

Installing the Control Cards

Note Starting with Release 11.1.4, ONS 15454 M12 chassis and TCC3 card are not supported on the ONS 15454 DWDM and WSON software packages. You must not attempt to upgrade ONS 15454 M12 nodes from a previous release to Release 11.1.4.

This chapter describes the common control cards needed for the Cisco NCS 2000 Series platforms and provides installation and card turn up procedures.

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Card Compatibility

Note The DB-9 console port of the node controller works only on the active control card of the GNE or ENE and not on the standby control card. The DB-9 console port also does not work in control cards installed in the sub-tending shelves. The console port is available on all control cards except the TNCS-2 and TNCS-2O cards.

Table 1: Platform and Software Release Compatibility for Control Cards

Card Name	R10.0	R10.1	R10.3	R10.5	R10.5.2	R10.6.1, R10.6.2, R10.7, R10.8, and R10.9	R11.x.x
TNC/TSC	NCS 2002, NCS 2006	NCS 2002, NCS 2006	NCS 2002, NCS 2006	NCS 2002, NCS 2006	NCS 2002, NCS 2006	NCS 2002, NCS 2006	NCS 2002, NCS 2006
TNCE/TSCE	NCS 2002, NCS 2006	NCS 2002, NCS 2006	NCS 2002, NCS 2006	NCS 2002, NCS 2006	NCS 2002, NCS 2006	NCS 2002, NCS 2006	NCS 2002, NCS 2006
TNCS	No	No	No	NCS 2015	NCS 2006, NCS 2015	NCS 2002, NCS 2006, NCS 2015	NCS 2002, NCS 2006, and NCS 2015
TNCS-O	No	No	No	No	NCS 2006, NCS 2015	NCS 2006 and NCS 2015	NCS 2002, NCS 2006, and NCS 2015
TNCS-2	No	No	No	No	No	No	NCS 2002, NCS 2006, and NCS 2015
TNCS-2O	No	No	No	No	No	No	NCS 2002, NCS 2006, and NCS 2015

Cards Supported in Cisco NCS Software

There are two types of NCS nodes:

- Flex NCS Node: Node that supports Flex Spectrum functionality and up to 96 channels in the ITU-T C band.

- Fixed Grid NCS Node: Node that supports fixed 80 channels in the ITU-T C band.

The following table lists the cards that are supported in Flex NCS and Fixed Grid NCS nodes.

Node Type	Control Cards	Amplifier Cards	Add/Drop Units	Transponder and Muxponder Cards
Flex NCS	• TNC • TSC • TNCE • TSCE • TNCS • TNCS-O • TNCS-2 • TNCS-2O	• OPT-AMP-C • EDRA-1-xx • EDRA-2-xx • OPT-EDFA-17 • OPT-EDFA-24 • RAMAN-CTP • RAMAN-COP	• 16-WXC-FS • 15216-MD-48-ODD • 15216-MD-48-EVEN • 15216-MD-48-CM • MF-4X4-COFS • MF-16AD-CFS • MF-DEG-5 • MF-UPG-4 • MF-MPO-8LC • PSM • 17 SMR9 FS • 24 SMR9 FS • 34 SMR9 FS • SMR20 FS • SMR20 FS CV • 12-AD-FS • 16-AD-FS • MF-MPO-16LC • MF-2MPO-ADP • MF-16AE-CFS • MF-10AD-CFS • PPMESH8-5AD • MF-DEG-5-CV • MF-UPG-4-CV • MF-M16LC-CV • MF-MPO-20LC • NCS2K-MF-6AD-CFS • NCS2K-MF-8X10G-FO	• 100G-LC-C • 100G-ME-C • 100G-CK-C • 100ME-CKC • 10x10G-LC • CFP-LC • AR_MXP • AR_XPE • WSE • 40G-MXP • 100GS-CK-LC • 200G-CK-LC • MR-MXP • 40E-MXP-C • 40ME-MXP-C • 400G-XP-LC

Node Type	Control Cards	Amplifier Cards	Add/Drop Units	Transponder and Muxponder Cards
Fixed Grid NCS	• TNC • TSC • TNCE • TSCE • TNCS • TNCS-O • TNCS-2 • TNCS-2O	• OPT-PRE • OPT-BST • OPT-BST-E • OPT-AMP-17-C • OPT-AMP-C • OPT-RAMP-C • OPT-RAMP-CE • OPT-EDFA-17 • OPT-EDFA-24 • RAMAN-CTP • RAMAN-COP • OSCM • OSC-CSM • TDC-CC • TDC-FC • 15216 FBG DCU	• 80-WXC-C • 15216-MD-40-ODD • 15216-MD-40-EVEN • 15216-MD-48-ODD • 15216-MD-48-EVEN • 15216-MD-48-CM • 15216-MD-ID-50 • 40-WXC-C • 40-SMR1-C • 40-SMR2-C • 15216-EF-40-ODD • 32WSS • 40-WSS-C • 40-WSS-CE • PSM • 40-MUX • 32-DMX • 40-DMX-CO • 40-DMX-CE • 15216-EF-40-EVEN • 15454-PP-MESH-4 • 15454-PP-MESH-8 • 15454-PP-4-SMR • NCS2K-MF-8X10G-FO • NCS2K-MF-MPO-20LC • 15216-MD-48-ODDE • 15216-MD-EVENE • 15216-MD-48-CME	All the transponder and muxponder cards.

Note NCS2K-S, NCS2K-F, and NCS2K-L packages are not supported in ONS 15454 M12 during upgrade from any release preceding to R11.x and later.

Note The MF-4X4-COFS patch panel supports only fixed grid and can support up to 96 channels.

Safety Labels

For information about safety labels, see the "Safety Labels" section.

TNC and TNCE Card

(Cisco NCS 2002 and Cisco NCS 2006)

The TNC or TNCE cards are provisioned as active and standby in the NCS 2006 shelf, and as a stand-alone card in the NCS 2002 shelf. The TNC or TNCE cards serve as the processor card for the node.

On the NCS 2006 shelf, install redundant TNC or TNCE cards in slots 1 and 8. If the active TNC or TNCE card fails, the system traffic switches to the redundant TNC or TNCE card.

On the NCS 2002 shelf, install the stand-alone TNC or TNCE cards in slot 1. The TNC or TNCE cards support line cards in slots 2 and 3.

The NCS 2006 shelf has dual power supply. The TNC or the TNCE card monitors both supply voltage inputs on the NCS 2006 shelf. The TNC or TNCE card raises an alarm if one of the supply voltage inputs has a voltage out of the specified range.

You can insert and remove the TNC or TNCE card without impacting the system traffic, even when the system is online.

Note The TNC and TNCE cards are not supported on NCS 2015. When these cards are inserted into the active or standby slots of the NCS 2015 chassis, the cards do not start and become active.

For more information about the TNC and TNCE cards, see http://www.cisco.com/en/US/prod/collateral/optical/ps5724/ps2006/data_sheet_c78-602903.html.

Control Card Workflow Diagram

Workflow Diagram

The following figure shows the workflow diagram of the TNC/TSC/TNCE/TSCE card on the NCS 2006 shelf. The diagram provides information on the tasks required to install and configure the TNC/TSC/TNCE/TSCE card.

Figure 1: Control Card Workflow Diagram

Related Procedures for TNC and TNCE Cards

- NTP-G313 Installing and Configuring the TNC, TNCE, TSC, TSCE, TNCS, TNCS-O, TNCS-2, and TNCS-2O Card, on page 21
- NTP-G22 Verifying Common Card Installation
- NTP-G51 Verify DWDM Node Turn Up
- NTP-G103 Backing Up the Database
- NTP-G104 Restoring the Database
- NTP-G106 Resetting Cards Using CTC
- NTP-G280 Modifying Threshold Settings for the TNC and TNCE Cards
- NTP-G277 Provision Alarms and Controls on the TNC, TNCE, TSC, or TSCE Card
- NTP-G279 Monitor TNC and TNCE Card Performance
- NTP-G250 Verifying Digital Image Signing (DIS) Information

TSC and TSCE Cards

(Cisco NCS 2002 and Cisco NCS 2006)

The TSC or TSCE card is provisioned as active and standby in the NCS 2006 shelf, and as a stand-alone card in the NCS 2002 shelf. The TSC and TSCE card serves as the processor card for the shelf.

On the NCS 2006 shelf, install redundant TSC and TSCE cards in slots 1 and 8. If the active TSC or TSCE card fails, system traffic switches to the redundant TSC or TSCE card.

On the NCS 2002 shelf, install the stand-alone TSC and TSCE cards in slot 1. The TSC and TSCE card support line cards in slots 2 and 3.

The NCS 2006 shelf has dual power supply. The TSC and TSCE card monitors both supply voltage inputs on the NCS 2006 shelf. The TSC and TSCE card raises an alarm if one of the supply voltage inputs has a voltage out of the specified range.

You can insert and remove the TSC and TSCE card without impacting the system traffic, even when the system is online.

The TSC and TSCE card does not support optical service channel (OSC) and SFP ports.

Note The TNC, TNCE, TSC, and TSCE cards cannot be inserted in the same shelf.

The TSC and TSCE card is not supported on NCS 2015. When the card is inserted into the active or standby slots of the NCS 2015 chassis, the card does not start and become active.

For more information about the TSC and TSCE card, see http://www.cisco.com/en/US/prod/collateral/optical/ps5724/ps2006/data_sheet_c78-602903.html.

Related Procedures for TSC and TSCE Cards

- NTP-G22 Verifying Common Card Installation
- NTP-G51 Verify DWDM Node Turn Up
- NTP-G103 Backing Up the Database
- NTP-G104 Restoring the Database
- NTP-G106 Resetting Cards Using CTC
- NTP-G280 Modifying Threshold Settings for the TNC and TNCE Cards
- NTP-G279 Monitor TNC and TNCE Card Performance
- NTP-G250 Verifying Digital Image Signing (DIS) Information

TNCS Card

(NCS 2002, NCS 2006, NCS 2015)

The TNCS cards are provisioned as active and standby in the Cisco NCS 2002, NCS 2006, or NCS 2015 shelves. The TNCS cards serve as the processor card for the node.

On the NCS 2015 shelf, the TNCS cards can be installed in slots 1 and 17. On the NCS 2006 shelf, the cards can be installed in slots 1 and 8. On the NCS 2002 shelf, the card can be installed in slot 1. If the active TNCS card fails, system traffic switches to the redundant TNCS card.

The NCS 2015 shelf is powered by DC power modules with 3+1, 2+2, 2+1, or 1+1 redundancy. A minimum of one power module is required to turn up the chassis. The number of power modules to be connected is dependent on the chassis load. The TNCS cards raise an alarm if one of the supply voltage inputs has a voltage out of the specified range.

You can insert and remove the TNCS cards even when the system is online, without impacting the system traffic.

Note When a TNCS card provisioned with OC3/STM-1 or GIGE payloads is replaced with a TNCS-O card, the PROV-MISMATCH, RS-EOC, EOC-E and SIGLOSS alarms are raised due to incompatibility of the payloads provisioned on the TNCS card. FE is the only payload supported on the TNCS-O card.

