



Nortel Networks

BayStack 460-24T-PWR Power over Ethernet Switch

BayStack 460-24T-PWR Power over Ethernet Switch

- Power to IP phones, wireless access points, net cameras, security and lighting devices, and access control devices
- Provides power to all 24 ports
- IEEE P802.3af draft-compliant to power multiple vendors' equipment
- Automatically provides power to a detected device
- Enables data and power to be transmitted over a single cable without using power outlets
- Network availability with QoS features
- Fail-safe stacking design assures continuous uptime
- Resilient connectivity for minimal network downtime
- Secure access and data traffic protection
- Simplifies the process of making adds, moves, and changes

Part of the successful BayStack* family, Nortel Networks BayStack 460-24T-PWR Power over Ethernet Switch is a resilient, secure stackable switch with Power over Ethernet (PoE) capabilities to IEEE P802.3af draft-compliant devices such as IP phones, wireless access points, net cameras, security and lighting devices, and access control devices (badge readers) (Figure 1). The switch has all of the features of the BayStack Business Policy Switch such as advanced Quality of Service (QoS) and high-resiliency, with the addition of Power over Ethernet capability. It enables enterprise customers to power devices while maintaining connectivity to standard 10/100 Mbps Ethernet devices such as

PCs and servers. All 24 ports of the BayStack 460 Switch can be powered.

High-density Power over Ethernet switch

The BayStack 460-24T-PWR Switch has 24 10/100 Mbps ports, one MDA (Media Dependent Adapter) slot for uplink connectivity, and one cascade module slot for stacking. Up to eight switches can be stacked to achieve up to 224 10/100 ports (using 4-port 10/100 Mbps MDA per switch). The 2.5 Gbps cascading bandwidth offers dedicated bandwidth between switches without sacrificing any uplink ports. The uplink ports can be used for connections to backbone switches such as the Passport 8600 Switch.



Figure 1: The BayStack 460-24T-PWR Power over Ethernet Switch

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IEEE P802.3af draft-compliant

The BayStack 460-24T-PWR Switch is IEEE P802.3af draft-compliant. It can provide Power over Ethernet to any IEEE P802.3af draft-compliant devices such as IP phones, wireless access points, net cameras, security and lighting devices, and access control devices. The benefit of being interoperable with 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' devices. It can supply power up to 15.4 watts per port, which meets the IEEE P802.3af standard. This is more than sufficient to power most devices. The standard is expected to be ratified in Q3, 2003.

Auto discovery feature

The BayStack 460-24T-PWR 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 can be configured to limit the power delivered to a device. Each port can also be configured for power priority level—

Figure 2: In the unlikely event of a switch failure, the stack integrity is maintained: cascade signals loop back at point of failure.

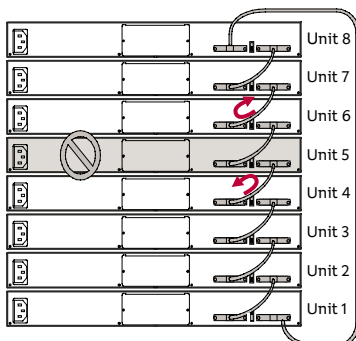
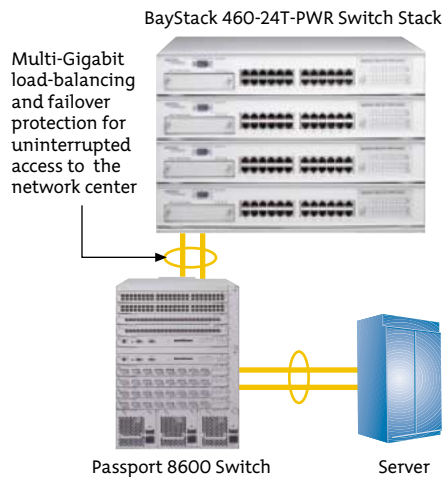


Figure 3: Distributed MultiLink Trunking across stack for higher bandwidth and fault tolerance



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 BayStack 460 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.

Plug-n-Play IP telephony switching

The BayStack 460 Switch provides simplified Web-based configurations on data and power properties. The graphical user interfaces make it simple to set up data and power configurations.

Convenience of a single cable

With the BayStack 460 Switch, data and power can be transmitted over one cable without using a power outlet. There is no need for a separate cable connecting the IP device to a power outlet.

