

NET INSIGHT'S NIMBRA™ PLATFORM

THE MOST EFFICIENT AND SCALEABLE TRANSPORT SOLUTION
FOR MEDIA, BROADCAST AND TV DISTRIBUTION NETWORKS

THE NIMBRA™ PLATFORM

Net Insight's Nimbra platform delivers the world's most efficient and scaleable optical transport solution for IP Media, Broadcast, Digital Terrestrial TV, Mobile TV (DVB-H) and IPTV/Triple Play networks.

Net Insight products truly deliver 100 percent Quality of Service with up to 3X improvement in utilization of bandwidth for a converged transport infrastructure. Net Insight's Nimbra Platform is the industry solution for video, voice and data, reducing operational costs by 50 percent and enhancing competitiveness in delivery of existing and new media services.

World class customers run mission critical video services over Net Insight products for more than 100 million people in more than 20 countries.

The Nimbra™ Platform

Net Insight's Nimbra product portfolio is a complete range of multi-service transport equipment based on video-centric technology for Broadcast, IP Media, Digital-Terrestrial and Broadband TV networks. The platform combines the cost-efficiency of Ethernet access and the latest advances in optical transport technologies to deliver a range of high quality video, IPTV, IP data and voice services on to a single and optimized transport infrastructure. Customers benefit from the industry's highest bandwidth utilization and guaranteed 100% Quality of Service to enable new revenue-generating video and media services.

Broadband and telecom operators providing video, voice and data services use the Nimbra platform to attract and retain subscribers by differentiating their offerings from competitors. Additionally, many broadcasters and telecom operators selling services to the professional media industry use Net Insight's highly effective platform to transport real-time sensitive video and IP data with guaranteed 100% QoS.

The Nimbra platform uses channelized bandwidth in steps of 0.5 Mbps to ensure the necessary capacity for each service throughout the network. This makes it possible to guarantee the delivery of IP data, VoIP and all types of video-related services like streaming media, Video-on-Demand and Digital TV. In addition, these products provide the highest transmission performance in terms of jitter, wander and latency together with advanced layer 2 multicast capabilities for all services. A built-in control plane automatically sets up services end-to-end across any network topology and automatically restores services in case of failure, resulting in significant OPEX reductions.

All products can be integrated with existing fiber or microwave infrastructures as well as with Next Generation SDH/SONET products. The Nimbra products allow operators to upgrade their networks to better utilize the capacity, while at the same time enabling them to offer additional and comprehensive revenue generating video services.

Net Insight's Nimbra platform is the ultimate solution for operators and service providers wanting to maximize their existing networks while adding new revenue-gener-

ating services with low CAPEX and OPEX.

Net Insight's solution for QoS-enabled IP transport has several unique features and benefits compared to traditional MSPP and packet-based solutions.

KEY FEATURES:

- **Guaranteed 100% QoS also at full network load** – Separation rather than prioritization of services ensures that traffic on different channels never interfere. This means that in contrast to packet or cell-switched networks where the QoS starts to degrade with higher network loads, video or other mission-critical traffic is always guaranteed full quality through the network, also at full network load. Similarly, traffic from different end customers or different service providers can be reliably separated.
- **Highest network utilization** – The platform includes enhanced functionality with non-hierarchical, low-rate switching which further increases the utilization in a Nimbra network. Channels have configurable size, unsurpassed granularity and can be symmetric or asymmetric as desired.
- **Flexible topologies for step-by-step build-out** – The link topologies can be configured to build ring, bus, and/or point-to-point/mesh structures as desired thereby simplifying network planning and allowing a build-as-you-grow strategy. Freedom to choose the topology to match the actual traffic pattern matrix is key to high resource utilization in a network.

