



Administrative and Service States for Cisco ONS 15454 DWDM and Cisco NCS 2000 Series

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CHAPTER 1

Administrative and Service States

This document describes the administrative and service states for Cisco ONS 15454 and Cisco NCS 2000 Series dense wavelength division multiplexing (DWDM) cards, optical payload ports, out-of-band optical service channel (OSC) ports, optical channel network connections (OCHNCs), and transponder/muxponder cards and ports. States for Software Release 5.0 and later based on the generic state model defined in Telcordia GR-1093-Core, Issue 2 and ITU-T X.731.

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Service States

Service states include a Primary State (PST), a Primary State Qualifier (PSTQ), and one or more Secondary States (SST). The following table lists the ANSI and ETSI service state PSTs and PSTQs supported by the ONS 15454 and NCS 2000.

Table 1: ONS 15454 and NCS 2000 Service State Primary States and Primary State Qualifiers

ANSI Primary State, Primary State Qualifier	ETSI Primary State, Primary State Qualifier	Definition
IS-NR (In-Service and Normal)	Unlocked-enabled	The entity is fully operational and will perform as provisioned.
OOS-AU (Out-of-Service and Autonomous)	Unlocked-disabled	The entity is not operational because of an autonomous event.
OOS-AUMA (Out-of-Service and Autonomous Management)	Locked-disabled	The entity is not operational because of an autonomous event and has also been manually removed from service.
OOS-MA (Out-of-Service and Management)	Locked-enabled	The entity has been manually removed from service.

The following table defines the ANSI and ETSI SSTs supported by the ONS 15454 and NCS 2000.

Table 2: ONS 15454 and NCS 2000 Secondary States

ANSI Secondary State	ETSI Secondary State	Definition
AINS	automaticInService	The entity is delayed before transitioning to the IS-NR (ANSI)/Unlocked-enabled (ETSI) service state. The transition to IS-NR/Unlocked-enabled depends on correction of conditions. Alarm reporting is suppressed, but traffic is carried. Raised fault conditions, whether or not their alarms are reported, can be retrieved on the Cisco Transport Controller (CTC) Conditions tab or by using the TL1 RTRV-COND command.
DSBLD	disabled	The entity was manually removed from service and does not provide its provisioned functions. All services are disrupted; unable to carry traffic.
FLT	failed	The entity has a raised alarm or condition.
MEA	mismatchOfEquipment	An improper card is installed. For example, an installed card is not compatible with the card preprovisioning or the slot. This SST applies only to cards.
MT	maintenance	The entity has been manually removed from service for a maintenance activity but still performs its provisioned functions. Alarm reporting is suppressed, but traffic is carried. Raised fault conditions, whether or not their alarms are reported, can be retrieved on the CTC Conditions tab or by using the TL1 RTRV-COND command.
SWDL	softwareDownload	The card is involved in a software and database download. This SST applies only to cards.

UAS	unassigned	The card is not provisioned in the database. This SST applies only to cards.
UEQ (Unequipped)	notInstalled	The card is not physically present (that is, an empty slot). This SST applies only to cards.

Administrative States

Administrative states are used to manage service states. Administrative states consist of a PST and an SST. [Table 3: ONS 15454 and NCS 2000 Administrative States, on page 3](#) lists the ANSI and ETSI administrative states supported by the ONS 15454 and NCS 2000. See [Table 2: ONS 15454 and NCS 2000 Secondary States, on page 2](#) for SST definitions.



Note A change in the administrative state of an entity does not change the service state of supporting or supported entities.

Table 3: ONS 15454 and NCS 2000 Administrative States

ANSI Administrative State (PST,SST)	ETSI Administrative State (PST,SST)	Definitions
IS	Unlocked	Puts the entity in service.
IS,AINS	Unlocked,automaticInService	Puts the entity in automatic in-service.
OOS,DSBLD	Locked,disabled	Removes the entity from service and disables it.
OOS,MT	Locked,maintenance	Removes the entity from service for maintenance.



Note The administrative state of a port immediately transitions to IS when these three conditions exist:

- The port state is changed from OOS,DSBLD to IS,AINS.
- The AINS Soak timer is set to 0.
- The port receives a bad signal (for example, signal loss, fiber cut and so on).

This is applicable to all the cards.

Service State Transitions

This section describes the transition from one service state to the next state for DWDM shelves, cards, optical payload ports, OSC ports, OCHNCs, and transponder/muxponder cards and ports. A service state transition is based on the action performed on the entity and any autonomous activity.



