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NETWORK SERVICES

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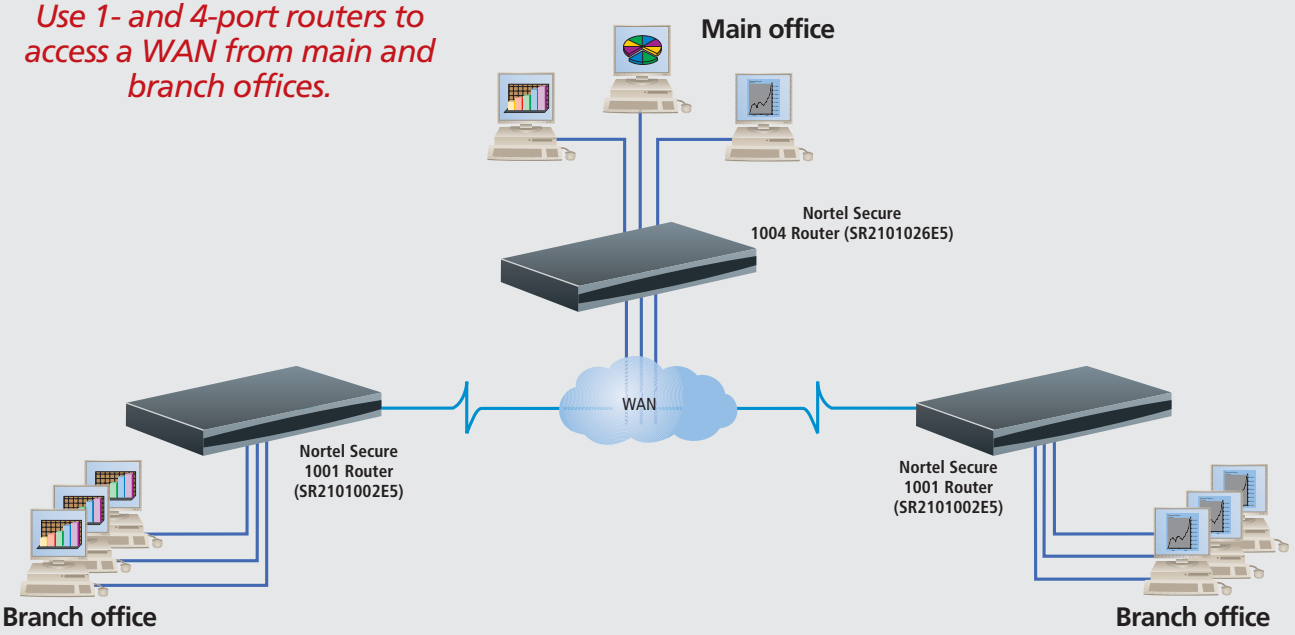
Nortel Secure Router, 1000 Series

Connect small or mid-sized networks over T1/E1 lines.

FEATURES

- Ideal for Internet access over T1/E1 enterprise networks, LAN access to branch offices, and ISPs.
- Connect 10- or 100-Mbps Ethernet networks to up to four T1 or E1 lines.
- Multilink bonding multiplexes up to four lines into one integrated circuit.
- Offer wire-speed performance, even with small packets and all network services enabled.
- Include extensive Quality of Service (QoS) features.

Use 1- and 4-port routers to access a WAN from main and branch offices.



OVERVIEW

1000 Series Nortel Secure Routers are ideal for T1/E1 Internet access to enterprise networks, for use by ISPs, and for WAN connections to remote offices—in short, anywhere you need secure, reliable, end-to-end LAN/WAN connectivity.

These powerful routers deliver the highest throughput at wire speed of any comparable router, making them particularly well suited for secure, converged solutions, including VoIP, private line WAN connectivity, video, IPsec VPN, data backup, and recovery applications.

One, two, or four ports

The 1001 models are ideal for use in companies that want to connect branch offices and remote sites to a single-line T1/E1 service, and for a direct Internet connection. The 1001 models feature a single T1/E1 port and a 266-MHz processor for high-value at an economical price.

Choose the 1002 or 1004 models for high-performance WAN access for enterprise branch offices and remote sites. These routers provide two or four T1/E1 ports and high-performance 300-MHz processors.

Each router also includes an integrated CSU/DSU and two 10-/100-Mbps Ethernet ports for fast connections to your LAN.

Scalable

When you need more bandwidth, Secure Routers bridge the gap by maximizing bandwidth across multiple circuits to lower operational costs.

1000 Series Secure Routers can scale from fractional T1/E1 to wire-speed T1/E1 bandwidth. Integrated multilink capabilities enable you to bond up to four T1/E1 channels into a single logical circuit to create one connection with over 6 Mbps of bandwidth.

Top performance

A fast-path forwarding engine maintains wire-speed throughput with low latency. Advanced Layer 2 switching and Layer 3 routing keep packets moving.

QoS optimizes bandwidth for data, voice, and video traffic so vital applications get priority and you get flawless multimedia without interfering with data applications. Comprehensive IP routing protocols provide high performance even with QoS enabled.

The routers have excellent latency and jitter characteristics. High-availability features such as BGP-4, VRRP, and NxT1/E1 bundling maximizes network uptime.

Tight security

Secure routers include the features you need to protect your data from unauthorized access or corruption.

Virtual Private Networks (VPNs) provide secure communications for your offices over public infrastructures such as the Internet.

Network Address Translation (NAT) enables the router to "hide" the IP addresses on your private network from the Internet.

The integral stateful-inspection firewall includes 25-zone support, policy-based NAT/PAT, and 30+ ALG support including H.322. and SIP. It also offers policy-based protection against denial of service attacks.

Highly manageable

Secure routers are manageable through the console or AUX port. Setup is easy with a menu-based GUI tool. For more advanced users, Command Line Interface (CLI) scripting tools provide even more router control.

