

# OC-12/STM-4 Trunk Module

High quality SDH/SONET trunk for the Nimbra 300 series

## MODULE



The 2-port OC-12/STM-4 Trunk Module enables multi-service transport over standard OC-12/STM-4 links.

The 2-port OC-12/STM-4 Trunk Module for the Nimbra 300 series of multiservice switches enables efficient high-quality media transport over standard OC-12/STM-4 links.

The 2 x OC-12/STM-4 Trunk Module is a 2-port plug-in unit for the Nimbra One/300 Series of multi-service switches. It features the same high quality transport found on all Nimbra trunk modules and enables troublefree, high quality of service transport of realtime sensitive media services.

### Highest Bandwidth Utilization

The Trunk Module enables multiservice operation over standard OC-12c/STM-4c links. Service multiplexing with granular bandwidth allocation in steps of 0,5 Mbps allows for an extremely high level of the network infrastructure and allows for true multi-service transport with hard QoS requirements over SDH/SONET links.

With a link overhead of only 1.5% and support for nonhierarchical switching/multiplexing, the Nimbra 300 architecture provides industry leading CAPEX savings.

### Multi-service Transport

The Trunk Module features two independent uni-directional Small Form-factor Pluggable ports (SFP) that can be fitted with various optical modules for different media. Fitted in a Nimbra 300 Series switch, the Trunk Module enables the design of a multiservice access and aggregation network that can access and aggregate for example Ethernet, compressed or uncompressed video, and PDH traffic. Nimbra One fits up to seven Trunk Modules.

Together with the OC-48/STM-16 and OC-3/STM-1 trunk modules a very flexible edge multi-service switching system is provided. A typical application for this trunk module is to serve as an up-link in a Nimbra 340, dual homed to two core/edge switches for redundancy or more capacity, carrying DVBAI and/or 270 Mbps SDI uncompressed video. Remaining capacity can be used e.g. for Ethernet transport. This constitutes a very powerful solution for a media PoP.

### Unprecedented Availability

The 2 x OC-12/STM-4 Trunk Module has extensive fault and performance monitoring options and supports dynamic network restoration and in-service hot swap for higher availability. It is easily managed by means of CLI, Web GUI and SNMP

# KEY FEATURES

## Standards compliant.

The ports comply to applicable SONET/SDH standards.

## Pluggable optics.

The two OC-12/STM-4 ports are Small Formfactor Pluggable (SFP LC) compatible and can be fitted with SFP modules for different distances and fiber media.

## Non-blocking switch.

The module is equipped with a strictly nonblocking switch matrix with 7.5 Gbps capacity in order to handle all switching between West-Node-East, thereby off-loading the backplane from transit traffic.

## Very high link utilization.

Support for logical channels with 0.5 Mbps granularity and a link overhead of only 1.5% allows for a very high level of network utilization, without impacting QoS.

## Any topology.

The module support any topology; point-to-point, rings and mesh.

## Multiservice support.

Supports transport of a variety of services such as Ethernet, SONET/SDH, PDH, DVB-ASI, SDI and AES.

## QoS Multicast support.

Supports multicasting of layer 2 services such as Video over IP or ASI, with guaranteed QoS for each stream.

## Performance monitoring.

Standard performance metrics with G.826 style presentation of performance.

## Hot swap.

Supports in-service swapping of the module for low unavailability.

## 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 300 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)

## Framing:

OC-12: STS-12c, ANSI T1.105  
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, SF, AIS, 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:** <15W

## 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  
Built-in oscillator: Stratum 3 / G.813 option 1

## 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)

## Regulatory compliance:

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:

NPS0019-3001 2 x OC-12/STM-4 Trunk Module (Nimbra 300)  
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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