

# ECU to ECU2 In-Service Migration Procedure for NCS4000 System with CLI

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## Introduction

This document describes the necessary information in order to successfully swap an in-service External Connection Unit (ECU) installed in an NCS4016 system and replace with ECU 2. It procedure provides steps to remove/install ECU.

## Prerequisites

### Requirements

Cisco recommends that you have knowledge of these topics:

- CLI Cisco IOS® for the Cisco NCS4000 series
- Cisco NCS4000 series inclusive of NCS4016/NCS4009

### Components Used

The information in this document is based on NCS4016 system running 6.5.26 or later software before the start of this procedure.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

## Background Information

The procedure detailed in this document does not affect the traffic. It assumes that the NCS4000 chassis is a 4016 or 4009 shelf. If your network is live, ensure that you understand the potential

impact of any command.

## Establish a connection to the NCS4K and Verify Minimum Software Release of 6.5.26

Before you begin, ensure that you have set up a laptop connection to the NCS 4016 and the laptop meets the hardware and software requirements.

Step 1. From the computer connected to the NCS 4016 shelf, start a terminal emulator program such as putty and login to the NCS4016 system.

Step 2. At the command prompt, execute **show version** and verify the software release is 6.5.26 as shown in the image.

```
RP/0/RP0:Node_Name#show version
Thu Nov 14 13:44:09.282 CST
Cisco IOS XR Software, Version 6.5.26
Copyright (c) 2013-2019 by Cisco Systems, Inc.
```

### Build Information:

```
Built By      : ahoang
Built On     : Fri Sep 13 13:33:51 PDT 2019
Built Host   : iox-lnx-060
Workspace    : /auto/srcarchive11/prod/6.5.26/ncs4k/ws
Version      : 6.5.26
Location     : /opt/cisco/XR/packages/
```

```
cisco NCS-4000 () processor
System uptime is 2 weeks 5 days 21 hours 42 minutes
```

Step 3. If the software is not on 6.5.26 or later, stop the procedure and upgrade the software to 6.5.26 before you continue.

Step 4. Verify and note all alarms as shown in the image.

```
RP/0/RP0:Node_Name#show alarms brief system active
Thu Nov 14 13:53:08.689 CST

-----
Active Alarms
-----
Location          Severity    Group      Set Time      Description
-----
0/12              Critical   Environ   10/20/2019 21:30:42 CDT  LC12 - Improper Removal
0/0               Minor     Controller 10/20/2019 21:31:45 CDT  Optics0/0/0/0/5 - Optics Low Transmit Power
0/0               Minor     Controller 10/20/2019 21:31:45 CDT  Optics0/0/0/0/6 - Optics Low Transmit Power
0/6               Minor     Controller 10/20/2019 21:31:53 CDT  Optics0/6/0/6 - Optics Unqualified PPM
0/3               Minor     Controller 10/20/2019 21:31:57 CDT  Optics0/3/0/6 - Optics Unqualified PPM
0/6               Critical   OTN        10/20/2019 21:32:59 CDT  ODU40/6/0/10 - OPUK Client Signal Failure
0/3               Critical   OTN        10/20/2019 21:33:02 CDT  ODU40/3/0/10 - OPUK Client Signal Failure
0/4               Major     Ethernet   10/21/2019 16:41:56 CDT  TenGigEctrlr0/4/0/0/2 - Carrier Loss On The LAN
0/0               Major     Ethernet   10/25/2019 17:11:10 CDT  TenGigEctrlr0/0/0/0/1 - Local Fault
0/3               Critical   OTN        11/01/2019 10:32:48 CDT  OTU40/3/0/11 - Incoming Payload Signal Absent
0/2               Major     Ethernet   10/30/2019 05:41:08 CDT  TenGigEctrlr0/2/0/4/1 - Carrier Loss On The LAN
0/0               Major     Ethernet   10/30/2019 05:41:09 CDT  TenGigEctrlr0/0/0/0/2 - Carrier Loss On The LAN
0/0               Critical   OTN        11/01/2019 10:34:57 CDT  ODU20/0/0/0/1 - OPUK Client Signal Failure
0/0               Critical   OTN        11/01/2019 10:34:59 CDT  ODU20/0/0/0/2 - OPUK Client Signal Failure
RP/0/RP0:Node_Name#
```

