

# NetPerformer® 9500

## Multi-Service Access Gateway for Central Offices



The NetPerformer 9500 is the definitive high performance voice and data convergence solution for corporate central sites to integrate traffic over a variety of popular corporate WAN infrastructures.



Provides a software migration path to standards-based VoIP

64 Analog or 240 Digital Telephony Channels

Integrates disparate phone systems

Reduces network infrastructure

Supports digital voice

Simplifies network management

Integrates networks seamlessly

### Leverage the Power of Convergence

The NetPerformer 9500, a high performance, high capacity voice and data integrated access gateway, is designed specifically for the corporate central site and easily supports up to 240 telephony over a single WAN interface. By efficiently packetizing and compressing telephony traffic and then delivering it with data over packet/cell-based connection-oriented or connection-less networks, the 9500 allows companies to seamlessly integrate telephony and data applications while substantially reducing monthly telephony services.

The NetPerformer 9500 is the flagship component of the NetPerformer premium suite of products, all of which have been optimized specifically for the evolving needs of complex distributed enterprise networks. These networks have varying Wide Area Networking (WAN) connectivity requirements, and often have multiple sites with differing needs of functionality, density, performance and connectivity. As a modular voice and data solution, the 9500 multi-service integrated access device delivers the highest level of performance and capacity available from the NetPerformer family.

### High Capacity, High Performance, High Versatility

The 9500 efficiently packetizes and compresses voice, fax, modem and data traffic, and transports it along with LAN, SNA or serial data over various WAN infrastructures such as IP, Frame Relay, Leased Lines, channelized services, ATM and Satellite (Point-to-Point/Multipoint).

The 9500 chassis can be populated with serial, LAN and analog and digital telephony ports for aggregation and redistribution of voice and data traffic.

All voice and data entering the unit are prioritized by protocol then combined for transport over Frame Relay, ATM or IP connection via private or public networks. This functionality is provided by PowerCell® NetPerformer's award-winning, cell-based QoS prioritization technology. Ethernet LAN support is included, and integrated full/fractional T1/E1, ISDN, PRI/BRI and ATM WAN connections are available as options.

### Scalability

With support for 240 digital or 64 analog voice channels, the SDM-9500 can address the needs of even the largest sites in today's enterprise network.

### Integrated Voice and Data

A modular, high-capacity format makes the 9500 an ideal solution for the needs of the regional or central site in a converged network. The 9500, in conjunction with the rest of the NetPerformer product line, allows each individual site to be

configured with the appropriate combination of services, performance and scalability, avoiding unnecessary costs.

### Easily Upgrades for Satellite Access

Every NetPerformer platform can provide satellite-based converged communications. With Verso's unique SkyPerformer® software option enabled, greater efficiency can be achieved with point to multipoint topologies. Ideal for small-to medium-size networks requiring voice, multi-protocol data and LAN support, SkyPerformer saves you money by reducing the need for multiple space segments and additional hardware in the initial installation. When your network requires both landline and satellite access, SkyPerformer enables a hybrid satellite/terrestrial topology over a single platform, further reducing costs and minimizing complexity.

### Any-to-any Voice Switching

Integrates the disparate phone systems of individual sites, eliminating the need for consistency among sites, reducing costs and increasing flexibility.

### Support for Modem and Fax

The NetPerformer 9500 integrates and supports all of the telephony needs of today's distributed network, further reducing cost. Furthermore, the 9500's serial port density and key aggregation features, unmatched by competitors, reduce line cost, PVC requirements and equipment expenditures.

### Digital Voice Support

The NetPerformer 9500 supports key signaling methodologies and connects to most industry standard PBX units.

### SNMP-Compliant MIBs and Graphical Management

Through the integration of ActView 3000 with HP's OpenView® for Windows and Sun Solaris, the SDM-9500 can be managed using today's most popular and universal network management paradigms.

### Supports Industry Standards

NetPerformer supports standards-based VoIP via the SIP protocol and a wide range of voice codecs, providing interoperability for multi-vendor and mixed private/public networks. Additionally, NetPerformer enables enterprises to build a bandwidth-efficient private enterprise network and allows interconnection with voice service providers for off-net calls. Seamless interconnectivity is not limited to voice, however. The 9500 also offers flexible data protocol support and interfaces with a wide range of network services and user requirements.