Significant space and cost savings

Traditionally, a mid-span patch panel device connects to a standard Ethernet switch and the device sends power over standard UTP cat 5 cable. In essence, two units are needed for Power over Ethernet capability. In contrast, the BayStack 460 Switch integrates standard LAN switch functionality with the power over UTP cable capability of a mid-span patch panel into one unit. This results in significant cost and space savings.

Fail-safe stacking and resiliency

A key differentiation for the BayStack 460 Switch is its resilient stacking feature. The BayStack 460 Switch can stack up to eight units with a cascade stacking design, assuring continuous uptime even if a switch in the stack should fail. A loop-back—or redundant cascade cable—is used to seamlessly connect the entire stack to eliminate any single point of failure (Figure 2).

MultiLink Trunking

MultiLink Trunking (MLT) enables grouping of links between the switch and another switch or a server to provide greater bandwidth with active redundant links.

With Nortel Networks unique Distributed MultiLink Trunking (DMLT) feature, trunked ports can span multiple units of the stack for fail-safe connectivity to mission-critical servers and the network center (Figure 3). This can provide bandwidth of up to 800 Mbps (when used with 10/100 ports) or up to 8 Gbps (when used with Gigabit uplink ports) with active redundant links in one trunk. Up to six trunks are supported per switch or stack.

Split MultiLink Trunking (SMLT) eliminates single points of failure and allows wiring closet switches, such as the BayStack 460, to have multiple active connections to the network core. The BayStack 460 Switch's ability to have multiple connections to a

Passport 8600 network core allows customers to double network bandwidth with no extra investment. The Passport 8600 provides a self-healing network which delivers the reliability and availability required by today's mission-critical applications. By combining the reliability of the Passport 8600 with the resilient trunking features of the BayStack 460 (DMLT, MLT, etc.), Nortel Networks offers the next generation of flexible networking solutions (Figure 4).

Stackable with the BayStack 450 Switch, BayStack Business Policy Switch and BayStack 470 Switch*

The BayStack 460 Switch can be stacked with the BayStack 450 Switches, BayStack Business Policy Switches, and BayStack 470 Switches.† A maximum of eight switches can be stacked together in any combination.

Common software platform

All BayStack switches, including the BayStack 460 Switch, have a common "look and feel" which reduces training costs. This allows the switches to be managed in a similar fashion via a broad set of management tools. These tools include Web, Command Line Interface (CLI), menus, Optivity Network Management System (NMS), Optivity Switch Manager (OSM), and Optivity Policy Services (OPS).

End-to-end Voice over IP

The BayStack 460 Switch provides enterprises another option for end-to-end deployment of Voice over IP. Succession Communication Server for Enterprise 1000, Business Communications Manager, Meridian, and BayStack all provide the choices that allow enterprises—from small and medium businesses to large campus infrastructures—

to deploy the solution that is right for them and offers the flexibility to implement infrastructure changes at their own pace. Figure 5 depicts an example of a small-to mid-sized enterprise solution with the BayStack 460 Switch. Figure 6 shows an example of a large enterprise solution.

MAC addresses

BayStack 460 Switches support up to 16,000 MAC addresses per switch or stack for deployment of large-scale enterprise networks with many attached devices and workgroups, allowing for scalability and cost-effectiveness.