Perform the following steps on the TNCS card before you replace a TNCS card with a TNCS-O card:

- Delete incompatible payloads (OC3/STM-1 or GIGE) on the TNCS card.
- Delete any synchronization service related to the OSC port.

For more information about the TNCS cards, see http://www.cisco.com/en/US/prod/collateral/optical/ps5724/ps2006/data_sheet_c78-602903.html.

TNCS-O Card

(NCS 2002, NCS 2006, NCS 2015)

The TNCS-O card is provisioned as active and standby in the Cisco NCS 2006 or NCS 2015 shelves. On the NCS 2015 shelf, the TNCS-O card can be installed in slots 1 and 17. On the NCS 2006 shelf, the card can be installed in slots 1 and 8. If the active TNCS-O card fails, the system switches to the redundant TNCS-O card.

Note The TNCS-O control card is not supported on a node that has ONS 15454 as node controller and NCS 2006 or NCS 2015 as subtending shelf controllers.

A TNCS-O card has an optical module that provides Optical Time Domain Reflectometer (OTDR) measurement, ORL measurement, and standard Optical Service Channel (OSC) capability on two ports. These capabilities are available on up to four ports for each shelf; a shelf can have two TNCS-O cards. OTDR scan and OSC transmission can run in parallel on different ports.

The TNCS-O cards support only Fast Ethernet (FE) and wavelength of 1518 nm in OSC transmissions.

Note OC-3 and ONE-GE payloads are not supported by the TNCS-O card.

The OTDR feature in the TNCS-O card lets you do the following:

- Inspect the transmission fiber.
- Identify discontinuities or defect on the fiber.
- Measure the distance and magnitude of defects like insertion loss, reflection loss, and so on.
- Monitor variations in scan values and configured threshold values periodically.

The OTDR measurement ranges are:

- Zone #1
- Zone #2
- Zone #3
- Zone #4
- Expert Mode
- Auto mode

The following table shows the OTDR performance in different operating ranges:

Operating Range	Distance Range [Km]	Distance Accuracy [m]	Loss Accuracy [dB]		Reflection Accuracy [dB]		Measurement Time [s]
			Typ.	W.C.	Typ.	W.C.	
Zone #1	0.001 - 1	+/- 1	+/- 0.2	+/- 2	3	4	180
Zone #2	0.001 - 25	+/- 2	+/- 0.2	+/- 2	2	4	180
Zone #3	0.001 - 80	+/- 10	+/- 0.5	+/- 2	1	4	180
Zone #4	0.001 - 100	+/- 20	+/- 0.5	+/- 2	1	4	180

The following table shows the maximum dynamic range of the TNCS-O OTDR in the different zones. The maximum dynamic range of the TNCS-O OTDR includes the total insertion loss, including the optical attenuation at the faceplate connector, not shown in the OTDR trace.

Operating Range	Max [dB]
Zone #1	2.5
Zone #2	8
Zone #3	17
Zone #4	21

The OSC transmission ranges are:

- Standard range: 12 - 43 dB
- Reduced range: 5 - 30 dB



Note The TNCS-O cards are not interoperable with TNC or TNCE cards. TNCS-O cards are interoperable only with a TNCS or another TNCS-O card over a fiber span. However, the OTDR functionality is available only if a TNCS-O card is connected to another TNCS-O card over a fiber span.



Note The OTDR feature of TNCS-O and TNCS-2O cards is not supported over DWDM network configuration having PSM card at the line side of booster amplifier. In this configuration, the PSM Working (W) and Protect (P) ports are connected to the fiber. The OTDR signal is split into both W and P fibers and back reflected light from both the fibers leads to inconsistent OTDR results.

For more information about the TNCS-O cards, see http://www.cisco.com/c/en/us/products/collateral/optical-networking/ons-15454-series-multiservice-transport-platforms/data_sheet_c78-602903.html.

Operating Modes for TNC, TNCE, TNCS, or TNCS-O cards

The control cards can be configured either in TNC or TNCO operating mode. The TNC mode is the default operating mode for the cards. A card is configured in TNCO mode if the actual card that is to be inserted into a shelf is a TNCS-O card.



Note The creation of OC-3 or ONE-GE payloads is rejected in the TNCO mode.

The PROV_MISMATCH alarm is raised in case of a provisioning mismatch. For more information on the PROV_MISMATCH alarm, see *Cisco NCS 2000 Series Troubleshooting Guide, Release 10.x.x*.

TNCS-2 and TNCS-2O Cards

(NCS 2002, NCS 2006, NCS 2015)

The TNCS-2 and TNCS-2O cards are provisioned as active in the NCS 2002 chassis, and as active and standby in the NCS 2006 or NCS 2015 chassis.



Note When the TNCS-2 or TNCS-2O control card is removed and re-inserted from the NCS 2002 chassis, the detection of fan-tray assembly (FTA) takes 5 to 7 minutes.

On the NCS 2015 shelf, the TNCS-2 and TNCS-2O cards can be installed in slots 1 and 17.

On the NCS 2006 shelf, the cards can be installed in slots 1 and 8.

On the NCS 2002 shelf, the cards can be installed in slot 1.

You can insert and remove the TNCS-2 and TNCS-2O cards without affecting the system traffic, even when the system is online.

The card has the following features:

- The TNCS-2 and the TNCS-2O cards work in redundant mode with another TNCS-2, TNCS-2O, TNCS, TNCSO, or TNCE cards.
- The TNCS-2 and the TNCS-2O cards can replace each other and the TNCS, TNCSO, or TNC-E cards in any NCS 2002, NCS 2006, or NCS 2015 chassis. When the TNCS, TNCSO, or TNCE cards are provisioned with the OC-3 payload and are being replaced by the TNCS-2/TNCS-2O card, the OC-3 payload provisioning has to be removed on the TNC-E/TNCS/TNCS-O card before replacing the card with the TNCS-2/TNCS-2O card.



Note When the TNCS-2/TNCS-2O card is replacing a pre-provisioned card with OC-3 payload on a chassis, the PROV-MISMATCH/MEA alarm is raised.

- The TNCS-2O has an optical module that performs Optical Time Domain Reflectometry (OTDR) functions with the internal module on two OSC ports 3, 4.
- Synchronous Ethernet is supported on all GE and FE ports of the TNCS-2 and the TNCS-2O cards.

- The TNCS-2 control card has OSC ports 1 and 2 available and the TNCS-2O has a total of four OSC ports available with FE and GE support. OC-3 support is not available on either of the cards.
- The TNCS-2 and TNCS-2O cards address CPU EOL and SDRAM supply issues on the existing controller cards.
- The TNCS-2 and the TNCS-2O cards supports a secure boot.
- The TNCS-2 and TNCS-2O cards exhibit chassis control functions including the control of power supplies, fans, ECU, optical modules, clock synchronization, and line card configuration. It can also configure the field programmable devices present in the TNCS-2 or TNCS-2O card.
- The TNCS-2 and TNCS-2O cards support environment monitoring and alarm reporting features.
- The TNCS-2 and TNCS-2O cards support multishelf management (MSM) as other control cards.
- The TNCS-2 or TNCS-2O cards can be inserted based on SSC into an existing MSM node with the node controller (NC) having one of TNCS, TNCS-O, TNCE, or TSCE control cards. The TNCS-2 card is supported on SSC to a NC having a TCC3 control card.



Note The TNCS-2O card is not supported on SSC to a NC having a TCC3 control card.



Note The TNCS-2 and TNCS-2O cards are not supported on the ONS 15454 chassis.



Note The TNCS-2 and TNCS-2O cards cannot be installed in the chassis that runs software earlier than R11.0.

- All packages are supported on the TNCS-2 and TNCS-2O cards.

The **Lamp Test** button is not available on the TNCS-2 and TNCS-2O cards.



Note When the EMS port is configured with 10 Mbps speed for TNCS-2 and TNCS-2O cards, it causes unicast storm control over the EMS peer port connected to the switch. However, when the storm controller is enabled on the EMS port for unicast packets on the switch, the EMS link goes down.

Table 2: The TNCS-2 and TNCS-2O cards support the following shelf control options:

Standby Slot	Active Slot	Support
TSC	TNCS-2O	Not Supported
TSC-E	TNCS-2O	Not Supported
TNC	TNCS-2O	Not Supported
TNC-E	TNCS-2O	Yes

Standby Slot	Active Slot	Support
TNCS	TNCS-2O	Yes
TNCS-O	TNCS-2O	Yes
TNCS-2	TNCS-2O	Yes
TSC	TNCS-2	Not Supported
TSC-E	TNCS-2	Not Supported
TNC	TNCS-2	Not Supported
TNC-E	TNCS-2	Yes
TNCS	TNCS-2	Yes
TNCS-O	TNCS-2	Yes
TNCS-2O	TNCS-2	Yes

Power Settings of TNCS-O and TNCS-2O OTDR Ports

OTDR ports of TNCS-O and TNCS-2O operate in two modes:

- High Power
- Low Power

These power changes occur based on the settings of the **Max Expected Span Loss** parameter. If the **Max Expected Span Loss** parameter is set to 28 dB or less, OTDR ports operate in low power and if the **Max Expected Span Loss** parameter is set to more then 28 dB, OTDR ports operate in high power.

After changing the value of **Max Expected Span Loss** parameter, you must perform **Launch ANS** from CTC as it is an ANS parameter.

Support for OTDR

Optical Time Domain Reflectometer (OTDR) is used to detect faults in an optical fiber link of a communication network. OTDR functionality is supported on TNCS-O and TNCS-2O control cards.

From Release 11.0, the OTDR functionality support is extended to NCS 2002.

The OTDR feature on the TNCS-O and TNCS-2O cards lets you do the following:

- Inspect the transmission fiber.
- Identify discontinuities or defect on the fiber.
- Measure the distance and magnitude of defects like insertion loss, reflection loss, and so on.
- Monitor variations in scan values and configured threshold values periodically.

The OTDR measurement ranges are:

- Zone #1

- Zone #2
- Zone #3
- Zone #4
- Expert Mode
- Auto mode

The following table shows the OTDR performance in different operating ranges:

Operating Range	Distance Range [Km]	Distance Accuracy [m]	Loss Accuracy [dB]		Reflection Accuracy [dB]		Measurement Time [s]
			Typ.	W.C.	Typ.	W.C.	
Zone #1	0.001 - 1	+/- 1	+/- 0.2	+/- 2	3	4	180
Zone #2	0.001 - 25	+/- 2	+/- 0.2	+/- 2	2	4	180
Zone #3	0.001 - 80	+/- 10	+/- 0.5	+/- 2	1	4	180
Zone #4	0.001 - 100	+/- 20	+/- 0.5	+/- 2	1	4	180

The following table shows the maximum dynamic range of OTDR in the different zones. The maximum dynamic range of OTDR includes the total insertion loss, including the optical attenuation at the faceplate connector, not shown in the OTDR trace.

