

## Series 7000 T1/E1 Routers

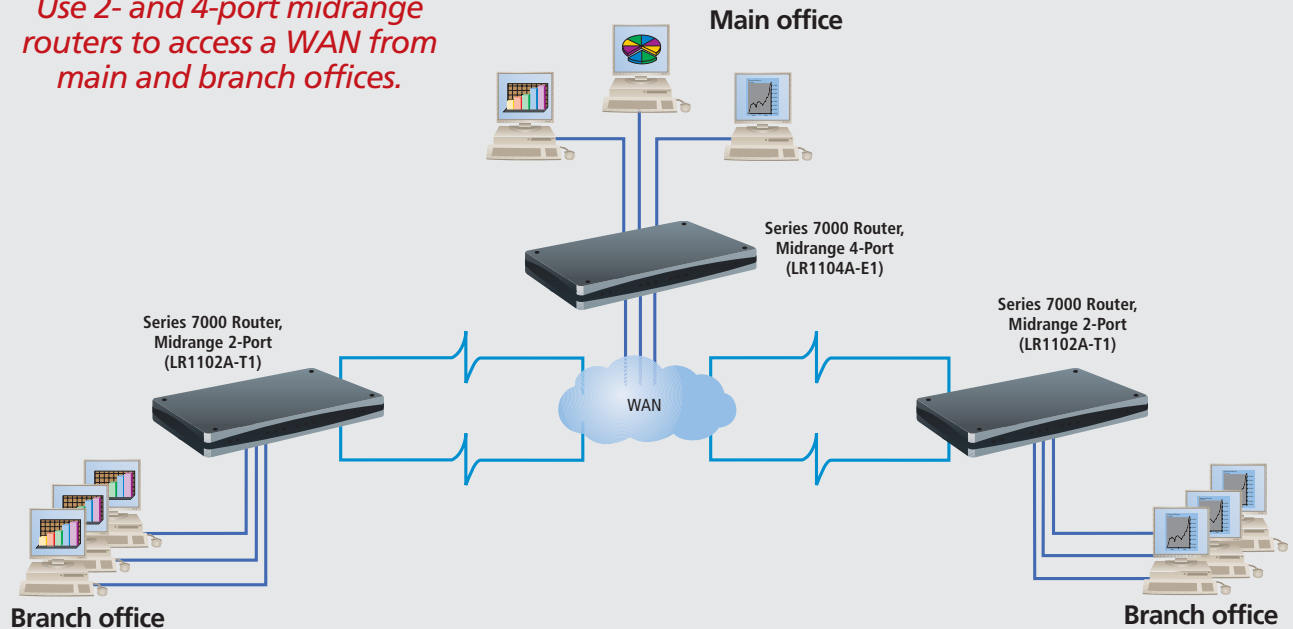


**Get top speed over T1/E1 lines with the midrange or enterprise routers.**

## FEATURES

- Make the most of your network with wire-speed bidirectional full-duplex throughput.
- Faster and less expensive than comparable Cisco routers.
- Aggregate speeds of up to 3.088 Mbps over T1 or 16.384 over E1.
- Inexpensive midrange standalone models are available.
- 4- and 8-port rackmount enterprise models for E1 are also available.

*Use 2- and 4-port midrange routers to access a WAN from main and branch offices.*



## OVERVIEW

Suppose you want to connect various branch offices to a WAN. Or your enterprise network might need Internet access. If you're considering purchasing or currently using a Cisco router, your network may not be running at its optimum speed.

Tired of sub-wire-speed performance? Don't want to spend the money for costly hardware upgrades? Eliminate sub-wire-speed performance and on-site hardware upgrades, plus do away with decreased bandwidth with Series 7000 T1/E1 Routers from Black Box.

These routers provide Internet access for enterprise networks or WAN access to branch offices, or they work in service provider sites.

In a typical T1 or E1 network, data is transferred over T1 or E1 cables at speeds of 1.544 or 2.048 Mbps, respectively.

