



The Power of We™

Features

High performance

Avaya Secure Router 1000 Series routers perform at wire speed even with small packet sizes or network services enabled.

Scalability

Integrated multi-link capabilities bond multiple T1s into a single logical circuit with aggregated bandwidth of up to 6 Mbps.

Advanced technology

Secure Router products have an industry-leading set of advanced technologies including:

- A fast path forwarding engine
- Multi-link bonding
- Extensive QoS capabilities
- Unique “virtual Ethernet” VLAN
- Robust security features including IPsec VPN, stateful firewall, policy-based NAT and DoS protection

Integrated solution

Secure Router 1000 Series routers include a wide array of integrated capabilities, including IPsec VPN, stateful firewall, built-in Ethernet ports, CSU/DSU and drop/insert (DSX-1) voice support, eliminating the need to purchase extra equipment to support additional services.

Avaya Secure Router 1000 Series

The Avaya Secure Router 1000 Series routers deliver fast, secure, reliable and scalable wide area network (WAN) T1/E1 and serial access for enterprises and service providers. These powerful platforms provide consistent high-speed throughput with no degradation in performance — even with advanced services enabled.



Avaya Secure Router 1000 Series

Ideal for installation in enterprise remote sites, branch offices or service provider points of presence (POPs), the Secure Router 1000 Series combines high performance and a robust feature set, making them an extraordinary value. The Secure Router 1000 Series complements Avaya’s existing enterprise portfolio, including IP Telephony, Ethernet switching, WLAN and security products. Altogether, this portfolio enables customers to cost-effectively deploy real-time applications across a secure, reliable, end-to-end LAN/WAN infrastructure.

A rich suite of routing services and advanced functionality make the Secure Router 1000 Series perfect for a variety of applications, including high-speed Internet access, private line WAN connectivity, video, IP Telephony, IPsec VPN, stateful firewall and data backup and recovery. Comprehensive, simple-to-use software tools enable sophisticated access and bandwidth management for dependable communications. A scale-on-demand provisioning system enables

extra ports to be added, bandwidth and enhanced capabilities via software, shortened deployment time and fewer site visits.

Peak performance

Avaya Secure Router 1000 Series routers perform up to three times faster than most standard WAN access platforms. Unlike other routers that cannot sustain peak performance as services are added, ours deliver services and applications at consistently high speeds, independent of bandwidth-intensive applications, packet sizes or enabled services. In addition, the Secure Router products have excellent latency and jitter characteristics. Collectively, wire-speed performance and full bandwidth make Secure Router 1000 Series platforms ideal for sites where DS3 connectivity is cost-prohibitive or unavailable, enabling organizations to deploy high-speed services while conserving expenses.

Scalable bandwidth

Efficient multi-link T1/E1 bonding allows up to four T1 or four E1 links to be combined into one logical 6-Mbps or 8-Mbps link, enabling organizations to add bandwidth without purchasing more costly DS3 services.

Comprehensive Quality of Service (QoS) management capabilities deliver services with low latency, enabling voice and video traffic to share data connections with no degradation in performance.

The Secure Router 1000 Series scale-on-demand provisioning architecture enables network administrators to easily increase bandwidth and expand functionality without costly hardware upgrades.

High processing power

Delivering communications at wire speed with all services enabled requires power. The Secure Router 1002 and 1004 include integrated Channel Service Units/Data Service Units (CSU/DSUs), high-performance 300 MHz processors and 256 MB

DRAM. For enhanced performance, Avaya provides 16 and 32 MB Flash RAM on the 1002 and 1004 models, respectively. Avaya's Secure Router 1001 delivers extremely high value at an economical price. With one T1/E1 or serial port, a 266 Mhz processor and 128 DRAM, the platform provides exceptionally high performance in a small form factor. It is ideal for companies that want to connect to a single-port T1/E1 or serial WAN service.

Outstanding WAN access value

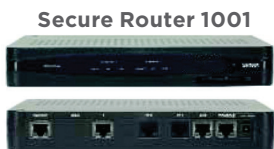
The wide array of advanced features built into the Secure Router 1000 Series are key ingredients that provide extraordinary value:

- **High-availability features** are designed to deliver no single point of failure. Border Gateway Protocol version 4 (BGP-4) enables multi-homing, allowing organizations to eliminate potential points of failure; the Virtual Router Redundancy Protocol (VRRP) enables redundant

router configurations; NxT1/E1 bundling seamlessly guards against individual circuit failure and restores bandwidth once a connection has been repaired.

