



# **Install FASTPATH software and RCFs on a NetApp cluster switch**

## **ONTAP Systems Switches**

NetApp  
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# Install FASTPATH software and RCFs on a NetApp cluster switch

You must install the FASTPATH software and reference configuration files (RCFs) on a NetApp CN1610 cluster switch.

## What you'll need

- The cluster must be a fully functioning cluster.
- There must be no defective cluster network interface cards (NICs), and all connected ports on the cluster switch must be functional.
- All cluster ports must be up.
- All cluster logical interfaces (LIFs) must be up and must not have been migrated.
- The ONTAP (privilege: advanced) `cluster ping-cluster -node node1` command must indicate that larger than PMTU communication is successful on all paths.
- You must consult the switch compatibility table on the *NetApp CN1601 and CN1610 Switches* page for the supported FASTPATH, RCF, and ONTAP versions.

[NetApp CN1601 and CN1610 Switches](#)

There can be command dependencies between command syntax in the RCF and FASTPATH versions.



In RCF version 1.2, support for Telnet has been explicitly disabled because of security concerns. To avoid connectivity issues while installing RCF 1.2, you must verify that Secure Shell (SSH) is enabled. The *NetApp® CN1610 Switch Administrator's Guide* has more information about SSH.

[NetApp® CN1610 Switch Administrator's Guide](#)

## About this task

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

- The procedures in this document use the clustered Data ONTAP 8.2 syntax. As a result, the cluster Vserver, LIF names, and CLI output will be different than those in Data ONTAP 8.3.
- The two NetApp switches are cs1 and cs2.
- The two cluster LIFs are clus1 and clus2.
- The Vservers are vs1 and vs2.
- The `cluster::*>` prompt indicates the name of the cluster.
- The cluster ports on each node are named e1a and e2a.

The *Hardware Universe* has more information about the actual cluster ports that are supported on your platform.

- The Inter-Switch Links (ISLs) that are supported for the NetApp cluster switch are ports 0/13 through 0/16.
- The node connections that are supported for the NetApp cluster switch are ports 0/1 through 0/12.

This procedure has two parts:

- [Install FASTPATH software](#) describes how to install the FASTPATH software.
- [Install an RCF on a CN1610 switch](#) describes how to install RCFs.

## Install FASTPATH software

When you install the FASTPATH software on your NetApp switches, you must begin the upgrade with the second switch, `cs2`.

### 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.



The AutoSupport message notifies technical support of this maintenance task so that automatic case creation is suppressed during the maintenance window.

2. Log into the switch as admin. There is no password by default. At the `(cs2) #` prompt, enter the `enable` command. Again, there is no password by default. This gives you access to Privileged EXEC mode, which allows you to configure the network interface.

```
(cs2) # enable
Password (Enter)
(cs2) #
```

3. On the console of each node, migrate `clus2` to port `e1a`: `network interface migrate`

```
cluster::*> network interface migrate -vserver vs1 -lif clus2 -source
-node node1 -destnode node1 -dest-port e1a
cluster::*> network interface migrate -vserver vs2 -lif clus2 -source
-node node2 -destnode node2 -dest-port e1a
```

4. On the console of each node, verify that the migration took place: `network interface show`

The following example shows that `clus2` has migrated to port `e1a` on both nodes:

```
cluster::*> network interface show -role cluster
```

Vserver	Logical Interface	Status Admin/Open	Network Address/Mask	Current Node	Current Port	Is Home
vs1	clus1	up/up	10.10.10.1/16	node1	e1a	true
	clus2	up/up	10.10.10.2/16	node1	e1a	false
vs2	clus1	up/up	10.10.10.1/16	node2	e1a	true
	clus2	up/up	10.10.10.2/16	node2	e1a	false

##### 5. Shut down cluster port e2a on both nodes: network port modify

The following example shows port e2a being shut down on both nodes:

```
cluster::*> network port modify -node node1 -port e2a -up-admin false
cluster::*> network port modify -node node2 -port e2a -up-admin false
```

##### 6. Verify that port e2a is shut down on both nodes: network port show

```
cluster::*> network port show -role cluster
```

Node	Port	Role	Link	MTU	Auto-Negot Admin/Oper	Duplex Admin/Oper	Speed (Mbps) Admin/Oper
node1	e1a	cluster	up	9000	true/true	full/full	auto/10000
	e2a	cluster	down	9000	true/true	full/full	auto/10000
node2	e1a	cluster	up	9000	true/true	full/full	auto/10000
	e2a	cluster	down	9000	true/true	full/full	auto/10000

##### 7. Shut down the Inter-Switch Link (ISL) ports on cs1, the active NetApp switch:

```
(cs1) # configure
(cs1)(config) # interface 0/13-0/16
(cs1)(Interface 0/13-0/16) # shutdown
(cs1)(Interface 0/13-0/16) # exit
(cs1)(config) # exit
```