VLAN support

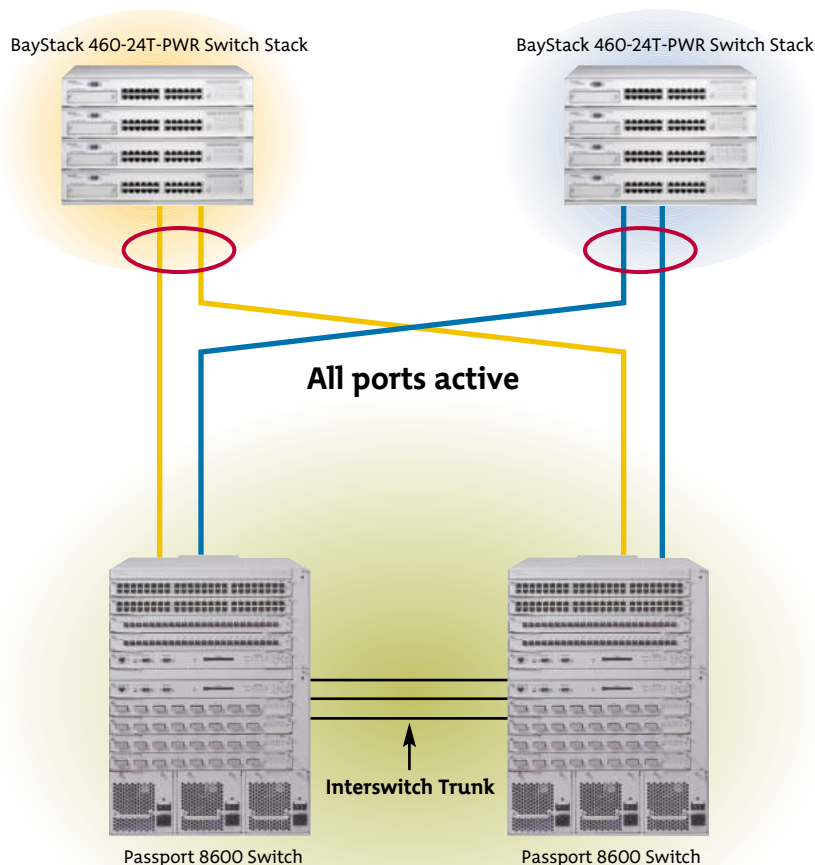
Up to 256 port-based VLANs can be established for each switch, to extend the broadcast domain and segment network traffic. The 256 VLANs can be spread among port-based, and MAC source address-based VLANs (maximum of 48 MAC source address-based VLANs). The 256 VLANs can be on a standalone switch or across a stack. Protocol-based VLANs allow switch ports to be assigned to a broadcast domain, based on the protocol information within the packet. These VLANs can localize broadcast traffic and assure that the specified protocol type packets are sent only to the protocol-based VLAN ports.

Shared VLAN (SVL) and individual VLAN (IVL) learning is supported. With SVL support, all VLANs in the switch share the same forwarding database. IVL lets individual VLANs have separate forwarding databases within the switch. IVL allows the switch to handle duplicate MAC addresses if they are in different VLANs.

IGMP snooping

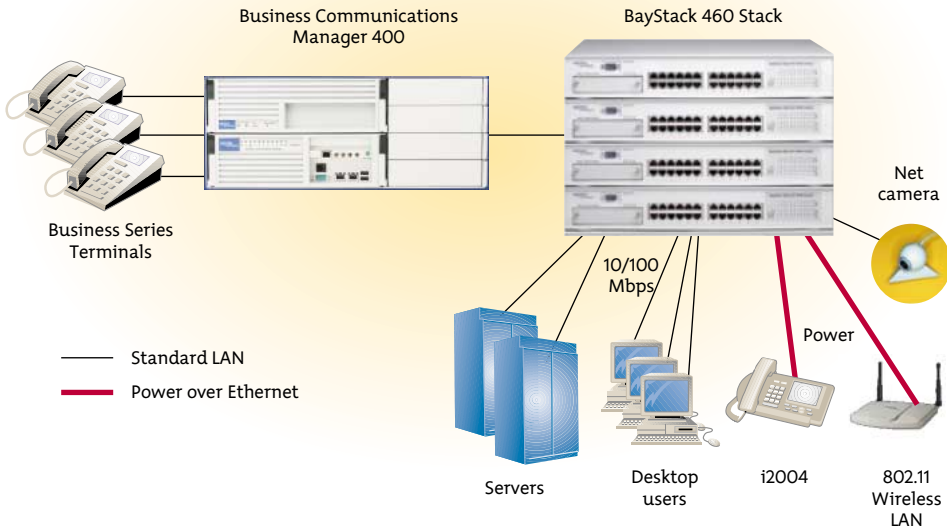
The BayStack 460 Switch features IP MultiCast support by examining ('snooping') all IGMP traffic in hardware at line rate, and pruning unwanted data streams from affecting network or end-station performance.

Figure 4: Split MultiLink Trunking (SMLT)



† Future software release.

Figure 5: Small to medium enterprise solution



Multiple spanning tree protocol groups

The BayStack 460 Switch supports multiple spanning tree groups (STGs). It supports a maximum of eight STGs, either all in one standalone switch or across a stack consisting of several BayStack 460 Switches. Multiple STGs provide multiple data paths, which can be used for load-balancing and redundancy.