But with Series 7000 Routers, multilink bonding optimizes bandwidth across multiple circuits. Here's how it works: The router combines up to eight lines into one integrated circuit to provide up to 16.384 Mbps for E1.

And even with all of its enhanced services enabled (details on [page 3](#)), the router still gives you fast throughput and data transmission—great when you need more bandwidth than standard T1 or E1 can provide, but aren't ready to upgrade to T3 or E3. Purchasing a T1 or E1 router lets you improve WAN

access performance, availability, and scalability without upgrading or replacing your existing equipment.

An important router feature is its firewall capability. A firewall guards your network from interfering networks by using security to control internal and external access to data. It works closely with the router services to determine whether to forward traffic onto its destination.

Firewalls are ideal for secure site-to-site communications, remote access, and parameter security. They provide an integrated platform for WAN access routing and security, while maintaining wire-speed performance.

The routers offer more security features, too. Multilevel passwords keep your network secure, as does the firewall with SPI (stateful packet inspection).

The router also supports Frame Relay applications.

Layer 2 switching allows for all routing at the core, enables you to extend Ethernet over WAN, retains VLAN over the WAN, provides high performance, is protocol independent, and is easy to configure. Layer 2 also provides Quality of Service (QoS) based on IP, Port, VLAN ID, and DSCP.

Layer 3 routing enables you to route RIP/OSPF/BG, provides VRRP, QoS, and radius/TACACS+. Plus, there's no memory to add, just a software key to upgrade. It also gives your network high performance.

### Available models

The affordable 2-port midrange T1 or 4-port E1 midrange standalone models are ideal for branch offices and are highly scalable to meet your current and future needs. They're also perfect for customer premise equipment. If you prefer, these models can also be wallmounted or rackmounted (call Tech Support for details). Spare power supplies are also available.

4- and 8-port enterprise rackmount E1 models feature fault tolerance and are NEBS Level 3 certified, which means they operate reliably in tough environmental conditions, don't adversely affect co-located equipment, and don't harm the environment or personnel. NEBS certification is the main difference between the midrange and enterprise routers. The enterprise models are a good choice for corporate headquarters and service provider POPs.

All models include two 10-/100-Mbps Ethernet ports for LAN connection, one DB9 auxiliary port, two ports for T1 connection or four or eight RJ-48C ports for E1 connection.

### Enhanced services

The T1 and E1 Routers span a wide range of applications. Enhanced services include backup and recovery, performance management, security, Ethernet extension, video and multimedia, IP telephony, and wireless.

In backup and recovery applications, the router gives you component, router, link, path, network, service provider, and backup redundancy.

Ethernet extension includes corporate LAN extension, point-of-sale (POS) and batch processing, e-mail and shared file services, and storage and backup.

Video and multimedia applications the router supports include remote surveillance, videoconferencing, and distance learning. The router uses sub-rate to full DS3 technology, as well as MLPP and MLFR, QoS, and Layer 2 and Layer 3 transport. These features enable the router to provide high-quality video and multimedia service and lower total operation cost.

IP telephony applications that the router supports are Voice over IP (VoIP) and IP PBX. The router uses MLPPP and MLFR, QoS, DSX drop & insert, and VLAN tagging and forwarding to give you higher-quality voice services, more efficient bandwidth use, better infrastructure, improved interoperability, and simplified management.

The routers are also compatible with wireless applications. Typical wireless applications include wireless LANs and corporate virtual private networks (VPNs). Features include MLPPP & MLFR, QoS, MHU, and VLAN tagging and forwarding. Benefits offered are advanced billing and mediation services, more efficient bandwidth use, better infrastructure use, improved interoperability, and simplified management.

### Connects directly to the interface

A built-in CSU/DSU enables you to connect the router directly to the T1 or E1 interface.

