



Product Brief

Nortel Secure Router 4134

A unified communications integrated branch solution

Give your employees a high quality of experience, regardless of which applications or services are enabled across the network.

Consolidate branch networking functions into fewer integrated devices to reduce network complexity and streamline capital and operational costs.

Do it all with a powerful modular system that converges routing, security and unified communications services in a single, competitively-priced platform.

The Nortel Secure Router 4134 is a modular, multi-service platform that integrates multiple networking functions, including routing, WAN, Ethernet switching, security and Voice over IP (VoIP) into a single device. The platform's design ensures the consistently high throughput required by voice, data or unified communications applications. The first device of its kind to feature embedded Microsoft intelligence to simplify deployment of unified

communications, the Secure Router 4134 can reduce the number of devices needed at the branch or regional site, generating substantial operational and capital cost savings for your business.

As part of Nortel's Secure Router family, the 4134 delivers the same superior low latency and small packet throughput as provided by other Secure Router models — and as demanded by real-time voice

and multimedia applications. Secure Router 4134 offers the greatest performance and connectivity within the Secure Router portfolio to date, enabling it to not only handle the demands of the integrated branch, but also act as the regional or headquarters router for most enterprises. In doing so, it can cost-effectively and securely concentrate traffic from hundreds of remote sites.

Features

Multi-service platform

- > Full IPV4/IPV6 routing, IPSec, VLAN and firewall
- > Voice media gateway services, including support for digital and analog trunks, analog phones, fax machines and modems
- > Integrated Microsoft Office Communications Server (OCS) mediation services
- > Wide range of WAN connectivity, including DS3, HSSI, Channelized DS3, T1/E1, ISDN BRI and Serial
- > High-density Ethernet switching with built-in Power over Ethernet (PoE)

Voice Media Gateway

- > Range of integrated voice interfaces, including FXS, FXO, DID, CAMA, BRI and T1/E1, enable connection to the PSTN or analog telephony devices
- > Up to 128 simultaneous voice (DSP) channels can handle voice gateway needs of small to large branch sites

Integrated Microsoft OCS Mediation Services

- > Integrated mediation services module provides translation/gateway services for locally connected Microsoft Office Communicator (OC) clients
- > Certified by Microsoft as "hybrid gateway" solution for OCS

Robust routing

- > Low-latency, high-packet throughput ideal for VoIP and multimedia transport
- > IPv4 or IPv6 with BGP-4 and Multicast services (PIM-SM, DVMRP)

Integrated security

- > Stateful packet inspection firewall
- > VPN hardware acceleration and IPSec VPN services for secure voice and data transport



Nortel Secure Router 4134

Only device of its kind to integrate Microsoft OCS mediation services

The Secure Router 4134 uniquely integrates Microsoft's OCS mediation services, along with media gateway, routing, switching and security capabilities into a single device. This combination is ideal for enterprises considering deploying Microsoft Office Communicator (OC) clients at their branch sites. The Secure Router 4134 can deliver local gateway services for OC clients either to the PSTN or to other non-OC clients. In doing so, it also ensures reliable performance for unified communications applications that support critical business processes. The Secure Router 4134 has also been certified by Microsoft as a "hybrid gateway" compatible with its OCS solution suite.

Voice media gateway services

The Secure Router 4134 can connect to the PSTN as well as support conventional TDM-based telephony devices through a set of integrated voice interfaces. T1/E1, FXS and FXO interfaces are all available for flexible telephony connection. With its integrated media gateway services, the Secure Router 4134 can connect local Microsoft OCS clients (and other telephony devices) directly to the PSTN, eliminating the need to route voice traffic back to a central site, saving on transmission costs. Secure Router 4134 media gateway services are also interoperable with Nortel's Communication Server 1000, Microsoft OCS and other SIP call servers, including Nortel's Communication Server 2100, as well as Broadsoft and Sylanro servers, providing additional telephony deployment options.

