Product Brief

Passport 8300

Nortel Networks

Passport 8300 Ethernet Switch

Passport 8300 benefits

- *Cost-effective wiring closet switch*
- *High density Ethernet, Fast Ethernet, and Gigabit Ethernet to the desktop*
- *Power to IP phones, wireless access points, and Web cameras*
- *Maximize investment with integrated uplinks on switch fabric module*
- *Enhanced network security to protect the enterprise assets*
- *Common operating system software across Passport 8000 family of switching solutions*

Business advantage

Enterprises seeking to extend the intelligence of their network to the wiring closet and deliver intelligence cost effectively can deploy a new class of edge device—the Passport* 8300 Ethernet Switch.

Today's applications require a smarter class of switch, one designed to respond to the needs of the enterprise with performance, capacity, converged communications, enhanced security and control, IP services, and ease of manageability.

- Passport 8300 provides customers unmatched network resiliency for the enterprise where the network is critical to user productivity. Nortel Networks switching portfolio is the only solution that delivers maximum device level reliability with the highly resilient feature, Split Multi-Link Trunking (SMLT), on the Passport 8600 Routing Switch to deliver 99.999 percent reliability to the network.
- For enterprises deploying the next generation of converged communication such as IP telephony, wireless LANs, and multimedia applications such as distance learning and video surveillance, the Passport 8300 is the common sense approach for their networks.
- As emerging applications introduce new traffic patterns and wireless access makes securing the edge increasingly important, the Passport 8300 helps ensure security is not compromised as the network changes to meet these needs.

NORTEL NETWORKS

As enterprises evolve their networking architectures to provide end-to-end intelligence services that are able to respond and adapt to the changing needs of the enterprise, the Passport 8300 is the wiring closet switch that can deliver the performance, capacity, and resiliency to ensure an easier transition and simplified management of the network today and into the future.

Product overview

Performance and capacity

The Passport 8300 delivers wire-speed switching and routing over copper and fiber media. The Passport 8300 modules support a high-performance Layer 2 and Layer 3 switching architecture that delivers 320 Gbps of switching capacity for application performance required by enterprise applications. Available in chassis with six slots and 10 slots and supporting up to 400 ports per chassis, the Passport 8300 will scale to meet the needs of the medium and large enterprise environment. All modules, fans, and power supplies are hot swappable, ensuring maximum flexibility in maintaining the uptime of your network. Additionally, dual load sharing power supplies provide N+1 power to the Passport 8300 switch.

Switch management

The Passport 8393SF module *(Figure 1)* is optimized for high-performance switching of Layer 2/3/4 traffic. Two switch fabric modules installed in the chassis provide redundant, load sharing capabilities.

Figure 1. Passport 8393SF Switch Fabric Module

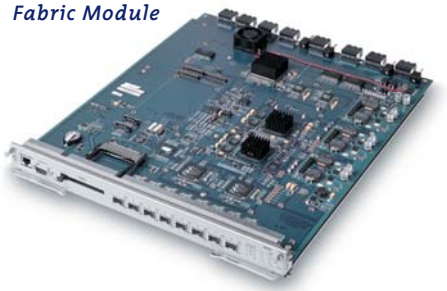


Table 1. Maximum port densities for the Passport 8303 and 8310 chassis

Module and interface type	Number of interfaces ports	Maximum number of interfaces per chassis	
		Passport 8306 6-slot chassis	Passport 8310 10-slot chassis
8393SF Switch Fabric Module (SFP GBIC)	8	16	16
8348TX 10/100 Module (RJ45)	48	192	384
8348TX-PWR 10/100 Module (RJ45)	48	192	384
8324GT10/100/1000 Module (RJ45)	24	96	192

The module has eight built-in Small Form Factor Pluggable (SFP) GBIC uplinks that provide simpler space saving connectivity to the network core. When two Passport 8393SFs are installed in a chassis, all 16 SFP GBIC ports are active. The switch fabric module also has a console port that can be used for out-of-band management.

Fast Ethernet with P802.3af Power over Ethernet (PoE)

The Passport 8348TX-PWR module *(Figure 2)* provides inline power to any IEEE P802.3af compliant devices such as IP phones, wireless access points, net cameras, security, lighting devices, and access control devices. Standards-based equipment means that customers are not forced to tie themselves to any one vendor, as the switch has the flexibility to power multiple vendors' P802.3af devices. It can supply power up to 15.4 watts per port, which meets the standard and is sufficient to power most devices.

