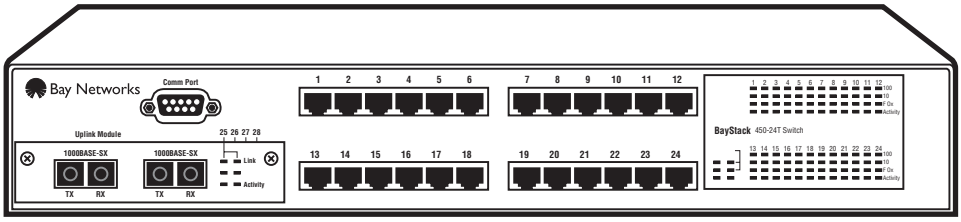
BLACK BOX®
NETWORK SERVICES

BayStack™ 450 Series Switches



Flexible choices for high-speed uplinks. Bring gigabit speeds to your enterprise network.

Key Features

- *Ideal for demanding environments where fail-safe performance is required.*
- *Each switch supports up to 64 port-based or policy-based LANs or 4,096 transit VLANs.*
- *Deliver wire-speed throughput—2.5 gigabits per second of switching power.*
- *Stackable up to 8 units and 224 ports.*
- *Flexible uplink options, including Gigabit Ethernet and ATM.*
- *10/100 half-duplex and full-duplex autosensing ports.*
- *Cascade stacking architecture ensures uninterrupted operation.*
- *Guaranteed for life.*

BayStack 450 Series Switches provide high-density, top-performance switching for enterprise wiring closets. They're designed to give you fail-safe scalability and advanced traffic management.

The switches include Media Dependent Adaptors (MDAs) for the Gigabit Ethernet, Fast Ethernet fiber or 10/100 autosensing Ethernet ports, and ATM uplinks of the future. You get wire-speed throughput, an aggregate of 2.5 Gbps across the switch. Specially designed chips support MAC Layer frame forwarding across all ports at a peak rate of 3 million packets per second.

Available in either 24- or 12-port configurations, the switch features an MDA slot, as well as a cascade stacking module slot. The autosensing 10BASE-T/100BASE-TX ports automatically detect and support the speed of the connected devices. Each switched port determines whether the device is operating at 10 or 100 Mbps and adjusts to the optimal speed. The switches also automatically detect and support full-duplex connections to servers, power-user workstations, or other switches as well as half-duplex links to legacy NICs or hubs.

And, unlike most stacking switches on the market, the BayStack 405 Switches include fail-safe cascade stacking architecture. Cascade cables connect up to eight stacked switches in a self-healing configuration, which protects your stack by looping signals back to a point of failure. So, in the unlikely event of a switch failure, you're assured that all other units in the stack remain operating—without any interruption. With many current "matrix" stacking switches, you lose your connections in the stack if the base unit fails.

For added fail-safe protection, each BayStack switch in the stack keeps a full copy of the stack configuration. And with the gigabit-uplink models, you get LinkSafe, which gives you two different physical fiber connectors for each uplink. If the primary path fails, traffic diverts to the redundant path in microseconds and protects your critical Gigabit Ethernet connections to your servers or network center.

Order the 450 Series Switch and you'll also get advanced Virtual LAN (VLAN) support. You can establish up to 64 port- or policy-based VLANs for each switch. In turn, you're able to extend the broadcast domain and segment network traffic. Each switch can also support 4,096 transit VLANs.

What's more, VLAN trunking is supported on every port of the switch, so you get an efficient way of transporting broadcast domains across switches.

Typical Application

With the BayStack 450 Switches, you can set up high-density 10/100/1000 switching in your wiring closet. In turn, you can establish fail-safe stackability and multilink trunking for redundant connections to your local servers and network center.

Technically Speaking

Here are just some of the advanced features of the BayStack 450 Series Switches:

Priority Queuing—The standards-based priority queuing enables you to prioritize multimedia or latency-sensitive traffic. That means integration of voice, video, and data within the same network is possible.

MultiLink Trunking—Trunking enables your network's devices to interpret the virtual geography of the network. This fail-safe function can be implemented across the stack, and connections between individual devices (such as those linking a switch and a routing switch) can be aggregated for both higher bandwidth and redundancy. If one port connection fails, other connections within the trunk seamlessly carry the full traffic load. Your servers and other important resources can be connected to different switches in the stack to achieve multi-homing and extend your link redundancy.