Reliable performance for converged branch applications

The Secure Router 4134 is a dependable solution that can be deployed in a variety of configurations to maximize uptime with no single points of failure. Data,

voice, video and other multimedia applications perform more smoothly without the latency, packet loss and jitter encountered with other solutions, resulting in the ability to provide the same enterprise-class service and quality of experience to remote sites and branch offices as is available at corporate headquarters.

Robust routing

Routing services include a full IPv4 and IPv6 protocol set, including BGP-4 and multicast capabilities. A full-function IPv6 implementation also enables deployment into environments that require extended IP addressing with the same routing services — all without any additional system memory requirements.

Integrated Ethernet switching

Integrated high-density Ethernet switching, including Gigabit, Fast Ethernet and Power over Ethernet (PoE) connectivity, enables flexible connection of local area network (LAN) devices, such as powered services for IP telephony devices. A variety of Ethernet switching modules enables up to 54 Gigabit, 72 Fast Ethernet or 72 PoE ports. The Ethernet switch ports can operate at either Level 2 or Level 3, enabling dynamic connectivity of devices and subnets across your network.

Integrated security

Powerful, fully-integrated security features include VPN and firewalls for increased reliability and user confidence. Capabilities include stateful packet firewall, detection and prevention of more than 60 Distributed Denial of Service (DDoS) attacks, VPN hardware acceleration for hub and spoke deployment over IPsec and VPN tunnels, and IPsec VPN data-encryption services with AES, 3DES, DES, SHA-1, MD-5 and Diffie-Hellman support.

Advanced quality of service

Quality of service goes beyond Layer 3 flow-based support by including Layer 2 class-based queuing. The highest granu-

larity of priorities (eight levels) provides maximum performance with the lowest latency for voice, video and other high-priority traffic while guaranteeing bandwidth among all classes.

Multi-link capabilities

Secure Router 4134 provides best-in-class MLPPP and MFR (FRF.16 and FRF.15) support to allow bonding of T1/E1, T3 and other WAN interfaces to create a single virtual interface capable of transmitting at the maximum bandwidth available. Multi-linking enables hassle-free bandwidth scalability, high-speed video, voice and data transfer while securing connectivity from individual link failures.

Simple to install, simple to scale modular platform

The Secure Router 4134 provides advanced operational features while simplifying, or eliminating, time-consuming and confusing installation tasks. The router's unique chassis has four small module slots and three medium ones to support the dynamic demands of growing businesses. Four small slots support low-density data or voice modules. Medium slots can be used for WAN, Ethernet or voice carrier modules. A voice carrier module also hosts up to four small voice modules (FXS or FXO) in a single medium module slot and can thereby increase total voice port capacity. The modular and flexible Secure Router 4134 can support:

- Up to 72 Power over Ethernet 10/100 Mbps ports
- Up to 58 Gigabit Ethernet switching ports
- Up to 64 FXS or FXO ports
- Microsoft Mediation Services Module
- Up to 3 Clear or Channelized DS3/T3 ports
- Up to 31 T1/E1 ports
- Up to 7 Serial or ISDN ports
- Up to 3 HSSI ports

Management

The Secure Router 4134 employs an industry-aligned command line interface (CLI) that makes it easy to set up and manage. Features include:

- On-Premise, Console and Command Line Interface; Telnet, Events, Syslog
- Remote SSHv2 provides secure communication for configuration and maintenance

The Secure Router family

The Secure Router 4134, with its modular design, high throughput and reliable performance, is complemented by Nortel's Secure Router 1000 and 3120 Series.

Deployed in combination with Secure Router 1001, 1002 and 1004 and/or the 3120, the Secure Router 4134 not only handles the WAN and LAN requirements of the integrated branch, but can also act as a central-site router for most enterprises.