Step 5. Verify hard drive details.

```
|
sysadmin-vm:0_RP0# sh media
Fri Jun 21 20:21:28.615 UTC
-----
Partition                Size      Used  Percent  Avail
-----
rootfs:                   2.4G     633M    29%     1.6G
log:                       478M     308M    70%     135M
config:                   478M      32M     8%     410M
disk0:                     949M      47M     6%     838M
install:                  3.7G     2.8G    81%     681M
disk1:                     18G      3.0G    18%     14G
-----
rootfs: = root file system (read-only)
log:    = system log files (read-only)
config: = configuration storage (read-only)
install: = install repository (read-only)
sysadmin-vm:0_RP0#
```

Step 6. Create a database backup.

```
RP/0/RP0:Node_Name# save configuration database disk1:Node_Name_DB_BACKUP
Thu Nov 14 13:59:54.631 CST
Configuration database successfully backed up at:
/harddisk:/disk1:Node Name DB BACKUP.tgz

RP/0/RP0:Node_Name# show run | file disk1:Node_Name_DB_BACKUP
Thu Nov 14 14:00:41.974 CST
Building configuration...

[OK]
RP/0/RP0:Node_Name#
```

Step 7. Verify the BITS timing. If the BITS timing is used by the NCS4K, record the output for these commands. If no timing is used, skip to Step 8. Record the output for the command **show controller timing controller clock** as shown in the image.

```
RP/0/RP0:Node_Name| #show controller timing controller clock
Wed Nov 13 14:53:18.781 CST
```

SYNCEC Clock-Setting: Rack 0

	BITS0-IN	BITS0-OUT	BITS1-IN	BITS1-OUT
Config	: Yes	No	Yes	No
PORT Mode	: T1	-	T1	-
Framing	: ESF	-	ESF	-
Linecoding	: B8ZS	-	B8ZS	-
Submode	: -	-	-	-
Shutdown	: No	No	No	No
Direction	: RX	TX	RX	TX
QL Option	: O2 G1	O2 G1	O2 G1	O2 G1
RX_ssm	: PRS	-	PRS	-
TX_ssm	: -	-	-	-
If_state	: UP	ADMIN_DOWN	UP	ADMIN_DOWN

  

	TE0-E	TE1-E	TE0-W	TE1-W
Config	: NA	NA	NA	NA
PORT Mode	: ICS	ICS	ICS	ICS
Framing	: -	-	-	-
Linecoding	: -	-	-	-
Submode	: -	-	-	-
Shutdown	: No	No	No	No
Direction	: -	-	-	-
QL Option	: O1	O1	O1	O1
RX_ssm	: -	-	-	-
TX_ssm	: -	-	-	-
If_state	: DOWN	DOWN	DOWN	DOWN

Record the output for the command **show frequency synchronization clock-interfaces brief** as shown in the image.

```
RP/0/RP0: Node_Name #show frequency synchronization clock-interfaces brief
Tue Nov 5 16:38:03.711 CST
Flags: > - Up           D - Down           S - Assigned for selection
       d - SSM Disabled  s - Output squelched L - Looped back
Node 0/RP0:
=====
Fl  Clock Interface      QLrcv  QLuse  Pri  QLsnd  Output driven by
=====
>S  Rack0-Bits0-In       PRS    PRS    50  n/a    n/a
D   Rack0-Bits0-Out     n/a    n/a    n/a  PRS    Rack0-Bits0-In
>S  Rack0-Bits1-In       PRS    PRS    50  n/a    n/a
D   Rack0-Bits1-Out     n/a    n/a    n/a  PRS    Rack0-Bits0-In
D   0/TE0-E             n/a    n/a    n/a  n/a    n/a
D   0/TE1-E             n/a    n/a    n/a  n/a    n/a
D   0/TE0-W             n/a    n/a    n/a  n/a    n/a
D   0/TE1-W             n/a    n/a    n/a  n/a    n/a
>S  Internal0           n/a    ST3    255  n/a    n/a
```

Step 8. Prepare for ECU removal. In order to safely remove the ECU from service, issue a detach command **hw-module provision ecu detach disk rack 0** as shown in the image.

```
RP/0/RP0:Node_Name#hw-module provision ecu detach disk rack 0
Thu Nov 14 14:30:25.864 CST
provision: detach triggered for rack :0
RP/0/RP0:Node_Name#hw-module provision ecu status disk rack 0
Thu Nov 14 14:30:57.139 CST
provision: status triggered for rack :0
detach: operation ongoing
RP/0/RP0:Node_Name#
```

```
RP/0/RP0:Node_Name#show alarms brief system active
Thu Nov 14 14:32:51.469 CST
```