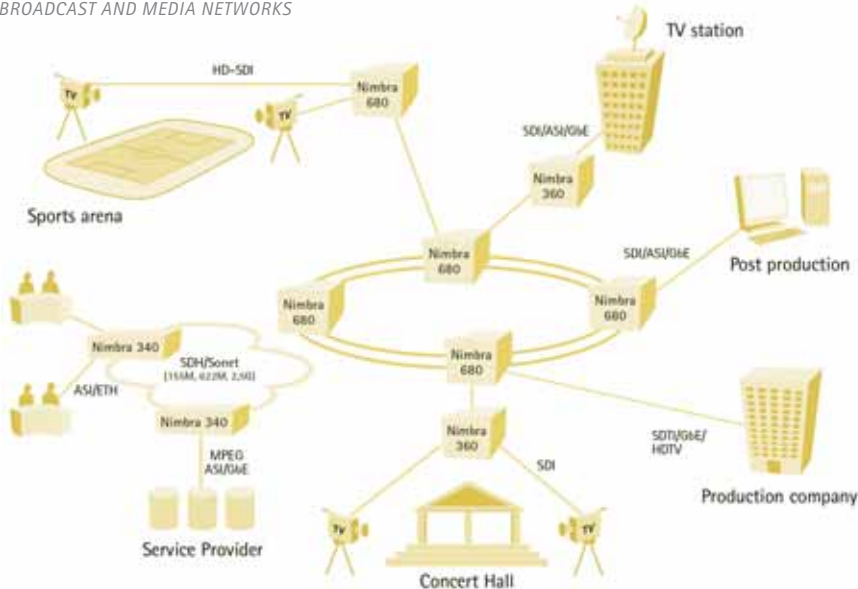
- **Signaled end-to-end provisioning and restoration** – Channels, whether unicast or multicast, automatically find their paths through the network during provisioning, requiring only identification of end points. An in-band signaling protocol based on GMPLS features handles the setup through the network and services are automatically rerouted in case of failures. Restoration options include hop-by-hop fast rerouting, predefined source routing or dedicated 1+1 protection in any network topology. Equipment protection options range from duplicated power supply to full hardware redundancy.

- **Comprehensive Ethernet functionality** – The Nimbra platform includes comprehensive Ethernet functionality. Using port and VLAN (802.1Q) information, Ethernet traffic from the same port can be mapped onto separate channels for effective E-Line and E-LAN services as specified by Metro Ethernet Forum. All Ethernet boards also support 802.1p and IP diffserv to ensure prioritized traffic always get first access onto the channels.

- **Multicast** – The Nimbra platform supports multicast transport for all services, such as Ethernet, ASI, SDI, HD-SDI, AES/EBU, SONET/SDH, and T1/E1. This feature allows e.g., hundreds of IP MPEG channels to be sent securely without interfering with other traffic on the same link, ensuring fast response times, constant delay and fast protection. Multicasting is supported in any network topology and for any level of forking with maintained QoS.

Market Sectors

BROADCAST AND MEDIA NETWORKS



BROADCAST AND MEDIA NETWORKS

Net Insight's solution for broadcast and media networks enables TV and production companies to produce and transport studio quality video over large terrestrial networks in real time. The Nimbra platform supports both SDTV and HDTV video transport using the media industry's own formats, such as SDI, uncompressed HD-SDI, SDTI, DVB-ASI, and AES/EBU with maintained high quality and with very high network utilization. Studio equipment and servers connect directly into standard video, audio and data interfaces in the platform thus replacing costly conversion equipment. In addition, Net Insight provides a guaranteed IP/Ethernet transport to ensure meeting the rigorous QoS requirements of the professional media industry.

Traditionally, each MPEG service has allocated capacity equivalent to a DS3/E3 or a full STM-1/OC-3 resulting in very low network utilization and high network costs. With the Nimbra platform each service can be set up in steps of 0.5 Mbps enabling a dramatic increase in network utilization and reduction in

cost. Net Insight has provided advanced terrestrial media networks for both broadcasters and production companies utilizing their own private network for video, voice and data, as well as telecom service providers offering new revenue-generating services to the media industry.

DIGITAL TERRESTRIAL TV (DTT) AND MOBILE TV NETWORKS (DVB-H)