Note When an entity is put in the OOS,MT administrative state, the ONS node suppresses all standing alarms on that entity. All alarms and events appear on the Conditions tab. You can change this behavior for the LPBKFACILITY and LPBKTERMINAL alarms. To display these alarms on the Alarms tab, set the NODE.general.ReportLoopbackConditionsOnOOS-MTPPorts (ANSI) or NODE.general.ReportLoopbackConditionsOnPortsInLocked,Maintenance (ETSI) to TRUE on the NE Defaults tab.

DWDM Shelf Service State Transitions

The following table lists ANSI and ETSI service state transitions for shelf entities.

Table 4: ONS 15454 and NCS 2000 Shelf Service State Transitions

Current Service State	Action	Next Service State
OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)	Connect a shelf.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Connect an invalid shelf.	OOS-AUMA,MEA & UAS (ANSI) Locked-disabled,mismatchOfEquipment & unassigned (ETSI)
	Add a shelf.	OOS-AU,AINS & UEQ (ANSI) Unlocked-disabled,automaticInService & notInstalled (ETSI)
OOS-AUMA,UAS (ANSI) Locked-disabled,unassigned (ETSI)	Disconnect a shelf.	OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)
	Add a shelf.	IS-NR (ANSI) Unlocked-enabled (ETSI)

OOS-AU,AINS & UEQ (ANSI) Unlocked-disabled,automaticInService & notInstalled (ETSI)	Connect a shelf.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Connect an invalid shelf.	OOS-AU,AINS & MEA (ANSI) Unlocked-disabled,automaticInService & mismatchOfEquipment (ETSI)
	Delete a shelf.	OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)
OOS-AU,UEQ (ANSI) Unlocked-disabled,notInstalled (ETSI)	Connect a shelf.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Connect an invalid shelf.	OOS-AU,MEA (ANSI) Unlocked-disabled,mismatchOfEquipment (ETSI)
	Delete a shelf.	OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)
IS-NR (ANSI) Unlocked-enabled (ETSI)	Delete a shelf.	OOS-AUMA,UAS (ANSI) Locked-disabled,unassigned (ETSI)
	Disconnect a shelf.	OOS-AU,UEQ (ANSI) Unlocked-disabled,notInstalled (ETSI)
OOS-AUMA,MEA & UAS (ANSI) Locked-disabled,mismatchOfEquipment & unassigned (ETSI)	Disconnect a shelf.	OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)
OOS-AUMA,AINS & MEA (ANSI) Locked-disabled,automaticInService & mismatchOfEquipment (ETSI)	Disconnect a shelf.	OOS-AU,AINS & UEQ (ANSI) Unlocked-disabled,automaticInService & notInstalled (ETSI)
OOS-AU,MEA (ANSI) Unlocked-disabled,mismatchOfEquipment (ETSI)	Disconnect a shelf.	OOS-AU,UEQ (ANSI) Unlocked-disabled,notInstalled (ETSI)
	Delete a shelf.	OOS-AUMA,MEA & UAS (ANSI) Locked-disabled,mismatchOfEquipment & unassigned (ETSI)

DWDM Card Service State Transitions

The following table lists ANSI and ETSI service state transitions for OSC-CSM, OSCM, OPT-BST, OPT-BST-E, OPT-PRE, OPT-AMP-17-C, OPT-AMP-17-C, 4MD-xx.x, 32WSS, 32DMX, 32DMX-L, 40-MUX-C, 40-DMX-C, 40-DMX-CE, 40-WSS-C, 40-WSS-CE, 40-WXC-C, 80-WXC-C, and 16-WXC-FS cards.

Table 5: ONS 15454 and NCS 2000 Optical Unit Service State Transitions

Current Service State	Action	Next Service State
IS-NR (ANSI) Unlocked-enabled (ETSI)	Delete the card.	OOS-AUMA,UAS (ANSI) Locked-disabled,unassigned (ETSI)
	Pull the card.	OOS-AU,UEQ (ANSI) Unlocked-disabled,notInstalled (ETSI)
	Reset the card.	OOS-AU,SWDL (ANSI) Unlocked-disabled,softwareDownload (ETSI)
	Alarm/condition is raised.	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
OOS-AU,AINS & MEA (ANSI) Unlocked-disabled,automaticInService & mismatchOfEquipment (ETSI)	Pull the card.	OOS-AU,AINS & UEQ (ANSI) Unlocked-disabled,automaticInService & notInstalled (ETSI)
	Delete the card.	If the card is valid: <ul style="list-style-type: none"> • OOS-AUMA,UAS (ANSI) • Locked-disabled,unassigned (ETSI) If the card is invalid: <ul style="list-style-type: none"> • OOS-AUMA,MEA & UAS (ANSI) • Locked-disabled,mismatchOfEquipment & unassigned (ETSI)
OOS-AU,AINS & SWDL (ANSI) Unlocked-disabled,automaticInService & softwareDownload (ETSI)	Restart completed.	IS-NR (ANSI) Unlocked-enabled (ETSI)
		OOS-AU,AINS & MEA (ANSI) Unlocked-disabled,automaticInService & mismatchOfEquipment (ETSI)
	Pull the card.	OOS-AU,AINS & UEQ (ANSI) Unlocked-disabled,automaticInService & notInstalled (ETSI)

