BLACK BOX®
NETWORK SERVICES

IP MUX II

IP Mux II
Power Chassis II
10/100 Mbps
CONSOLE
LNK 1 FDX   LNK 2 FDX   LNK 3 FDX   LNK 4 FDX   LNK UPLINK FDX
RCV XMT ENA 100
DOWNLINK
Ethernet IP Multiplexer

Multiple users can share one high-speed port— you control the bandwidth amounts for each!
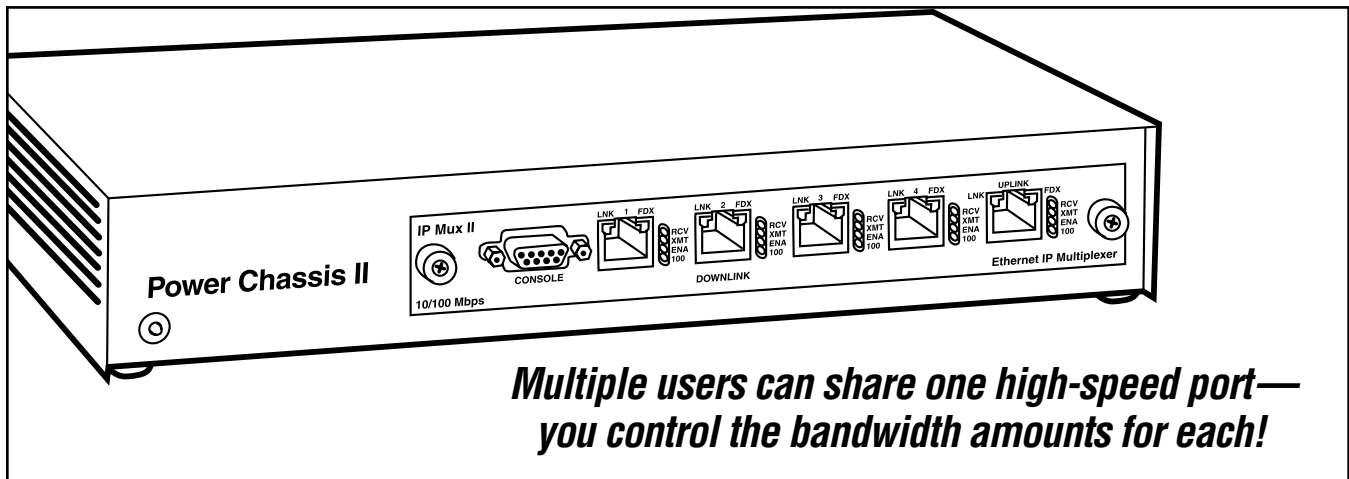
Key Features

▶ *A TCP/IP access multiplexor and a bandwidth manager.*

▶ *Symmetric and asymmetric rate control for each port.*

▶ *Ideal for ISPs and other service providers.*

▶ *Provides hackproof security between ports.*

▶ *Easy to configure with iView software GUI.*

▶ *Bandwidth can be managed remotely using SNMP.*

▶ *Layer 3-type control.*

▶ *Autosensing 10-/ 100-Mbps ports.*

▶ *Module plugs into our Power Chassis II.*

Split one high-speed Internet connection into four bandwidth-controllable ports with the IP Mux II from Black Box.

This modular, bidirectional IP multiplexer and bandwidth manager not only minimizes your per-port costs but gives you Layer 3-type control for uncluttered data throughput between its four downstream ports and one upstream port.

The IP Mux II module (IP Mux Module TX/5) plugs into our Power Chassis II (see **page 2**) and can be configured in minutes with the included iView software. This software GUI, which installs on any network PC and is compatible with Windows® 95/98, Windows NT®, and Windows 2000 as well as HTML, enables you to manage the IP Mux II and allocate bandwidth to users with ease.

Or, if you prefer, use another SNMP-compatible network management system, such as HP® OpenView®. Within minutes, you can set bandwidth for connected users by simply dialing-in the desired amount.

Muxing ports

As a multiplexing device, the IP Mux II enables you to split its one 10BASE-T/100BASE-TX downlink connection between its four 10BASE-T/100BASE-TX uplink ports. Each port's user, in turn, has their own independent downlink port.