- **Advanced QoS features** optimize bandwidth for voice, video and data traffic. Organizations benefit from crystal clear multimedia communications without impeding data applications. Comprehensive IP routing protocols deliver high performance, even with features such as Access Control List (ACL), NAT and QoS enabled.
- **Multi-link capabilities** maximize bandwidth across multiple circuits to lower operational costs.
- **Virtual Ethernet technology** provides seamless integration between geographic locations. Layer 2 tagging, QnQ double tagging and forwarding, and exclusive Network Address Translation (NAT) capabilities allow transparent LAN access across the WAN.
- **Integrated IPsec VPN, stateful firewall, policy-based NAT and DoS protection.**

Figure 1. Secure Router scalability



The Secure Router 1001 and 1001S are suitable for use in remote offices or in any location needing a direct Internet connection. Featuring either a single T1/E1 or serial port, the Secure Router 1001 and 1001S pack a powerful punch in a feature-packed platform. They can scale from fractional T1/E1 to wire-speed T1/E1 bandwidth and beyond, even when forwarding small packets with advanced services enabled.



Secure Router 1002 and 1004 scalable routers provide high performance WAN access for enterprise branch offices and remote sites. These versatile platforms provide a single T1 or E1 port plus the ability to upgrade to four-port (T1/E1) capacity. The Secure Router 1002 and 1004 routers each provide unparalleled performance and advanced software functionality in a compact, highly reliable platform.

- **Dual auto-sensing 10/100BASE-TFast Ethernet interfaces** enable administrators to quickly and easily perform remote configuration, provisioning and management.

- **Bandwidth and services can be scaled remotely**, simplifying management and eliminating the need for expensive truck rolls and hardware upgrades.

- **A choice of interface** enables management using a standard Command Line Interface (CLI) or standards-based Simple Network Management Protocol (SNMP) tools.

High return on investment

Secure Router 1000 Series routers deliver consistent top-speed performance at the network edge and provide a winning combination of standard and advanced services. These powerful platforms enable organizations to improve and provision network services, develop new revenue generating opportunities, increase employee productivity, and build customer

loyalty and satisfaction. Avaya Secure Routers offer a cost-effective way to provide high-speed access without compromising service quality.

Secure Router 1000 Series Technical Specifications

Service levels and connectivity

- T1/E1
- Fractional T1/E1
- Serial (up to 2 Mbps)
- 10/100 Base-T

WAN protocol support

- Point-to-Point Protocol (PPP), including PPP over
- Ethernet (PPPoE)
- Frame Relay (including FRF.12 fragmentation)
- HDLC
- Bridge Control Protocol (BCP)
- Dial back-up via integral ISDN (SR 1001)

INDUSTRY-LEADING PERFORMANCE

In independent tests, the 1004 router was found to:

- Achieve 100% zero-loss throughput in multi-link configurations of dual and quad-T1 interfaces with VPN, Firewall, QoS and NAT services enabled
- Provide up to 6 times the throughput of comparable competitive offerings in tests of 64-byte packets in scenarios tested
- Deliver line-rate bi-directional (full duplex) throughput of 12 Mbps and 6 Mbps across four and two aggregated multi-link PPP T1 links, respectively

Additional tests have proven that routers, such as the Secure Router 1001, 1002 and 1004, as well as the Secure Router 3120, consistently outperform comparable competitive products in critical data and voice application scenarios.