Fast Ethernet

The Passport 8348TX module *(Figure 3)* provides 48 auto-sensing 10/100 Mbps ports for desktop connectivity using RJ-45 connectors. It is optimized for high density wiring closet solutions where Gigabit connectivity is not required.

Gigabit Ethernet

The Passport 8324GT 24-port 10/100/1000 auto-sensing module *(Figure 4)* delivers Gigabit Ethernet to the desktop for high-performance workstations, power users, servers, and other high bandwidth connectivity required in the wiring closet. Future support for a high-density 48-port 10/100/1000 module will enable the gigabit Ethernet density to scale to 384 ports in a single 10-slot chassis.

10 Gigabit Ethernet

A 10 Gigabit Ethernet interface will be delivered on the Passport 8300 in a future release.

Table 1 shows the maximum port densities supported in the Passport 8306 and 8310 chassis.

Figure 2. Passport 8348TX-PWR Module

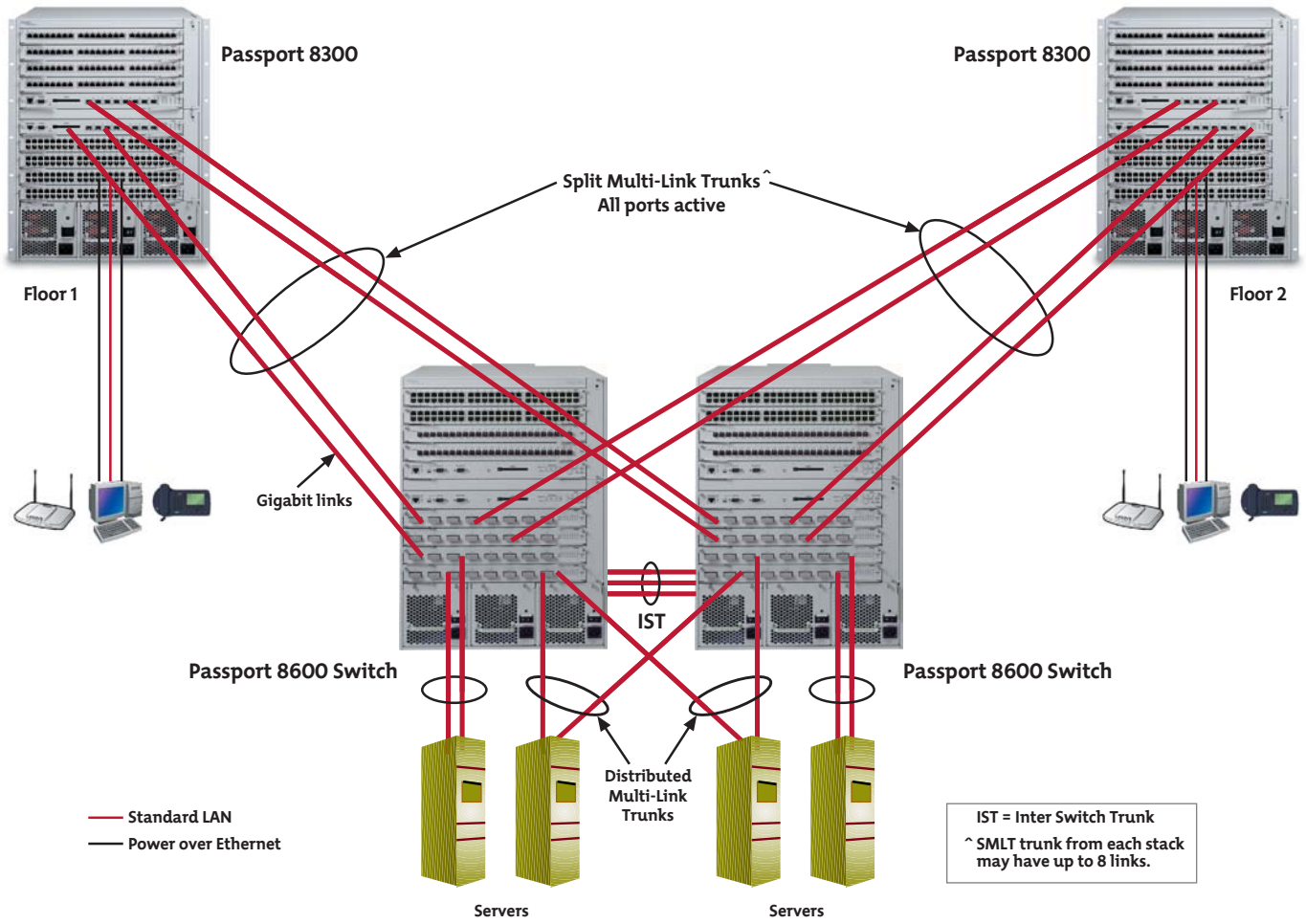
Figure 3. Passport 8348TX Module

Figure 4. Passport 8324GT Module

Benefits of Power over Ethernet (PoE)