Operating Range	Max [dB]
Zone #1	2.5
Zone #2	8
Zone #3	17
Zone #4	21

You can start a scan in auto mode requesting for the new reflection loss report or for both (legacy and new reflection loss reports). You can select, either the new loss reflection scan or normal scan. The TL1 command used for this operation is available here TL1 Command Guide.

Note The OTDR feature of TNCS-O and TNCS-2O cards is not supported over DWDM network configuration having PSM card at the line side of booster amplifier. In this configuration, the PSM Working (W) and Protect (P) ports are connected to the fiber. The OTDR signal is split into both W and P fibers and back reflected light from both the fibers leads to inconsistent OTDR results.

Note When an OTDR hybrid scan is initiated on the TNCS-2O card, UDC partial packet loss occurs while the scan is in progress. The UDC packet loss stops once the OTDR hybrid scan is completed.

OTDR Training

In R10.8, OTDR scan performances are improved using specific parameters of fiber plant such as span length, span loss, equipment insertion loss, reflection contributions, and major events on the fiber. This calibration operation is called OTDR training.

OTDR training is executed with the following rules.

- OTDR training is executed on both the Tx fiber and Rx fiber.
- OTDR training results are used to execute the composite scan.
- OTDR training is embedded in the scan operation.
- OTDR training takes up to 2 minutes in fast mode and up to 10 minutes in hybrid mode.
- OTDR training results in calibration file, fast span trace, and identification of fiber end.

Note High reflection location is not available if detected during ORL training.

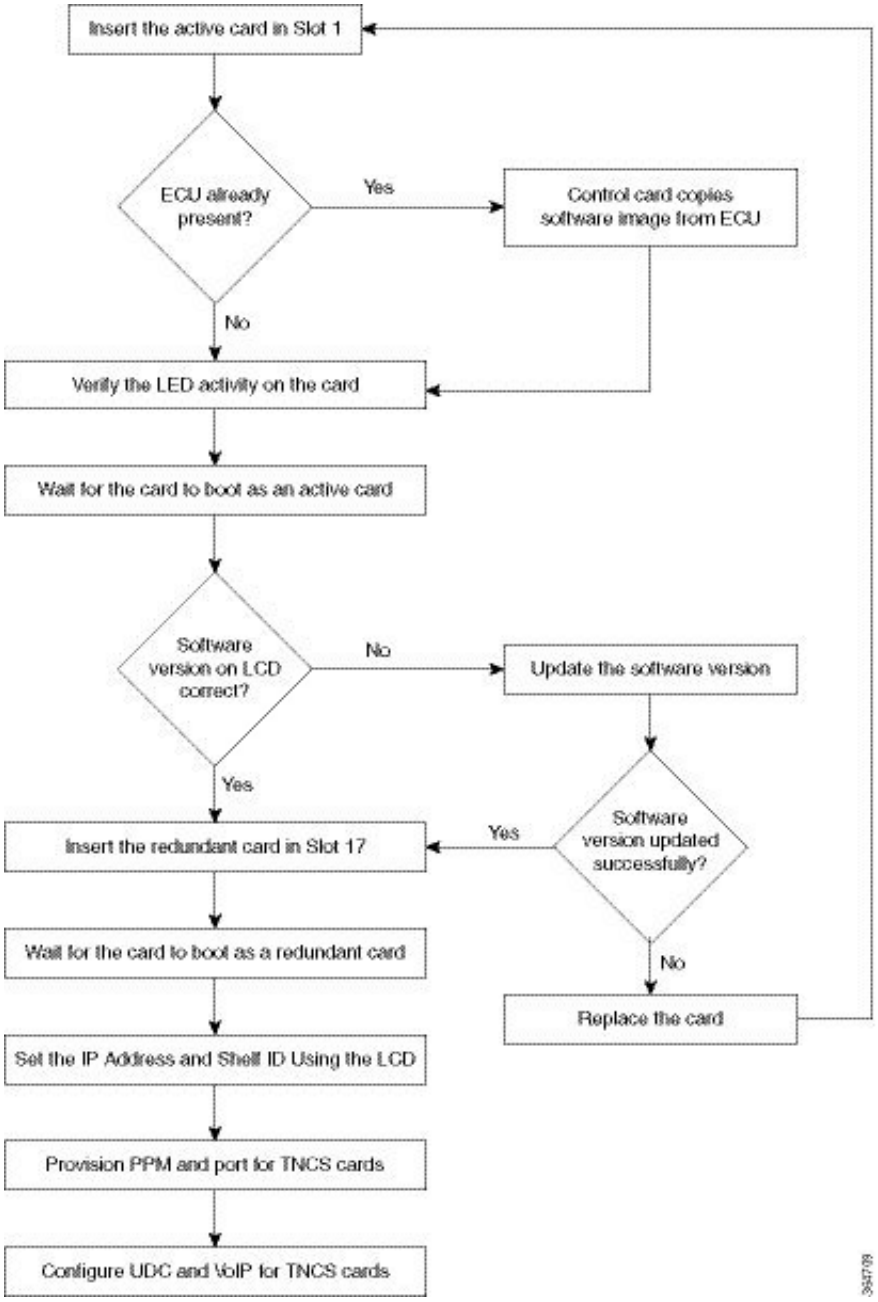
You can configure a periodic ORL training in the Rx direction, even for a single PPM. The TL1 command used for this operation is available here TL1 Command Guide.

Control Card Workflow Diagram

Note From Release 10.62 onwards, the new node must be connected to the laptop before node turn up.

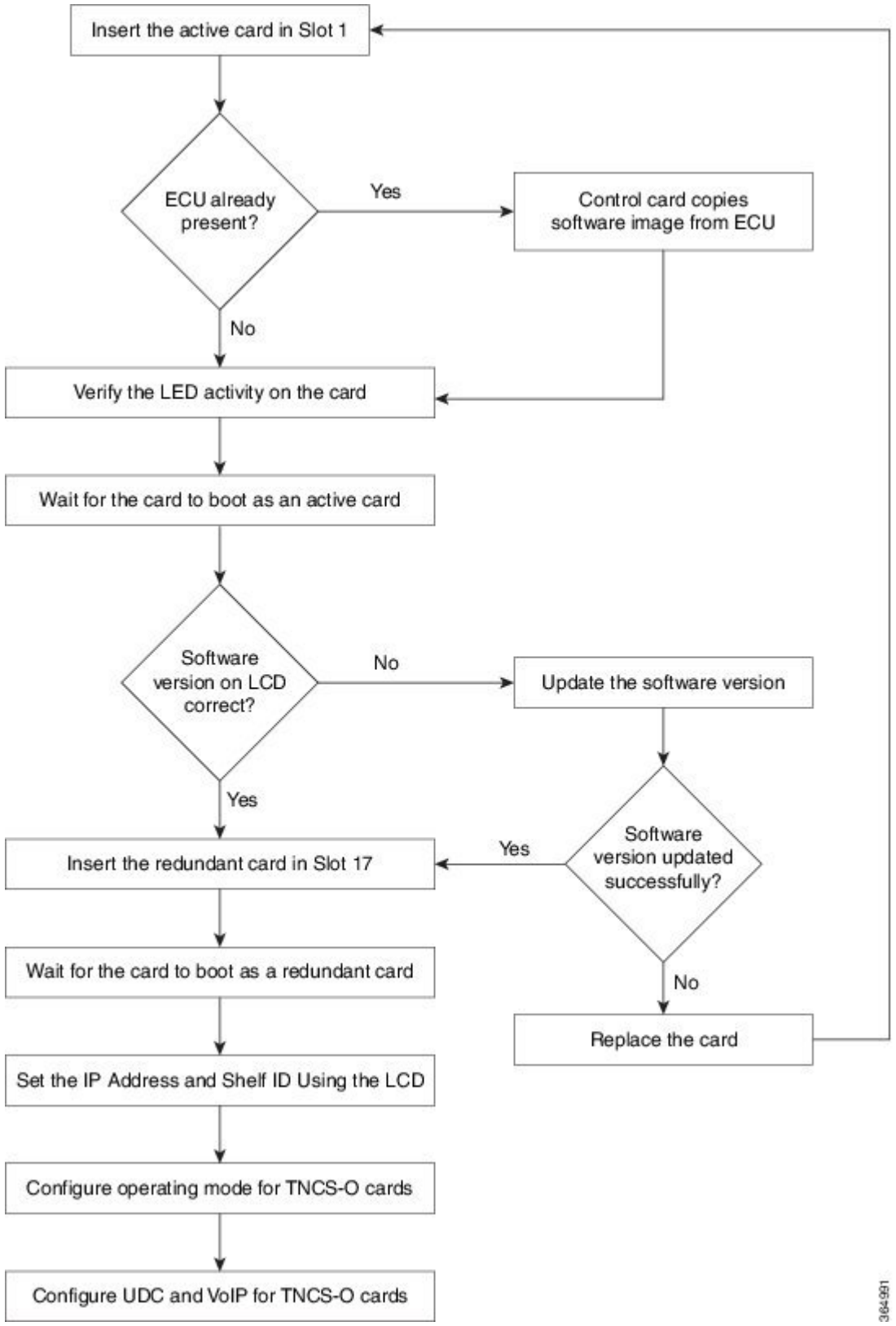
The following figure shows a workflow that describes the tasks required to install and configure the TNCS card.

Figure 2: TNCS Card Workflow



The following figure shows a workflow that describes the tasks required to install and configure the TNCS-O card.

Figure 3: TNCS-O Card Workflow


Insert the active card in Slot 1
ECU already present?
Yes
Control card copies software image from ECU
No
Verify the LED activity on the card
Wait for the card to boot as an active card
Software version on LCD correct?
No
Update the software version
Yes
Software version updated successfully?
Yes
Insert the redundant card in Slot 17
No
Replace the card
Wait for the card to boot as a redundant card
Set the IP Address and Shelf ID Using the LCD
Configure operating mode for TNCS-O cards
Configure UDC and VoIP for TNCS-O cards
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Related Procedures for TNCS and TNCS-O Cards

- NTP-G313 Installing and Configuring the TNC, TNCE, TSC, TSCE, TNCS, TNCS-O, TNCS-2, and TNCS-2O Card, on page 21
- NTP-G277 Provision Alarms and Controls on the TNC, TNCE, TNCS, TSC, or TSCE Card

Digital Image Signing

(Cisco NCS 2000 Series)

The DIS feature complies with the new U.S. Government Federal Information Processing Standard (FIPS) 140-3 to provide security for all software provided on the Cisco NCS 2000 Series platforms. This standard requires software to be digitally signed and verified for authenticity and integrity prior to load and execution.

DIS focuses on software security and provides increased protection from attacks and threats to Cisco NCS 2000 Series products. DIS verifies software integrity and provides assurance that the software has not been tampered with or modified. Digitally signed Cisco software provides counterfeit protection.

New controller cards, such as TNC/TNCE/TSC/TSCE/TNCS/TNCS-O, provide services that authenticate the origin of the software running on the Cisco NCS 2000 Series platforms.