##### 8. Back up the current active image on cs2.

```
(cs2) # show bootvar
```

```
Image Descriptions      .
```

```
active:
```

```
backup:
```

```
Images currently available on Flash
```

unit	active	backup	current-active	next-active
1	1.1.0.3	1.1.0.1	1.1.0.3	1.1.0.3

```
(cs2) # copy active backup
```

```
Copying active to backup
```

```
Copy operation successful
```

```
(cs2) #
```

#### 9. Download the image file to the switch.

Copying the image file to the active image means that when you reboot, that image establishes the running FASTPATH version. The previous image remains available as a backup.

```
(cs2) # copy tftp://10.0.0.1/NetApp_CN1610_1.1.0.5.stk active
```

```
Mode..... TFTP
```

```
Set Server IP..... 10.0.0.1
```

```
Path..... ./
```

```
Filename..... NetApp_CN1610_1.1.0.5.stk
```

```
Data Type..... Code
```

```
Destination Filename..... active
```

```
Management access will be blocked for the duration of the transfer
```

```
Are you sure you want to start? (y/n) y
```

```
TFTP Code transfer starting...
```

```
File transfer operation completed successfully.
```

#### 10. Verify the running version of the FASTPATH software.

```
(cs2) # show version
```

```
Switch: 1
```

```
System Description..... Broadcom Scorpion 56820
                           Development System - 16 TENGIG,
                           1.1.0.3, Linux 2.6.21.7
Machine Type.....        Broadcom Scorpion 56820
                           Development System - 16TENGIG
Machine Model.....        BCM-56820
Serial Number.....        10611100004
FRU Number.....
Part Number.....          BCM56820
Maintenance Level.....    A
Manufacturer.....         0xbc00
Burned In MAC Address..... 00:A0:98:4B:A9:AA
Software Version.....     1.1.0.3
Operating System.....     Linux 2.6.21.7
Network Processing Device..... BCM56820_B0
Additional Packages.....   FASTPATH QOS
                           FASTPATH IPv6 Management
```

11. View the boot images for the active and backup configuration.

```
(cs2) # show bootvar
```

```
Image Descriptions
```

```
active :
```

```
backup :
```

```
Images currently available on Flash
```

unit	active	backup	current-active	next-active
1	1.1.0.3	1.1.0.3	1.1.0.3	1.1.0.5

12. Reboot the switch.

```
(cs2) # reload
```

```
Are you sure you would like to reset the system? (y/n)  y
```

```
System will now restart!
```

13. Log in again, and verify the new version of the FASTPATH software.

```
(cs2) # show version
```

```
Switch: 1
```

```
System Description..... Broadcom Scorpion 56820
                           Development System - 16 TENGIG,
                           1.1.0.5, Linux 2.6.21.7
Machine Type.....        Broadcom Scorpion 56820
                           Development System - 16TENGIG
Machine Model.....        BCM-56820
Serial Number.....        10611100004
FRU Number.....
Part Number.....          BCM56820
Maintenance Level.....    A
Manufacturer.....         0xbc00
Burned In MAC Address..... 00:A0:98:4B:A9:AA
Software Version.....     1.1.0.5
Operating System.....     Linux 2.6.21.7
Network Processing Device..... BCM56820_B0
Additional Packages.....   FASTPATH QOS
                           FASTPATH IPv6 Management
```

14. Bring up the ISL ports on cs1, the active switch.

```
(cs1) # configure
(cs1) (config) # interface 0/13-0/16
(cs1) (Interface 0/13-0/16) # no shutdown
(cs1) (Interface 0/13-0/16) # exit
(cs1) (config) # exit
```

15. Verify that the ISLs are operational: `show port-channel 3/1`

The Link State field should indicate Up.



```
(cs2) # show port-channel 3/1
```

```
Local Interface..... 3/1
Channel Name..... ISL-LAG
Link State..... Up
Admin Mode..... Enabled
Type..... Static
Load Balance Option..... 7
(Enhanced hashing mode)
```

Mbr Ports	Device/ Timeout	Port Speed	Port Active
-----	-----	-----	-----
0/13	actor/long partner/long	10G Full	True
0/14	actor/long partner/long	10G Full	True
0/15	actor/long partner/long	10G Full	True
0/16	actor/long partner/long	10G Full	True

16. Copy the running-config file to the startup-config file when you are satisfied with the software versions and switch settings.

```
(cs2) # write memory
```

```
This operation may take a few minutes.
Management interfaces will not be available during this time.
```

```
Are you sure you want to save? (y/n) y
```

```
Config file 'startup-config' created successfully .
```

```
Configuration Saved!
```

