

# OC-12/STM-4 Trunk Module

High quality SDH/SONET trunk for the Nimbra 600 series

## MODULE



The 4-port OC-12/STM-4 Trunk Module enables high-quality multiservice transport over standard OC-12/STM-4 links.

The OC-12/STM-4 Trunk Module for the Nimbra 600 series of multiservice switches enables high-quality transport of video, audio and data over standard OC-12/STM-4 links.

The 4-port OC-12/STM-4 Trunk Module is a high capacity plug-in interface for the Nimbra 600 of multiservice switches. It features the same high quality transport found on all Nimbra trunk modules and enables trouble-free service transport of real-time sensitive media services, with guaranteed QoS.

The module provides a synchronous switched transport layer over OC-12/STM-4 infrastructure for efficient media transport. It features on-board circuitry to eliminate jitter and wander impairments from e.g. pointer justifications in the underlying transport layer.

### Highest Bandwidth Utilization

The OC-12/STM-4 Trunk Module enables service multiplexing with granular bandwidth allocation in steps of 0,5 Mbps to provide true multi-service transport of video, audio and data, with hard QoS requirements, over SDH/SONET links.

With a link overhead of only 1.5% and support for non-hierarchical service switching/multiplexing, the Nimbra architecture provides industry leading network utilization.

### Multi-service Transport

The OC-12/STM-4 Trunk Module features 4 independent Small Form-factor Ports (SFPs) that can be fitted with various optical modules for different media. The module is suitable for all network topologies, including ring, point-point, bus, and mesh.

The different Nimbra SDH/SONET trunk modules provide a very flexible core/edge multi-service switching system for demanding video, audio and data applications, with guaranteed 100% QoS.

### Unprecedented Availability

The 2 x OC-12/STM-4 Trunk Module provides extensive ITU-T G.826 compliant fault and performance monitoring options and supports dynamic network restoration and in-service hot swap for high availability. It is easily managed through CLI, Web GUI and SNMP.

# KEY FEATURES

## Standards compliant.

The port complies with applicable SONET / SDH / DTM standards.

## Pluggable optics.

Each of the 4 OC-12/STM-4 ports is equipped with a Small Form-factor Pluggable (SFP) housing that can be fitted with SFP modules for different distances and fiber media.

## Very high utilization.

Each trunk port can carry up to 589 Mbps payload. This corresponds to a link overhead of only 1.5% as compared to for example the ATM cell tax of 10%. Non-hierarchical switching and multiplexing of services enhances utilization significantly.

## Carrier class.

The Nimbra 680/688 and its modules are designed to meet NEBS level 3 specifications for trouble-free operation.

## Multiservice operation.

Each port can carry any mix of data, video, audio and voice traffic.

## Multicast support.

The trunk module supports QoS guaranteed multicast of all service streams (i.e. Ethernet, DVB-ASI MPEG, 270 Mbps SDI, PDH etc.)

## Extremely low jitter and wander.

The module has on-board circuitry to eliminate jitter and wander impairments from e.g. pointer justifications in the underlying transport layer.

## Performance monitoring.

Standard performance metrics with G.826 style presentation of performance for a consolidated link performance view.

## Hot swap.

Supports in-service swapping of the module for high availability.

## Ease of handling.

Managed by CLI, Web GUI or SNMP. Can also be managed by Nimbra Vision™ NMS.

# TECHNICAL SPECIFICATIONS

**Form factor:** Plug-in unit to Nimbra 600 series, uses 1 slot

## Laser options:

Small Form-factor: STM-4 S-4.1 / OC-12 IR-1 (SM,1310nm, 15 km)  
Pluggable (SFP): STM-4 L-4.1 / OC-12 LR-1 (SM,1310nm, 40 km)  
STM-4 L-4.2 / OC-12 LR-2 (SM,1550nm, 80 km)  
CWDM 8 wavelengths (SM,1470-1610nm, 80km)

## Framing:

OC-12: STS-12c, ANSI T1105  
STM-4: STM-4, ITU-T Rec G.707

## Mapping:

SONET: STS-12c SPE  
SDH: VC-4-4c  
DTM: VC synchronous; ETSI ES 201 803-4

## Fault management:

SONET/SDH: LOS, LOF, LOP, AIS, DEG, EXC, PLM, TIM, UNEQ, RDI (LED and Element Manager)

## Performance management:

ITU-T G.826 based  
Bins: 24h, 15min  
Parameters: ES, SES, BBE, UAS

## Maintenance:

Hardware: Hot swap  
Firmware: Remote download

**Power consumption:** < 40W

## Management:

SNMP: v1/v2c/v3  
ElementManager: Web GUI, CLI  
Network Manager: Nimbra Vision

## Timing and Synchronization:

Timing modes:  
Locked: OC-12/STM-4; DTM network sync  
Hold-over:  
Free-running: <4.6 ppm

## Environmental conditions:

Operating temp: 5 to 40 °C (41 to 104 °F)  
(short term): -5 to 55 °C (23 to 131 °F)  
Storage temp: -40 to 70°C (-40 to 156 °F)  
Relative humid: 10% to 90% (non-condensing)

Safety: UL60950-1  
EN60950-1  
Laser safety: CFR 21 1040.10/11  
EMC: FCC 15 Class A  
EN 300 386  
CE marking: 93/68/EEC

## Ordering information:

NPS0045-6001 4 x OC-12/STM-4 Trunk Module  
NPA0014-LJ11 SFP Module OC-12/STM-4 IR1  
NPA0014-LL11 SFP Module OC-12/STM-4 LR1  
NPA0014-VL21 SFP Module OC-12/STM-4 LR2

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