OOS-AU,AINS & UEQ (ANSI) Unlocked-disabled,automaticInService & notInstalled (ETSI)	Insert a valid card.	OOS-AU,AINS & SWDL (ANSI) Unlocked-disabled,automaticInService & softwareDownload (ETSI)
	Insert an invalid card.	OOS-AU,AINS & MEA (ANSI) Unlocked-disabled,automaticInService & mismatchOfEquipment (ETSI)
	Delete the card.	OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)
OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)	Pull the card.	OOS-AU,UEQ (ANSI) Unlocked-disabled,unequipped (ETSI)
	Delete the card.	OOS-AUMA,UAS (ANSI) Locked-disabled,unassigned (ETSI)
	Change the administrative state to OOS,MT (ANSI) or Locked,maintenance (ETSI).	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)
	Reset the card.	OOS-AU,SWDL (ANSI) Unlocked-disabled,softwareDownload (ETSI)
	Alarm/condition is cleared.	IS-NR (ANSI) Unlocked-enabled (ETSI)
OOS-AU,MEA (ANSI) Unlocked-disabled,mismatchOfEquipment (ETSI)	Pull the card.	OOS-AU,UEQ (ANSI) Unlocked-disabled,notInstalled (ETSI)
	Delete the card.	If the card is valid: <ul style="list-style-type: none"> • OOS-AUMA,UAS (ANSI) • Locked-disabled,unassigned (ETSI) If the card is invalid: <ul style="list-style-type: none"> • OOS-AUMA,MEA & UAS (ANSI) • Locked-disabled,mismatchOfEquipment & unassigned (ETSI)

OOS-AU,SWDL (ANSI) Unlocked-disabled,softwareDownload (ETSI)	Restart completed.	IS-NR (ANSI) Unlocked-enabled (ETSI)
		OOS-AU,MEA (ANSI) Unlocked-disabled,mismatchOfEquipment (ETSI)
OOS-AU,UEQ (ANSI) Unlocked-disabled,notInstalled (ETSI)	Pull the card.	OOS-AU,UEQ (ANSI) Unlocked-disabled,notInstalled (ETSI)
	Insert a valid card.	OOS-AU,SWDL (ANSI) Unlocked-disabled,softwareDownload (ETSI)
	Insert an invalid card.	OOS-AU,MEA (ANSI) Unlocked-disabled,mismatchOfEquipment (ETSI)
OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)	Delete the card.	OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)
	Pull the card.	OOS-AUMA,MT & UEQ (ANSI) Locked-disabled,maintenance & notInstalled (ETSI)
	Delete the card.	OOS-AUMA,UAS (ANSI) Locked-disabled,unassigned (ETSI)
	Change the administrative state to IS (ANSI) or Unlocked (ETSI).	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
	Reset the card.	OOS-AUMA,MT & SWDL (ANSI) Locked-disabled,maintenance & softwareDownload (ETSI)
OOS-AUMA,MEA & UAS (ANSI) Locked-disabled,mismatchOfEquipment & unassigned (ETSI)	Alarm/condition is cleared.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Pull the card.	OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)
	Provision the card.	OOS-AU,MEA (ANSI) Unlocked-disabled,mismatchOfEquipment (ETSI)

OOS-AUMA,MT & SWDL (ANSI) Locked-disabled,maintenance & softwareDownload (ETSI)	Restart completed.	OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)
		OOS-AUMA,MEA & MT (ANSI) Locked-disabled,mismatchOfEquipment & maintenance (ETSI)
	Pull the card.	OOS-AUMA,MT & UEQ (ANSI) Locked-disabled,maintenance & notInstalled (ETSI)
OOS-AUMA,UAS (ANSI) Locked-disabled,unassigned (ETSI)	Pull the card.	OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)
	Provision an invalid card.	OOS-AU,MEA (ANSI) Unlocked-disabled,mismatchOfEquipment (ETSI)
	Provision a valid card.	OOS-AU,SWDL (ANSI) Unlocked-disabled,softwareDownload (ETSI)
OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)	Insert a valid card.	OOS-AU,SWDL (ANSI) Unlocked-disabled,softwareDownload (ETSI)
	Insert an invalid card.	OOS-AUMA,MEA & UAS (ANSI) Locked-disabled,mismatchOfEquipment & unassigned (ETSI)
	Preprovision a card.	OOS-AU,AINS & UEQ (ANSI) Unlocked-disabled,automaticInService & notInstalled (ETSI)

Optical Payload Port Service State Transitions

The following table lists the ANSI and ETSI optical payload port service state transitions.