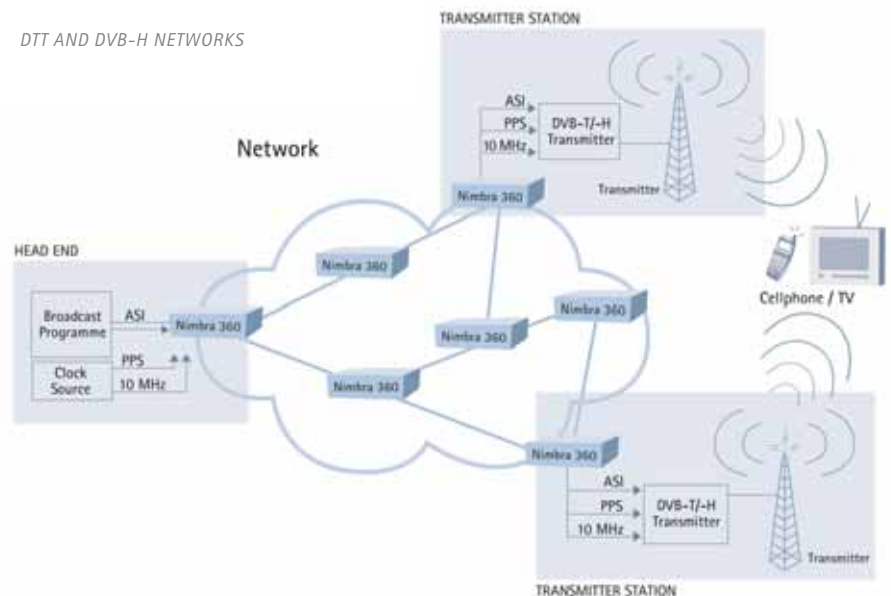
Digital Terrestrial TV (DVB-T, ATSC, DMB, ISDB-T) recently has gone from test implementations to massive rollouts. IMS research anticipates a worldwide annual growth rate of more than 43%, and in Europe and Asia a large number of countries are now planning a near term build-out. The first deployments of DVB-H, distribution of video to handheld devices such as mobile phones are now also taking place.

Net Insight's Nimbra platform provides a unique solution for DTT and DVB-H networks. Native ASI signals are inserted directly into the Nimbra products at the headend and are multicast across the network to the transmitter sites, eliminating the need for network to ASI adapters.

To maximize utilization, only the payload of the ASI signals is sent over the network. The platform accepts ASI signals from 2 to 212 Mbps. IP data and voice traffic can be transported over the same network used for DVB distribution, which significantly reduces total infrastructure cost. Transport overhead is very low compared with ATM networks. As much as 20% more TV channels can be sent over an OC-3/STM-1 network, resulting in increased revenue potential.

DVB-T and DVB-H often require a Sin-

DTT AND DVB-H NETWORKS



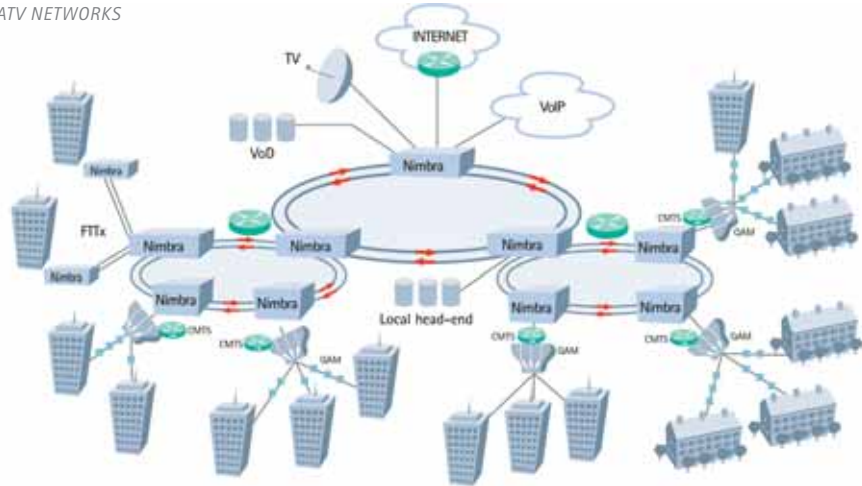
gle Frequency Network (SFN) where the transmitter stations must be synchronized to send their signals at exactly the same time. The Nimbra platform has a unique Time Transfer capability that allows highly accurate distribution of real time over the same network that carries the video signals. This eliminates the need for costly and potentially insecure GPS receivers in the network.

