

Overview of the OCx Interface Module

The features of the following OCx interface modules are configured based on the SONET and SDH mode support:

- 1-port OC-48/STM-16 or 4-port OC-12/OC-3 / STM-1/STM-4 + 12-port T1/E1 + 4-port T3/E3 CEM Interface ModuleNCS4200-3GMS
- 1-Port OC-192 or 8-Port Low Rate CEM Interface Module NCS4200-1T8S-10CS
- NCS 4200 1-Port OC-192 or 8-Port Low Rate CEM 20G Bandwidth Interface Module (NCS4200-1T8S-20CS)

SONET Modes

SONET supports the following Circuit Emulation over Packet (CEP), Structure- Agnostic TDM over Packet (SATOP), and Circuit Emulation over Packet-Switched Network (CESoPSN) modes:

CEP Modes

- STS-48C
- STS-12C
- STS-3C
- STS-1
- VT 1.5

SAToP or CESoP

- VT1.5-T1
- T3
- CT3-T1

The following table provides required clock and CEM configuration that is supported on each of the SONET mode:

Table 1: Modes Supported on SONET

	STS-48C	STS-12C	STS-3C	STS-1	VT 1.5	VT 1.5 T1	T3	CT3-T1
Required Configuration								
Mode	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Internal/Line Clock Source	Internal	Internal	Internal	Internal	Internal	Yes	Yes	Yes
ACR/DCR Clock	NA	NA	NA	NA	NA	Yes	Yes	Yes
CEM Configurations								
CEP	Yes	Yes	Yes	Yes	Yes	NA	Yes	NA
SAToP Framed	NA	NA	NA	NA	NA	Yes	Yes	Yes
SAToP Unframed	NA	NA	NA	NA	NA	Yes	Yes	Yes
CESoPSN	NA	NA	NA	NA	NA	Yes	Yes	Yes
Interworking Multiservice Gateway (iMSG) [1]								
iMSG	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Serial Interfaces	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
iMSG ACR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Multilink Interfaces	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
VLAN Handoff	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OCx Port Protection								
APS	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OCx Path Protection								
UPSR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
UPSR over HDLC	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

[1] Supports Channelized T3/E3or T1/E1

SDH Modes

SDH supports the following modes:

- AU-4-16c (VC4-16c)
- AU-4-4c (VC4-4c)
- AU-4 (VC4)
- AU-4 — TUG-3 — VC-3 — T3 (TUG-3 — T3)
- AU-4 — TUG-3 — VC-3 — E3 (TUG-3 — E3)
- AU-4 — TUG-3 — TUG-2 — VC-11 (TUG-2 — VC-11)
- AU-4 — TUG-3 — TUG-2 — VC-12 (TUG-2 — VC-12)
- AU-4 — TUG-3 — TUG-2 — VC-12 — E1 (TUG-2 — E1)
- AU-3 — VC-3 — T3 (VC-3 — T3)
- AU-3 — TUG-2 — VC-11 — T1 (TUG-2 — T1)
- AU-3 — TUG-2 — VC-11 (TUG-2 — VC-11)
- AU-3 — TUG-2 — VC-12 (TUG-2 — VC-12)
- AU-3 — VC-3 — E3 (VC-3 — T3)

The following table provides required clock and CEM configuration that is supported on each of the SDH mode. The SDH modes provided in brackets are only for the documentation purpose:

Table 2: Modes Supported on SDH

	VC4-16c	VC4-4c	VC4	TUG-2-VC11	TUG-2-VC12	TUG-3-E3	TUG-3-T3	TUG-2-VC11-T1	TUG-2-VC12-E1
Required Configuration									
Mode	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Internal/Line Clock Source	Internal	Internal	Internal	Internal	Internal	Yes	Yes	Yes	Yes
ACR/DCR Clock	NA	NA	NA	NA	NA	Yes	Yes	Yes	Yes
CEM Configurations									
CEP	Yes	Yes	Yes	Yes	Yes	NA	NA	NA	NA
SAToP Framed	NA	NA	NA	NA	NA	Yes	Yes	Yes	Yes

	VC4-16c	VC4-4c	VC4	TUG-2-VC11	TUG-2-VC12	TUG-3-E3	TUG-3-T3	TUG-2-VC11-T1	TUG-2-VC12-E1
SAToP Unframed	NA	NA	NA	NA	NA	Yes	Yes	Yes	Yes
CESoPSN	NA	NA	NA	NA	NA	Yes	Yes	Yes	Yes
Interworking Multiservice Gateway (iMSG)									
iMSG	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Serial Interfaces	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
iMSG ACR	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OCx Port Protection									
MSP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
OCx Path Protection									
SNCP	Yes	Yes	Yes	Yes	Yes	NA	NA	NA	NA