Table 6: ONS 15454 and NCS 2000 Optical Payload Port Service State Transitions

Current Service State	Action	Next Service State
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IS-NR (ANSI) Unlocked-enabled (ETSI)	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	The OCHNC end-to-end path no longer exists.	OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)
	Alarm/condition is raised.	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)	All required OCHNC connections exist.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Put the port in the OOS,MT (ANSI) or Locked,maintenance (ETSI) administrative state.	OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)
	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Alarm/condition is raised.	OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)
OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)	Alarm/condition is cleared.	OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)
	Put the port or cross-connect in the IS (ANSI) or Unlocked (ETSI) administrative state.	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
	Put the port or cross-connect in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Put the port or cross-connect in the OOS,MT (ANSI) or Locked,maintenance (ETSI) administrative state.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)

OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)	Alarm/condition is cleared.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Put the port or cross-connect in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)
	Put the port or cross-connect in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Put the port or cross-connect in the OOS,MT (ANSI) or Locked,maintenance (ETSI) administrative state.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)
OOS-AUMA,FLT & LPBK & MT (ANSI) Locked-disabled,failed & loopback & maintenance (ETSI)	Release the loopback.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)
	Alarm/condition is cleared.	OOS-MA,LPBK & MT (ANSI) Locked-enabled,loopback & maintenance (ETSI)
OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)	Alarm/condition is cleared.	OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)
	Put the port or cross-connect in the IS (ANSI) or Unlocked-enabled (ETSI) administrative state.	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
	Put the port or cross-connect in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)
	Put the port or cross-connect in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Put the port or cross-connect in a loopback.	OOS-AUMA,FLT & LPBK & MT (ANSI) Locked-disabled,failed & loopback & maintenance (ETSI)

OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)	Put the port in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)
	Put the port in the OOS,MT (ANSI) or Locked,maintenance (ETSI) administrative state.	OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)
OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)	Put the port in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)
	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Alarm/condition is raised.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)

OSC Port Service State Transitions

The following table lists the ANSI and ETSI OSC port service state transitions.

Table 7: ONS 15454 and NCS 2000 OSC Port Service State Transitions

Current Service State	Action	Next Service State
IS-NR (ANSI) Unlocked-enabled (ETSI)	Delete the OSC.	OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)
	Alarm/condition is raised.	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)	Create the OSC.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Put the port in the OOS,MT (ANSI) or Locked,maintenance (ETSI) administrative state.	OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)
	Alarm/condition is raised.	OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)

OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)	Alarm/condition is cleared.	OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)
	Put the port in the IS (ANSI) or Unlocked (ETSI) administrative state.	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Put the port in the OOS,MT (ANSI) or Locked,maintenance (ETSI) administrative state.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)
OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)	Alarm/condition is cleared.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Put the port in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)
	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Put the port in the OOS,MT (ANSI) or Locked,maintenance (ETSI) administrative state.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)

OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)	Alarm/condition is cleared.	OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)
	Put the port in the IS (ANSI) or Unlocked-enabled (ETSI) administrative state.	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
	Put the port in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)
	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Put the port in a loopback.	OOS-AUMA,FLT & LPBK & MT (ANSI) Locked-disabled,failed & loopback & maintenance (ETSI)
OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)	Put the port in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)
	Alarm/condition is raised.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)

OCHNC, OCHCC, and OCH-Trail Service State Transitions

The following table lists the ANSI and ETSI OCHNC, OCHCC, and OCH-Trail service state transitions.