DIS Identification

Digitally signed software can be identified by the last three characters appended to the working version and protected version field in CTC. The DIS conventions can be viewed under the working version displayed in the **Maintenance** > **Software** tab in CTC. For example, 9.2.0 (09.20-X10C-29.09-SDA) and 9.2.0 (09.20-010C-18.18-SPA).

The significance of the three characters appended to the software version is explained in the following table:

Character	Meaning
S (first character)	Indicates that the package is signed.
P or D (second character)	Production (P) or Development (D) image. • Production image—Software approved for general release. • Development image—development software provided under special conditions for limited use.
A (third character)	This third character indicates the version of the key used for signature generation. The version changes when a key is revoked and a new key is used. The values of the version key varies from A to Z.

Related Procedures for DIS

To verify DIS, see NTP-G250 Verifying Digital Image Signing (DIS) Information

Control Card Reset

You can soft reset the control card by using CTC or by physically resetting the card (a hard reset). A soft reset reboots the control card and reloads the operating system and the application software. Additionally, a hard reset temporarily removes power from the control card and clears all the buffer memory.

You can apply a soft reset from CTC to either an active or standby control card without affecting traffic. If you need to perform a hard reset on an active control card, put the control card into standby mode first by performing a soft reset.

Note Hard reset can also be performed on the TNC/TNCE/TSC/TSCE/TNCS/TNCS-O card through CTC and TL1 interface. Before performing the hard reset, bring the TNC/TNCE/TSC/TSCE/TNCS/TNCS-O card to maintenance mode.

When you reset the standby control card, the system traffic is not affected. When you reset the active control card, traffic switches to the standby card if the standby card is present and in the ready standby state. If the standby card is not in the ready standby state, traffic does not switch, and results in loss of system traffic and management connectivity until the card reboots completely.

Caution When you reset the TNC/TNCE/TSC/TSCE card on the NCS 2002 or NCS 2006 shelf or the TNCS/TNCS-O card on the NCS 2006 or NCS 2015 shelf in simplex control mode (when the standby control card is not present), loss of management connectivity happens until the card reboots. The system traffic loss may occur depending on the line card and traffic type.

Control Card Database

When dual control cards are installed in the NCS 2000 Series shelf each control card hosts a separate database; therefore, the protect card database is available if the database on the working control card fails. You can also store a backup version of the database on the workstation running CTC. This operation should be part of a regular maintenance program at approximately weekly intervals, and should also be completed when preparing NCS 2000 Series for a pending natural disaster, such as a flood or fire. The configuration details are stored in the database of the control card. The database restore from a TNC and TNCE cards to a TSC and TSCE cards or vice versa is not supported.

Note The following parameters are not backed up and restored: node name, IP address, mask and gateway, and Internet Inter-ORB Protocol (IIOP) port. If you change the node name and then restore a backed up database with a different node name, the circuits map to the new node name. We recommend keeping a record of the old and new node names.

NTP-G313 Installing and Configuring the TNC, TNCE, TSC, TSCE, TNCS, TNCS-O, TNCS-2, and TNCS-2O Card

Purpose	This procedure describes how to install and configure the TNC, TNCE, TSC, TSCE, or TNCS/TNCS-O/TNCS-2/TNCS-2O card.
Tools/Equipment	Redundant TNC/TNCE/TSC/TSCE/TNCS/TNCS-O/TNCS-2/TNCS-2O cards on NCS 2006 shelf (required) Stand-alone TNC/TNCE/TSC/TSCE/TNCS-2/TNCS-2O/TNCS-O card on NCS 2002 shelf (required) Redundant TNCS/TNCS-O/TNCS-2/TNCS-2O cards on the NCS 2015 shelf.
Prerequisite Procedures	Install Power and Ground. See the Hardware Installation Guide.
Required/As Needed	Required
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Warning During this procedure, wear grounding wrist straps to avoid ESD damage to the card. Do not directly touch the backplane with your hand or any metal tool, or you could shock yourself. Statement 94

Caution Always use the supplied ESD wristband when working with a powered NCS 2000 Series shelf assemblies. For detailed instructions on how to wear the ESD wristband, refer to the *Electrostatic Discharge and Grounding Guide for Cisco NCS 2000 Series*.

Note If you install a card incorrectly, the FAIL LED flashes continuously.

Procedure

Step 1 Complete the DLP-G604 Installing the TNC, TNCE, TSC, TSCE, TNCS-2, TNCS-2O, TNCS-O, or TNCS Card, on page 22.

Step 2 Complete theDLP-G788 Configuring Operating Mode for the TNC, TNCE, TNCS, TNCS-O, TNCS-2, and TNCS-2O Cards, on page 29.

Step 3 Complete the DLP-G605 Provisioning PPM and Port for the TNC, TNCE, TNCS-2, TNCS-2O, and TNCS Cards, on page 27.

Step 4 Complete the DLP-G606 Configuring UDC and VoIP for the TNC, TNCE, TNCS-2, TNCS-2O, and TNCS/TNCS-O Cards, on page 28.

Step 5 Complete the DLP-G605 Provisioning PPM and Port for the TNC, TNCE, TNCS-2, TNCS-2O, and TNCS Cards, on page 27.

Note
Step 3, on page 21 and Step 5, on page 22 do not apply to TNCS-O cards.

Stop. You have completed this procedure.

DLP-G604 Installing the TNC, TNCE, TSC, TSCE, TNCS-2, TNCS-2O, TNCS-O, or TNCS Card

This task installs active and standby cards on the Cisco NCS 2006 or Cisco NCS 2015 shelf.

This task installs active and standby cards on the Cisco ONS 15454 M6 or Cisco NCS 2015 shelf.

Purpose	(Cisco NCS 2000 Series) This task installs two TNC/TNCE/TSC/TSCE/TNCS-2O/TNCS-2 cards on the NCS 2006 shelf, two TNCS/TNCS-O/TNCS-2/TNCS-2O cards on the NCS 2006 or NCS 2015 shelf, and a stand-alone TNC/TNCE/TSC/TSCE/TNCS-2/TNCS-2O card on the NCS 2002 shelf. Install and initialize the TNC/TNCE/TSC/TSCE/TNCS/TNCS-2/TNCS-2O/TNCS-O card before installing any other line cards into the shelf assemblies. On the NCS 2006 shelf, install the TNC/TNCE/TSC/TSCE/TNCS-2/TNCS-2O/TNCS/TNCS-O cards in slots 1 and 8 for redundancy. On the Cisco NCS 2015 shelf, install the TNCS/TNCS-O cards in slots 1 and 17 for redundancy. On the NCS 2002 shelf, install the stand-alone TNC/TNCE/TSC/TSCE/TNCS-2 card in slot 1.
Tools/Equipment	Two TNC/TNCE/TSC/TSCE/TNCS-2/TNCS-2O/TNCS/TNCS-O cards for the NCS 2006 shelf, two TNCS/TNCS-2/TNCS-2O/TNCS-O cards for the Cisco NCS 2015 shelf, and one TNC/TNCE/TSC/TSCE/TNCS-2 card for the NCS 2002 shelf.
Prerequisite Procedures	None
Required/As Needed	Required
Onsite/Remote	Onsite
Security Level	None

Note The NCS 2002 shelf supports stand-alone control cards such as TNC, TSC, TNCE, TNCS, TNCS-O, TNCS-2, TNCS-2O, or TSCE. During replacement or removal of the control card, ensure that the optical fibers are not disturbed. The fibers must be correctly routed in the retention feature mounted on the front side of the shelf.

Note Node discovery fails when the control card of a NCS 2002 node is replaced with a control card running a later software version because the NCS 2002 node loses it node IP and node name. However, there is no loss of traffic and the provisioning database.

Caution Do not remove the control cards during the software installation process, which is indicated by the alternate flashing of the FAIL and ACT/STBY LEDs. Removing the control cards during the software installation process corrupts the system memory.

Note Allow each control card to boot completely before installing the redundant control card.

Note You cannot insert the control cards in other slots due to mechanical constraints. To identify the card slot, match the symbol placed on the lower side of the card front panel with the symbol on the shelf.

Note The firmware upgrade of the OTDR functionality of the TNCS-O card might take up to 1 hour and 15 minutes, depending on the node configuration. An automatic retry mechanism is available in case of any issue during the upgrade. During the firmware upgrade, the TNCS-O card is fully functional except for the OTDR feature, which is not available until the completion of the firmware upgrade.

From Release 11.0, the firrmware upgrade of the OTDR functionality of the TNCS-2 and TNCS-2O cards might take 30 mins.

Procedure

Step 1 Open the latches or ejectors of the first control card that you will install.

Step 2 Use the latches or ejectors to firmly slide the card horizontally along the guide rails until the card plugs into the receptacle at the back of the slot (slot 1 or 8 in the NCS 2006 shelf, slot 1 or 17 in the NCS 2015 shelf, and slot 1 in the NCS 2002 shelf).

Note
The cards slide vertically in the NCS 2015 shelf.

Step 3 Verify that the card is inserted correctly, and close the latches or ejectors on the card.

If you insert a card into a slot assigned for a different card, all LEDs turn off.

Step 4 If needed, verify the LED activity on the control card.

- The red FAIL LED, PWR LED turn on briefly.
- The red FAIL LED turns on for about 10 seconds.

- The red FAIL LED and the amber ACT/STBY LED turn on for about 30 seconds.
- The red FAIL LED blinks for about 10 seconds.
- The red FAIL LED turns on for about 15 seconds.
- All the LEDs including the CRIT, MAJ, MIN, REM, SYNC, and ACO LEDs blink once and turn off for about 10 seconds.
- ACT/STBY LED blinks for about 1 second.
- All the LEDs including the CRIT, MAJ, MIN, REM, SYNC, and ACO LEDs turn off for about 10 seconds.
- The ACT/STBY, ACO, and PWR LEDs turn on.
- The boot process is complete when the PWR LEDs turn green and the amber ACT/STBY LED remains on. The ACT/STBY LED turns green if this is the first control card installed, but turns amber if this is the second control card installed.

Note
It might take up to four minutes for the power alarms to clear.

Note
Alarm LEDs might be on. After completing the control card installation, log in to CTC and click the Alarms tab to display the alarms raised on the card. For procedure to clear the alarm, see the Troubleshooting Guide.

Note
During the control card initialization, the SFTWDOWN alarm appears twice. The alarm clears after the control card boots completely.

Note
If the FAIL LED is on continuously, see the note in Step 8 about the control card automatic upload.