-----  
Active Alarms

Location	Severity	Group	Set Time	Description
0/RP1	Minor	Software	11/14/2019 14:30:28 CST	disk provision is in progress
0/RP0	Minor	Software	11/14/2019 14:31:57 CST	The detach provision for disk started

RP/0/RP0:Node\_Name#

Step 9. Before the ECU Module is removed physically, please ensure the alarm The Detach Operation for disk started is cleared on the system.

```
RP/0/RP0:Node_Name#hw-module provision ecu status disk rack 0
Thu Nov 14 14:36:07.406 CST
provision: status triggered for rack :0
detach: operation completed successfully
```

Step 10. Remove the ECU Module from the NCS4K chassis:

- a. Ensure the user is wearing an ESD wrist strap.
- b. Remove all cables connected to the NCS4K-ECU module.
- c. When you remove the EMS cable, it will drop all remote management to the shelf. It will not be restored until the EMS cable is reconnected in Step 11. Remote access can still be attained with the use of the console port.
- e. Remove all individual timing cables connected to the unit.
- f. Use a Philips screwdriver in order to loosen screws on the ECU unit.
- g. Use the latch on both sides to plug out the NCS4K-ECU unit.
- h. Remove both 2.5" SATA drives (SSD) from the original NCS4K-ECU. Note the exact position, left or right, in the ECU.
- i. Insert the 2.5" SATA drives removed from NCS4K-ECU into the new NCS4K-ECU2 module. Ensure they are installed in the same position as the original ECU.

Step 11. Install the ECU2 module and reconnect cables:

- a. Place the new NCS4K-ECU2 module with both 2.5" SATA drives into the original ECU slot.
- b. Reconnect all cables removed in Step 10. to the new ECU2 Module.
- c. Tighten the screws after latches are positioned correctly.

d. Ensure remote management connectivity to the NE is available again.

e. Ensure the NE's front-panel LCD is operational.



Step 12. Initialize new ECU2 in NCS4K Chassis. Wait for 2 to 3 minutes for NCS4K-ECU2 module to initialize.

Step 13. Execute attach command from the command prompt as shown in the image.

```
RP/0/RP0:Node_Name#hw-module provision ecu attach disk rack 0
Thu Nov 14 14:47:05.299 CST
provision: attach triggered for rack :0
RP/0/RP0:Node_Name#hw-module provision ecu status disk rack 0
Thu Nov 14 14:47:49.869 CST
provision: status triggered for rack :0
attach: operation ongoing
RP/0/RP0:Node_Name#hw-module provision ecu status disk rack 0
Thur Nov 14 14:50:13.884 CST
provision: status triggered for rack :0
attach: operation completed successfully
RP/0/RP0:Node_Name#
```

Step 14. Once the ECU attaches successfully to the chassis, the ECU migration from NCS4K-ECU to NCS4K- ECU2 is complete.

## Post Checks

### Verify Alarms

Verify alarms and ensure there are no new or unexpected alarms on the shelf.

**Note:** The Disk space alert for location alarm might take a little longer to idle for both RP0 and RP1 but you can verify the disk is operational with the sh media command.

Num	Ref	New	Date	Object	Eqpt Type	Slot	Unit	Port	Wavelength	Path Width	Sev	ST	SA	Cond	Description	Direction	Location
NA	NA	✓	06/21/19 14:40:34	0/RP0	Route Pr...	RP0	NA	NA	NA	NA	CR	C	NA	DISK1-DISK-SPA...	Disk space alert for location "Sysadmin/mis...	NA	NEAR
NA	NA	✓	06/21/19 14:40:01	0/RP0	Route Pr...	RP0	NA	NA	NA	NA	MN	C	NA	ECU_CAL_DISK...	disk provision is in progress	NA	NEAR
NA	NA	✓	06/21/19 14:40:00	0/RP0	Route Pr...	RP0	NA	NA	NA	NA	MN	C	NA	ECU_CAL_PROV...	The attach provision for disk started	NA	NEAR