Table 8: ONS 15454 and NCS 2000 OCHNC Service State Transitions

Current Service State	Action	Next Service State
IS-NR (ANSI) Unlocked-enabled (ETSI)	Put the connection in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)
	Alarm/condition is raised.	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)

OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)	Put the connection in the IS (ANSI) or Unlocked (ETSI) administrative state.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Alarm/condition is raised.	OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)
OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)	Alarm/condition is cleared.	OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)
	Put the port in the IS (ANSI) or Unlocked (ETSI) administrative state.	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Put the port in the OOS,MT (ANSI) or Locked,maintenance (ETSI) administrative state.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)
OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)	Alarm/condition is cleared.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Put the port in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)
	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Put the port in the OOS,MT (ANSI) or Locked,maintenance (ETSI) administrative state.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)
OOS-AUMA,FLT & LPBK & MT (ANSI) Locked-disabled,failed & loopback & maintenance (ETSI)	Release the loopback.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)
	Alarm/condition is cleared.	OOS-MA,LPBK & MT (ANSI) Locked-enabled,loopback & maintenance (ETSI)

OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)	Alarm/condition is cleared.	OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)
	Put the port in the IS (ANSI) or Unlocked-enabled (ETSI) administrative state.	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
	Put the port in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)
	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Put the port in a loopback.	OOS-AUMA,FLT & LPBK & MT (ANSI) Locked-disabled,failed & loopback & maintenance (ETSI)
OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)	Put the connection in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)

Transponder/Muxponder Card Service State Transitions

The following table lists ANSI and ETSI transponder and muxponder card service state transitions.

Table 9: ONS 15454 and NCS 2000 Transponder/Muxponder Card Service State Transitions

Current Service State	Action	Next Service State
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IS-NR (ANSI) Unlocked-enabled (ETSI)	Change the administrative state to OOS,MT (ANSI) or Locked,maintenance (ETSI).	OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)
	Delete the card.	OOS-AUMA,UAS (ANSI) Locked-disabled,unassigned (ETSI)
	Pull the card.	OOS-AU,UEQ (ANSI) Unlocked-disabled,notInstalled (ETSI)
	Reset the card.	OOS-AU,SWDL (ANSI) Unlocked-disabled,softwareDownload (ETSI)
	Alarm/condition is raised.	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
OOS-AU,AINS & MEA (ANSI) Unlocked-disabled,automaticInService & mismatchOfEquipment (ETSI)	Change the administrative state to OOS,MT (ANSI) or Locked,maintenance (ETSI).	OOS-AUMA,MEA & MT (ANSI) Locked-disabled,mismatchOfEquipment & maintenance (ETSI)
	Pull the card.	OOS-AU,AINS & UEQ (ANSI) Unlocked-disabled,automaticInService & notInstalled (ETSI)
	Delete the card.	If the card is valid: <ul style="list-style-type: none"> • OOS-AUMA,UAS (ANSI) • Locked-disabled,unassigned (ETSI) If the card is invalid: <ul style="list-style-type: none"> • OOS-AUMA,MEA & UAS (ANSI) • Locked-disabled,mismatchOfEquipment & unassigned (ETSI)
OOS-AU,AINS & SWDL (ANSI) Unlocked-disabled,automaticInService & softwareDownload (ETSI)	Restart completed.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Pull the card.	OOS-AU,AINS & UEQ (ANSI) Unlocked-disabled,automaticInService & notInstalled (ETSI)

OOS-AU,AINS & UEQ (ANSI) Unlocked-disabled,automaticInService & notInstalled (ETSI)	Insert a valid card.	OOS-AU,AINS & SWDL (ANSI) Unlocked-disabled,automaticInService & softwareDownload (ETSI)
	Insert an invalid card.	OOS-AU,AINS & MEA (ANSI) Unlocked-disabled,automaticInService & mismatchOfEquipment (ETSI)
	Delete the card.	OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)
	Change the administrative state to OOS,MT (ANSI) or Locked, maintenance (ETSI).	OOS-AUMA,MT & UEQ (ANSI) Locked-disabled,maintenance & notInstalled (ETSI)
OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)	Pull the card.	OOS-AU,UEQ (ANSI) Unlocked-disabled,unequipped (ETSI)
	Delete the card.	OOS-AUMA,UAS (ANSI) Locked-disabled,unassigned (ETSI)
	Change the administrative state to OOS,MT (ANSI) or Locked,maintenance (ETSI).	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)
	Reset the card.	OOS-AU,SWDL (ANSI) Unlocked-disabled,softwareDownload (ETSI)
	Alarm/condition is cleared.	IS-NR (ANSI) Unlocked-enabled (ETSI)