- ***Dual functionality—Supports both Power over Ethernet (PoE) devices and standard LAN devices.***
- ***Standards compliant—Interoperability with other vendors' standards-based equipment does not tie you to a single vendor.***
- ***Significant cost and space savings—Integrating standard LAN switch functionality with power over UTP cable of a mid-span patch panel into a single unit.***
- ***Convenient use of single cable—Allowing data and power to be transmitted over one cable without the need for a power outlet.***

Figure 5. Enterprise solution with Power over Ethernet



MAC addresses

Passport 8300 is architected to support up to 8,000 MAC addresses per switch, for deployment of large-scale enterprise networks with large numbers of attached devices and workgroups, allowing for scalability and cost effectiveness.

VLAN support

VLANs can be established for each switch to extend the broadcast domain and segment network traffic. These VLANs can be spread among port-based or protocol-based VLANs. Protocol-based VLANs allow switch ports assignment to a broadcast domain based on the protocol information within the packet. These VLANs localize broadcast traffic and assure that the specified protocol type packets are sent only to the protocol-based VLAN ports. The Passport 8300 has been architected to support up to 2,000 VLANs scaling to 4,000 VLANs in a future release.

Enhanced security and control

IEEE 802.1x based security

Also known as Extensible Authentication Protocol (EAP), 802.1x based security limits access to the network based on user credentials. User login requires a username and password that is authenticated by a user database on an authentications server. Users are denied access to the network if they are unable to be authenticated. This functionality supports client access and interoperates with Microsoft Windows XP and other 802.1x compliant clients.

Simple Network Management Protocol (SNMPv3)

The Passport 8300 supports SNMPv3, an interoperable standards-based protocol for network management. By providing secure access to the switch using a combination of authenticating and encrypting packets over the network, management data can be collected securely from the Passport 8300 without fear of the data being tampered with or corrupted. Additionally, confidential management information can be encrypted to prevent its contents from being exposed on the network.

Secure Shell (SSH)†

The Passport 8300 also supports SSH which provides authentication and encrypted communications. SSHv2 supports strong authentication and encrypted communications. It allows you to log into the switch from an SSH client and perform a secure Telnet session using CLI commands. This feature is ideal for security conscious customers such as federal governments.

Converged communications

Nortel Networks is uniquely positioned to provide end-to-end Voice over IP with Succession,* Business Communications Manager, Meridian,* and reliable infrastructure with the Passport 8600, 8300, and BayStack* are integral components that make successful Voice over IP implementations for Nortel Networks enterprise customers.

IEEE compliant P802.3af Power over Ethernet (PoE)

The Passport 8300 Power over Ethernet (PoE) Switch Modules can provide power over the unused pair to power devices located where there is not a power outlet or where there is insufficient power. This simplifies

deployment of IP powered phones and when installing devices such as Web cameras and wireless access point in locations such as false ceilings. The switch supplies power to IP devices up to 15.4 watts per port, meeting IEEE P802.3af standards and more than sufficiently is able to provide power to IP devices per port. A typical enterprise solution with the Passport 8300 and IP powered devices is detailed in *Figure 5*.

Auto discovery feature
The Passport 8300 Switch automatically recognizes the connection of a device and immediately sends power to it. This automatic capability ensures fast connectivity without manual intervention.

Dynamic power management
Each port on the Passport 8348TX-PWR can be configured to limit the power delivered to a device. Each port can also be configured for power priority level—Low, High, and Critical. On the switch, total available power is monitored. In the case where all available power is fully utilized, the switch may turn off lower priority ports and turn on higher priority ports.

Active circuit protection
The Passport 8300 switch can automatically disable a port if there is a short. All the other ports on the switch will remain active and will not be affected by the disabled port.

Advanced IP services

Quality of Service (QoS)
The Passport 8300's QoS features allow you to not just utilize bandwidth more efficiently, optimizing existing network resources and capabilities, but also provide packet classification and marking at the edge of the network, simplifying the QoS deployment at the aggregation and core of the network. By classifying, prioritizing, policing, and marking (DiffServ Code Point) LAN traffic, networks can offer reliable connectivity and required bandwidth for mission-critical applications like IP telephony and mission-critical data applications to specific groups and users, and to individual devices. The Passport 8300 provides eight hardware queues.