Figure 4: Installing TNC and TNCE Cards on the NCS 2006 Shelf

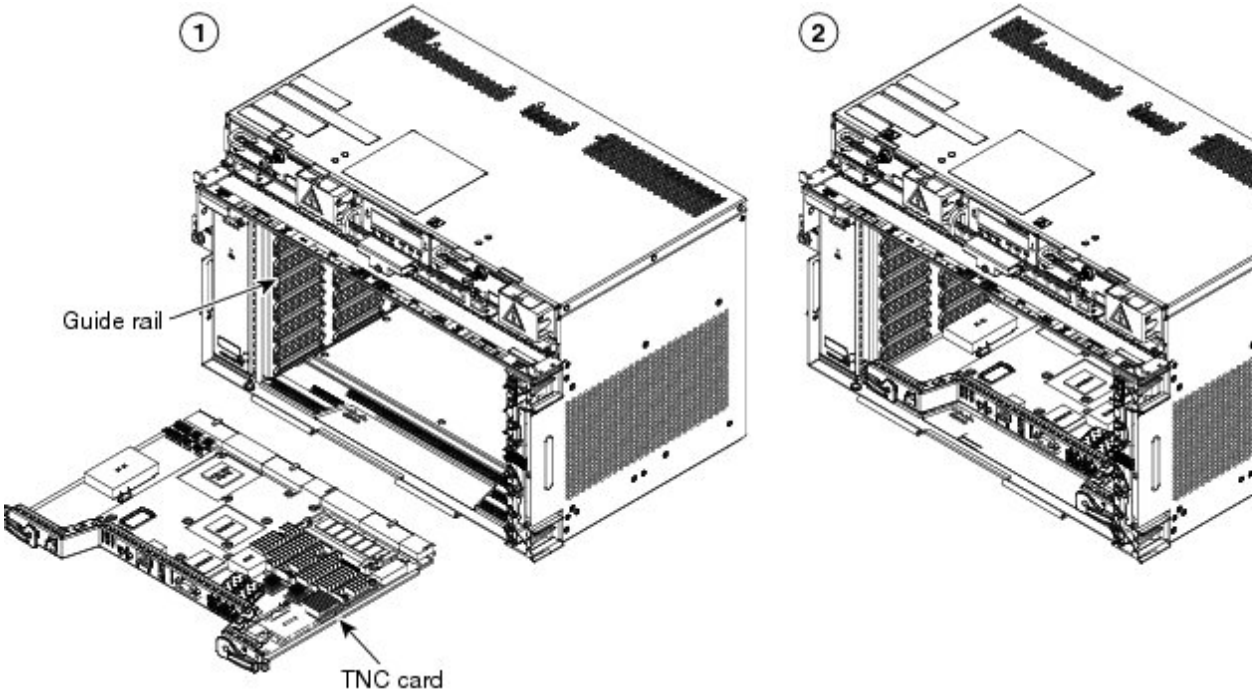
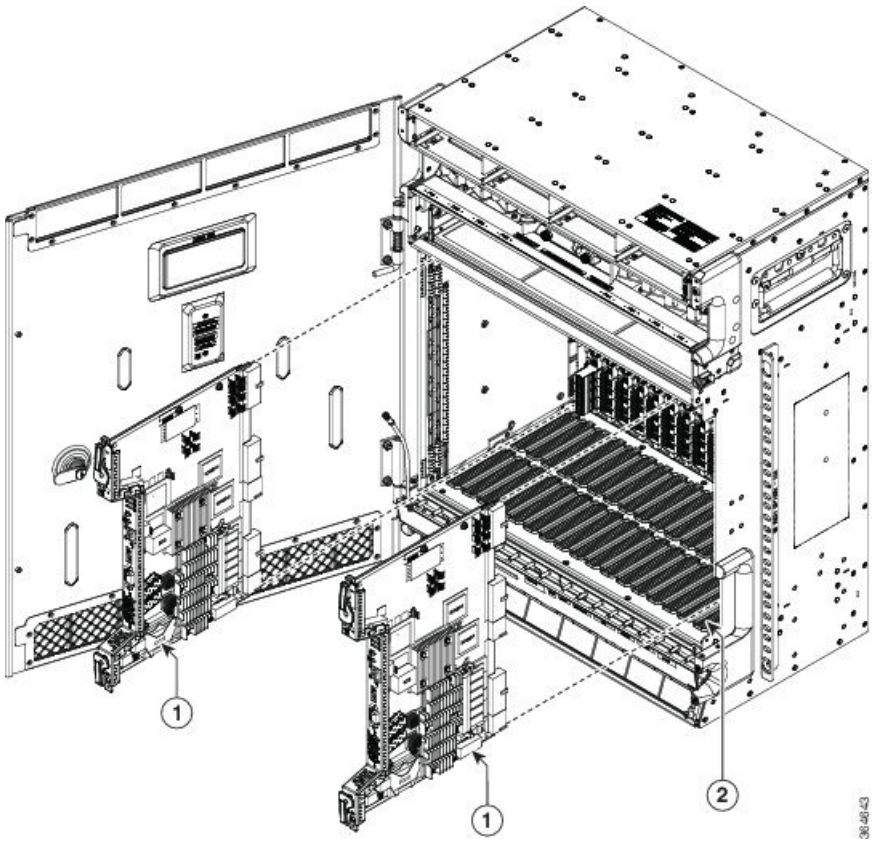


Figure 5: Installing TNCS/TNCS-O Cards on the NCS 2015 Shelf



1	TNCS/TNCS-O Card	2	Guide Rail

Step 5 Verify that the ACT/STBY LED is green if this is the first powered-up control card installed or amber if this is the second powered-up control card. The IP address, temperature of the node, and time of day appear on the LCD. The default time and date is 12:00 AM, January 1, 1970.

Step 6 The LCD cycles through the IP address (the default is 192.1.0.2), node name, and software version. Verify that the correct software version is shown on the LCD. The software text string indicates the node type (SDH or SONET) and software release. (For example: SDH 09.20-05L-20.10 indicates it is an SDH software load, Release 9.2. The numbers following the release number do not have any significance.)

Step 7 If the LCD shows the correct software version, continue with Step 8. If the LCD does not show the correct software version, refer to your next level of technical support, upgrade the software, or remove the control card and install a replacement card. Refer to the release-specific software upgrade document to replace the software.

Step 8 (NCS 2006 or NCS 2015 shelf only) Repeat Steps 1 through 7 for the redundant control card.

Note
If you install a standby control card that has a different software version than the active control card, the standby control card copies the software version from the one in the active control card. When the standby card is first inserted, the LEDs follow the normal boot-up sequence. However, after the red FAIL LED turns on for about 5 seconds, the FAIL LED and the ACT/STBY LED begin to flash alternately for up to 30 minutes. After loading the new software, the upgraded control cards LEDs repeat the appropriate bootup sequence, and the amber ACT/STBY LED turns on.

Step 9 Return to your originating procedure.

DLP-G605 Provisioning PPM and Port for the TNC, TNCE, TNCS-2, TNCS-2O, and TNCS Cards

Purpose	(Cisco NCS 2000 Series)This task provisions a PPM and port on TNC, TNCE, TNCS, TNCS-2, and TNCS-2O cards. PPMs are created to support the OSC function.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	None

Note If the card in the shelf is configured in TNCO operating mode, PPM and port is automatically provisioned on the card.

Procedure

Step 1 In node view (single-shelf mode) or shelf view (multishelf view), double-click the TNC, TNCE, TNCS, TNCS-2, TNCS-2O, or TNCS-O cards where you want to provision PPM and port settings.

Step 2 Click the **Provisioning** > **Pluggable Port Modules** tabs.

Step 3 In the Pluggable Port Modules area, click Create. The Create PPM dialog box appears.

Step 4 In the Create PPM dialog box, complete the following:

- PPM—Choose 1 or 2 from the PPM drop-down list.
- PPM Type—Displays the PPM associated with the chosen PPM in the above step.

Step 5 Click **OK**. The newly created PPM appears in the Pluggable Port Modules area. The row in the Pluggable Port Modules area becomes white when the PPM is inserted and the Actual Equipment Type column lists the name of PPM.

Step 6 In the Pluggable Ports area, click**Create** . The Create Port dialog box appears.

Step 7 In the Create Ports dialog box, complete the following:

- Port—Choose the port you want to configure from the Port drop-down list.
- Port Type—Choose the port type, such as OC-3, FE, or ONE-GE from the Port Type drop-down list.

Note

When changing the port type from OC-3 or FE, to ONE-GE is traffic affecting.

Note
The OC-3 port type is not supported on the TNCS-2 & TNCS-2O cards.

Note
OC-3 can be configured only on PPM port 1. FE and ONE-GE can be configured on both the ports. If the port type is FE, then disable ALS before provisioning OSC on that port.

Step 8 Click **OK**. The newly created port appears in the Pluggable Ports area. The port type you provisioned is listed in the Rate column.

Step 9 Repeat Steps 3 through 8 to provision another PPM and port on the TNC, TNCE, TNCS-2, TNCS-2O, or TNCS cards.

Step 10 Return to your originating procedure (NTP).

DLP-G606 Configuring UDC and VoIP for the TNC, TNCE, TNCS-2, TNCS-2O, and TNCS/TNCS-O Cards

Purpose	(Cisco NCS 2000 Series)This task configures UDC and VoIP traffic for the TNC, TNCE, TNCS-2, TNCS-2O, and TNCS/TNCS-O cards.
Tools/Equipment	None
Prerequisite Procedures	• DLP-G46 Log into CTC • NTP-G38 Provisioning OSC Terminations • DLP-G605 Provisioning PPM and Port for the TNC, TNCE, TNCS-2, TNCS-2O, and TNCS Cards, on page 27
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	None

Note LLDP traffic associated with specific MAC addresses is not passed across UDC.

Note Each TNC, TNCE, TNCS-2, TNCS-2O, and TNCS/TNCS-O card supports UDC/VoIP configuration. You can configure UDC or VoIP on the two SFP ports present on the TNC, TNCE, TNCS-2, TNCS-2O, and TNCS cards. The TNC, TNCE, TNCS-2, TNCS-2O, and TNCS cards support the UDC/VoIP configuration only when OSC is provisioned on the SFP ports.

Note If two nodes are connected through the fiber and if the TNC, TNCE, TNCS-2, TNCS-2O, and TNCS/TNCS-O cards in one node have UDC configuration, the TNC, TNCE, TNCS-2, TNCS-2O, and TNCS/TNCS-O cards in the other node must also have UDC configuration. The same rule applies to VoIP configuration.

Procedure

Step 1 In node view (single-shelf mode) or shelf view (multishelf view), double-click the TNC, TNCE, TNCS, TNCS-2, TNCS-2O, or TNCS-O cards where you want to configure UDC and VoIP.

Step 2 Click the **Provisioning** > **UDC / VOIP** tabs.

Step 3 From the Service Type drop-down list, choose UDC or VOIP.

Note
You can configure UDC or VoIP on only one SFP port at a time per TNC, TNCE, TNCS-2, TNCS-2O, or TNCS card. If you want to configure UDC or VoIP on the second SFP port, choose NONE from the Service Type drop-down list for the first port and then choose UDC or VoIP for the second port.

Step 4 Click **Apply**.

Step 5 Return to your originating procedure (NTP).

DLP-G788 Configuring Operating Mode for the TNC, TNCE, TNCS, TNCS-O, TNCS-2, and TNCS-2O Cards

Purpose	(Cisco NCS 2000 Series)This task configures the operating mode for the TNC, TNCE, TNCS, and TNCS-O cards.
Tools/Equipment	None
Prerequisite Procedures	• DLP-G46 Log in to CTC
Required/As Needed	As Needed
Onsite/Remote	Onsite or Remote
Security Level	None

The TNC mode supports the TNC, TNC-E and TNCS cards, the TNCS-O mode supports only the TNCS-O card, and no card mode supports the TSC and TSC-E cards.