## System Details

- Modular chassis: 8 slots for voice/data modules, one slot for 100 Mbps Firewire bus expansion card to additional chassis
  - Up to up to 4 chassis daisy-chained when utilizing the 9585 only, 3 utilizing both the 9530 and 9585 modules
  - Power: auto-sensing 100-240 VAC, 50/60 Hz, -48 VDC.
  - Optional redundant VAC power supply

## Voice and Data Module

- 9585 integrated voice and data module:
  - 3 universal serial ports (user or link), DTE or DCE, HD26F connectors, RS-232C, X.21/V.11, RS-530, RS-449/RS-442, V.35, internal/external clocking
  - 110BaseT LAN port
  - 4 slots for interface cards
  - Occupies two slots in the 9500 chassis, maximum of 4 9585 per 9500 chassis
  - Performance Level: 10,000 cells per second per module

## Interface Options

- Digital Data/Voice interface cards:
  - IM-T1: T1 interface module for PBX or WAN connection with integrated CSU (B8ZS/B7ZS/AMI, D4/ESF framing, NT/TE, RJ48 connector)
  - IM-E1-75: E1 interface module for PBX or WAN connection (HDB3, 75 ohm, BNC connectors)
  - IM-E1-120: E1 interface module for PBX or WAN connection (HDB3, NT/TE, 120 ohm, RJ48 connector)
  - IM-BRI: 2-port BRI S/T for PBX or WAN connection (NT/TE, phantom power, RJ48 connectors)
- Analog telephony interface cards:
  - IM-EM: 4-port E&M module (2- or 4-wire, types I, II, or V, 600 ohms, RJ48 connectors)
  - IM-FXS: 2-port FXS module (software controllable impedance, loop start, RJ11 connectors)
  - IM-FXO: 2-port FXO module (software controllable impedance, loop start, RJ11 connectors)
- Data interface card:
  - IM-Dual-Serial: 2-port universal serial WAN interface (user or link), DTE or DCE, HD26F connector, interface compatible with RS-232/V.24, V.35, X.21/V.11, RS-449-V.36, RS-530, internal/external clocking
  - Up to 4 interface cards per 9585 module
- DSP SIMM modules (internal):
  - SIMM-1: 1-DSP voice processing module, supporting 3 -5 voice channels, depending on algorithm
  - SIMM-3: 3-DSP voice processing module, supporting 9 -15 voice channels, depending on algorithm
  - SIMM-6: 6-DSP voice processing module, supporting 18 -30 voice channels, depending on algorithm
  - Up to 4 DSP SIMMs per 9585 module

## Network Connections

- Network topology: public and private Frame Relay and ATM, mesh, hierarchical, star, point-to-point, satellite point-to-point/multipoint (SkyPerformer option)
- Automatic node discovery and rerouting with least cost metric routing
- Automatic load balancing, bandwidth on demand (over leased line), dial back-up, time-of-day connect
- QoS: 8 classes of service, 16 priority weights, association to 802.1p and DiffServ TOS bits

## Link Port Protocols:

- Leased Lines:
  - Serial synchronous full duplex and T1/E1 channelized (full or fractional services with up to 64 logical ports)
  - Frame Relay, HDLC and PPP, PowerCell
  - Drop and insert for T1/E1 voice and data
- IP WAN:
  - Ethernet, serial and T1/E1 PPP, Frame Relay RFC-1490, ATM RFC-1483, RFC-2364 and PowerCell over IP
- Frame Relay (Public and private):

- UNI User and Network, UNI, RFC1490, PowerCell
- Local management interface: LMI, ANSI T1.617/annex D, ITU-T Q.933/annex A, CLLM or disabled
- PVCs: 300 per node, automatic DLCI discovery
- SVCs: telephony applications, one SVC per voice call
- ATM (optional license required):
  - T1/E1 full or fractional, up to 31 PVCs, PowerCell over AAL5, RFC1483 Multiprotocol Encapsulation over AAL5, RFC2364 PPP over AAL5, FRF.8 Service Interworking
- ISDN T1//E1 PRI and BRI:
  - Switched or leased line mode, Frame Relay, Power Cell, PPP, HDLC
- Switched Lines and Dial back-up:
  - PowerCell over serial ports or ISDN PRI/BRI
  - Dialing protocols: V.25bis, X.21, AT and control leads
- Speed:
  - Link port maximum speed without compression: 2.048Mbps
  - Link port maximum speed with software compression: 2.048Mbps