Num	Ref	New	Date	Object	Eqpt Type	Slot	Unit	Port	Wavelength	Path Width	Sev	ST	SA	Cond	Description	Direction	Location
NA	NA	✓	06/21/19 14:40:34	0/RP0	Route Pr...	RP0		NA	NA	NA	CR	C	NA	DISK1-DISK-SPA...	Disk space alert for location "Sysadmin/mis...	NA	NEAR
NA	NA	✓	06/21/19 14:40:01	0/RP0	Route Pr...	RP0		NA	NA	NA	MN	C	NA	ECU_CAL_DISK_...	disk provision is in progress	NA	NEAR
NA	NA	✓	06/21/19 14:40:00	0/RP0	Route Pr...	RP0		NA	NA	NA	MN	C	NA	ECU_CAL_PROV...	The attach provision for disk started	NA	NEAR
NA	NA	✓	06/21/19 14:38:41	0/RP0	Route Pr...	RP0		NA	NA	NA	MN	R	NA	ECU_CAL_PROV...	The attach provision for disk started	NA	NEAR
NA	NA	NA	06/21/19 14:22:31	0/RP1	Route Pr...	RP1		NA	NA	NA	CR	R	NA	DISK1-DISK-SPA...	Disk space alert for location "Sysadmin/mis...	NA	NEAR
NA	NA	NA	06/21/19 14:21:07	0/RP1	Route Pr...	RP1		NA	NA	NA	MN	R	NA	ECU_CAL_DISK_...	disk provision is in progress	NA	NEAR

## Verify Media

Verify that both solid-state disk drives are slotted correctly and reachable as shown in the image.

```
sysadmin-vm:0_RP0# sh media
```

```
Fri Jun 21 20:21:28.615 UTC
```

```
-----
Partition                               Size      Used  Percent  Avail
-----
rootfs:                                2.4G      633M    29%     1.6G
log:                                     478M      308M    70%     135M
config:                                 478M       32M     8%     410M
disk0:                                  949M       47M     6%     838M
install:                                3.7G      2.8G    81%     681M
disk1:                                  18G       3.0G   18%     14G
-----
```

```
rootfs: = root file system (read-only)
log:    = system log files (read-only)
config: = configuration storage (read-only)
install: = install repository (read-only)
sysadmin-vm:0_RP0#
```

## BITS Timing Re-Check

If BITS timing was equipped and section 1.5 was completed, run the commands again after you re-attach the BITS timing to ECU2 and compare with previous results as shown in the image.

RP/0/RP0:node\_name#show controller timing controller clock

Wed Nov 13 14:53:18.781 CST

SYNCEC Clock-Setting: Rack 0

	BITS0-IN	BITS0-OUT	BITS1-IN	BITS1-OUT
Config	: Yes	No	Yes	No
PORT Mode	: T1	-	T1	-
Framing	: ESF	-	ESF	-
Linecoding	: B8ZS	-	B8ZS	-
Submode	: -	-	-	-
Shutdown	: No	No	No	No
Direction	: RX	TX	RX	TX
QL Option	: O2 G1	O2 G1	O2 G1	O2 G1
RX_ssm	: PRS	-	PRS	-
TX_ssm	: -	-	-	-
If_state	: UP	ADMIN_DOWN	UP	ADMIN_DOWN

	TE0-E	TE1-E	TE0-W	TE1-W
Config	: NA	NA	NA	NA
PORT Mode	: ICS	ICS	ICS	ICS
Framing	: -	-	-	-
Linecoding	: -	-	-	-
Submode	: -	-	-	-
Shutdown	: No	No	No	No
Direction	: -	-	-	-
QL Option	: O1	O1	O1	O1
RX_ssm	: -	-	-	-
TX_ssm	: -	-	-	-
If_state	: DOWN	DOWN	DOWN	DOWN

RP/0/RP0: Node\_Name #show frequency synchronization clock-interfaces brief

Tue Nov 5 16:38:03.711 CST

Flags: > - Up D - Down S - Assigned for selection  
d - SSM Disabled s - Output squelched L - Looped back

Node 0/RP0:

```

=====
Fl  Clock Interface  QLrcv  QLuse  Pri  QLsnd  Output driven by
=====
>S  Rack0-Bits0-In   PRS    PRS    50  n/a    n/a
D   Rack0-Bits0-Out n/a    n/a    n/a  PRS    Rack0-Bits0-In
>S  Rack0-Bits1-In   PRS    PRS    50  n/a    n/a
D   Rack0-Bits1-Out n/a    n/a    n/a  PRS    Rack0-Bits0-In
D   0/TE0-E         n/a    n/a    n/a  n/a    n/a
D   0/TE1-E         n/a    n/a    n/a  n/a    n/a
D   0/TE0-W         n/a    n/a    n/a  n/a    n/a
D   0/TE1-W         n/a    n/a    n/a  n/a    n/a
>S  Internal0       n/a    ST3    255  n/a    n/a

```