TV operators deploying digital terrestrial TV based on Net Insight's Nimbra platform not only get a DTT network but a multi-service transport infrastructure that opens up new business opportunities. Adding E1 cards and the unique E1 multicast makes it easy to distribute digital radio. Adding a higher-speed backbone and SDI, HD-SDI, ASI, and AES-EBU cards turns the network into a very powerful media contribution platform. The built-in GbE and Ethernet multicast makes the solution very suitable for IPTV distribution or WiFi/Wimax aggregation. The same platform can also be used for mobile TV whether distributed over IP or ASI MPEG.

IPTV / TRIPLE PLAY NETWORKS

Originally built to handle demanding real-time video services, the Net Insight Nimbra platform is the perfect fit for Telco triple play networks. It offers an end-to-end

CATV NETWORKS



transport solution integrating best-effort Internet traffic, broadcast TV, Video-on-Demand (VoD), Voice-over-IP, and legacy TDM services in a single platform scalable to millions of subscribers. Using Ethernet multicast, the platform allows hundreds of TV channels encoded as IP MPEG to be efficiently distributed with full protection, ensuring fast response times and high utilization.

The Nimbra platform enables telecom operators, xDSL or Ethernet broadband providers to deliver high quality video, voice and data at competitive prices. Net Insight's solution offers operators significantly reduced CAPEX and OPEX, while

enabling the launch of new revenue-generating services.

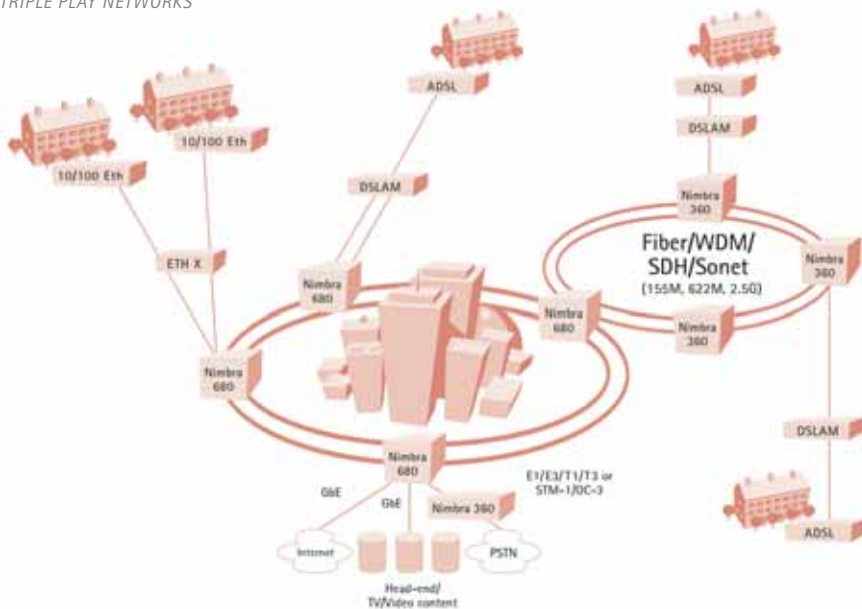
The network can be built using any topology on any infrastructure, and allows an unlimited amount of hops without compromising QoS and protection times. Additionally, with the ability to handle E1/T1 and STM-1/OC-3 in parallel with the Ethernet traffic, the solution provides a smooth migration combining ATM and Ethernet in the aggregation network or for handling legacy telephony over the same infrastructure as the data and video transport.

CATV NETWORKS

The Nimbra platform is equally suited to deliver triple play solutions for cable TV networks. MSOs benefit from the combination of efficient Ethernet functionality for IP TV, VoIP, VoD and VPN services with native video network interfaces such as ASI and SDI directly in the products. This means a true multi-service network delivering the same high quality for video as today's hybrid CATV networks.

In packet networks, operators are forced to decentralize content to reduce the number of packet hops. In a Net Insight network, delay is short and QoS is always guaranteed over any number of hops. This makes it possible to centralize the TV head-end and content servers. Moreover, the flexible network architecture allows for regional insertion or local VoD servers anywhere in the network. This gives MSOs a scalable triple play solution offering faster time-to-market and easier operations.

TRIPLE PLAY NETWORKS



The Product Portfolio

Net Insight's Nimbra product portfolio consists of powerful transport network switches and access devices with a state of the art optical control plane. The platform has standard interfaces for all established technologies, allowing operators to integrate the platform over dark fiber, WDM or SDH/SONET infrastructures to add new revenue generating video services to their service portfolios and optimize network capacity.