Procedure

Step 1 In node view (single-shelf mode) or shelf view (multishelf view), double-click the control card where you want to configure the card mode.

Step 2 Click **Provisioning** > **Card** tab.

Step 3 From the Mode drop-down list, choose TNC or TNCO.

Note
The card is configured to TNC mode by default.

Note
If the actual card to be inserted is TNCS-O card, configure the card in TNCO mode.

Step 4 Click **Apply**.

Step 5 Return to your originating procedure (NTP).

DLP-G774 Changing the Frame Type on the OSC

Purpose	This task changes the frame type on the OSC.
Tools/Equipment	None
Prerequisite Procedures	DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	None

Note TNCS-O cards support only FE payload. Hence, OSC payload cannot be changed on TNCS-O cards.

Procedure

Step 1 Delete the OC-3, STM1, FE, or ONE_GE OSC communication channel. See DLP-G186 Delete an OSC Termination.

Step 2 Click **Provisioning** > **WDM-ANS** > **Internal Patchcords**.

Step 3 Choose the internal patchcord that is associated with OSC and click **Delete**.

Step 4 Delete the OSC payload on the TNC/TNCE/TNCS-2/TNCS-2O/TNCS card.

a) In node view (single-shelf mode) or shelf view (multishelf view), double-click the TNC/TNCE/TNCS card where you want to delete the OSC payload.

b) Click the **Provisioning** > **Pluggable Port Modules** tabs.
c) In the Pluggable Ports area, choose the OSC payload that you want to delete and click **Delete**.

Step 5 Provision the OSC payload on the TNC/TNCE/TNCS-2/TNCS-2O/TNCS card. See DLP-G605 Provisioning PPM and Port for the TNC, TNCE, and TNCS Cards.

Note
OC-3/STM1 can be configured only on port 1. FE and ONE-GE can be configured on both the ports.

Step 6 Provision the internal patchcord from the OSC on the TNC/TNCE/TNCS/TNCS-2/TNCS-2O card to the corresponding line card. See Virtual Patchcords.

Step 7 Provision the OSC communication channel. See NTP-G38 Provisioning OSC Terminations.

Step 8 Repeat the above steps for the other node.

Step 9 Return to your originating procedure (NTP).

Accessing and Configuring the Controller Cards Using Link-Local Address

Table 3: Feature History

Feature Name	Release Information	Feature Description
Accessing the Controller Cards using Link-Local Address	Cisco NCS 2000 Release 11.13	You can now use the link-local subnet address to access and configure the controller cards. This approach is helpful when you do not have admin privileges to the laptop through which the controller card is configured. Ensure that the controller card and the laptop are on the same subnet.

This topic describes how to access controller cards in factory mode with link-local subnet IP address (169.254.0.2) when you don't have administrative access to the laptop to configure the controller cards using the default IP address (192.1.0.2).

Procedure

Step 1 Disable the Wi-Fi connection on your laptop.

Step 2 Check and ensure that NCS 2000 is in default factory mode.

Step 3 Connect the laptop ethernet port to either the controller card front port, the ECU EMS port, or the ECU craft port which enables the laptop OS (Windows, Mac, or Linux) to assign the IP address (169.254.0.2) in the link-local subnet.

Note
The initial DHCP discovery phase run by the laptop will fail because the controller card does not support it.

Step 4 Ping the link-local address in the Command Prompt to verify the connectivity between NCS 2000 and the laptop.

Step 5 Use the default username and password values to log into CTC for NCS2000.

Step 6 After logging in, **Change Password** dialog box prompts you to change the password.

Step 7 Change the password for your Username:

a) Enter the old password in the **Old Password** field.
b) Enter the new password in the **New Password** and **Confirmation New Password** fields.
c) Check the **Change password in all other nodes in the background check box**.
d) Select the required Applicable Nodes from the list.
e) Click **OK**.

Step 8 In the node view (single-shelf mode) or multishelf view (multishelf mode), click the **Maintenance** > **Database** tabs.

Step 9 Click **Rebuild DB** and click **Yes** on the dialog box to exit from the factory mode.

Step 10 In the node view (single-shelf mode) or multishelf view (multishelf mode), click the **Provisioning** > **Network** > **General** tabs.

Step 11 Configure the new IP address:

a) Enter the IP address in the **Node Address** field.
b) Enter the subnet mask in the **Net/Subnet Mask Length** field.
c) Enter the gateway address in the **Default Router** field.
d) Click **Apply**.

NCS 2000 reboots to activate the new IP address.

Step 12 Disconnect the ethernet.

Step 13 Connect NCS 2000 to the site LAN using the EMS port.

Step 14 Enable the Wi-Fi connect on your laptop, and verify that the NCS 2000 chassis is correctly managed locally and remotely using the assigned IP address.

Step 15 The remote admin can now start deployment of the node.

NTP-G278 Upgrade an Older Controller Card to a Newer Controller Card

Purpose	This procedure upgrades an older controller card to a newer controller card. See the #unique_36 to upgrade the TNCS Card to TNCS-O Card.
Tools/Equipment	Two TSCE/TNC/TNCE/TNCS/TNCS-O (Two of the new controller cards to be used as active and standby cards.)
Prerequisite Procedures	"DLP-G46 Log into CTC" in the "Connect the PC and Log into the GUI" document.

Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Maintenance or higher

The table below lists the matrix of the controller cards that can be upgraded.

Card	New Card
TSC	TSC-E
	TNC
	TNC-E
	TNCS
	TNCS-O
TSC-E	TNC
	TNC-E
	TNCS
	TNCS-O
TNC	TNC-E
	TNCS
	TNCS-O
TNC-E	TNCS
	TNCS-O
TNCS	TNCS-O

Note Downgrade procedures from a newer controller card to older controller card are not supported. Log into the Technical Support Website at http://www.cisco.com/cisco/web/support/index.html for more information or call Cisco TAC (1 800 553-2447).

Note If the old controller is TNC/TNC-E/TNCS and you want to upgrade to TNCS-O, the old controller cards should be provisioned only with an FE payload on both the PPM ports. If the TNC/TNC-E/TNCS controller card has a different payload provisioned such as OC-3/1GIGE, you must delete the OSC, payload, and the PPM.

This procedure also applies to TSC/TNC/TSC-E/TNC-E upgrades to the TNCS/TNCS-O card for an M6 shelf.

Before you begin

- M2 supports only TSC, TSC-E, TNC, TNC-E, TNCS, TNCS-2, TNCS-2O, and TNCS-O controller cards.
- M6 supports only TSC, TSC-E, TNC, TNC-E, TNCS,TNCS-2, TNCS-2O, and TNCS-O controller cards.
- M15 supports only TNCS, TNCS-2, TNCS-2O, and TNCS-O controller cards.

Procedure

Step 1 Verify that the node you are upgrading has R 10.x.x/ R11.0 installed. The software version is displayed in the upper left corner of the window.

Step 2 Back up the database before beginning the upgrade.

Step 3 Physically replace the standby older controller card with the newer controller card. task

a) Check the LED on the faceplate. The ACT/STBY LED on the faceplate of the controller card indicates whether the card is in active or standby mode. A green ACT/STBY LED indicates an active card and an amber light indicates a standby card.
b) Open the ejectors on the standby old controller card.
c) Slide the card out of the slot. This raises the IMPROPRMVL alarm, which clears when the upgrade is complete.
d) Right-click the slot from which the old controller card was ejected out.
e) Click **Delete Card** to delete the old controller card from CTC.

Note
If the old controller card is not deleted from the CTC shelf view before inserting the new controller card, the MEA (card mismatch) alarm appears on that slot.

f) Open the ejectors on the new controller card to be installed.
g) Slide the new controller card into the slot along the guide rails.
h) Close the ejectors.
i) In CTC node view, Ldg (loading) appears on the newly installed controller card.

Note
It takes approximately 10 minutes for the active old controller card to copy the system software and database to the newly installed controller card. During this operation, the LEDs on the new controller card flash Fail and then the active/standby LED flashes. When the transfer completes, the new controller card reboots and goes into standby mode after approximately three minutes. Do not remove the card from the shelf during a database transfer.

Caution
If your active old controller card resets during the upgrade before the new controller card is in full standby mode, remove the new controller card immediately.

Step 4 When the newly installed controller card is in standby, right-click the active old controller card in CTC.

Step 5 From the pull-down menu, click **Reset Card**.

Wait for the old controller card to reboot. The standby new controller card is switched to active mode. The old controller card verifies that it has the same database as the new controller card and then switches to standby.

Step 6 Verify that the remaining old controller card is now in standby mode (the ACT/STBY LED changes to amber).

Step 7 Physically replace the remaining old controller card with the second new controller card.

a) Open the ejectors on the old controller card.
b) Slide the card out of the slot. This raises the IMPROPRMVL alarm, which clears when the upgrade is complete.
c) Right-click the slot from which the old controller card was ejected out.
d) Click **Delete Card** to delete the old controller card from CTC.

   If the old controller card is not deleted from the CTC shelf view before inserting the TNC card, the MEA (card mismatch) alarm appears on that slot.

e) Open the ejectors on the new controller card.
f) Slide the new controller card into the slot along the guide rails.
g) Close the ejectors.

The second new controller card boots up. The second new controller card must also copy the database. Do not remove the card from the shelf during a database transfer.

Step 8 If power-related alarms occur after the second new controller card is installed, check the voltage on the RJ-45 LAN port. Refer to the troubleshooting guide for information on clearing the alarms.

Stop. You have completed this procedure.

LCD or ECU Hot Plug-In

Purpose	This procedure upgrades or downgrades the LCD or ECU (in case of NCS 2015) inserted into a node.
Tools/Equipment	One LCD (incase of NCS 2006) or ECU (in case of NCS 2015) having a USB device with Release 11.0 and one LCD (incase of NCS 2006) or ECU (in case of NCS 2015) having a USB device with Release prior to 11.0.
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Maintenance or higher

Before you begin

The following procedure is applicable on the NCS 2006 and NCS 2015 chassis. These scenarios apply to the LCD in case of the NCS 2006 and the ECU in case of the NCS 2015.

Note In the case, the user is unaware of the Release version of the LCD or ECU being plugged-in into the chassis, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call TAC (1 800 553-2447).

Insert an LCD/ECU of Release prior to 11.0 in a Release 11.0 Chassis

Procedure

Step 1 Ensure the LCD/ECU present in the chassis is of Release 11.0.

Step 2 Eject the LCD/ECU operating with Release 11.0 from the chassis.

Step 3 Insert the new LCD/ECU with a Release prior to 11.0. The USBSYNC alarm is raised indicating the USB Sync procedure. Wait for USBSYNC alarm to clear.

Stop. You have completed this procedure.

Insert an LCD/ECU of Release 11.0 in a Release prior to 11.0 Chassis

Caution When an LCD or ECU of release 11.0 onwards is inserted into a chasis with a release prior to 11.0, the downgrade of LCD to release prior to 11.0 will not be successful and the node will reboot. The chassis will not be in a usable condition.