ASCII configuration file

The BayStack 460 Switch can download a user-editable ASCII configuration file from a Trivial File Transfer Protocol (TFTP) server. The ASCII configuration file can be loaded automatically at boot time or on demand using the management systems (console menus or CLI). Once downloaded, the configuration file automatically configures the switch or stack according to the CLI commands in the file. This feature allows the flexibility of creating command configuration files that can be used on several switches or stacks with minor modifications.

Security

The BayStack* 460 Switch features BaySecure, which allows authentication of all access, not only to the switches for management and configurations, but also access to the infrastructure through these switches. This software feature limits access to only network authorized and trusted users including full tracking of network connections. With BaySecure, network access is granted or denied by proper MAC address identification (maximum of 448). In addition, with the Distributed Access List Security feature, network access is granted or denied on a per port basis. The BayStack 460 Switch also provides Remote Authentication Dial-In User Service (RADIUS) for switch security management.

IP Manager List limits access to the management features of the BayStack 460 Switch by a defined list of IP addresses, providing greater network security and manageability.

SNMPv3 provides user authentication and data encryption for higher security. It also offers secure configuration and monitoring.

For even greater security, the BayStack 460 Switch also supports the IEEE 802.1x standard (Extensible Authentication Protocol or EAP). EAP limits access to the network based on user credentials. A user needs to “log in” to the network using username/ password; the user database is maintained on the authentication server (not the switch). EAP prevents network connectivity without password authorization for added security and control in physically non-secure areas. For example, banks, trading rooms, or classroom training facilities could take advantage of this feature. EAP supports client access to the network and interoperates with Microsoft Windows XP.

Web-based management

Web-based management using a Web browser simplifies the task of managing the BayStack 460 Switch. This feature provides summary, configuration, fault, statistics, application, administration, and support pages for entire stack. Traffic classification and prioritization can be set via the Web-based QoS Wizard and advanced configuration tool. Real-time sampling provides up-to-date LED stats info for stacked units. The Web interface also allows for static configuration of numerous parameters of the device.

Power sharing options

The BayStack 460 Switch can be used in conjunction with the BayStack 10 PSU or NES (Network Energy Source) DC Power System from Invensys (www.intergynes.com) to create a load sharing, RPSU, or UPS solution.

Load sharing

The BayStack 460 Switch provides up to 200 watts to power the devices. With the addition of a BayStack 10 PSU, up to 235 watts of total power can be supplied to devices. A 2-pin cable is required to connect from the BayStack 460 to the BayStack 10 PSU. With the addition of NES DC power system, up to 370 watts of total power can be supplied to devices.

Redundant power supply unit support

Using a BayStack 10 PSU will provide up to 75 watts of power to be supplied to devices in case the power supply of the BayStack 460 fails. A 2-pin cable is required to connect from the BayStack 460 to the

BayStack 10 PSU. Using NES DC power system, up to 200 watts of power can be supplied to devices in case the power supply of the BayStack 460 fails.

Uninterruptible power supply support

Using a BayStack 10 PSU will provide up to 75 watts of power to be supplied to devices in case there is an electrical outage. Up to 15 minutes of battery life is provided (this will vary depending on the amount of modules installed on the BayStack 10). Using NES DC power system, up to 200 watts of power can be supplied to devices in case there is an electrical outage. With NES system, up to 8 hours of battery life is provided (this will vary depending on the amount of modules on the NES unit).

NES ordering information

For more product information on NES DC power systems, please visit their Web site at: www.intergynes.com

For information on how to purchase NES DC power system, please e-mail Invensys at: us_dc_quotes@energy.invensys.com or nes_quotes@energy.invensys.com