17. Enable the second cluster port, e2a, on each node: network port modify

```
cluster::*> network port modify -node node1 -port e2a -up-admin true
cluster::*> **network port modify -node node2 -port e2a -up-admin true**
```

18. Revert clus2 that is associated with port e2a: network interface revert

The LIF might revert automatically, depending on your version of ONTAP software.

```
cluster::*> network interface revert -vserver Cluster -lif n1_clus2
cluster::*> network interface revert -vserver Cluster -lif n2_clus2
```

19. Verify that the LIF is now home (true) on both nodes: `network interface show -role cluster`

```
cluster::*> network interface show -role cluster
```

Vserver	Logical Interface	Status Admin/Oper	Network Address/Mask	Current Node	Current Port	Is Home
vs1						
	clus1	up/up	10.10.10.1/24	node1	e1a	true
	clus2	up/up	10.10.10.2/24	node1	e2a	true
vs2						
	clus1	up/up	10.10.10.1/24	node2	e1a	true
	clus2	up/up	10.10.10.2/24	node2	e2a	true

20. View the status of the nodes: `cluster show`

```
cluster:::> cluster show
```

Node	Health	Eligibility
node1	true	true
node2	true	true

21. Repeat step 1 through step 18 to upgrade the FASTPATH software on the other switch, cs1.  
 22. If you suppressed automatic case creation, re-enable it by invoking an AutoSupport message:

```
system node autosupport invoke -node * -type all -message MAINT=END
```

## Install a Reference Configuration File on a CN1610 switch

When you are installing a reference configuration file (RCF), you must first migrate the cluster LIFs away from switch cs2. After the RCF is installed and validated, the LIFs can be migrated back.

### What you'll need

You must have saved the configuration that is currently running on your switch.

## Steps

1. Save your current switch configuration information: `write memory`

The following example shows the current switch configuration being saved to the startup configuration (`startup-config`) file on switch `cs2`:

```
(cs2) # write memory
This operation may take a few minutes.
Management interfaces will not be available during this time.

Are you sure you want to save? (y/n) y

Config file 'startup-config' created successfully.

Configuration Saved!
```

2. On the console of each node, migrate `clus2` to port `e1a`: `network interface migrate`

```
cluster::*> network interface migrate -vserver vs1 -lif clus2 -source
-node node1 -destnode node1 -dest-port e1a

cluster::*> network interface migrate -vserver vs2 -lif clus2 -source
-node node2 -destnode node2 -dest-port e1a
```

3. On the console of each node, verify that the migration occurred: `network interface show -role cluster`

The following example shows that `clus2` has migrated to port `e1a` on both nodes:

```
cluster::*> network port show -role cluster
      clus1      up/up      10.10.10.1/16   node2    e1a      true
      clus2      up/up      10.10.10.2/16   node2    e1a      false
```

4. Shut down port `e2a` on both nodes: `network port modify`

The following example shows port `e2a` being shut down on both nodes:

```
cluster::*> network port modify -node node1 -port e2a -up-admin false
cluster::*> network port modify -node node2 -port e2a -up-admin false
```

5. Verify that port `e2a` is shut down on both nodes: `network port show`

```
cluster::*> network port show -role cluster
```

Node	Port	Role	Link	MTU	Auto-Negot Admin/Oper	Duplex Admin/Oper	Speed (Mbps) Admin/Oper
-----	-----	-----	----	-----	-----	-----	-----
node1							
	e1a	cluster	up	9000	true/true	full/full	auto/10000
	e2a	cluster	down	9000	true/true	full/full	auto/10000
node2							
	e1a	cluster	up	9000	true/true	full/full	auto/10000
	e2a	cluster	down	9000	true/true	full/full	auto/10000

6. Shut down the ISL ports on cs1, the active NetApp switch.

```
(cs1) # configure
(cs1) (config) # interface 0/13-0/16
(cs1) (interface 0/13-0/16) # shutdown
(cs1) (interface 0/13-0/16) # exit
(cs1) (config) # exit
```

7. Copy the RCF to the switch.



You must set the `.scr` extension as part of the file name before invoking the script. This extension is the extension for the FASTPATH operating system.

