

IP/Ethernet Trunk Module

Reliable media transport over IP for the Nimbra 300 MSR

MODULE



The 3-port IP/Ethernet Trunk Module enables multiservice media transport over IP with guaranteed Quality of Service.

The 3-port IP/Ethernet Trunk Module for the Nimbra 300 series of MSRs provides scalable and cost-efficient media transport over IP with guaranteed Quality of Service and end-to-end service integrity and performance monitoring.

The IP/Ethernet Trunk Module for the Nimbra 300 MSR enables efficient transport of video, audio and data over IP/MPLS/Ethernet infrastructure, for demanding media and broadcasting applications.

Service Aware Media Networks

The IP/Ethernet Trunk Module is typically used to interface a service aware media network with the underlying IP core network. By creating a media service overlay using MSRs from Net Insight, the network becomes aware of each individual media service. Each service can be provisioned, monitored and protected, not only as a member of a class of service, but individually, on-demand and on an end-to-end basis.

In addition to the advanced management and network protection features found on all Nimbra trunk modules, the IP/Ethernet Trunk Module implements Forward Error Correction (FEC) to protect the link from bit errors or dropped packets. Advanced clock recovery mechanisms are used to preserve a high QoS in terms of jitter and wander.

Service-Centric Network Management

The IP/Ethernet Trunk Module supports Net Insight's service-centric network management concept. Services are setup, managed, and monitored without any need for advanced IP traffic engineering or any interaction with the IP service provider. New services are provisioned end-to-end without affecting any ongoing transmissions and independently of the IP core network.

Trunk capacity used by the IP/Ethernet module is configurable and available trunk capacity can be allocated to transport video, audio and data services with at a granularity of 0.5 Mbps.

Performance Monitoring

The IP/Ethernet Trunk continuously monitors the performance of the underlying IP network in terms of:

- Statistical counters and Packet Delay Variation (PDV) gauges on the MSR trunk links (MSR to MSR), even if it consists of multiple IP hops.
- Ethernet statistics on the link to the next IP router.

The performance monitoring is done on actual data path traffic and does not require the extra overhead or equipment of external probing systems. Performance monitoring can be consolidated over time and/or topology to produce reports for SLA follow-up.

KEY FEATURES

Service aware media networks.

A Nimbra MSR network is capable of looking at each individual media service within the core network without any grouping into service classes - to make the network truly aware of each individual service.

Lossless routing.

From ingress port to egress port, a Nimbra MSR never loses a single packet. Lossless routing is possible thanks to dedicated QoS allocation per service, together with Net Insight's unique time synchronization.

QoS enhanced links.

At each hop, the Nimbra MSR performs specific tasks to improve the QoS of the underlying IP network. This functionality consists of Forward Error Correction to reduce packet loss, traffic shaping to facilitate resource allocation and resynchronization to reduce jitter and wander.

Service-centric network management.

In a Nimbra MSR network, each service can be provisioned, monitored and protected individually, on demand and on an end-to-end basis.

3 ports for link diversity and aggregation.

The module is equipped with 3 independent ports which may be used e.g. for dual uplinks from an access node or for aggregation in an edge node.

Bandwidth granularity.

The Ethernet trunk bandwidth may be defined in steps of 0.5 Mbps to allow for cost-effective resource utilization.

Enhanced QoS.

FEC (Forward Error Correction) buffers and advanced play-out functions are implemented to minimize potential Quality of Service degradations caused by the underlying packet network.

Comprehensive protection options.

The interface supports automatic network restoration and per service 1+1 protection.

Advanced clock recovery.

Automatic clock recovery circuitry that adapts to packet network jitter/wander levels, with automatic fall-back to local or external reference.

TECHNICAL SPECIFICATIONS

Form factor: Plug-in unit to Nimbra 300 series, uses 1 slot.

Physical Interface:

Interface type: SFP ports
Number of ports: 3
Supported SFPs: 1000BASE-T, 1000BASE-SX/LX
Port speed: 10, 100 or 1000 Mbps full duplex auto sensing (1000BASE-T), 1000 Mbps (1000BASE-SX/LX)

Mapping:

Encapsulation: DTM over DPP-IP/UDP/IP/Ethernet
FEC: Adapted SMPTE 2022 / COP
Bw. granularity: 0.5 Mbps

Supported standards:

IEEE 802.3 Ethernet
IEEE 802.1Q Virtual LANs
IEEE 802.1p Ethernet User Priority
RFC2474 IP Diffserv Priority
RFC826, RFC903 Address Resolution protocols ARP
RFC768 User Datagram Protocol UDP

Fault management:

Defects: dLOS, dLOF, dLOP, dLOM, dAIS, dRDI, dDEG
Alarms: Communication and Equipment

Performance management:

24h/15min bins: ES, SES, BBE, UAS, SS
IP: UDP Checksum
Ethernet: MIB-2/RMON counters statistics group

Maintenance:

Hardware: Hot swap
Firmware: Remote firmware upgrade

Management:

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

Timing and Synchronization:

Modes: Network timing
Hold-over/Local
External reference

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)

Power consumption: <20W

Regulatory compliance:

Safety: IEC/EN 60950-1
CE marking: 93/68/EEC
EMC: ETSI EN 300 386
FCC Part 15 sub-part B
RoHS directive: 2002/95/EC

Ordering information:

NPS0053-3001 3 x IP/Ethernet Trunk Module (300)
NPM0016-3ET2 2 x IP/ETH Trunk Firmware for Nimbra 300

(Note: The 3 x IP/Ethernet Trunk Module is not supported by the Nimbra 390)

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