An Enterprise-Sized MAC Address Table—BayStack 450 Switches support more than 12,000 MAC addresses per switch. With this heavy-duty support, you're able to deploy large enterprise networks with many devices and workgroups attached to each switch. In a full 802.1Q environment, up to 32,000 MAC addresses are supported.

Support for Spanning Tree—The switches include built-in support for Spanning Tree Protocol (IEEE 802.1D), which detects and eliminates logical loops in your network. When multiple paths exist, the switch automatically places some ports on standby and forms a network with the most-efficient traffic paths, avoiding the continual frame loops.

IGMP Snooping—The BayStack 450 Switches feature a new level of IP MultiCast support by examining, or "snooping," all IGMP traffic in the hardware at the line rate and pruning the unwanted data streams. Unchecked, the data streams could adversely affect your network or workstation performance.

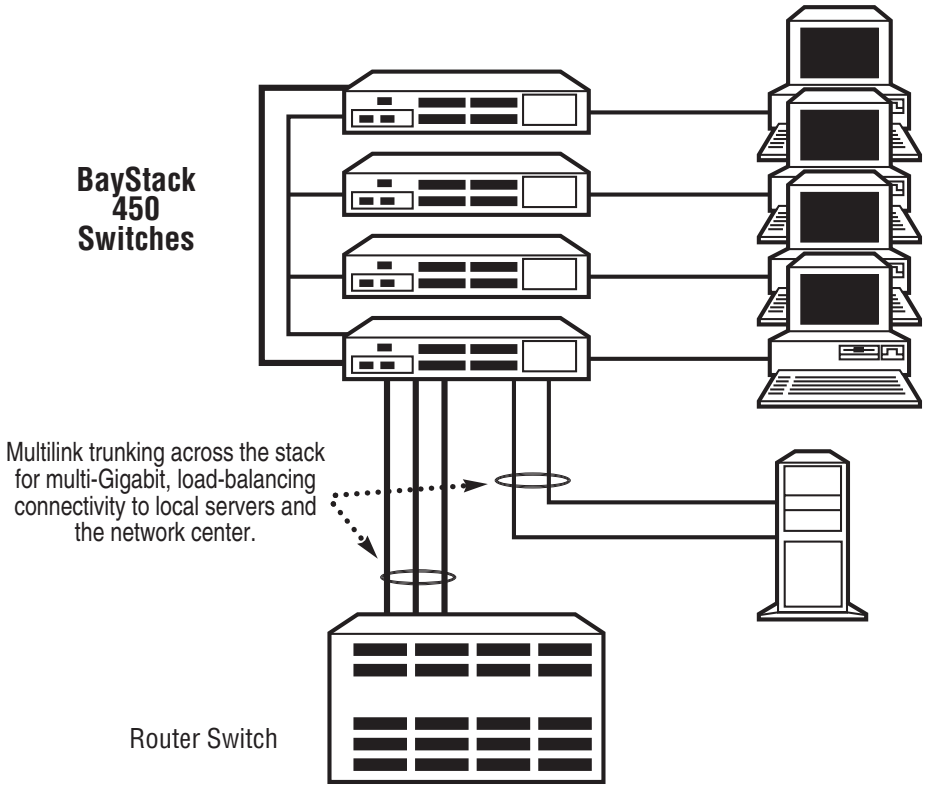
Support for Optivity®—The switches include built-in support for Optivity network management software, also available from Black Box. The software gives you Simple Network Management Protocol and support for full RMON groups. With this, you can manage the entire network—including all hubs, routers, switches, etc.—from a single management station.

Web-Based Management—You can easily monitor your network's status via a local corporate intranet or from any Web-connected PC.

Concurrent RMON on Every Port—This enables standards-based RMON managers and Optivity applications to manage the network as well as the device with four groups of RMON (Alarms, Event, History, and Statistics) on every port.

Enhanced Port Mirroring—By connecting a probe or an external LAN analyzer to any port in the stack, you can benefit from enhanced port mirroring. This provides you with a detailed RMON 1 and 2 analysis of switched traffic. Port mirroring copies packets flowing through a specified port and sends the replicated data to the analyzing probe.