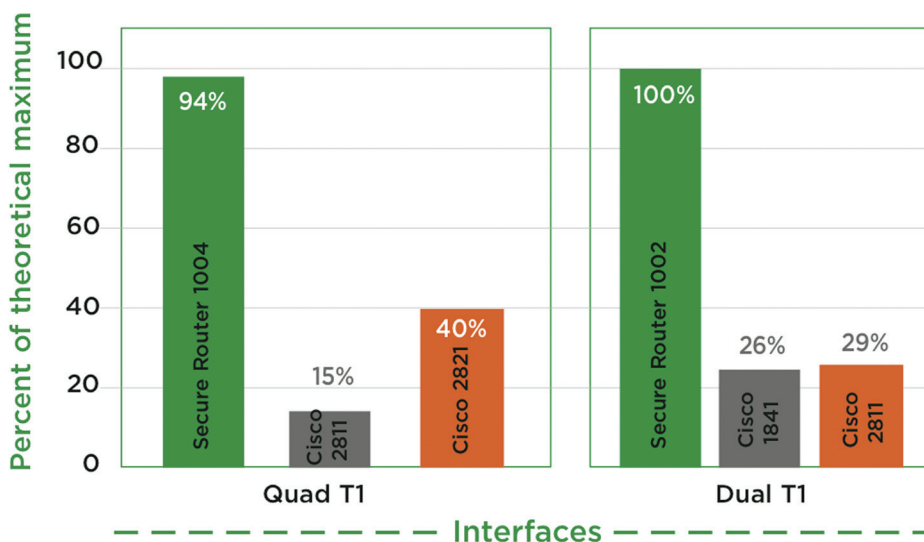


Figure 2. Zero loss, bidirectional throughput using 64-byte packets via multi-link PPP, VPN, Firewall, NAT and QoS enabled

WAN interfaces (T1/E1)

T1

- Line code: B8ZS/AMI
- Framing: ESF/D4
- Output level: DS1/DSX-1
- Line build out (DS1): 0, -7.5, -15 dB
- Equalization (DSX-1): 0-655 ft
- Clock: Internal or line

E1

- Line rate: 2.048 Mbps
- Framing: G.704
- Line code: HDB3
- Electrical: G.703
- Clock: Internal or line

WAN interfaces (Serial/SR 1001S)

- V.35
- X.21
- RS-232
- RS-449
- EIA-530/530A

Management interfaces

- Console: RJ-45
- AUX: RJ-45

LAN interfaces

- Two 10/100 Base-T Fast Ethernet; 802.3, auto-negotiating, full or half-duplex, load sharing with failover capability
- VLAN-802.1Q tagging and forwarding, double tagging for VLAN domain
- Maximum IP Routing Performance
- SR 1001: 43,000 pps (64-byte)
- SR 1002 & 1004: 69,000 pps (64-byte)

Software features

Layer 3

- Routing: RIPv1, RIPv2, OSPF, BGP4, static routing, ECMP
- High availability: VRRP, redundant router connections
- ACL, NAT, DHCP Relay, GRE Tunneling, IP-IP for GRE

QoS and traffic management

- RED, WRED, DiffServ, bandwidth guarantee/shaping, flow monitoring
- Traffic policing
- Eight-level Priority Class Based Queuing (per IP address/subnets, ports, DSCP and ToS bits), VLAN ID (802.1Q), VLAN priority (802.1p)
- Frame Relay traffic shaping and policing

Firewall

- Stateful packet inspection firewall
- 25-zone support
- Policy-based NAT/PAT
- 60+ Distributed Denial of Service (DDoS) attack preventions
- 30+ ALG support (including H.323 and SIP)

VPN (License Option)

- IPSec VPN (Site-to-site and remote access)
- DES, 3DES, AES, SHA1, MD5
- NAT Traversal

“VoIP-friendly” features

- Low-latency packet forwarding
- SIP ALG for NAT and Firewall
- Cone NAT (for Avaya Unistim protocol) with NAT hairpinning
- Frame Relay fragmentation (FRF.12)
- Compressed RTP (cRTP)