You configure a range of unique IP addresses for each of the downlink ports, assigning a mux byte to each. This byte becomes the byte that's examined when data arrives at the uplink port. Data, in turn, is forwarded to the specified downlink port.

Forwarding of data to each individual port remains secure. Because there's no logical or physical path between the four downlink ports, it's impossible for one downlink port's user to access or monitor another downlink port. Packet data transfers occur between the uplink and a downlink port only, so you're given complete security on a shared Internet connection. If you require communication between downlink ports, packets must pass through

the IP Mux II and be routed back to the device via a connected router or Layer 3 switch.

For even more security, the IP Mux II permits SNMP requests from the uplink port only. If someone tries to use a downlink port to manage the device via SNMP, they're rejected.

With its Layer 3 traffic-control features, the IP Mux II functions like a router. It multiplexes IP packets only. Packets sent to it in any other protocol (IPX, for example) get nowhere. The module silently discards them, resulting in a reduction of non-IP traffic on all ports that frees even more bandwidth for your users.

Filtering data according to its Network Layer protocols, the IP Mux II has seven modes for forwarding/discarding frames that it encounters. By default, all network traffic passes through the IP Mux II, but you can also instruct it to either pass forward or discard network traffic based on whether the traffic's destination IP falls is within your specified IP address range.

What's more, the IP Mux II autonegotiates to the network speed of the hardware you connect to its RJ-45 ports. To activate this function on the uplink port, you simply flip a DIP switch. On downlink ports, 10-/100-Mbps autonegotiation is activated through iView (or the network management software of your choice).

You can also set each port to operate at one speed only, too. In the IP Mux II's Force 10 mode, for instance, only 10-Mbps information is transmitted or received; all 100-Mbps packets are discarded.

For diagnostic purposes, each RJ-45 port on the module has six embedded LEDs that alert you to the status of the port's connected link and duplex mode, whether the port is receiving or transmitting data, and whether it's operating at 10- or 100-Mbps speed.

Controlling bandwidth

As Internet usage increases, making the most of available bandwidth has become more important these days. So why waste it where it isn't needed?

The IP Mux II enables a more efficient and cost-effective use of bandwidth. You can set bandwidth exactly to what the customer requires—and nothing more.

Ideal for Web hosting and server-colocation applications, the module's most logical use is as an interface between an ISP Point-of-Presence (POP) and a group of users. An ISP, for instance, can use the IP Mux II to quickly guarantee a wide range of bandwidth requirements for subscribers who need varying levels of service. By having the flexibility to fine-tune the amount of bandwidth you provide to customers, you can ensure a better use of your resources.

It's also a great choice for broadband-access providers who offer multiple service levels to business parks, multi-tenant buildings, hotels, and educational facilities. When a customer's bandwidth requirements change, a service provider can adjust the amount remotely. By not having to visit a customer, you can save additional time and money.

The downlink ports on the IP Mux II share a total bandwidth of 100 Mbps. From this total, you can allocate a specific portion to each individual port, such as 10 Mbps to the first port, 50 Mbps to the second, 20 Mbps to the third, and 20 Mbps to the fourth. Using the iView software (or a compatible SNMP application), just enter the specific value for each port—anywhere from 64 bps up to 100 Mbps.

Setting it up

Once you connect the IP Mux II to your network, begin by assigning the device its own IP address. This initial configuration can be done in-band through the module's 10-BASE-T/100BASE-TX port while using the HubControl utility that's included on the iView CD, or out-of-band through the RS-232 serial port.

Of the two IP-address assignment routes, the second is the simplest. Simply plug one end of the included straight-through-pinned cable to the DB9 connector and the other end into the appropriate port on your computer or terminal that's set for VT100™ emulation. Further configuration and management can be done in-band over Ethernet via local and remote LAN connections.

If you use the HubControl utility, you can initiate SNMP configuration for SNMP-manageable devices during the IP address setup process. This way, you can get a head start on adding subnet masks, trap assignments, and other management functions.

Once the chassis has an IP address assigned, you use the iView software (or another SNMP-compatible network management system, such as HP OpenView) to configure, monitor, and manage the IP Mux II. Program subnet masks and default gateways, create community strings (for both read-only and read/write access), configure traps—all within a password-protected process!