For each of these applications, advanced QoS features support Internet Engineering Task Force (IETF) standard DiffServ QoS architecture—a packet classification based on the content of IP packet header fields (voice, video, data) traffic policing, and remote sniffing.

Traffic policing
Traffic policing enables provisioning of different service levels by limiting traffic throughput at the ingress (incoming) port of the Passport 8300. Traffic policing enables provisioning of different levels of service by limiting traffic throughput at the ingress (incoming) port of the switch.

Traffic shaping
Traffic shaping offers the ability to limit traffic on each port. While traffic policing is needed to provide different levels of service to data streams on the ingress ports, traffic shaping is needed to smooth the traffic from the egress ports. Passport 8300 supports port based traffic shaping. Enterprises working with service providers or carriers utilize this feature when they are deploying Ethernet in place of the traditional Frame Relay, ISDN, or ATM WAN access solutions.

IP filtering
IP filters can be used to manage traffic and to provide security. Filters are defined with match conditions and the actions to be performed when the condition is satisfied. Only data that matches the pattern is allowed to pass through the filter. Filters can be used to set traffic priority, drop or allow IP packets, as well as define conditions for mirroring of traffic.

Pay as you grow software capable
Nortel Networks enables customers to pay only for the functionality that meets their business needs. The switch supports wire-speed Layer 3 IP routing with static and local route support, RIP in its base routing license. Future software releases are planned to include advanced routing protocols OSPF, ECMP, VRRP, and for deployment of multimedia applications, support for DVMRP, PIM-SM, and PIM-SSM.

Advanced resiliency

Integrated Time Domain Reflectometer (TDR)
The Passport 8300 provides an integrated TDR to simplify troubleshooting of the physical cable plant, enabling IT managers to quickly identify the failing mechanism and isolate to the source of the problem, helping ensure maximum uptime of the network. Through remote and non-invasive diagnosis of cabling issues such as cable opens, cable shorts or impedance mismatch in the cable and report, within one meter, the distance of the fault. The switch can detect and report these issues without unplugging cables and plugging in expensive cable testers.

Split Multi-Link Trunking (SMLT)
Nortel Networks advanced resilient technology, SMLT, provides for sub-second failover and sub-second recovery with full load balancing by eliminating the network node as a point of failure. SMLT enhances the benefits of 802.3ad link aggregation, by eliminating the link as a point of failure and by allowing trunk members to terminate at different physical switches. The Passport 8300 deployed in the wiring closet is compatible with SMLT when implemented in the network with a Passport 8600 switch in the core. SMLT capabilities will be integrated in Passport 8300 in a future release for installation of the Passport 8300 as a medium or branch office core switch.

Common software platform
All Passport 8000 switches, including the Passport 8100, 8300, and 8600, now use a common operating system. This provides the simplicity and reliability that helps enterprises streamline their network operations without the need to re-learn a new operating system for each switch.

Network management

The Passport 8300 can be managed by a variety of management tools to adapt to the specific operating environment. These include: dual Command Line interface (CLI), Java™-based Device Manager, Web-based management, SNMP management software (SNMPv1,v2 and v3), and Nortel Networks Optivity* Switch Manager software†, Optivity Enterprise Network Management System (ONMS), and Optivity Policy Services (OPS)†. The Passport 8300 supports four groups of Remote Monitoring (RMON) on all ports. The four groups of RMON are alarms, events, history, and statistics.

Port mirroring
The Passport 8300 has a port mirroring feature that helps you to monitor and analyze network traffic. Port mirroring supports both ingress (incoming traffic) and egress (outgoing traffic) port mirroring. When enabled, the mirrored (source) port's ingress or egress packets are forwarded normally and a copy of the packets is sent out the mirrored port to the mirroring (destination) port.

Non-volatile storage of configuration

The Passport 8300 has on board Non-Volatile Random Access Memory (NVRAM) for the storage of configuration and image files that ensures against lost configuration and information in the event of a power loss to the switch.

LED indicators

The LED Indicators on the front panel of the modules make it simple to monitor the switch status and help in isolating and diagnosing switch problems.

Summary

The Passport 8300 high-performance hardware technology, combined with the rich advanced services to enhance, protect and simplify network operations, is the solution for customers making an investment in their Campus LAN infrastructure that will grow with the business for years to come. As a provider of end-to-end solutions that span voice, data, applications, and network management, Nortel Networks can help you increase your opportunities for profitability, streamline your business operations, increase productivity, and help you gain a competitive business edge.