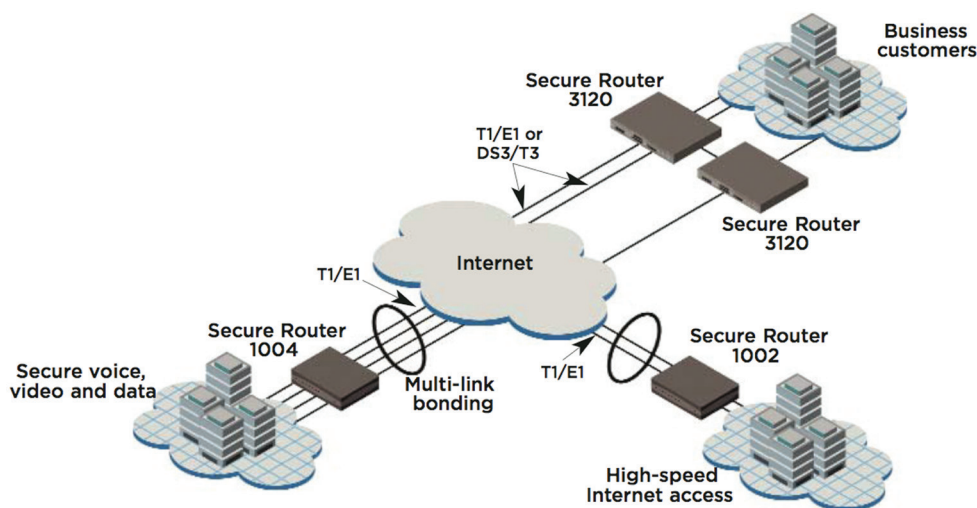


Figure 3. The Avaya Secure Router includes fixed-configuration 1000 Series and modular 3120 platforms. All Secure Routers may be deployed in a variety of configurations to provide high-quality data, voice, video and multimedia performance with advanced security features, lower total cost of ownership, flexible deployment options and fast, reliable application delivery.

IP multicast

- IGMPv2, IGMPv3
- PIM-SMv2, PIM-SSM

Service provisioning

- Management: Telnet SSHv2, FTP/TFTP, SNMPv1, SNMPv2c, RADIUS, TACACS+, TCL scripting
- Management UI: CLI and graphical
- Monitoring: Syslog, statistics, alarm
- Diagnostics: BERT, loopback testing, trace route, packet capture (PCAP)

Hardware

Dimensions

- Height: 1.32 in (3.35 cm):
- Width: 8.6 in (21.97 cm)
- Depth: 6.51 in (16.54 cm):
- Weight: 1.5 lb (.68 kg)

Processor

- 300 MHz, 266 MHz (1001 and 1001S)

Memory

- Default: 256MB DRAM, 128 MB (1001 and 1001S)
- Default: 16MB FLASH (1001 and 1001S, 1002); 32 MB FLASH (1004)
- External compact flash storage for multiple configurations (1001 and 1001S)

Power

- External power brick: 100-240 VAC, 110 VAC (1001 and 1001S), 50-60 HZ
- AC input current: Rated 800 mA maximum, measured 120 mA (120 VAC), 60 mA (240 VAC)
- DC output current: Rated 2000 mA max., 800 mA max. (1001 and 1001S)
- Power dissipation: 12 W maximum, 8 W maximum (1001 and 1001S)

Mounting

- Rack mount: 19 in. or 23 in. (optional)
- Wall mount: optional
- Tabletop: standard

Environmental

- Operating temperature: 32° to 104°F (0° to 40°C)
- Relative humidity: 0 to 95%

Regulatory approvals

Safety

- UL/cUL 1950, 3rd edition (2000)
- IEC60950, 3rd edition (1999)

- EN 60950

EMC

- FCC Part 15 Class A
- EN 55022A
- EN 300-386-2
- EN61000-3-2
- EN61000-3-3

Telecom

- US FCC Part 68
- Canada Industry Canada CS-03
- Europe CTR 12/13

Secure Router 1001, 1001S, 1002 and 1004 feature comparison

	1001	1001S	1002	1004
T1\E1 Ports	1	N/A	2	4
Serial Ports	N/A	1	N/A	N/A
CSU\DSU	Yes	N/A	Yes	Yes
Add/Drop Port (DSX)	N/A	N/A	1	1
Ethernet Ports	2 10/100	2 10/100	2 10/100	2 10/100
Memory	128 MB	128 MB	256 MB	256 MB
Console/Auxiliary Port	1/1	1/1	1/1	1/1
Compact Flash Slot	Yes	Yes	N/A	N/A
IP Routing Performance (64-byte PPS)	43K packets per second	43K packets per second	69K packets per second	69K packets per second
IPSec VPN (3DES) throughput	4.9 Mbps	48 Mbps	74 Mbps	74 Mbps
Power	External AC/DC	External AC/DC	External AC/DC	External AC/DC

Learn More

To learn more about the Avaya Secure Router 100 Series, contact your Avaya Account Manager, Avaya Authorized Partner or visit us at: www.avaya.com.

About Avaya

Avaya is a global provider of business collaboration and communications solutions, providing unified communications, contact centers, networking and related services to companies of all sizes around the world. For more information please visit www.avaya.com.

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