Wiring for MDI-X—All of the switch's 10/100 autosense Ethernet port connectors are wired for MDI-X connections to other devices. You can use inexpensive straight-through unshielded twisted-pair (UTP) cables to switch your connections to internetworking devices, desktops, and servers.



The BayStack 450 Switches can help you get 10/100/1000 switching in the wiring closet, featuring fail-safe stackability and multilink trunking for redundant connections to local servers and the network center.

Specifications

Duplex Support — Half and full

Speed — 10/100/1000 Mbps

Protocols —
IEEE 802.3 CSMA/CD (ISO/IEC 8802-3);
IEEE 802.3i 10BASE-T (ISO/IEC 8802-3);
IEEE 802.3u 100BASE-T (ISO/IEC 8802-3);
IEEE 802.1D MAC Bridges (ISO/IEC 10038);
IEEE 802.3z 1000BASE-SX and 1000BASE-LX (Draft Standard ver. 3.1)

Gigabit Link Power Budget —
1000BASE-SX, 1000BASE-LX MultiMode Fiber: 7.5 dB;
1000BASE-LX SingleMode Fiber: 8.0 dB

Gigabit Cabling Distance —
50-µm multimode fiber:
1000BASE-SX, 1000BASE-LX: 1,804 ft. (550 m);
62.5-µm multimode fiber:
1000BASE-SX: 853 ft. (260 m);
1000BASE-LX: 1,804 ft. (550 m)

Gigabit & 100BASE-FX Connector Type — SC

Gigabit Cabling Type — 62.5/125 micron (core/cladding) MultiMode fiber

CE Approval — All items listed are approved.

Throughput — 3 million pps (aggregate)

Forwarding Rate —
10-Mbps port: 14,880 pps;
100-Mbps port: 148,810 pps;
1000-Mbps port: 1,488,100 pps

Latency — 9 µsec for min. packet length at 100 Mbps

Internal Memory — Processor DRAM: 2 MB; Flash: 1 MB

Temperature — Operating: 5 to 40° C; Storage: -25 to +70° C

Humidity — 85% max. relative (noncondensing)

Power — 100–240 VAC

Size — 7.1 x 44.7 x 38.1 cm

Weight — 5.3 kg

Additional equipment you may need:

- Optivity Network Management Software
- CAT5 Solid-Conductor Cable, 4-Pair, Straight-Pinned PVC

For these and other components...

Call our expert Technical Support Staff for all your enterprise networking needs. They'll help you find the best equipment for your application.

Ordering Information

This information will help you place your order quickly.

PRODUCT NAME	ORDER CODE
BayStack 450 Switches	
450-24T Switch 24 10/100 Ports + 1 MDA Slot & 1 Cascade Slot	AL2012E14
450-24T Switch 12 10/100 Ports + 1 MDA Slot & 1 Cascade Slot	AL2012E15
450-1SX 1-Port 1000BASE-SX Single PHY MDA	AL2033005
450-1SX 1-Port 1000BASE-SR Redundant PHY MDA (*includes* LinkSafe)	AL2033006
450-1SX 1-Port 1000BASE-LX Single PHY MDA	AL2033007
450-1SX 1-Port 1000BASE-LR Redundant PHY MDA (*includes* LinkSafe)	AL2033008
BayStack 400 Modules & Adaptors for 450 Switches	
400-2FX 2-Port 100BASE-FX MDA	AL2033002
400-4TX 4-Port 10/100 MDA	AL2033004
400-ST1 Cascade Module 2.5 Gbps (*includes* Cascade Cable, order 1 unit per switch in stack)	AL2033010
400-SRC Cascade Return Cable (order 1 per stack of 3 or more)	AL2018001
400-SSC Cascade Spare Cable (spare only; replaces cable included with AL2033010)	AL2018002

ACCESSORIES	ORDER CODE
Optivity Network Management Software	
Optivity Workgroup-EZLAN Windows	600
EZ Internetwork Windows®	76024
Optivity Campus	
Novell® Managewise	620-1
HP® OpenView® Windows	636-03
CAT5 Solid-Conductor Cable, 4-Pair, Straight-Pinned, PVC, 10 ft. (3.0 m)	EYN737MS-0010
(Other lengths available. *Call us!*)	