NIMBRA 600 SERIES

Nimbra 680 and Nimbra 688 are carrier class switches for high-capacity media, CATV and IPTV networks. Nimbra 680 features up to 80 Gbps redundant, non-blocking switching capacity and 8 slots for traffic interface modules in a compact 6 RU chassis. Nimbra 688 has twice the interface capacity. Available traffic boards include OC-3/STM-1 to OC-192/STM-64 SONET/SDH and high-density Gigabit Ethernet and HD/SD SDI modules. Optical interface options include CWDM and DWDM.



NIMBRA ONE

Nimbra One is a multiservice access and edge switch for operators and service providers in the broadcast/media and broadband/triple play network sectors. Nimbra One features a wide selection of access and trunk interfaces and has a switching capacity of up to 17.5 Gbps. 7 slots are available for traffic boards including OC-3/STM-1, OC-12/STM-4, OC-48/STM-16, Fast and Gigabit Ethernet, DVB-ASI, SDI, AES/EBU, E1/ DS1, and E3/DS3.



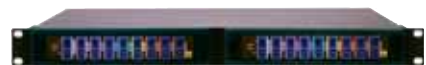
NIMBRA 300 SERIES

Nimbra 340, Nimbra 340-HD and Nimbra 360 are compact multiservice access and switch devices for efficient aggregation of data and video services. The products are particularly suited for DVB-T and professional media applications. The 2 RU chassis has a switching capacity of 5 Gbps and always comes with one built-in Gigabit Ethernet port and two slots for plug-in modules with the same set of interfaces supported as for Nimbra One. In addition the chassis is equipped with two fixed bidirectional DVB-ASI ports (Nimbra 340) or one bidirectional HD-SDI port (Nimbra 340-HD) or four multirate SONET/SDH trunk ports (Nimbra 360) to provide maximum cost-efficiency for different service demands.



NIMBRA 120

Nimbra 120 is a compact and easy-to-deploy CWDM multiplexing solution that provides scalability and cost-effectiveness for service providers and professional media network operators. Together with CWDM SFP modules in the Nimbra family of multiservice switches, the Nimbra 120 forms a scalable and highly flexible optical networking solution. A DWDM version is also available on request.



NIMBRA VISION

Nimbra Vision is a comprehensive network management system for Nimbra networks. Full FCAPS functionality is supported over standard SNMP interfaces. Nimbra Vision continuously monitors the network for faults and performance degradation and displays status in a centralized network view. Services are easily provisioned using the network map. 3rd party equipment can be integrated either via Nimbra Vision or by connecting directly to the network elements.



INTERFACE MODULES

All interface modules for the Nimbra switches have hot-swap functionality, ensuring high reliability. Access modules connect to a variety of service interfaces while trunk modules are used for interconnection of Nimbra nodes.

Gigabit Ethernet Access Module

A high-capacity Ethernet interface offering enhanced channelization with 512 kbps granularity in unicast and multicast configurations. The module supports VLAN separation (IEEE 802.1Q) allowing each VLAN to be forwarded on dedicated channels, and prioritization of packets (IEEE 802.1p or IP Diffserv). 1-port and 8-port versions are available.

Fast Ethernet Access Module

An 8-port 10/100 Base-T interface with VLAN and user priority support, ideal for integration of Ethernet access networks into a scalable multiservice aggregation infrastructure. The interface is auto-sensing and full duplex with RJ45 connectors.

SDI Video Access Module

This module offers 270 Mbps SDI interfaces based on the ITU-R BT.601/656 digital video standard for the transport of uncompressed, studio-quality video over wide area networks. The SDI Video Access Module supports protected multicast distribution in any network topology. The Nimbra One and Nimbra 300 series features a board with two bi-directional SDI ports, while the eight-port version for the Nimbra 600 series optionally supports HD-SDI with each port configurable for HD or SD and as Input or Output.

ASI Transport Access Module

This module enables digital multimedia transport with guaranteed quality of service allowing MPEG transport streams in secured logical channels ranging from 2 to 212 Mbps. It enables cost-efficient unicast or multicast video transport in both private fiber networks or over public SDH/SONET networks. 2+2 ports and 8 ports versions are available. The 8-port version has a built-in 1+1 network protection option.



