb/s)	State	Status	ID			
node1										
	e3a	ENET	storage	100	enabled	online	30			
	e3b	ENET	storage	0	enabled	offline	30			
	e7a	ENET	storage	0	enabled	offline	30			
	e7b	ENET	storage	100	enabled	online	30			
node2										
	e3a	ENET	storage	100	enabled	online	30			
	e3b	ENET	storage	0	enabled	offline	30			
	e7a	ENET	storage	0	enabled	offline	30			
	e7b	ENET	storage	100	enabled	online	30			
cluster1::*>										

10. Verify that both switches are available: net device-discovery show

11. Verify the shelf ports in the storage system: storage shelf port show -fields remote-device, remote-port

<pre>cluster1::*> storage shelf port show -fields remote-device, remote-port</pre>			
shelf	id	remote-port	remote-device
3.20	0	Sqws	sw1
3.20	1	Sqws	nsw2
3.20	2	swp4	sw1
3.20	3	swp4	nsw2
3.30	0	swp5	sw1
3.20	1	swp5	nsw2
3.30	2	swp6	sw1
3.20	3	swp6	nsw2
<pre>cluster1::*></pre>			

12. Enable the Ethernet switch health monitor log collection feature for collecting switch-related log files, using the two commands: system switch ethernet log setup-password and system switch ethernet log enable-collection

Enter: system switch ethernet log setup-password

```
cluster1::*> system switch ethernet log setup-password
Enter the switch name: <return>
The switch name entered is not recognized.
Choose from the following list:
sw1
nsw2
cluster1::*> system switch ethernet log setup-password
Enter the switch name: sw1
RSA key fingerprint is e5:8b:c6:dc:e2:18:18:09:36:63:d9:63:dd:03:d9:cc
Do you want to continue? {y|n}::[n] y
Enter the password: <enter switch password>
Enter the password again: <enter switch password>
cluster1::*> system switch ethernet log setup-password
Enter the switch name: nsw2
RSA key fingerprint is 57:49:86:a1:b9:80:6a:61:9a:86:8e:3c:e3:b7:1f:b1
Do you want to continue? {y|n}:: [n] y
Enter the password: <enter switch password>
Enter the password again: <enter switch password>
```

Followed by: system switch ethernet log enable-collection

```
cluster1::*> system switch ethernet log enable-collection

Do you want to enable cluster log collection for all nodes in the cluster?
{y|n}: [n] y

Enabling cluster switch log collection.

cluster1::*>
```



If any of these commands return an error, contact NetApp support.

13. Initiate the switch log collection feature: system switch ethernet log collect -device *

Wait for 10 minutes and then check that the log collection was successful using the command: system switch ethernet log show

- 14. Change the privilege level back to admin: set -privilege admin
- 15. If you suppressed automatic case creation, re-enable it by invoking an AutoSupport message: system node autosupport invoke -node * -type all -message MAINT=END

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