Network management

On-box management

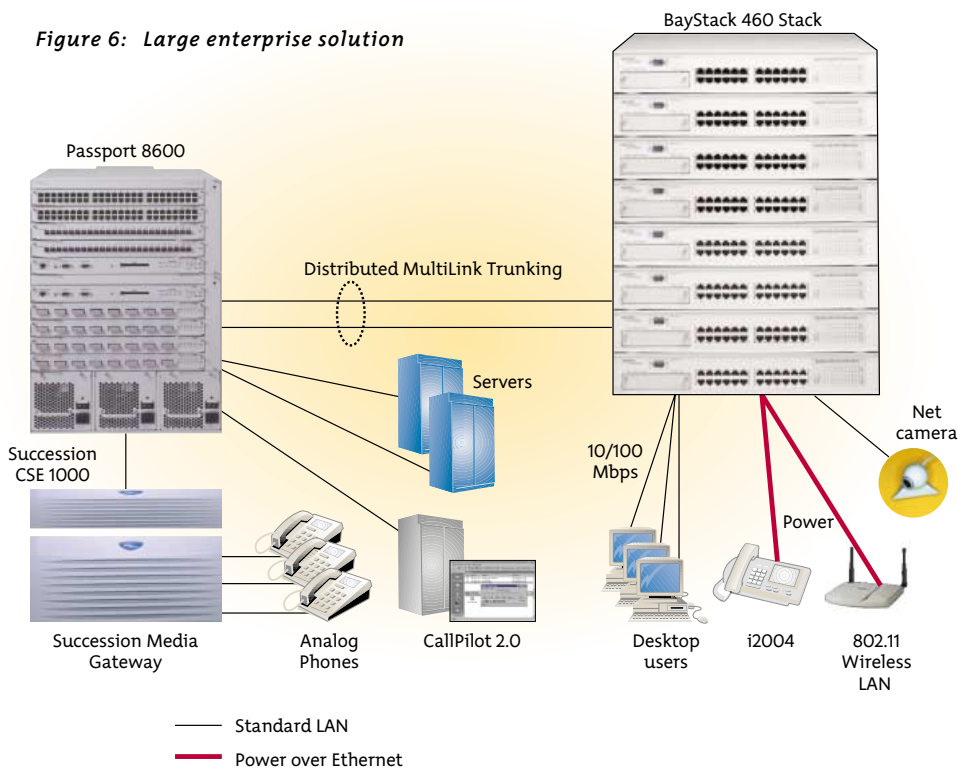
Network management begins with the device. The BayStack 460 Switch supports four groups of Remote Monitoring (RMON) on all ports and is SNMPv3 compliant. The SNMP agent software resides in the switch and uses the information it collects to provide management for all ports in the stack. In addition, the agent also provides the ability to set up policy-based networks by supporting the Common Open Policy Support (COPS) protocol.†

Configuration management

The process of configuration begins with a single device, but finishes across multiple devices. Java Device Manager (JDM) is the single device configuration tool for those configuration functions that require communicating with a single device. JDM uses a common user interface and workflow that supports many Nortel Networks Ethernet Switches. This commonality allows the network manager to become familiar with one tool instead of multiple tools.

Optivity Switch Manager (OSM) performs the configuration function across multiple devices. Configuration functions such as VLAN assignments, MultiLink Trunking (MLT), and Multicast are deployed across multiple Nortel Networks Ethernet Switches. The BayStack 460 Switch will be supported in OSM version 3.0 in future releases.

Figure 6: Large enterprise solution



† Future software release.

Fault management and resolution

With Optivity Network Management System (NMS), the network manager has quick access to the information required to manage and isolate all BayStack 460 networks events. Tools such as Physical Topology View inform the network manager how a particular event is affecting the physical connectivity within the network. End Node Locate provides the ability to locate a failing end node and, with one mouse click, have access to the RMON statistics for the failing Ethernet port supporting that end node. These solutions provide visual and statistical tools necessary to quickly resolve any network event or to manage performance in real-time. The BayStack 460 will be supported in NMS version 10.1 (future release). In the meantime, there will be an OIT (Optivity Integration Toolkit) file for the BayStack 460 which can be used with NMS 10.0.

Quality of Service

Quality of Service (QoS) is becoming increasingly necessary as more of an organization's critical business runs over the network infrastructure. When you implement the BayStack 460 Switch QoS features in your network, you can utilize bandwidth more efficiently, optimizing your existing network resources and capabilities. If the network is congested or down, if sales people cannot submit orders, if e-mail and intranet traffic threatens online Web transactions, or if new applications like voice and video fail, your business could be negatively impacted.

By classifying, prioritizing, policing, and marking LAN traffic, networks can offer reliable connectivity and required bandwidth for mission-critical applications like VoIP to specific groups and users, as well as to individual devices.

For each of these applications, advanced QoS features support Internet Engineering Task Force (IETF) standard DiffServ QoS architecture, packet classification based on the contents of packet header fields (voice, video, data), traffic policing, and remote sniffing. As a result, optimal network performance and reliability may be attained while realizing significant cost savings. Customized service type and flow-based administrations through traffic shaping and policing may also be established, providing an opportunity for customer-specific service offerings, which can be implemented to address-specific and unique customer requirements.