AES/EBU Access Module

Digital audio is efficiently carried with minimum overhead using this 8-port module for the Nimbra One and 300 series. The module supports a wide range of sample rates from 32 to 192 kHz. A special feature is the "Virtual Studio" functionality, whereby the board can be configured to frame align audio samples to a local reference such that the wide-area transported signal appears to be a local signal.

OC-3/STM-1 Access Module

The OC-3/STM-1 access module provides seamless service integration and migration for metro

networks. It offers 4 channelized interfaces for transport of any OC-3/STM-1 compatible services. Multiplexing and switching of embedded STS-1 streams is fully supported.

E1 and T1 Access Module

This module offers a transparent PDH transport service for E1 and DS1 traffic providing 8 independent bi-directional G.703 compatible ports. Each circuit is independently switched and carries its own timing derived from the source. The board features optional 1+1 channel protection per 1.5 or 2 Mbps port.

OC-192/STM-64 Trunk Module

Used for high-capacity interconnection of Nimbra 680/688 nodes. The board supports mixing of HD/SD SDI and Ethernet traffic from Nimbra 600 series access modules combined with other types of services from underlying Nimbra One and 300 series access nodes. The board has one 10 Gbps XFP port with various optical interface options including DWDM.



OC-48/STM-16 Trunk Module

The 2-port 2.5 Gbps X-ADM module provides on-board add-drop switching functionality, especially optimized for the Nimbra One and Nimbra 300 series in protected ring networks. The 4-port module offers a cost-effective, high-density solution for the Nimbra 600 series.

OC-12/STM-4 Trunk Module

A 622 Mbps SDH/SONET compliant trunk interface with modular optics. 2-port and 4-port versions are available. The 2-port version for the Nimbra One and 300 series has an on-board switch matrix that will maximize the availability of through traffic. The 4-port version for the Nimbra 600 series is typically used for aggregation of traffic from underlying Nimbra One and Nimbra 300 series access nodes.

OC-3/STM-1 Trunk Module

This is a 155 Mbps SDH/SONET compliant trunk module with four SFP ports. Each trunk port can carry more than 147 Mbps payload. This corresponds to a link overhead of only 1.5% as compared to for example the ATM cell tax of 10%.

1Gbps Optical Trunk Module

This is a 1 Gbps trunk module for the Nimbra One and 300 series with high performance to price ratio. It is available in both short haul and long haul versions for use directly over fiber or transparent WDM systems. It is also used for cost-effective interconnection of collocated Nimbra nodes.

DS3/E3 Trunk Module

A trunk module offering four 45 or 34 Mbps PDH compatible trunk interfaces for the Nimbra One and Nimbra 300 series. It enables multi-ser-

vice operation over standard DS3/E3 connections or leased lines.

SOFTWARE PACKAGES

Net Insight's Network OS, NimOS, providing an automated control plane with signaled end-to-end provisioning and rerouting, is included in all hardware platforms together with a web-based element manager. It is possible to further enhance the functionality of the network elements with the below software packages.

Dynamic Routing

Automatically populates and updates the routing tables used by the optical control plane. Provides plug-and-play provisioning of the network and makes sure that path information is always up to date after topology changes.

Multicast

Software packages can be added to facilitate flexible point-to-multipoint distribution of any service supported by the Nimbra platform. Applications include multicast transport with guaranteed 100% QoS of:

- ASI in DTT/DVB-H and CATV networks
- Ethernet for broadcast TV distribution in the IPTV / triple play sector
- DMB, DAB radio and digital audio channels using E1 and AES/EBU interfaces
- Uncompressed HD or SD video in a professional media environment.

HD-SDI Access

An optional firmware package will enable the High Definition mode of the 8-port HD/SD SDI card for the Nimbra 600 series. This will allow each port to be configured for HD or SD SDI video with HD supported both at 1.485 and 1.485/1.001 Gbps bit rates.

OC-3/STM-1 Forward Error Correction

The OC-3/STM-1 Trunk Module can be upgraded with an optional firmware that provisions Forward Error Correction (FEC). This improves the transmission performance over unreliable media such as microwave links.