The HubControl utility is also used to upload new versions of the system software and new MIB information to the IP Mux II.

The Power Chassis II

The 1-slot Power Chassis II must be ordered along with the IP Mux Module TX/5.

This self-contained chassis has an fixed, internal AC power supply and can be used on the desktop or mounted in a rack or cabinet with the included ears and hardware. Side vented, the unit features an internal fan to keep it cool.

In addition to serving as a platform for powering IP Mux II, the chassis can be used for various other types of application modules as they're introduced by us. (For an up-to-date selection, call Tech Support.)

When your application requirements change, all you have to do is slide a new module into the chassis, then tighten a couple of module screws to secure in the chassis. Internal guide rails make seating the module's card-edge connector firmly in the backplane easy.

Specifications

IP Mux II

Approvals: FCC Part 15, Subpart B, Class A; CE; UL®; CSA

Connectors:
Network: (5) RJ-45 (10BASE-T/100BASE-TX) including (1) downlink for bidirectional multiplexing of traffic and bandwidth control; Console: (1) DB9 F (RS-232) serial

Indicators: (6) LEDs per each network port: LNK (link), FDX (duplex mode), RCV (receive data), XMT (transmit data), ENA (port enabled), 100 (operating speed)

Power Chassis II

Approvals: FCC Part 15, Subpart B, Class A; CE; UL®; CSA

Connector: (1) 3-prong IEC-320 AC power input

Indicator: (1) LED: Power

Temperature Tolerance: Operating: 32 to 104ºF (0 to 40ºC); Storage: 0 to 160ºF (-18 to +71ºC)

Humidity Tolerance: 5 to 95% noncondensing

Power: Internal, autosensing 100–240 VAC, 50–60 Hz, 0.1/0.05 A

Size: 2"H x 12"W x 7"D (5.1 x 30.5 x 17.8 cm)

Weight: 9 lb. (4.1 kg)

iView Software Requirements

System Requirements

20 MB of free disk space, 32 MB RAM with *one* of the following:

- Windows® 95/98, Windows NT®, Windows 2000 (standalone or with HP® OpenView®)
- HP-UX® and HP OpenView
- IBM® AIX and NetView® or HP OpenView
- Solaris® and HP OpenView

Display Setting Requirements

- Color setting of at least 64K (higher than 256 colors)
- Monitor resolution of at least 800 x 600

Why Buy From Black Box? Exceptional Value. Exceptional Tech Support. Period.

Recognize any of these situations?

- You wait more than 30 minutes to get through to a vendor's tech support.
- The so-called "tech" can't help you or gives you the wrong answer.
- You don't have a purchase order number and the tech refuses to help you.
- It's 9 p. m. and you need help, but your vendor's tech support line is closed.

According to a survey by Data Communications magazine, 90% of network managers surveyed say that getting the technical support they need is extremely important when choosing a vendor. But even though network managers pay anywhere from 10 to 20% of their overall purchase price for a basic service and support contract, the technical support and service they receive falls far short of their expectations—and certainly isn't worth what they paid.

At Black Box, we guarantee the best value and the best support. You can even consult our Technical Support Experts before you buy if you need help selecting just the right component for your application.

Don't waste time and money—call Black Box today.

What's Included

LE1027C

- IP Mux Module TX/5
- (1) 6-ft. (1.8-m) male-to-female DB9 cable for RS-232 console connections
- CD containing iView software and related MIBs
- Users' manual

LE1026A

- Power Chassis II
- (1) 6-ft. (1.8-m) male-to-female DB9 cable for RS-232 console connections
- (1) AC power cord
- Rackmount ears and hardware
- Users' manual

Ordering Information

ITEM	CODE
Order both a module and a chassis…	
IP Mux Module TX/5	LE1027C
Power Chassis II	LE1026A
For optimum performance, order…	
Category 5 Patch Cable, 100-MHz, 4-Pair, Straight-Pinned, PVC, Beige, 10-ft. (3-m)	EVMSL05-0010

Black Box offers the best warranty program in the industry—Fido Protection®. For more information, request **FaxBack 22512**.