The switch will validate the script automatically as it is downloaded to the switch, and the output will go to the console.

```
(cs2) # copy tftp://10.10.0.1/CN1610_CS_RCF_v1.1.txt nvram:script
CN1610_CS_RCF_v1.1.scr
```

```
[the script is now displayed line by line]
Configuration script validated.
File transfer operation completed successfully.
```

8. Verify that the script was downloaded and saved with the file name that you gave it.

```
(cs2) # script list
Configuration Script Name      Size(Bytes)
-----
running-config.scr            6960
CN1610_CS_RCF_v1.1.scr        2199

2 configuration script(s) found.
6038 Kbytes free.
```

9. Validate the script.



The script is validated during the download to verify that each line is a valid switch command line.

```
(cs2) # script validate CN1610_CS_RCF_v1.1.scr
[the script is now displayed line by line]
Configuration script 'CN1610_CS_RCF_v1.1.scr' validated.
```

10. Apply the script to the switch.

```
(cs2) #script apply CN1610_CS_RCF_v1.1.scr

Are you sure you want to apply the configuration script? (y/n) y
[the script is now displayed line by line]...

Configuration script 'CN1610_CS_RCF_v1.1.scr' applied.
```

11. Verify that your changes have been implemented on the switch.

```
(cs2) # show running-config
```

The example displays the `running-config` file on the switch. You must compare the file to the RCF to verify that the parameters that you set are as you expect.

12. Save the changes.

13. Set the `running-config` file to be the standard one.

```
(cs2) # write memory
This operation may take a few minutes.
Management interfaces will not be available during this time.

Are you sure you want to save? (y/n) y

Config file 'startup-config' created successfully.
```

14. Reboot the switch and verify that the running-config file is correct.

After the reboot completes, you must log in, view the running-config file, and then look for the description on interface 3/64, which is the version label for the RCF.

```
(cs2) # reload

The system has unsaved changes.
Would you like to save them now? (y/n) y

Config file 'startup-config' created successfully.
Configuration Saved!
System will now restart!
```

15. Bring up the ISL ports on cs1, the active switch.

```
(cs1) # configure
(cs1) (config)# interface 0/13-0/16
(cs1) (Interface 0/13-0/16)# no shutdown
(cs1) (Interface 0/13-0/16)# exit
(cs1) (config)# exit
```

16. Verify that the ISLs are operational: show port-channel 3/1

The Link State field should indicate Up.

```
(cs2) # show port-channel 3/1
```

```
Local Interface..... 3/1
Channel Name..... ISL-LAG
Link State..... Up
Admin Mode..... Enabled
Type..... Static
Load Balance Option..... 7
(Enhanced hashing mode)
```

Mbr Ports	Device/ Timeout	Port Speed	Port Active
-----	-----	-----	-----
0/13	actor/long partner/long	10G Full	True
0/14	actor/long partner/long	10G Full	True
0/15	actor/long partner/long	10G Full	True
0/16	actor/long partner/long	10G Full	True

17. Bring up cluster port e2a on both nodes: `network port modify`

The following example shows port e2a being brought up on node1 and node2:

```
cluster::*> network port modify -node node1 -port e2a -up-admin true
cluster::*> network port modify -node node2 -port e2a -up-admin true
```

18. Verify that port e2a is up on both nodes: `network port show -role cluster`

```
cluster::*> network port show -role cluster
```

Node	Port	Role	Link	MTU	Auto-Negot Admin/Oper	Duplex Admin/Oper	Speed (Mbps) Admin/Oper
-----	-----	-----	-----	-----	-----	-----	-----
node1							
	e1a	cluster	up	9000	true/true	full/full	auto/10000
	e2a	cluster	up	9000	true/true	full/full	auto/10000
node2							
	e1a	cluster	up	9000	true/true	full/full	auto/10000
	e2a	cluster	up	9000	true/true	full/full	auto/10000

19. On both nodes, revert clus2 that is associated with port e2a: `network interface revert`

The LIF might revert automatically, depending on your version of ONTAP.

```
cluster::*> network interface revert -vserver node1 -lif clus2
cluster::*> network interface revert -vserver node2 -lif clus2
```

20. Verify that the LIF is now home (true) on both nodes: `network interface show -role cluster`

```
cluster::*> network interface show -role cluster
```

	Logical	Status	Network	Current	Current	Is
Vserver	Interface	Admin/Oper	Address/Mask	Node	Port	Home
-----	-----	-----	-----	-----	-----	-----
vs1						
	clus1	up/up	10.10.10.1/24	node1	e1a	true
	clus2	up/up	10.10.10.2/24	node1	e2a	true
vs2						
	clus1	up/up	10.10.10.1/24	node2	e1a	true
	clus2	up/up	10.10.10.2/24	node2	e2a	true

21. View the status of the node members: `cluster show`

```
cluster::> cluster show
```

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

22. Copy the `running-config` file to the `startup-config` file when you are satisfied with the software versions and switch settings.



```
(cs2) # write memory
This operation may take a few minutes.
Management interfaces will not be available during this time.

Are you sure you want to save? (y/n) y

Config file 'startup-config' created successfully.

Configuration Saved!
```

23. Repeat step 1 through step 22 to upgrade the RCF on the other switch, cs1.

### **Related information**

[NetApp Support](#)

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