Time Transfer

This is a value added firmware option for the Nimbra 360 that is used for distribution of timing information, 1 PPS and 10 MHz, with high accuracy over a Nimbra network. Key applications include SFN enabling in DVB-T, DVB-H and DAB networks over the same infrastructure that provides distribution of traffic signals to the transmitters. The Net Insight time transfer solution eliminates the need for costly and potentially insecure GPS receivers.

Nimbra 360 Trunk Interface Upgrades

In its basic configuration the Nimbra 360 includes support for 4 integrated OC-3/STM-1 trunk interfaces. The same ports can instead be used for 4 x OC-12/STM-4 or 2 x OC-48/STM-16 transport by downloading additional firmware.

Technical Specifications

NIMBRA SWITCHES

Nimbra 600 series	Capacity: Shelf (HxWxD): Electrical Options: Synchronization: Control port:	Nimbra 680: 40 or 80 Gbps switching capacity, non-blocking in redundant configuration Nimbra 688: 80 Gbps switching capacity, non-blocking in redundant configuration Nimbra 680: 267x445x240mm/10.5"x17.5"x9.4"; 12 slots (8 for traffic modules) Nimbra 688: 445x445x240mm/17.5"x17.5"x9.4"; 22 slots (16 for traffic modules) -48 VDC or 115/230 VAC redundant 1.544 or 2.048 MHz G703.13 input, 2.048 MHz output; Holdover stratum 3, G.813 option 1 Serial port RS232C; Ethernet port 10/100 BASE-T; USB port. Optional control board redundancy
Nimbra One	Capacity: Shelf (HxWxD): Electrical Options: Synchronization: Control port:	Up to 17.5 Gbps switching capacity, with average non-blocking capacity of 5 Gbps 505x482x260mm/19.9"x19"x10.2"; 8 slots -48 VDC with optional redundancy; additional external AC options available 1.544 or 2.048 MHz G703.13 input, 2.048 MHz output; external clock reference on control module Serial port RS232C; Ethernet port 10/100 base-T
Nimbra 300 series	Capacity: Shelf (HxWxD): Built-in traffic ports: Electrical Options: Synchronization: Control port:	5 Gbps switching capacity 88x445x240mm/3.5"x17.5"x9.4"; 2 slots Nimbra 340: 1 x GigE and 2 in + 2 out ASI Nimbra 340-HD: 1 x GigE and 1 in + 1 out HD-SDI Nimbra 360: 1 x GigE and 4 x Multirate SONET/SDH trunk -48 VDC with built-in redundancy; additional external AC options available 1.544 or 2.048 MHz G703.13 input, 2.048 MHz output; optional 1PPS and 10 MHz dual in our out Serial port RS232C; Ethernet port 10/100 base-T
Nimbra 120	Capacity: Shelf (HxWxD): Electrical Options:	8 x 2.5 Gbps CWDM multiplexing capacity, 16 x 10 Gbps DWDM option 44x433x277mm/1.75"x17.1"x10.9" N/A, passive device

