

Product Brief

Nortel Networks Versalar Switch Router 25000

Are you a service provider looking to capitalize on new revenue opportunities offered by the growth of the Internet? How about offering mission-critical IP services, such as Internet Protocol virtual private network (IP VPN) services and Voice-over-IP?

We developed the new core Versalar Switch Router 25000 specifically to support this market opportunity, to deliver the performance, scalability, availability, and quality of service required for premium carrier applications.

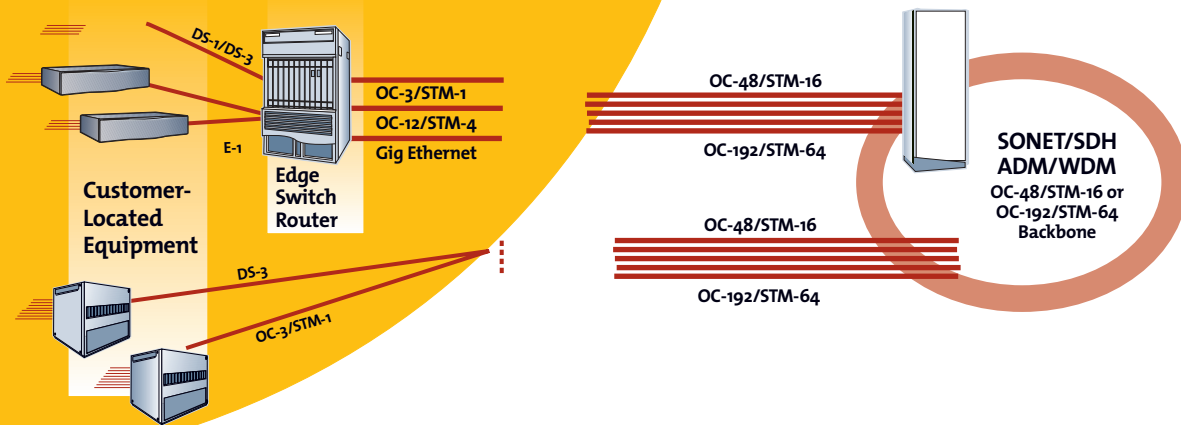
Over the last 10 years, Internet Protocol (IP) networking has matured from an academic tool to a multi-billion dollar industry. There's no sign of a slow-down; the Internet is still doubling in size about every six months.

For service providers, this huge opportunity has brought some daunting challenges: explosive growth in users... bandwidth-hungry, fault-intolerant applications... rapidly evolving standards... frequent and costly upgrades... complicated multi-layer networks.

To meet these challenges, Nortel Networks presents the [Versalar Switch Router 25000](#). Developed specifically for service providers, this high performance core switch router sets a new standard of carrier-class availability, scalability, and performance for IP networks.

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Coupled with our industry-leading SONET/SDH, Dense Wavelength Division Multiplexing (DWDM), and access technologies, the Versalar Switch Router 25000 is ready for your next-generation Internet—the Optical Internet.

What Makes the Versalar Switch Router 25000 Exceptional?

High scalability for long-term investment protection—The Versalar Switch Router 25000 delivers usable throughput of 480 Gbps (gigabits per second).

The system is designed with a distributed IP forwarding architecture with redundant, centralized routing computation and control, providing a clear separation between the IP forwarding and routing functions.

This high performance forwarding is achieved with a scalable, non-blocking switch fabric optimized using virtual output queues, priority classes, intelligent scheduling algorithms, and designed for efficient multi-cast.

The fabric field can easily be upgraded and is backward compatible with the existing modules to protect your investment.

High availability for non-stop services—Designed for continuous operation in the service provider environment, the Versalar Switch Router 25000 has hot-swappable control, fabric, and line cards; in-service software upgrades; and N+1 redundancy—resulting in no single point of failure and delivering **99.999 percent availability**.

Network resiliency is provided through SONET APS (automatic protection switching) and MPLS (MultiProtocol Label Switching) traffic engineering. Moreover, all Versalar systems and services are backed by the Nortel Networks global customer support organization.

Together, these features and services deliver the kind of availability you need to support mission-critical applications and support guaranteed service-level agreements.

Reduced network and management complexity—The Versalar Switch Router 25000 simplifies network operations by:

- reducing the number of boxes in the network.
- using Nortel Networks Preside service ware that incorporates optical, ATM, Frame Relay, and telephony networks"

If you're using a complex configuration of multiple switches and routers today, you'll see dramatic savings by replacing duplicate boxes with a fully redundant Versalar Switch Router 25000. In addition, multiple network layers are eliminated by the integration with Nortel Networks SONET/SDH and DWDM network elements.

You'll see further savings by being able to manage the multiservice/IP/SONET/SDH network from a single centralized management system. For the Versalar Switch Router 25000, the Preside portfolio provides service assurance, service activation, policy services, customer care and billing, and service control capabilities.