Technical specifications

Table 2. Passport 8300

Performance specifications

Switch fabric bandwidth: 320 Gbps
Addressing: 48-bit MAC address
Frame length: 64 to 1518 bytes (IEEE 802.1Q Untagged)
64 to 1522 bytes (IEEE 802.1Q Tagged)
Jumbo frame support: Up to 9000 bytes (IEEE 802.1Q Tagged)
Data rate: 10 Mbps Manchester encoded or 100 Mbps
4MB - 5MB encoded
Multi-Link Trunks: Up to 32 trunks with 4 links per group
VLANs: Up to 2,000 port- or protocol-based; per VLAN Tagging option
Multiple spanning tree groups: Up to 64 (STGs)

Interfaces

Access 48-ports 10/100BASE-T auto-speed sensing
48-ports 10/100BASE-T auto-speed sensing with P802.3af Power over Ethernet
24-port 10BASE-T/100BASE-TX/1000BASE-T

Uplinks 8-port Gig fiber ports (mini-GBIC slots)
1000BASE-SX uses shortwave length 850 nm fiber optic connectors to connect devices over multimode (550 m or 1,805 ft) fiber optic cable
1000BASE-LX uses longwave length 1,300 nm fiber optic connectors to connect devices over single mode (5 km or 3.1 mi) or multimode (550 m or 1,805 ft) fiber optic cable

Network protocol and standards compatibility

IEEE 802.3 10BASE-T (ISO/IEC 8802 3, Clause 14)
IEEE 802.3u 100BASE-TX (ISO/IEC 8802-3, Clause 25)
IEEE 802.3u Autonegotiation on Twisted Pair (ISO/IEC 8802-3, Clause 28)
IEEE 802.3x (Flow Control on the Gigabit Uplink port)
IEEE 802.3z 1000BASE-SX and 1000BASE-LX
IEEE 802.3ab 1000BASE-T
IEEE 802.1d MAC Bridges (ISO/IEC 10038)
IEEE 802.1p (Prioritizing)
IEEE 802.1Q (VLAN Tagging)
IEEE 802.1D Spanning Tree Protocol
IETF DiffServ

RFC support

RFC 1213 (MIB-II); RFC 1493 (Bridge MIB); RFC 2863 (Interfaces Group MIB); RFC 2665 (Ethernet MIB); RFC 2737 (Entity MIBv2); RFC 2819 (RMON MIB); RFC 1757 (RMON); RFC 1271 (RMON); RFC 1157 (SNMP); RFC 2570 (SNMPv3);RFC 2571 (SNMP Frameworks); RFC 2573 (SNMPv3 Applications); RFC 2574 (SNMPv3 USM); RFC 2575 (SNMPv3 VACM); RFC 2576; RFC 2572 (SNMP Message Processing); RFC 1332/1661 (Point to Point Protocol; RFC791/1812 (Internet Protocol); RFC 1388/2453 (RIP1/RIP2); RFC 2328(OSPF)†

Physical specifications

Passport 8306
Height: 15.8 in. (40.1 cm)
Width: 17.5 in. (44.5 cm)
Depth: 19.9 in. (50.5 cm)
Weight (empty): 49 lb (22 kg)
Weight (fully loaded): 140 lb (63 kg)
NOM approved

Passport 8310
Height: 22.9 in. (58.2 cm)
Width: 17.5 in. (44.5 cm)
Depth: 19.9 in. (50.5 cm)
Weight (empty): 85 lb (39 kg)
Weight (fully loaded): 225 lb (102 kg)
Cooling system:
Fan trays: 2 per chassis
Fans: 8 per fan tray
Thermal sensors: 1 per fan tray
Operating altitude: 3,024 m (10,000 ft)

—continued

Ordering Information

Table 2. Passport 8300 (continued)

Environmental specifications

Operating temperature: 0°C to 50°C (32°F to 104°F)

Storage temperature: -25°C to 70°C (-13°F to 158°F)

Operating humidity: 85% maximum relative humidity, noncondensing

Storage humidity: 95% maximum relative humidity, noncondensing

Operating altitude: 3048 m (10,000 ft) maximum

Storage altitude: 3048 m (10,000 ft) maximum

Free fall/drop: ISO 4180-s, NSTA 1A

Vibration: IEC 68-2-6/34

Shock/bump: IEC 68-2-27-29

Safety agency approvals

UL Listed (UL1950)