INTERFACE MODULES	Service	Interface Options	Nimbra 680 & 688 Characteristics	Nimbra One & 300 Characteristics
OC-192/STM-64 Trunk	OC-192c/STM-64c 9437 Mbps payload	XFP modules: SR-1/J-64.1 (2km); IR-2/S-64.2b (40km); LR-2/L-64.2 (80km); DWDM (40/80km)	1 port < 40W	N/A
OC-48/STM-16 Trunk	OC-48c/STM-16c 2359 Mbps payload	SFP modules: SR-1/J-16 (2km); IR-1/S-16.1 (15km); LR-1/L-16.1 (40km); CWDM (80km); DWDM (80km)	4 ports < 40W	2 ports On-board add-drop switch < 15W; 2 ports (Nimbra 360 fixed)
OC-12/STM-4 Trunk	OC-12c/STM-4c 589 Mbps payload	SFP modules: IR-1/S-4.1 (15km); LR-1/L-4.1 (40km); LR-2/L-4.2 (80km); CWDM (80km)	4 Ports < 40W	2 ports < 15W; 4 ports (Nimbra 360 fixed)
OC-3/STM-1 Trunk	OC-3c/STM-1 147 Mbps payload	SFP modules: Coax (100m); MM (2km); IR-1/S-1.1 (15km); LR-1/L-1.1 (40km); LR-2/L-1.2 (80km)	4 ports < 40W	4 ports < 12W; 4 ports (Nimbra 360 fixed)
1Gbps Optical Trunk	1000 Mbps over 8B10B 993 Mbps payload	SM/SH: 1310nm, 7.5dB (10km) SM/LH: 1550nm, 24dB (70km)	N/A	1 port < 12W
DS3/E3 Trunk	PDH 45 or 34 Mbps 42 or 33 Mbps payload	BNC 75 ohms	N/A	4 ports < 10W
OC-3/STM-1 Access	155 Mbps OC-3/STM-1 1+1 protection	SFP modules: Coax (100m); MM (2km); IR-1/S-1.1 (15km); LR-1/L-1.1 (40km); LR-2/L-1.2 (80km)	N/A	4 ports VC-4/STS-3c/STS-1 handling < 12W
Gigabit Ethernet Access	Ethernet Transport Service (ETS) with VLAN separation and user priority Bandwidth 0.5-1000 Mbps	SFP modules: 1000BASE-T (100m); MM/SX (500m); SM/LX (10km); SM/ZX (70km)	8 ports < 40W	1 port < 25W
Fast Ethernet Access	Ethernet Transport Service (ETS) with VLAN separation and user priority Bandwidth 0.5-100 Mbps	RJ 45 10/100 Mbps full duplex autosensing	N/A	8 ports < 25W
HD-SDI Video Access	Switched 1.485 or 1.485/1.001 Gbps uncompressed HD video	BNC 75 ohms	8 ports (in / out / monitoring per port). HD/SD configurable < 40W	1 in, 1 out, 1 monitor port (Nimbra 340-HD fixed)
SDI Video Access	Switched 270 Mbps SDI uncom- pressed video or SDTI data	BNC 75 ohms	8 ports (in / out / monitoring per port). HD/SD configurable < 40W	4 ports (2 in, 2 out) 2 monitoring ports < 25W
ASI Transport Access	Switched DVB-ASI video for MPEG transport streams Bandwidth 2-212 Mbps 1+1 protection (8-port version)	BNC 75 ohms	N/A	4 ports (2 in, 2 out) + 2 mon < 20W; 8 ports (in or out per port) + 1 monitoring port < 20W
AES/EBU Audio Access	Switched digital audio to AES3 standard. Bit rate 2-12 Mbps, sample rate 32-192 kHz. 1+1 protection	BNC 75 ohms	N/A	8 ports (in or out per port) + 1 monitoring port < 20W
E1/T1 Access	Switched PDH 2 or 1.5 Mbps 1+1 protection	RJ 48 120 ohms/100 ohms	N/A	8 ports < 12W

GENERAL TECHNICAL SPECIFICATIONS

Regulatory Compliance EMC: FCC 15 Class A, ETS 300 386 CE Mark: EN 300 386-2, 93/68/EEC Electrical safety: UL 1950, EN/IEC 60950 NEBS: GR-63-CORE, GR-1089-CORE	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 humidity: 10% to 90%, non-condensing	Performance Monitoring: All ITS services based on ITU-T G.826 Ethernet packet statistics, RMON
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NETWORK MANAGEMENT

Element Manager	Built-in Web GUI with full FCAPS functionality CLI interface SNMP v1, v2c, v3; Support for third party NMS In-band management channel or out-band management via control port
Nimbra Vision™ NMS	Auto-discovery of devices, Topological maps, Fault Management, Network database, Service Provisioning, Channel Trace, Centralized backup, Link Management, Performance Management, and Security Management
Nimbra Netsim	Off-line network planning tool for bandwidth calculations and simulation of network failures. Automatic dimensioning of rerouting capacity. Equipment validation. Same routing algorithms and configuration rules as in a live network. Runs on standard PC in Java runtime environment.

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Net Insight AB • Box 42093 • SE-126 14 Stockholm • Sweden
 Phone +46 (0)8 685 04 00 • Fax +46 (0)8 685 04 20 • sales@netinsight.net
 Net Insight Inc. • 1050 Winter Street, Suite 1000 • Waltham, MA 02451 • US
 Phone +1-781-530-3742 • sales-us@netinsight.net

www.netinsight.net