Note
- For NCS 2006 platform, this scenario is applicable only for LCD module.
- For NCS 2015 platform, this scenario is applicable only for ECU module. (as for NCS 2015 platform, the USB is on ECU)

In this case, follow the below steps to make the chassis usable:

Procedure

Step 1 Ensure the LCD or ECU present in the chassis is with release 11.0 onwards and the USB sync is complete.

Wait, if the USB sync is not complete.

Step 2 Download any release prior to release 11.0 into the protect partition on the node and follow the NCS 2000 downgrade process steps.

The LCD or ECU gets formatted with the dosFs1.0 file system after you complete the downgrade process. The LCD or ECU is now ready to be inserted in any chassis running prior to release 11.0.

Note
In case of any help, log into the Technical Support Website at http://www.cisco.com/c/en/us/support/index.html for more information or call TAC (1 800 553-2447).

Upgrade the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O Card to the TNCS-2 or TNCS-2O Card

Purpose	This procedure upgrades the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card to the TNCS-2 or TNCS-2O card.
Tools/Equipment	Two TNCS-2/TNCS-2O cards.
Prerequisite Procedures	"DLP-G46 Log into CTC" in the Connect the PC and Log into the GUI document. "NTP-U488 Back Up the Cisco NCS Software Database" "DLP-U546 Download the NCS Software" "DLP-U548 Activate the New Cisco NCS Software" "NTP-U489 Upgrade the Cisco NCS 2000 Software" Access the above procedures in the Cisco NCS 2000 Series Upgrade Guide document.
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Maintenance or higher

Caution Please make sure that the LCD/ECU are plugged-in and then proceed. The USB is located in the LCD module in NCS 2006 and ECU module in NCS 2015. Do not pull-out any of the above mentioned devices while performing upgrade procedure. It is not recommended to initiate any card replacement procedure without the LCD/ECU.

Upgrade as needed:

Dual Shelf Control - Upgrade the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O Card to the TNCS-2 or TNCS-2O Cards

A dual shelf control scenario is when a Cisco NCS 2006 or Cisco NCS 2015 has two operating Control Cards on the chassis, one in active mode and one in standby mode. In this case, both the standby and active cards are upgraded to the TNCS-2 or TNCS-2O cards.

Procedure

Step 1 Verify that the node you are upgrading has R 11.0 installed. The software version is displayed in the upper left corner of the window.

Step 2 Back up the database before beginning the upgrade. https://www.cisco.com/c/en/us/td/docs/optical/15000r10_0/ncs/network_config/guide/b_ncs_network_configuration/b_ncs_network_configuration_chapter_010000.html#ID17_backupdatabase

Step 3 Physically replace the standby TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with the TNCS-2/TNCS-2O card

Note
It takes approximately 10 minutes for the active TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card to copy the system software and database to the TNCS-2 or TNCS-2O card. During this operation, the LEDs on the TNCS-2 or TNCS-2O card flash Fail and then the active/standby LED flashes. When the transfer completes, the new control card reboots and goes into standby mode after approximately three minutes. Do not remove the card from the shelf during a database transfer.

a) Check the LED on the faceplate. The ACT/STBY LED on the faceplate of the control card indicates whether the card is in active or standby mode. A green ACT/STBY LED indicates an active card and an amber light indicates a standby card.
b) Open the ejectors on the standby old control card.
c) Slide the card out of the slot. This raises the IMPROPRMVL alarm, which clears when the upgrade is complete.
d) Right-click the slot from which the old control card was ejected out.
e) Click **Delete Card** to delete the old control card from CTC.

Note
If the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card is not deleted from the CTC shelf view before inserting the TNCS-2/TNCS-2O card, the PROV-MISMATCH/MEA (card mismatch) alarm appears on that slot.

The following table shows the services that must be deleted on the old control card before replacement.

Table 4: Deletion of Services on the Old Control Card

Old Control Card	Services	New Control Card
TNC, TNC-E, TNCS	OC3 payload	TNCS-2
TNCSO	OTDR port provisioning	TNCS-2
TSC and TSC-E	Provisioning	TNCS-2

Old Control Card	Services	New Control Card
TSC, TSCE, TNC, TNC-E, TNCS, TNCSO	All services	TNCS-2O

f) Open the ejectors on the TNCS-2/TNCS-2O card to be installed.
g) Slide the card into the slot along the guide rails.
h) Close the ejectors.
i) In CTC node view, Ldg (loading) appears on the newly installed TNCS-2/TNCS-2O card.

Caution
If your active TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card resets during the upgrade before the TNCS-2/TNCS-2O control card is in full standby mode, remove the TNCS-2 or TNCS-2O card immediately.

Step 4 When the newly installed TNCS-2/TNCS-2O card is in standby, right-click the active TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card in CTC.

Step 5 From the pull-down menu, click **Reset Card**.

Wait for the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card to reboot. The new standby TNCS-2/TNCS-2O card is switched to active mode. The TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card verifies that it has the same database as the TNCS-2 or TNCS-2O card and then switches to standby.

Step 6 Verify that the remaining TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card is now in standby mode (the ACT/STBY LED changes to amber).

Step 7 Physically replace the remaining TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with the second TNCS-2/TNCS-2O card.

a) Open the ejectors on the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card.
b) Slide the card out of the slot. This raises the IMPROPRMVL alarm, which clears when the upgrade is complete.
c) Right-click the slot from which the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card was ejected out.
d) Click **Delete Card** to delete the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card from CTC.

   If the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card is not deleted from the CTC shelf view before inserting the TNCS-2 or TNCS-2O card, the IMPROV-MISMATCH/MEA (card mismatch) alarm appears on that slot. The MEA alarm can be cleared by resetting the configuration to factory defaults.

e) Open the ejectors on the TNCS-2/TNCS-2O card.
f) Slide the TNCS-2/TNCS-2O card into the slot along the guide rails.
g) Close the ejectors.

The TNCS-2/TNCS-2O card boots up. The TNCS-2/TNCS-2O card must also copy the database. Do not remove the card from the shelf during a database transfer.

Step 8 If power-related alarms occur after the second TNCS-2 or TNCS-2O card is installed, refer to the troubleshooting guide for information on clearing the alarms.

Stop. You have completed this procedure.

Dual Shelf Control - Upgrade Control Card to TNCS-2 or TNCS-2O Card

A dual shelf control scenario is when a Cisco NCS 2006 or Cisco NCS 2015 has two operating Control Cards on the chassis. In this case, only the standby control card is upgraded to the TNCS-2 or TNCS-2O card.

Procedure

Step 1 Verify that the node you are upgrading has R 11.0 installed. The software version is displayed in the upper left corner of the window.

Step 2 Back up the database before beginning the upgrade. https://www.cisco.com/c/en/us/td/docs/optical/15000r10_0/ncs/network_config/guide/b_ncs_network_configuration/b_ncs_network_configuration_chapter_010000.html#ID17_backupdatabase

Step 3 Perform steps 3 to 6 from Dual Shelf Control - Upgrade the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O Card to the TNCS-2 or TNCS-2O Cards, on page 38 to upgrade the standby TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with the TNCS-2/TNCS-2O card.

Note
On a dual shelf controller, the TNCS-2 and TNCS-2O cards are only compatible to function with the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O control cards.

Stop. You have completed this procedure.

Single Shelf Control - Upgrade Control Card to TNCS-2 or TNCS-2O Card

A single shelf control scenario is where a control card is inserted in slot 1 or 8 of the NCS 2006 and slot 1 or 17 of the NCS 2015, the other slot is installed with a filler card.

Procedure

Step 1 Verify that the node you are upgrading has R 11.x.x installed. The software version is displayed in the upper left corner of the window.

Step 2 Back up the database before beginning the upgrade. https://www.cisco.com/c/en/us/td/docs/optical/15000r10_0/ncs/network_config/guide/b_ncs_network_configuration/b_ncs_network_configuration_chapter_010000.html#ID17_backupdatabase

Step 3 Physically replace the active TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with the TNCS-2/TNCS-2O card.

a) Check the LED on the faceplate. The ACT/STBY LED on the faceplate of the control card indicates whether the card is in active or standby mode. A green ACT/STBY LED indicates an active card and an amber light indicates a standby card.
b) Open the ejectors on the active TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card.
c) Slide the card out of the slot. This raises the IMPROPRMVL alarm, which clears when the upgrade is complete.
d) Right-click the slot from which the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card was ejected out.
e) Click **Delete Card** to delete the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card from CTC.

Note
If the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card is not deleted from the CTC shelf view before inserting the TNCS-2/TNCS-2O card, the PROV-MISMATCH/MEA (card mismatch) alarm appears on that slot. The complete provisioning database will be lost on clearing the MEA alarm. The backed up database has to be restored after the MEA alarm clears.

Specific services must be deleted on the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O cards before upgrading to TNCS2 and TNCS2O cards. For more information, see Table 4: Deletion of Services on the Old Control Card, on page 38.

Caution
Replacing the Active Control Card on the node is service-affecting.

f) Open the ejectors on the TNCS-2/TNCS-2O card to be installed.
g) Slide the card into the slot along the guide rails.
h) Close the ejectors.
i) In CTC node view, Ldg (loading) appears on the TNCS-2 or TNCS-2O control card.

Step 4 When the installed TNCS-2/TNCS-2O card is in active mode, wait for control card to sync from the USB successfully. This indicates that the chassis is upgraded with Release 11.00 and corresponding database.

Stop. You have completed this procedure.

Single Shelf Control - Upgrade Control Card with Release 11.0

A single shelf control scenario is where a control card is inserted in slot 1 or 8 of the NCS 2006 and slot 1 or 17 of the NCS 2015, the other slot is installed with a filler card. In this case, the active control card of a release prior to Release 11.0 is upgraded with another control card with Release 11.0 and the other slot is installed with a filler card.

Procedure

Step 1 Verify that the node you are upgrading has a Release prior to R 11.0 installed. The software version is displayed in the upper left corner of the window.

Step 2 Back up the database before beginning the downgrade. https://www.cisco.com/c/en/us/td/docs/optical/15000r10_0/ncs/network_config/guide/b_ncs_network_configuration/b_ncs_network_configuration_chapter_010000.html#ID17_backupdatabase

Step 3 Physically remove the active TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version prior to Release 11.0 and replace the card with the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version Release 11.0.

Note
When the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with a software version prior to Release 11.0 is to be replaced with another TNC, TSC, TSC-E, TNC-E, TNCS, TNCS-2, TNCS-2O, or TNCS-O card with a software version Release 11.0, upgrade the existing node with the TNC, TSC, TSC-E, TNC-E, TNCS, TNCS-2, TNCS-2O, or TNCS-O card with a software version Release 11.0.

Note

In NCS 2002 node with one control card, NCS 2006 and NCS 2015 nodes with one control card and filler card, replace the existing simplex control card running prior to R11.0 with another control card running prior to R11.0. If the existing simplex control card running prior to R11.0 is replaced with a R11.0 or higher control card, the node database and traffic becomes affected. This issue does not arise when replacing a standby control card with a spare card.