OOS-AU,MEA (ANSI) Unlocked-disabled,mismatchOfEquipment(ETSI)	Pull the card.	OOS-AU,UEQ (ANSI) Unlocked-disabled,notInstalled (ETSI)
	Delete the card.	If the card is valid: <ul style="list-style-type: none"> • OOS-AUMA,UAS (ANSI) • Locked-disabled,unassigned (ETSI) If the card is invalid: <ul style="list-style-type: none"> • OOS-AUMA,MEA & UAS (ANSI) • Locked-disabled,mismatchOfEquipment & unassigned (ETSI)
	Change the administrative state to OOS,MT (ANSI) or Locked,maintenance (ETSI).	OOS-AUMA,MT & UEQ (ANSI) Locked-disabled,maintenance & notInstalled (ETSI)
OOS-AU,SWDL (ANSI) Locked-disabled,softwareDownload (ETSI)	Restart completed.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Pull the card.	OOS-AU,UEQ (ANSI) Locked-disabled,notInstalled (ETSI)
OOS-AU,UEQ (ANSI) Locked-disabled,notInstalled (ETSI)	Insert a valid card.	OOS-AU,SWDL (ANSI) Locked-disabled,softwareDownload (ETSI)
	Insert an invalid card.	OOS-AU,MEA (ANSI) Locked-disabled,mismatchOfEquipment (ETSI)
	Delete the card.	OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)
	Change the administrative state to OOS,MT (ANSI) or Locked,maintenance (ETSI).	OOS-AUMA,MT & UEQ (ANSI) Locked-disabled,maintenance & notInstalled (ETSI)

OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)	Pull the card.	OOS-AUMA,MT & UEQ (ANSI) Locked-disabled,maintenance & notInstalled (ETSI)
	Delete the card.	OOS-AUMA,UAS (ANSI) Locked-disabled,unassigned (ETSI)
	Change the administrative state to IS (ANSI) or Unlocked (ETSI).	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
	Reset the card.	OOS-AUMA,MT & SWDL (ANSI) Locked-disabled,maintenance & softwareDownload (ETSI)
	Alarm/condition is cleared.	IS-NR (ANSI) Unlocked-enabled (ETSI)
OOS-AUMA,MEA & MT (ANSI) Locked-disabled,mismatchOfEquipment & maintenance (ETSI)	Change the administrative state to IS (ANSI) or Unlocked (ETSI).	OOS-AU,MEA (ANSI) Locked-disabled,mismatchOfEquipment (ETSI)
	Pull the card.	OOS-AUMA,MT & UEQ (ANSI) Locked-disabled,maintenance & notInstalled (ETSI)
	Delete the card.	If the card is valid: <ul style="list-style-type: none"> • OOS-AUMA,UAS (ANSI) • Locked-disabled,unassigned (ETSI) If the card is invalid: <ul style="list-style-type: none"> • OOS-AUMA,MEA & UAS (ANSI) • Locked-disabled,mismatchOfEquipment & unassigned (ETSI)
OOS-AUMA,MEA & UAS (ANSI) Locked-disabled,mismatchOfEquipment & unassigned (ETSI)	Pull the card.	OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)
	Provision the card.	OOS-AU,MEA (ANSI) Locked-disabled,mismatchOfEquipment (ETSI)

OOS-AUMA,MT & SWDL (ANSI) Locked-disabled,maintenance & softwareDownload (ETSI)	Restart completed.	OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)
	Pull the card.	OOS-AUMA,MT & UEQ (ANSI) Locked-disabled,maintenance & notInstalled (ETSI)
OOS-AUMA,MT & UEQ (ANSI) Locked-disabled,maintenance & notInstalled (ETSI)	Change the administrative state to IS (ANSI) or Unlocked (ETSI).	OOS-AU,UEQ (ANSI) Locked-disabled,notInstalled (ETSI)
	Insert a valid card.	OOS-AUMA,MT & SWDL (ANSI) Locked-disabled,maintenance & softwareDownload (ETSI)
	Insert an invalid card.	OOS-AUMA,MEA & MT (ANSI) Locked-disabled,mismatchOfEquipment & maintenance (ETSI)
	Delete the card.	OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)
OOS-AUMA,UAS (ANSI) Locked-disabled,unassigned (ETSI)	Pull the card.	OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)
	Provision an invalid card.	OOS-AU,MEA (ANSI) Locked-disabled,mismatchOfEquipment (ETSI)
	Provision a valid card.	OOS-AU,SWDL (ANSI) Locked-disabled,softwareDownload (ETSI)
OOS-AUMA,UAS & UEQ (ANSI) Locked-disabled,unassigned & notInstalled (ETSI)	Insert a valid card.	OOS-AU,SWDL (ANSI) Locked-disabled,softwareDownload (ETSI)
	Insert an invalid card.	OOS-AUMA,MEA & UAS (ANSI) Locked-disabled,mismatchOfEquipment & unassigned (ETSI)
	Preprovision a card.	OOS-AU,AINS & UEQ (ANSI) Unlocked-disabled,automaticInService & notInstalled (ETSI)

OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)	Change the administrative state to IS (ANSI) or Unlocked (ETSI).	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Delete the card.	OOS-AUMA,UAS (ANSI) Locked-disabled,unassigned (ETSI)
	Pull the card.	OOS-AUMA,MT & UEQ (ANSI) Locked-disabled,maintenance & notInstalled (ETSI)
	Reset the card.	OOS-AUMA,MT & SWDL (ANSI) Locked-disabled,maintenance & softwareDownload (ETSI)
	Alarm/condition is raised.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)

Transponder/Muxponder Port Service State Transitions

The following table lists the ANSI and ETSI transponder and muxponder port service state transitions.

Important Notes for Table 8:

- The transponder and muxponder cards have both client and trunk ports. To bring up service, it is not necessary for both the client side and trunk side to be in the IS-NR (ANSI)/Unlocked-enabled (ETSI) service state.
- In a client-side facility loopback, the client port is in the OOS-MA,LPBK & MT (ANSI)/Locked-enabled,loopback and maintenance (ETSI) service state and the remaining client and trunk ports can be in any other service state. In a client-side terminal loopback on transponder cards, the client port is in the OOS-MA,LPBK & MT service state and the trunk ports are in IS-NR (ANSI)/Unlocked-enabled (ETSI). For client-side terminal loopbacks on muxponder cards, the client port is in the OOS-MA,LPBK & MT service state and the remaining client and trunk ports can be in any service state.
- In a trunk-side facility loopback, the trunk port is in the OOS-MA,LPBK & MT (ANSI)/Locked-enabled,loopback and maintenance (ETSI) service state and the remaining client and trunk ports can be in any other service state. In a trunk-side terminal loopback, the trunk port is in the OOS-MA,LPBK & MT (ANSI)/Locked-enabled,loopback and maintenance (ETSI) service state and the client ports are in IS-NR (ANSI)/Unlocked-enabled (ETSI) for complete loopback functionality. This type of loopback affects all client ports because it is performed on the aggregate signal.

Table 10: ONS 15454 and NCS 2000 Transponder/Muxponder Port Service State Transitions

Current Service State	Action	Next Service State
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IS-NR (ANSI) Unlocked-enabled (ETSI)	Put the port in the OOS,MT (ANSI) or Locked,maintenance (ETSI) administrative state.	OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)
	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Put the port in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)
	Alarm/condition is raised.	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)	Put the port in the IS (ANSI) or Unlocked (ETSI) administrative state.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Put the port in the OOS,MT (ANSI) or Locked,maintenance (ETSI) administrative state.	OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)
	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Alarm/condition is raised.	OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)
OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)	Alarm/condition is cleared.	OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)
	Put the port in the IS (ANSI) or Unlocked (ETSI) administrative state.	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Put the port in the OOS,MT (ANSI) or Locked,maintenance (ETSI) administrative state.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)

OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)	Alarm/condition is cleared.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Put the port in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)
	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Put the port in the OOS,MT (ANSI) or Locked,maintenance (ETSI) administrative state.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)
OOS-AUMA,FLT & LPBK & MT (ANSI) Locked-disabled,failed & loopback & maintenance (ETSI)	Release the loopback.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)
	Alarm/condition is cleared.	OOS-MA,LPBK & MT (ANSI) Locked-enabled,loopback & maintenance (ETSI)
OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)	Alarm/condition is cleared.	OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)
	Put the port in the IS (ANSI) or Unlocked-enabled (ETSI) administrative state.	OOS-AU,FLT (ANSI) Unlocked-disabled,failed (ETSI)
	Put the port in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS & FLT (ANSI) Unlocked-disabled,automaticInService & failed (ETSI)
	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Put the port in a loopback.	OOS-AUMA,FLT & LPBK & MT (ANSI) Locked-disabled,failed & loopback & maintenance (ETSI)

OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)	Put the port in the IS (ANSI) or Unlocked (ETSI) administrative state.	IS-NR (ANSI) Unlocked-enabled (ETSI)
	Put the port in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)
	Put the port in the OOS,MT (ANSI) or Locked,maintenance (ETSI) administrative state.	OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)
OOS-MA,LPBK & MT (ANSI) Locked-enabled,loopback & maintenance (ETSI)	Release the loopback.	OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)
OOS-MA,MT (ANSI) Locked-enabled,maintenance (ETSI)	Put the port in the IS (ANSI) or Unlocked (ETSI) administrative state.	IS-NR Unlocked-enabled (ETSI)
	Put the port in the IS,AINS (ANSI) or Unlocked,automaticInService (ETSI) administrative state.	OOS-AU,AINS (ANSI) Unlocked-disabled,automaticInService (ETSI)
	Put the port in the OOS,DSBLD (ANSI) or Locked,disabled (ETSI) administrative state.	OOS-MA,DSBLD (ANSI) Locked-enabled,disabled (ETSI)
	Put the port in loopback.	OOS-MA,LPBK & MT (ANSI) Locked-enabled,loopback & maintenance (ETSI)
	Alarm/condition is raised.	OOS-AUMA,FLT & MT (ANSI) Locked-disabled,failed & maintenance (ETSI)

Additional References

Related Documents

Use this document in conjunction with the other release-specific documentation listed in this table:

Link	Description
<i>Cisco ONS Documentation Roadmap</i>	Provides quick access to publications of Cisco ONS releases.

Link	Description
<i>Cisco ONS 15454 DWDM Control Card and Node Configuration Guide</i>	Provides background and reference material and procedures for installation and configuration of control cards and node configuration on Cisco ONS 15454 dense wavelength division multiplexing (DWDM) systems.
<i>Cisco ONS 15454 DWDM Line Card Configuration Guide</i>	Provides background and reference material and procedures for installation and configuration of line cards on Cisco ONS 15454 dense wavelength division multiplexing (DWDM) systems.
<i>Cisco ONS 15454 DWDM Network Configuration Guide</i>	Provides background and reference material, procedures for turn up, provisioning, and maintenance of Cisco ONS 15454 dense wavelength division multiplexing (DWDM) systems.
<i>Cisco ONS 15454 DWDM Troubleshooting Guide</i>	Provides general troubleshooting instructions, alarm troubleshooting instructions, and a list of error messages that apply to the Cisco ONS 15454 dense wavelength division multiplexing (DWDM) systems.
<i>Release Notes for Cisco ONS 15454</i>	Provides information about new features and enhancements for the Cisco ONS 15454 DWDM platforms.
<i>Cisco ONS 15454 Hardware Installation Guide</i>	Provides installation information of the Cisco ONS 15454 hardware.
<i>Cisco ONS 15454 DWDM Licensing Guide</i>	Provides information about installing and managing Cisco ONS 15454 DWDM licenses.
<i>Cisco ONS SDH TL1 Command Guide</i> <i>Cisco ONS SONET TL1 Command Guide</i>	Provides a comprehensive list of TL1 commands.
<i>Installing the GBIC, SFP, SFP+, XFP, CXP, CFP, and CPAK Optical Modules in Cisco ONS Platforms</i>	Provides information about the Pluggable Port Modules support.

Link	Description
<i>Cisco NCS 2000 Series Documentation Roadmap</i>	Provides quick access to publications of Cisco NCS 2000 Series releases.
<i>Cisco NCS 2000 Series Control Card and Node Configuration Guide</i>	Provides background and reference material and procedures for installation and configuration of control cards and node configuration on Cisco NCS 2000 Series systems.
<i>Cisco NCS 2000 Series Line Card Configuration Guide</i>	Provides background and reference material and procedures for installation and configuration of line cards on Cisco NCS 2000 Series systems.

Link	Description
<i>Cisco NCS 2000 Series Network Configuration Guide</i>	Provides background and reference material, procedures for turn up, provisioning, and maintenance of Cisco NCS 2000 Series systems.
<i>Cisco NCS 2000 Series Troubleshooting Guide</i>	Provides general troubleshooting instructions, alarm troubleshooting instructions, and a list of error messages that apply to the Cisco NCS 2000 Series systems.
<i>Release Notes for Cisco NCS 2000 Series</i>	Provides information about new features and enhancements for the Cisco NCS 2000 Series systems.
<i>Cisco NCS 2000 Series Hardware Installation Guide</i>	Provides installation information of the Cisco NCS 2000 Series hardware.
<i>Cisco NCS 2000 Series Licensing Configuration Guide</i>	Provides information about installing and managing NCS licenses.
<i>Cisco NCS 2000 Series TL1 Command Guide</i>	Provides a comprehensive list of TL1 commands.
<i>Installing the GBIC, SFP, SFP+, XFP, CXP, CFP, and CPAK Optical Modules in Cisco NCS Platforms</i>	Provides information about the Pluggable Port Modules support.

Technical Assistance

Link	Description
http://www.cisco.com/support	<p>The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies.</p> <p>To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds.</p> <p>Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.</p>

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