## Telephony Features

- Maximum telephony channels: up to 8 FXS or FXO, or 16 E&M, or 120 (96 with SIP) digital channels per SDM-9585 module
- Voice compression algorithms:
  - ACELP-CN 8K/6K with fallback, 4 ch. per DSP
  - G.711 PCM 64K, 5 ch. per DSP
  - G.723.1 Low 5.3K/High 6.3K, 4 ch. per DSP
  - G.726 ADPCM 16K/24K/32K/40K, 4 ch. per DSP
  - G.729 (3 ch. per DSP) and G.729a 8K (5 ch. per DSP)
- FAX Relay: Group III FAX 4.8,7.2,9.6,12.0,14.4 Kbps, over PowerCell or T.38 for SIP. Group IV fax and other non-voice bearer ISDN channel at 64K over PowerCell (5 ch. per DSP)
- Modem Relay: V.32bis demodulation up to 14.4Kbps, modem passthrough (G.711) PowerCell mode for other modem types, STU-III secure phones (3 ch. per DSP)
- Network signaling:
  - Any-to-any switching, using PowerCell over PVC or Frame Relay SVC, or SIP (Session Initiated Protocol) VoIP, including end-to-end QSIG/ISDN support for supplementary services
- Analog telephony channels:
  - FXS: loop and ground start forward disconnect
  - FXO: loop start, forward disconnect
  - E&M: immediate and wink start, custom
- Digital telephony channels:
  - ISDN and QSIG T1/E1 PRI and BRI signaling: EuroISDN/ETSI, National and Japan
  - T1 signaling: robbed bit signaling, CCS transparent, SS7 transport
  - E1 signaling: CAS, CCS transparent, SS7 transport
  - Digital CAS Signaling types: Immediate, Wink, FXO, FXS, FXO ground, FXS ground, E1/R2, PLAR, custom
- Mu-law or A-law coding
- Pulse and tone dialing
- Voice traffic routing with alternates destinations and digits manipulation using local mapping tables, locally switched TDM calls (hairpin)
- VoIP peer-to-peer calling with ingress and egress dialing plan, centralized dialing plan using SIP Redirect, and registration to optional SIP proxy
- Radius authentication and billing server interface

## LAN Support

- Two IP address per LAN port
- Ethernet interfaces: Ethernet II and IEEE 802.2, 802.3, SNAP
- Standards: IP RIP V1/V2 or Static, OSPF, IP Precedence, diffServ, NAT, VoIP SIP NAT ALG, IP Multicast IGMP V1/V2 PIM-DM, BootP/DHCP relay, DHCP client, IPX RIP and SAP, LLC2, 802.1p/q prioritization and VLAN, 802.1D Spanning Tree Protocol (STP), MAC Layer
- Filter criteria: based on protocol, address (source, destination or SAP), TOS bit/diffServ or custom filtering

## Data Features

- Protocols:
  - SNA: SDLC, LLC2 or Frame Relay RFC-1490 (BAN, BNN), maximum of 64 PUs per unit, (types 1, 2.0, 2.1, 4/5), Local SDLC and LLC2 spoofing, SDLC/LLC2 conversion
  - Legacy Sync: PPP, BDLC, HDLC, SDLC, X.25, X.25 over Frame Relay (annex F/G), COP, BSC, VIP, ALC, IBM/RJE, Uniscope, Poll/Select, Siemens Nixdorf, JCA, Zengin
  - Frame Relay: RFC-1490, UNI-DTE, UNI-DCE
  - Asynchronous: ENQ/ACK, XON/XOFF, transparent, CTS/DTR
- Maximum speed is protocol dependent, 2 Mbps for Frame Relay, HDLC/SDLC, PPP and X.25

## Software Options

- SkyPerformer®
- SIP
- ATM

## Network Management

- SNMP management via ActView 3000 Network Management System for HP OpenView for Windows or Sun Solaris
- Menu driven async console port (VT-100) via DB9 male connector, auto-sensing DTE/DCE
- Remote Telnet access to command port
- FTP upload and download of software and configuration
- Traps, traces and extended statistics
- Username/password security control, Radius Authentication for console and Telnet access administrative filtering

## Physical Characteristics

Dimensions: 12.5" H x 17.5" W x 12.3" D  
 31.8 cm H x 44.5 cm W x 31.1 cm D  
 Typical weight: 23 lbs. (10.4Kg)  
 Shipping weight: 26 lbs. (11.8 kg)

## Environmental Tolerances

Operating temperature: 0° to 45° Celsius  
 Relative humidity: 10% to 90%, non-condensing

## Regulatory - Compliance and Agency Approval

This product complies with or have obtained Regulatory Agency approval at least against the following standards:

• EMC - Emission	FCC CFR 47 Part 15 EN 55022 (1994)+ Amendment 1 AS/NZS 3548 (1995) EN 55024 (1998)	
• EMC - Immunity	EN 60950 (1992)+ Amendments 1-3 UL 1950 3rd Edition CSA C22.2 N °950 AS/NZS 3260 (1993) ACA TS001 (1996)	
• Safety	IEC 950 (1991)+ Amendments 1-3 UL 1950 3rd Edition CSA C22.2 N °950 AS/NZS 3260 (1993) ACA TS001 (1996)	
• Telecom - Analog	FCC Part 68 IC CS-03 Part 2	
• Telecom - Digital	FCC Part 68 IC CS-03 Part 2 and Part 6	ACA TS002 ACA TS003

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