IEC 950/EN60950

C22.2 No. 950 (CUL) with all national deviations

UL-94-V1 Flamability requirements for PC board

NOM (NOM-019

Electromagnetic emissions summary

Meets the following standards
US,CFR47, Part 15 Subpart B, Class A

Canada, ICES-003, Issue 2, Class A

Austrailia/New Zealand, NZS 3548:1995,Class A

Japan, V-3/97.04:1997, Class A

Taiwan, CNS 13438, Class A

EN55022:1995, Class A

EN 61000-3-2:1995

EN 61000-3-3:1994

Electromagnetic immunity:
Meets the EN 50082-1:1997 standard

Table 3. Ordering information for the Passport 8300

Order number	Description
DS1402007	Passport 8310 10-Slot Chassis
DS1402008	Passport 8306 6-slot Chassis
DS1404076	Passport 8393SF Switch Fabric Module with 8 Small Form Factor Pluggable(SFP) Gigabit Ethernet Ports
DS1404077	Passport 8348TX 48-port 10/100 Module
DS1404078	Passport 8348TX-PWR 48-port 10/100 Module with Power over Ethernet
DS1404079	Passport 8324GT 24-port 10/100/1000 Module
DS1405A1	Passport 8300 AC Power Supply
DS1421002-2.0	Passport 8300 Base Software license
AA1419013	1-port 1000BASE-SX Small Form Factor GBIC (LC connector)
AA1419014	1-port 1000BASE-SX Small Form Factor GBIC (MT-RJ connector)
AA1419015	1-port 1000BASE-LX Small Form Factor GBIC (LC connector)
AA1419025	1-port 1000BASE-CWDM Small Form Factor GBIC—1470nm Wavelength (40km), LC connector
AA1419026	1-port 1000BASE-CWDM Small Form Factor GBIC—1490nm Wavelength (40km), LC connector
AA1419027	1-port 1000BASE-CWDM Small Form Factor GBIC—1510nm Wavelength (40km), LC connector
AA1419028	1-port 1000BASE-CWDM Small Form Factor GBIC—1530nm Wavelength (40km), LC connector
AA1419029	1-port 1000BASE-CWDM Small Form Factor GBIC—1550nm Wavelength (40km), LC connector
AA1419030	1-port 1000BASE-CWDM Small Form Factor GBIC—1570nm Wavelength (40km), LC connector
AA1419031	1-port 1000BASE-CWDM Small Form Factor GBIC—1590nm Wavelength (40km), LC connector
AA1419032	1-port 1000BASE-CWDM Small Form Factor GBIC—1610nm Wavelength (40km), LC connector
AA1419033	1-port 1000BASE-CWDM Small Form Factor GBIC—1470nm Wavelength (70km), LC connector
AA1419034	1-port 1000BASE-CWDM Small Form Factor GBIC—1490nm Wavelength (70km), LC connector
AA1419035	1-port 1000BASE-CWDM Small Form Factor GBIC—1510nm Wavelength (70km), LC connector
AA1419036	1-port 1000BASE-CWDM Small Form Factor GBIC—1530nm Wavelength (70km), LC connector
AA1419037	1-port 1000BASE-CWDM Small Form Factor GBIC—1550nm Wavelength (70km), LC connector
AA1419038	1-port 1000BASE-CWDM Small Form Factor GBIC—1570nm Wavelength (70km), LC connector
AA1419039	1-port 1000BASE-CWDM Small Form Factor GBIC—1590nm Wavelength (70km), LC connector
AA1419040	1-port 1000BASE-CWDM Small Form Factor GBIC—1610nm Wavelength (70km), LC connector
DY4311015	Power splitters for i200X phones—bag of 12

† Supported in future release

* The seventh character (?) of the power supply order number must be replaced with the proper code to indicate desired product nationalization:

"A" – No power cord included, must be ordered separately.

Nortel Networks is an industry leader and innovator focused on transforming how the world communicates and exchanges information. The company is supplying its service provider and enterprise customers with communications technology and infrastructure to enable value-added IP data, voice and multimedia services spanning Wireless Networks, Wireline Networks, Enterprise Networks, and Optical Networks. As a global company, Nortel Networks does business in more than 150 countries. More information about Nortel Networks can be found on the Web at:

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For more information, contact your Nortel Networks representative, or call 1-800-4 NORTEL or 1-800-466-7835 from anywhere in North America.

† Available in planned future software release.

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