Queuing function

The BayStack 460 Switch provides network availability for mission-critical applications, devices, and users. This is done by classifying, prioritizing, and marking LAN IP traffic using up to eight hardware-based IP service class queues (on the Gigabit uplink ports) based on the following parameters:

- ToS/DSCP marking
- IP source address/destination address or subnets
- TCP/UDP source/destination port/port range
- 802.1p priority bits
- Ingress source port
- IP protocol ID (e.g. TCP, UDP, IGMP)
- EtherType (e.g. IP, IPX)
- VLAN ID

It also has the ability to read packets that have been marked from other devices such as the Passport 8600 Switch. Also, weighted round-robin prevents normal priority traffic from being starved by expedited traffic (on a per-packet basis).

Quality of Service and policy management

QoS provides the ability to read, alter, prioritize, and tag or mark IP traffic based upon information imbedded in Type of Service (ToS). Based on the IETF Committee's industry standards, the BayStack 460 Switch provides the ability to prioritize traffic based upon the required level of service for a given transaction. This level of service can be marked in the embedded information inside each IP packet's ToS field. DiffServ is based upon ToS field. The BayStack 460 Switch has application-specific integrated circuits (ASICs) to enable DiffServ Code points can be mapped to 802.1p.

The QoS policies can be configured via the BayStack 460 Switch built-in Web-based management tools to facilitate QoS; alternatively, Optivity Policy Services can be utilized for dynamic end-to-end enterprise-wide policy and QoS management, which is facilitated through the Common Open Policy Support (COPS) protocol (future software release).

Quality of Service provisioning

With Optivity Policy Services (OPS), policies can be created through a simple intuitive drag and drop workflow. OPS is the Policy Decision Point in a DiffServ QoS implementation. Using OPS, common policies can be created one time and simultaneously implemented across many BayStack 460 Switches through a single command instead of hours of filter configuration. Policies are easily managed and updated in the OPS GUI.

- Simple intuitive policy creation
- Re-use filter common filter sets
- Network-wide view of policies currently being enforced

- Avoid QoS provisioning errors
- Centrally manage DSCP and 802.1p to queue mapping tables
- Save time provisioning the network; thousands of CLI or Web transactions reduced to a few simple actions

The BayStack 460 is planned to be supported in OPS version 3.1 (future release).

Newer Gigabit Ethernet MDAs

The BayStack 460 Switch supports the latest Gigabit MDAs. Each of these MDAs will support 8 output queues and support traffic shaping. The three MDAs are:

- BPS2000-1GT 1-port 1000BASE-TX MDA
- BPS2000-2GT 2-port 1000BASE-TX MDA
- BPS2000-2GE 2-port Small Form Factor GBIC MDA

With the dual-port small form factor GBIC MDA, you can plug up to two small form factor pluggable GBICs. There are three types of small form factor pluggable GBICs to choose from:

- 1-port 1000BASE-SX Small Form Factor GBIC (LC connector)
- 1-port 1000BASE-SX Small Form Factor GBIC (MT-RJ connector)
- 1-port 1000BASE-LX Small Form Factor GBIC (LC connector)

New CWDM small form factor pluggable GBICs can also be used with the two-port small form factor GBIC MDA. With CWDM, a customer can dramatically increase the bandwidth supported over a single fiber. Instead of 1 Gigabit per fiber connection with a CWDM GBIC, eight wavelengths can be supported per fiber.

In other words, eight gigabits of traffic can be supported across one single mode fiber. There are eight different wavelength GBIC options for 40 km and eight different wavelength GBIC options for 70 km.

Traffic Policing

Traffic Policing enables provisioning of different levels of service by limiting traffic throughput at the ingress (incoming) port of the BayStack 460 Switch. For example, if a port is set to certain speeds such as 10 Mbps, all traffic under 10 Mbps on that port will pass and traffic that exceeds 10 Mbps on that same port is dropped. Service providers will find this especially useful to control bandwidth to their customers.

IP traffic shaping

IP traffic shaping offers the ability to smooth IP classified traffic from the Gigabit uplink ports of a single BayStack 460 Switch. 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 on the uplink connection from BayStack 460 to the network core, yielding the most efficient bandwidth utilization. The primary customers for rate shaping are service providers or carrier customers that are selling Ethernet in place of traditional Frame Relay, ISDN, or ATM WAN access solutions, and providing end-to-end Ethernet service for simplicity. Some enterprise customers use traffic shaping as a mechanism to limit bandwidth without having to swap out physical interfaces, leaving them room to grow.