Full SNMP management enables you to easily integrate the routers into your managed network and manage them using any standard SNMP management software package.

Technically Speaking

If you require reliable network connections between remote sites, T1 or E1 can fit the bill.

Both T1 and E1 are foundations of global communications. Developed more than 35 years ago and commercially available since 1983, T1 and E1 go virtually anywhere phone lines go, but they're much faster. T1, used primarily in the U.S., sends data up to 1.544 Mbps; E1, used primarily in Europe, supports speeds to 2.048 Mbps. No matter where you need to connect—North, South, or Central America, Europe, or the Pacific Rim—T1 and E1 can get your data there fast!

T1 and E1 are versatile, too. Drive a private, point-to-point line; provide corporate access to the Internet; enable inbound access to your Web Server—even support a multimedia WAN that extends halfway around the world! T1 and E1 are typically used for:

- Accessing public Frame Relay networks or Public Switched Telephone Networks (PSTNs) for voice or fax.
- Merging voice and data traffic. A single T1 or E1 line can support voice and data simultaneously.
- Making super-fast LAN connections. Today's faster Ethernet speeds require the very high throughput provided by one or more T1 or E1 lines.
- Sending bandwidth-intensive data such as CAD/CAM, MRI, CAT-scan images, and other large files.

Scaling T1

Basic T1 service supplies a bandwidth of 1.536 Mbps. However, many of today's applications demand much more bandwidth. Or perhaps you only need a portion of the 1.536 Mbps that T1 supplies. One of T1's best features is that it can be scaled up or down to provide just the right amount of bandwidth for any application.

A T1 channel consists of 24 64-kbps DS0 (Digital Signal [Zero]) subchannels that combine to provide 1.536 Mbps throughput. Because they enable you to combine T1 lines or to use only part of a T1, DS0s make T1 a very flexible standard.

If you don't need 1.536 Mbps, your T1 service provider can rent you a portion of a T1 line, called Fractional T1. For instance, you can contract for half a T1 line—768 kbps—and get the use of DS0s 1–12. The service provider is then free to sell DS0s 13–24 to another customer.

If you require more than 1.536 Mbps, two or more T1 lines can be combined to provide very-high-speed throughput. The next step up from T1 is T1C; it offers two T1 lines multiplexed together for a total throughput of 3.152 on 48 DS0s. Or consider T2 and get 6.312 Mbps over 96 DS0s by multiplexing four T1 lines together to form one high-speed connection.

Moving up the scale of high-speed T1 services is T3. T3 is 28 T1 lines multiplexed together for a blazing throughput of 44.736 Mbps, consisting of 672 DS0s, each of which supports 64 kbps.

T4 consists of 4032 64-kbps DS0 subchannels for a whopping 274.176 Mbps of bandwidth—that's 168 times the size of a single T1 line!

These various levels of T1 service can by implemented simultaneously within a large enterprise network. T1's cousin, E1, can also have multiple lines merged to provide greater throughput.

SR2101008E5

TECH SPECS

CPU — 1001 models: 266 MHz;
1002 and 1004 models: 300 MHz
Diagnostics — BERT, loopback, trace route
Firewall — Stateful packet inspection (SPI), 25-zone support, NAT, DDoS, ALG, IPSec, L2TP, PPTP
Management — CLI®, SNMP, Syslog, Telnet™ SSHV2, FTP/TFTP, SNMPv1, RADIUS, TACACS+, TCL Scripting, BERT, trace route, loopback tests
Memory — 1001 models: 128 MB DRAM, 16 MB flash;
1002 models: 256 MB DRAM, 16 MB flash;
1004 models: 256 MB DRAM, 32 MB flash
Performance — With services enabled:
1001 models: 1 x T1/E1 wire speed;
1002 models: 2 x T1/E1 wire speed;
1004 models: 4 x T1/E1 wire speed
Protocols Supported — Layer 2: VLAN-802.1Q tagging and forwarding, double tagging for VLAN domain, IP MU: transparent Layer 2 packet forwarding;
Layer 3: Routing: static routing, RIP, OSPF, BG-4, ECMP; High-availability: VRRP, redundant router connections; ACL, NAT, GRE tunneling, IP-IP for GRE;
WAN: PPP, MLPPP, MFR, HDLC, BCP
QoS — RED, WRED, DiffServ, bandwidth guarantee/sharing, flow monitoring, traffic policing;
Eight-level priority class based queuing (per IP address/subnets, ports, DSCP, and ToS bits, VLAN ID, VLAN Priority);
Frame Relay traffic shaping and policing
VPN Acceleration — 1001 models: Software based;
1002 and 1004 models: Onboard hardware
CE Approval — Yes
Connectors —
1001 models: (1) RJ-48C (T1 or E1), (2) RJ-45 (10/100 Ethernet), (1) DB9 (auxiliary), (1) RJ-45 (console);
1002 models: (2) RJ-48C (T1 or E1), (2) RJ-45 (10/100 Ethernet), (1) DB9 (auxiliary), (1) RJ-45 (console);
1004 models: (4) RJ-48C (T1 or E1), (2) RJ-45 (10/100 Ethernet), (1) DB9 (auxiliary), (1) RJ-45 (console)
Power — 115 VAC, 60 Hz, external
Size — 1.3"H x 8.6"W x 6.5"D (3.3 x 21.8 x 16.5 cm)
Weight — 1.5 lb. (0.7 kg)

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.

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Item	Code
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with VPN	**SR2101002E5**
Nortel Secure 1002 Router	
2-Port	**SR2101008E5**
with VPN	**SR2101012E5**
Nortel Secure 1004 Router	
4-Port	**SR2101018E5**
with VPN	**SR2101026E5**

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