## 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.



LR1102A-T1

## TECH SPECS

**CPU** — LR1102A-T1, LR1104A-E1: 300 MHz;  
LR1112A-E1, LR1114A-E1: 400 MHz

**Management** — CLI®, SNMP, Syslog, Telnet™, BERT, traceroute, loopback tests

**Memory** — LR1102A-T1, LR1112A-E1, LR1114A-E1: 256 MB DRAM, 16 MB flash;  
LR1104A-E1: 256 MB DRAM, 32 MB flash

**Protocols Supported** — Layer 2: IP MUX, PPP, VLAN, MLPPP, HDLC, FR, MLFR;  
Layer 3: RIP V1, RIP V2, OSPF, VRRP, BGP

**QoS** — VoP (Voice over IP), RED, DiffServ, Class-Based Queuing (DBQ), Weighted Fair Queuing (WFQ), Frame Relay traffic shaping, policing

**Security** — NAT, ACLs, Denial of Service (DoS) Protection, DHCP, TFTP, PAP, RADIUS Authentication, TACACS+, SSH2, IPsec Management Interface

**Speed** — LR1102A-T1: 3.088 Mbps;  
LR1104A-E1: 8.192 Mbps;  
LR1112A-E1: 9.468 Mbps;  
LR1114A-E1: 18.816 Mbps

**TIOS** — Version 7.2 or higher

**MTBF** — 26 years

**Connectors** — LR1102A-T1: (2) RJ-48C (T1 or E1);  
(2) RJ-45 (10/100 Ethernet); (1) DB9 (auxiliary); (1) RJ-45 (console);  
LR1104A-E1: (4) RJ-48C (T1 or E1); (2) RJ-45 (10/100 Ethernet);  
(1) DB9 (auxiliary); (1) RJ-45 (console);  
LR1112A-E1: (4) RJ-48C (T1 or E1); (2) RJ-45 (10/100 Ethernet);  
(1) DB9 (auxiliary); (1) RJ-45 (console);  
LR1114A-E1: (8) RJ-48C (T1 or E1); (2) RJ-45 (10/100 Ethernet);  
(1) DB9 (auxiliary); (1) RJ-45 (console)

**Indicators** — LR1102A-T1, LR1104A-E1: (17) LEDs: (4) WAN Status,  
(4) Link/Act, (4) HS, (4) DUP, (1) Power;  
LR1112A-E1, LR1114A-E1: (11) LEDs: (1) Summary, (1) Power, (1) Status,  
(1) CA/TA (HSSI), (1) DTR/DSR (V.35), (1) ST, (1) SD, (1) RT, (1) RD,  
(1) HSSI, (1) V.35

**Temperature Tolerance** — Operating: 32 to 120°F (0 to 49°C)

**Humidity Tolerance** — 5 to 95%

**Power** — LR1102A-T1: 115 VAC, 60 Hz, external;  
LR1104A-E1: 240 VAC, 50 Hz, external;  
LR1112A-E1, LR1114A-E1: 115–240 VAC, 50–60 Hz, autosensing,  
internal; optional redundant power supplies and DC power supplies  
are available

**Size** — LR1102A-T1, LR1104A-E1: 1.3"H x 8.7"W x 6.5"D  
(3.3 x 22.1 x 16.5 cm);  
LR1112A-E1, LR1114A-E1: 2.7"H x 17.3"W x 11.8"D (6.9 x 43.9 x 30 cm)

**Weight** — LR1102A-T1, LR1104A-E1: 1.5 lb. (0.7 kg);  
LR1112A-E1, LR1114A-E1: 13 lb. (5.9 kg)

Item	Code
Series 7000 Routers	
Midrange T1	
2-Port	<b>LR1102A-T1</b>
Midrange E1	
4-Port	<b>LR1104A-E1</b>
Enterprise E1 with VPN	
4-Port	<b>LR1112A-E1</b>
8-Port	<b>LR1114A-E1</b>

### Remember to order cables...

GigaBase® 350 CAT5e, 350-MHz Bulk Cable, PVC, Blue,  
1000-ft. (304.8-m) **EYN851A-PB-1000**  
(For other lengths or plenum cable,  
call our FREE Tech Support.)

GigaBase 350 CAT5e, 350-MHz Patch Cable, 4-Pair,  
Straight-Pinned, PVC, Beige, Custom Lengths **EVNSL85**



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