Summary

With more than 100 years in telecommunications, Nortel Networks is uniquely positioned to help your business reduce costs by combining voice and data into an integrated system. Why take a chance on a vendor that only understands part of the equation? Let us show you how the BayStack 460 Switch—along with other Nortel Networks products—can increase your profitability, streamline your business operations, increase productivity, and help you gain the competitive edge.

Technical specifications

Table 1: BayStack 460-24T-PWR Power over Ethernet Switch technical specifications

Performance specifications	
Switch fabric	2.56 Gbps
Frame forward rate (64-byte packets)	Up to 3.2 million packets per second (pps) maximum, learned unicast traffic
Port forwarding/filtering performance (64-byte packets)	For 10 Mbps: 14,880 pps maximum For 100 Mbps: 148,810 pps maximum
Address database size	16,000 entries at line rate (32,000 entries without flooding)
Addressing	48-bit MAC address
Frame length	64 to 1518 bytes (IEEE 802.1Q Untagged) 64 to 1522 bytes (IEEE 802.1Q Tagged)
Data rate	10Mbps Manchester encoded or 100 Mb/s 4B/5B encoded
Interface options	
10BASE-T/100BASE-TX	RJ-45 (8-pin modular) connectors for MDI-X interface
100BASE-FX	SC and MT-RJ connectors for switched 100 Mbps (100BASE-FX) connections over 50/125 and 62.5/125 micron multimode fiber optic cable (2 km/6562 ft. maximum distance)
1000BASE-SX (Shortwave Gigabit Fiber) MDA	SC connectors for shortwave 850 nm fiber optic connections over multimode 550 m/1805 ft.) fiber optic cable
1000BASE-LX (Longwave Gigabit Fiber) MDA	SC connectors for longwave 1300 nm fiber optic connections over single-mode (3km/9843 ft.) or multimode (550m/1805 ft.) fiber optic cable
The BayStack 450-1GBIC MDA supports the following GBICs:	
1000BASE-SX	Uses shortwave 850 nm fiber optic connectors to connect devices over multimode (550 m or 1,805 ft) fiber optic cable
1000BASE-LX	Uses longwave 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
1000BASE-XD	Uses single mode fiber to connect devices over distances up to 40 km (or 31 mi), depending on the quality of the cable
1000BASE-ZX	Uses single mode fiber to connect devices over distances up to 70 km (or 43 mi), depending on the quality of the cable. The ports on this GBIC operate only in full-duplex mode
Network protocol and standards compatibility	
	IEEE P802.3af draft-compliant
	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 100BASE-FX (ISO/IEC 8802-3, Clause 26)
	IEEE 802.1p (Prioritizing)
	IEEE 802.1Q (VLAN Tagging)
	IEEE 802.1z (Gigabit)
	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 2748 (COPS)
	RFC 2940 (COPS Clients); RFC 3084 (COPS Provisioning); RFC 2570 (SNMPv3)
	RFC 2571 (SNMP Frameworks); RFC 2572 (SNMP Message Processing)
	RFC 2573 (SNMPv3 Applications); RFC 2574 (SNMPv3 USM); RFC 2575 (SNMPv3 VACM)

Table 1: BayStack 460-24T-PWR Power over Ethernet Switch technical specifications (continued)

Electrical specifications	
Input voltage:	100 to 240 VAC at 47 to 63 Hz
Input power consumption:	400 W maximum
Input volt amperes rating:	440 VA maximum
Input current:	4.5 A @ 100 VAC, 2.25 A @ 240 VAC
Maximum thermal rating:	575 BTU/hr
Physical specifications	
Weight:	5.8 kg (12.76 lb)
Height:	7.04 cm (2.77 in.)
Width:	43.82 cm (17.25 in.)
Depth:	38.35 cm (15.1 in.)
Environmental specifications	
Operating temperature:	0° to 40° C (32° to 104°F)
Storage temperature:	-25° to 70° C (-13° to 158°F)
Operating humidity:	85% maximum relative humidity, non-condensing
Storage humidity:	95% maximum relative humidity, non-condensing
Operating altitude:	Up to 3024 m (10,000 ft.)
Storage altitude:	Up to 3024 m (10,000 ft.)
Safety agency approvals	
	UL listed (UL 60950)
	CUL (CAN/CSA-22.2 No. 60950)
	CB certificate and report with all national deviations (IEC 60950/EN60950)
Electromagnetic emissions summary	
Meets the following standards:	
United States:	FCC CFR47 PART 15, SUBPART B, Class A
Canada:	ICES-003, ISSUE-3, Class A
Australia/New Zealand:	AS/NZ 3548: 1995/A1:1997/A2; 1997, Class A
Japan:	VCCI-V-3/02.04/ Class A
Taiwan:	CNS 13438, Class A
Europe:	EN 55022-1998/A1:2000 Class A
EMC Directive: 89/336/EEC:	Directly published in the EMC Directive of 89/336/EEC with Modification 92/31/EED, 93/13/EC EN 61000-3-2: 2000 EN 61000-3-3: 1995/A1:2001
Global:	CISPR 22-1997/A1:2000, Class A
Electromagnetic immunity	
Global:	CISPR 24:1997/A1:2001
Europe:	EN55024:1998/A1:2001