Note
Replacing the Active Control Card on the node has an impact on traffic.

Step 4 Sync the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version prior to Release 11.0 to USB. The USBSYNC alarm clears.

a) Open the ejectors on the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version prior to Release 11.0.
b) Slide the card out of the slot. This raises the IMPROPRMVL alarm, which clears when the upgrade is complete.
c) Right-click the slot from which the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version prior to Release 11.0 was ejected out.
d) Click **Delete Card** to delete the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version prior to Release 11.0 from CTC.

   If the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version prior to Release 11.0 is not deleted from the CTC shelf view before inserting the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version Release 11.0, the IMPROV-MISMATCH/MEA (card mismatch) alarm appears on that slot.

   Specific services must be deleted on the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O cards before upgrading to TNCS2 and TNCS2O cards. For more information, see Table 4: Deletion of Services on the Old Control Card, on page 38.

e) Open the ejectors on the TNC, TSC, TSC-E, TNC-E, TNCS, TNCS-2, TNCS-2O, or TNCS-O card with software version Release 11.0.
f) Slide the TNC, TSC, TSC-E, TNC-E, TNCS, TNCS-2, TNCS-2O, or TNCS-O card with software version Release 11.0 into the slot along the guide rails.
g) Close the ejectors.

Step 5 The sync of the TNC, TSC, TSC-E, TNC-E, TNCS, TNCS-2, TNCS-2O, or TNCS-O card with software version Release 11.0 to USB begins automatically. The USBSYNC alarm clears.

The node is active with the database that is available in the new control card.

Stop. You have completed this procedure.

Downgrade the TNCS-2 and TNCS-2O Cards to TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O Cards

Purpose	This procedure downgrades a TNCS-2 or TNCS-2O card to the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card.

Tools/Equipment	Two TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O cards.
Prerequisite Procedures	"DLP-G46 Log into CTC" in the "Connect the PC and Log into the GUI" document. "NTP-U491 Restore the Previous Software Load and Database" "NTP-U488 Back Up the Cisco NCS Software Database" Access the above procedures in the Cisco NCS 2000 Series Upgrade Guide document.
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Maintenance or higher

Caution Please make sure the LCD/ECU are all plugged-in and then proceed. The USB is located in the LCD module in NCS 2006 and ECU module in NCS 2015. Do not pull-out any of the mentioned devices while performing revert procedure. If the USB is inserted after the revert procedure, then it needs to be formatted manually. It is not recommended to initiate any card replacement procedure without the LCD/ECU.

Downgrade as needed:

Procedure

Dual Shelf Control - Downgrade Control Cards to TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O Card

Procedure

Step 1 Verify that the node you are downgrading has Release 11.0 installed. The software version is displayed in the upper left corner of the window.

Step 2 Back up the database before beginning the downgrade. https://www.cisco.com/c/en/us/td/docs/optical/15000r10_0/ncs/network_config/guide/b_ncs_network_configuration/b_ncs_network_configuration_chapter_010000.html#ID17_backupdatabase

Step 3 Physically replace the standby TNCS-2/TNCS-2O control card with the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with Release prior to 11.0.

Note
It takes approximately 10 minutes for the active TNCS-2/TNCS-2O card to copy the system software and database to the newly installed controller card. During this operation, the LEDs on the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card flash Fail and then the active/standby LED flashes. When the transfer completes, the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card reboots and goes into standby mode after approximately three minutes. Do not remove the card from the shelf during a database transfer.

a) Check the LED on the faceplate. The ACT/STBY LED on the faceplate of the controller card indicates whether the card is in active or standby mode. A green ACT/STBY LED indicates an active card and an amber light indicates a standby card.
b) Open the ejectors on the standby old control card.
c) Slide the card out of the slot. This raises the IMPROPRMVL alarm, which clears when the upgrade is complete.
d) Right-click the slot from which the old control card was ejected out.
e) Click **Delete Card** to delete the old control card from CTC.

Note
If the TNCS-2/TNCS-2O card is not deleted from the CTC shelf view before inserting the TNC-E/TNCS/TNCS-O card, the PROV-MISMATCH/MEA (card mismatch) alarm appears on that slot.

Specific Services must be deleted on the TNC, TSC, TSC-E, TNC-E, TNCS or TNCS-O cards before upgrading to TNCS2 and TNCS2O cards.

Table 5: Deletion of Services on the New Control Card

New Control Card	Services	Old Control Card
TNCS-2	OC3 payload	TNC, TNC-E, TNCS
TNCS-2	OTDR port provisioning	TNCSO
TNCS-2	Provisioning	TSC and TSC-E
TNCS-2O	All services	TNC, TSC, TSCE, TNC, TNC-E, TNCS, TNCSO

f) Open the ejectors on the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card to be installed.
g) Slide the card into the slot along the guide rails.
h) Close the ejectors.
i) In CTC node view, Ldg (loading) appears on the newly installed controller card.

Caution
If your active TNCS-2/TNCS-2O card resets during the upgrade before the new controller card is in full standby mode, remove the new controller card immediately.

Step 4 When the newly installed TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card is in standby, right-click the active TNCS-2/TNCS-2O card in CTC.

Step 5 From the pull-down menu, click **Reset Card**.

Wait for the TNCS-2/TNCS-2O card to reboot. The new standby TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card is switched to active mode. The old TNCS-2/TNCS-2O card verifies that it has the same database as the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card and then switches to standby.

Step 6 Verify that the remaining TNCS-2/TNCS-2O card is now in standby mode (the ACT/STBY LED changes to amber).

Step 7 Physically replace the remaining TNCS-2/TNCS-2O card with the second TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card.

a) Open the ejectors on the TNCS-2/TNCS-2O card.
b) Slide the card out of the slot. This raises the IMPROPRMVL alarm, which clears when the upgrade is complete.
c) Right-click the slot from which the TNCS-2/TNCS-2O card was ejected out.
d) Click **Delete Card** to delete the TNCS-2/TNCS-2O card from CTC.

   If the TNCS-2/TNCS-2O card is not deleted from the CTC shelf view before inserting the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card, the IMPROV-MISMATCH/MEA (card mismatch) alarm appears on that slot. The MEA alarm can be cleared by resetting the configuration to factory defaults.

e) Open the ejectors on the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card.
f) Slide the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card into the slot along the guide rails.
g) Close the ejectors.

The second TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card boots up. The TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card must also copy the database. Do not remove the card from the shelf during a database transfer.

Step 8 If power-related alarms occur after the second TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card is installed, refer to the troubleshooting guide for information on clearing the alarms.

Stop. You have completed this procedure.

Dual Shelf Control - Downgrade A Single TNCS-2 or TNCS-2O Card to the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O Card

A dual shelf control scenario is when a Cisco NCS 2006 or Cisco NCS 2015 has two operating Control Cards on the chassis. In this case, only the standby control card is downgraded from the TNCS-2 or TNCS-2O card to the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card.

Procedure

Step 1 Verify that the node you are downgrading has Release 11.0 installed. The software version is displayed in the upper left corner of the window.

Step 2 Back up the database before beginning the downgrade. https://www.cisco.com/c/en/us/td/docs/optical/15000r10_0/ncs/network_config/guide/b_ncs_network_configuration/b_ncs_network_configuration_chapter_010000.html#ID17_backupdatabase

Step 3 Perform step 3 from Dual Shelf Control - Downgrade Control Cards to TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O Card, on page 43 to downgrade the standby TNCS-2/TNCS-2O card to the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card.

Note

On a dual shelf controller, the TNCS-2 and TNCS-2O cards are only compatible to function with the TNC-E, TNCS, and TNCS-O control cards.

Specific services must be deleted on the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O cards before upgrading to TNCS2 and TNCS2O cards. For more information, see Table 4: Deletion of Services on the Old Control Card, on page 38.

Single Shelf Control - Downgrade Control Card with Software prior to Release 11.0



Caution When a control card with Software Release 11.0 is replaced by another control card with a Software Release prior to 11.0, the downgrade will not happen successfully. The node will not be in a usable condition. Hence, this is not recommended.

Before you begin

- These steps are common for NCS 2002, NCS 2006, and NCS 2015 chassis in slots 1 or 8 in NCS 2006 and slots 1 or 17 in NCS 2015.

Procedure

Step 1 Verify that the node you are downgrading has a Release 11.0 installed. The software version is displayed in the upper left corner of the window.

Step 2 Back up the database before beginning the downgrade. https://www.cisco.com/c/en/us/td/docs/optical/15000r10_0/ncs/network_config/guide/b_ncs_network_configuration/b_ncs_network_configuration_chapter_010000.html#ID17_backupdatabase

Step 3 Revert to Release prior to 11.0.

Note
Revert to a Release prior to 11.0 is not possible on the TNCS-2/TNCS-2O cards as they do not support releases prior to Release 11.0. Hence, install a TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card in the node with Release 11.0 and then revert to Release prior to 11.0

Step 4 The sync of the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version prior to Release 11.0 to USB begins automatically. The USBSYNC alarm is raised after reverting the software from Release 11.0 to a Release prior to 11.0.

Step 5 Physically remove the active TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software Release 11.0. and replace the card with the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with a software release prior to Release 11.0.

Note
When the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with a software version of Release 11.0 is to be replaced with another TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with a software version prior

to Release 11.0, revert the existing node with the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card of a software version prior to Release 11.0.

In NCS 2002 node with one control card, NCS 2006 and NCS 2015 nodes with one control card and filler card, replace the existing simplex control card running R11.0 with another control card running R11.0. If the existing simplex control card running R11.0 is replaced with another control card running prior to R11.0, the node database and traffic becomes affected. This issue does not arise when replacing a standby control card with a spare card.

Replacing the Active Control Card on the node is service-affecting.

a) Open the ejectors on the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version Release 11.0.
b) Slide the card out of the slot. This raises the IMPROPRMVL alarm, which clears when the upgrade is complete.
c) Right-click the slot from which the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version Release 11.0 was ejected out.
d) Click **Delete Card** to delete the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version Release 11.0 from CTC.

   If the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version Release 11.0 is not deleted from the CTC shelf view before inserting the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version prior to Release 11.0, the IMPROV-MISMATCH/MEA (card mismatch) alarm appears on that slot.

   Specific services must be deleted on the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O cards before upgrading to TNCS2 and TNCS2O cards. For more information, see Table 4: Deletion of Services on the Old Control Card, on page 38.

e) Open the ejectors on the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version prior to Release 11.0.
f) Slide the TNC, TSC, TSC-E, TNC-E, TNCS, or TNCS-O card with software version prior to Release 11.0 into the slot along the guide rails.
g) Close the ejectors.

Step 6 The sync of the TNC, TSC, TSC-E, TNC-E, TNCS or TNCS-O card with software version prior to Release 11.0 to USB begins automatically. Wait for the USBSYNC alarm to clear that is raised after replacing the card in step-5. The USBSYNC alarm clears.

The node is active with the database that is available in the new control card.

Stop. You have completed this procedure.