Versalar Switch Router 25000 Technical Specifications

Carrier-Grade System and Network Resilience

Redundant 480-Gbps throughput capacity
 Redundant fabric arbiter
 Redundant control processors
 Redundant power supply
 Hot-swap support for all modules
 Reliable software upgrade support

Protocols Supported

Data Path - IPv4, MPLS, IPv6 ready
 IP Routing - OSPFv2.0, RIPv2, Integrated ISIS, BGPv4
 Multicast - DVMRP, PIM-SM, IGMP
 MPLS - LDP, CR-LDP, RSVP Tunnels

Services

Telnet, FTP, TFTP, NTP, Syslog, Packet Capture utility for debugging
 Quality of Service—DiffServ, Type of Service (TOS) manipulation, policing, multiple queue definitions, RED for queuing management, traffic shaping per queue, intelligent packet discard
 MPLS based traffic engineering
 Support for Virtual Private Networks (VPN)
 ATM Services—RFC1483 multiprotocol encapsulation, PVC support, per-VC queuing, UBR, VBR, and CBR service classes

Interface Cards

8-port OC-3c/STM-1 ATM
 2-port OC-3c/STM-1 Packet over SONET/SDH
 2-port OC-12c/STM-4c ATM
 8-port OC12c/STM-4c Packet over SONET/SDH
 4-port channelized OC-12 point-to-point protocol (PPP) (48 DS-3s)
 4-port OC-48c/STM-16c Packet over SONET/SDH
 8-port Gigabit Ethernet; 1-port 10 Gigabit Ethernet
 4-port OC-192c/STM-64c Packet over SONET/SDH

Port Density

Interface	Maximum Ports Per 36" Chassis	Maximum Ports Per 7' Rack
OC-3c/STM-1 ATM	96	192
OC-3c/STM-1 SONET/SDH	24	48
OC-12c/STM-4c ATM	24	48
OC-12c/STM-4c SONET/SDH	96	192
Ch OC-12 PPP (48 DS-3)	48	96
OC-48c/STM-16c SONET/SDH	48	96
Gigabit Ethernet	96	192
10-Gigabit Ethernet	12	24
OC-192c/STM-64c SONET/SDH	48	96

Network Management

Industry-standard command line interface (CLI)
 SNMP configuration, management, traps and alarms
 Integrated Network Management (INM) support

Physical Characteristics

14-slot mid-plane chassis, 12 slots for input/output (I/O) cards, NEBS-compliant — Two chassis per 19' rack
 Dimensions— 36" (91.44 cm) high, 17.25" (43.81 cm) wide, 24" (60.96 cm) deep
 Certification—
 UL 1950 3rd Ed., CSA C22.2 No. 950, FCC Class A, CSA, EN55022 Class A, Nortel Networks Year 2000 compliance

Electrical Power

Native: -48 VDC power, 1800 watts per power supply
 External: 220 VAC converter, 2000 watts per power supply

Operating Environment

41 to 104 degrees F (5 to 40 degrees C)
 20 to 80 percent relative humidity, non-condensing
 0 to 10,000 feet altitude (0 to 3048 meters)

Silicon-based flexibility and performance—The industry has been challenged to produce line-rate performance while accommodating evolving standards and future applications.

In the past, vendors had to re-spin ASICs (application-specific integrated circuits) to support new functionality or standards. We solved this problem by developing an industry-first IP packet processor—a custom-built, micro-programmable ASIC that supports 24 million IP packets per second—for full line rate performance from DS-3 to OC-192/ STM-64, with QoS (quality of service) enabled.

Known as the Route Switch Processor (RSP), this ASIC is also used in the Nortel Networks Versalar 15000 Edge Switch Router.

Industry-leading density and interface options—The Versalar Switch Router 25000 offers unprecedented density in a range of interfaces—from 576 DS-3 ports all the way up to 48 OC-192/STM-64 ports in half a rack.

Create custom levels of service for different customers, and give them hard proof that you're meeting service level agreements.

Create bandwidth-guaranteed services for premium customers, and economical "best-effort" services for budget-conscious customers and delay-tolerant applications.

Two units, including redundant power subsystems, can be stacked in a seven-foot rack. No other solution comes close to providing this level of interface flexibility with such minimal footprint.

New revenue opportunities through differentiated service offerings—With the Versalar Switch Router 25000, you can create custom levels of service for different customers, and give them hard proof that you're meeting service level agreements. Create bandwidth-guaranteed services for premium customers, and economical "best-effort" services for budget-conscious customers and delay-tolerant applications.

Classification, policing, congestion management, and multiple queue definitions (RED for queuing management) enable you to define tiered service packages in addition to the traditional best-effort forwarding.

Leverages existing technologies—As part of the Versalar family of switch routers, the Versalar Switch Router 25000 uses the same IP packet processor as the Versalar Switch Router 15000, and uses the same networking software, Nortel Networks Carrier Networking Services (CNS).

This architectural commonality supports common traffic engineering capabilities, common management features, common industry-standard command line interfaces, and common quality of service (QoS) applications. Furthermore, the reliability and line-rate performance of the hardened CNS software have already been validated in service provider networks.

Look over the technical specifications for the Versalar Switch Router 25000, and you'll agree that this future-ready technology sets a new standard for next-generation core IP networking.

Versalar Switch Router 25000 Terabit System

When used with the Nortel Networks OPTera Packet Core switching fabric, the Versalar Switch Router 25000 becomes a terabit, optical routing platform.

Several Versalar Switch Router 25000 systems, located up to a kilometer apart, can be linked as access shelves in a combined, single-hop network element that supports up to hundreds of terabits per second throughput. This terabit system is managed as a single network element supported by Preside service-enabling management software.

This innovative architecture (on which Nortel Networks holds 45 patents), is known as the OPTera Packet Solution. It revolutionizes the Internet infrastructure by integrating optical and packet layers, consolidating multiple layers into one, scaling from gigabits to hundreds of terabits per second, and delivering 99.999% system and network reliability.

When used in the OPTera Packet Solution, the Versalar Switch Router 25000 Terabit System interworks directly with the optical layer to dynamically assign bandwidth and reconfigure the network under abnormal conditions, such as network congestion—providing premium reliability and bandwidth efficiency.



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For more information, please contact your local Nortel Networks representative.
Tel 1-800-4-NORTEL (1-800-466-7835) or 506-674-5471
Nortel Networks Corporation, 35 Davis Drive, P.O. Box 13010, RTP, NC 27709

<http://www.nortelnetworks.com>

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