Ordering information

Table 2: BayStack 460-24T-PWR Power over Ethernet Switch ordering information

Order No.	Description
AL2001x20**	BayStack 460-24T-PWR Power over Ethernet Switch (24 10/100BASE-TX plus 1 MDA slot and 1 cascade module slot).
AL2033011	BPS2000-4TX 4-port 10/100 MDA
AL2033012	BPS2000-4FX 4-port 100BASE-FX MDA w/mini MT-RJ-type connectors
AL2033013	BPS2000-2FX 2-port 100BASE-FX MDA w/SC-type connectors
AL2033010	BayStack 400-ST1 Cascade Module (includes cascade cable)
AL2018001	BayStack 400-SRC Cascade Return Cable (1 meter)
AL2018002	BayStack 400-SSC Spare Cascade Cable (18 inch)
AL2018004	BayStack 400-SRC Cascade Return Cable (3 meter)
AL2033005^	BayStack 450-1SX 1-port 1000BASE-SX Single PHY MDA
AL2033006^	BayStack 450-1SR 1-port 1000BASE-SX Redundant PHY MDA
AL2033007^	BayStack 450-1LX 1-port 1000BASE-LX Single PHY MDA
AL2033008^	BayStack 450-1LR 1-port 1000Base-LX Redundant PHY MDA
AL2033009^	BayStack 450-1GBIC MDA (GBIC not included with MDA)
AA1419001~	1-port 1000BASE-SX Gigabit Interface Connector (GBIC), SC connector
AA1419002~	1-port 1000BASE-LX Gigabit Interface Connector (GBIC), SC connector
AA1419003~	1-port 1000BASE-XD Gigabit Interface Connector (GBIC)-40km SC connector
AA1419004~	1-port 1000BASE-ZX Gigabit Interface Connector (GBIC)-70km SC connector
AL2033014***	BPS2000-1GT 1-port 1000BASE-TX MDA
AL2033015***	BPS2000-2GT 2-port 1000BASE-TX MDA
AL2033016***	BPS2000-2GE 2-port Small Form Factor GBIC MDA (supports up to two Small Form Factor GBICs)
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
AA1419001	1-port 1000BASE-SX Gigabit Interface Connector (GBIC), SC connector
AA1419002	1-port 1000BASE-LX Gigabit Interface Connector (GBIC), SC connector
AA1419003	1-port 1000BASE-XD Gigabit Interface Connector (GBIC)-40km SC connector
AA1419004	1-port 1000BASE-ZX Gigabit Interface Connector (GBIC)-70km SC connector
AL2018008	2-pin cable from BayStack 460-24T-PWR to BayStack 10 PSU (for RPSU and load-sharing capability)
DY4311015	Power splitters for i200X phones—bag of 12

* These features will be supported on future software releases available free from the Web.

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

“A” – No power cord included

“B” – Includes European “Schuko” power cord common in Austria, Belgium, Finland, France, Germany, The Netherlands, Norway, and Sweden

“C” – Includes power cord commonly used in the United Kingdom and Ireland

“D” – Includes power cord commonly used in Japan

“E” – Includes North American power cord

“F” – Includes Australian power cord, also commonly used in New Zealand and the People’s Republic of China

^ Supports two output (egress) queues

~ One of these GBICs can be installed in the BayStack 450-1GBIC MDA

***Supports up to eight output (egress) queues



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www.nortelnetworks.com/baystack460

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