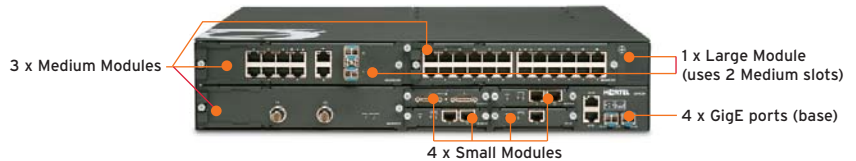
An easy choice

Secure Router 4134 is a high-performance branch convergence solution that brings together feature-rich VoIP and feature-rich data into a common platform for simplified management, greater cost savings and a high quality of user experience.

A unified communications-ready platform

The Secure Router 4134 is designed to deliver integrated VoIP gateway functions, including support for Nortel IP telephony and Microsoft (OCS) devices. Most notably, the Secure Router 4134 integrates Microsoft Mediation technology enabling Microsoft OC clients in the branch to communicate with other SIP or analog-based devices through the Secure Router 4134. This benefits customers with Microsoft OCS at their headquarters who can extend their unified communications applications to the branch with improved manageability and reduced complexity. As the first device of its kind to integrate Microsoft Mediation technology, the Secure Router 4134 fulfills Nortel's and Microsoft's joint Innovative Communications Alliance (ICA) vision as a leading-edge unified communications integrated branch solution.





Secure Router 4134 modular options








Multislot chassis with 4 10/100/1000 Mbps Ethernet ports (2 UTP + 2 SFP), console/AUX port, USB and compact flash, redundant AC or DC power.

- > Supports up to 3 medium modules
- > Supports up to 4 small modules
- > Supports 1 large module

Medium Modules:

-  8-port T1/E1 (software selectable)
-  1-port Channelized T3/DS3
1-port Clear Channel T3/DS3
-  1-port High-Speed Serial Interface (HSSI)
-  10-port 10/100/1000 Mbps Ethernet
-  24-port Power over Ethernet
24-port Fast Ethernet
-  Mediation Services Module for OCS
-  Carrier Module for Voice
Hosts up to 4 x FXS or FXO modules (photo shows carrier module with 4 voice modules installed)

Small Modules:

-  1-port T1/E1
2-port T1/E1
-  2-port ISDN BRI S/T
2-port ISDN BRI U
-  1-port Serial
2-port Serial
-  2-port FXS with Direct Inward Dial (DID)
4-port FXS with Direct Inward Dial (DID)
-  2-port FXO
4-port FXO

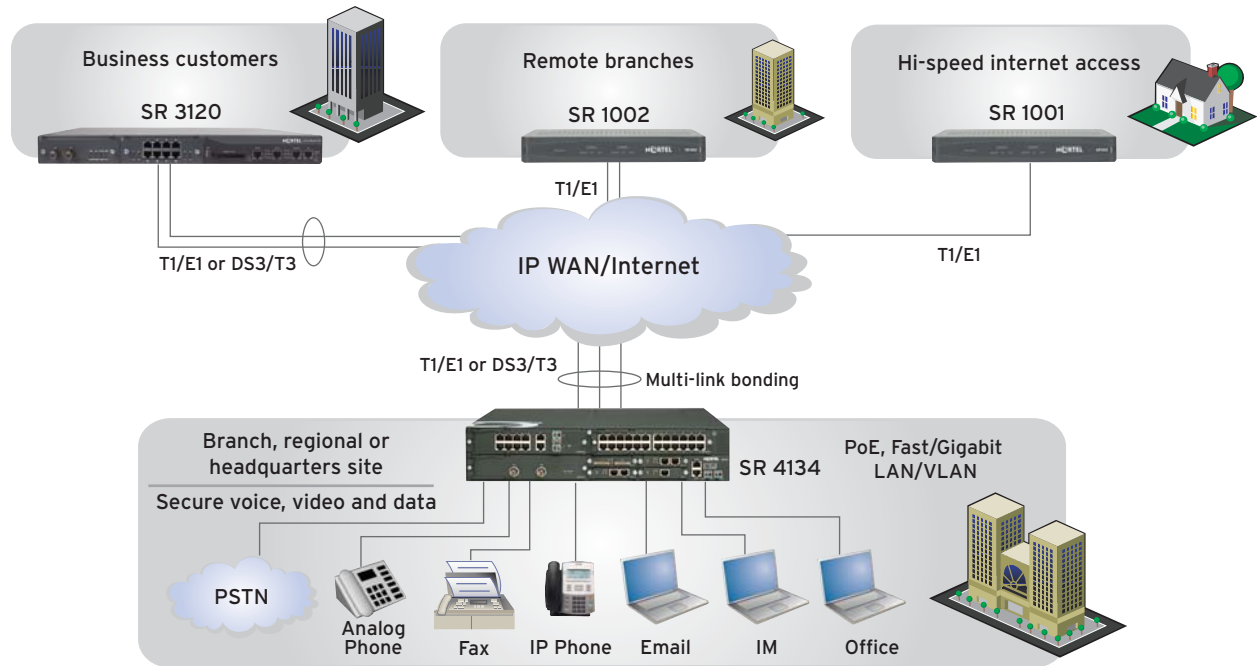
Large Module:

44-port 10/100/1000 Mbps Ethernet



Figure 1. Branch/remote office architecture with Secure Router 4134

The Secure Router 4134 provides high-quality data, voice and multimedia performance with advanced security features, low total cost of ownership, flexible deployment options and fast, reliable application delivery. It can be deployed along with other Secure Router family products for remote site WAN connectivity.



Secure Router 4134 technical specifications

Software features

WAN

- Point-to-Point Protocol (PPP), including PPP over Ethernet (PPPoE)
- Frame Relay (including FRF.12 fragmentation)
- HDLC
- Bridge Control Protocol (BCP)

Multilink WAN Support

- Multilink PPP (MLPPP)
- Multilink Frame Relay (MFR), including FRF.15 (end-to-end) and FRF.16 (UNI/NNI)
- Bonding of T1/E1, Serial or DS3 interfaces

Ethernet Switching

- LAN/MAC Bridging, Spanning Tree (STP), Rapid and Multiple Spanning Tree (RSTP and MSTP)
- VLAN Bridging, tagging, retagging, Generic VLAN Registration Protocol (GVRP)
- 802.3ad link aggregation
- 802.1x authentication
- 802.3af-2003 (Power over Ethernet)
- VLAN-802.1Q tagging and forwarding, double tagging for VLAN domain
- PPP over Ethernet (PPPoE)

Layer 3

- IPv4 and IPv6 support, including IPv4-IPv6 tunnels
- Static routing, RIPv1/2, RIPng for IPv6, OSPFv2 and v3, BGP4/4+
- Policy-based routing
- Inter-VLAN routing
- High availability: VRRP, redundant router connections
- ACL, NAT, GRE Tunneling, IP-IP for GRE

Quality of Service/Traffic Management

- RED, WRED, DiffServ, bandwidth guarantee/sharing, flow monitoring
- Traffic Policing
- 8 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
- VLAN classification (port, subnet or protocol-based)

MPLS Label Edge Routing (LER) services

- Label Distribution Protocol (LDP)
- RSVP-TE, OSPF-TE
- MPLS Fast Reroute
- MPLS Martini Pseudo-wire (Ethernet, PPP, HDLC over MPLS)

Firewall

- Stateful Packet Inspection Firewall
- 25-zone support (including Corporate, Internet, DMZ)
- Policy based NAT/PAT
- 60+ Distributed Denial of Service (DDoS) Attack Preventions
- 30+ ALG support (including H.323/SIP)
- Pass through, IPSec, L2TP, PPTP

Secure Router 4134 technical specifications

Voice

Voice Signaling Support

- T1 ISDN PRI (User side)
 - NI2, DMS-100, 5ESS
- T1 Channel Associated Signaling (CAS)
 - Robbed Bit Signaling; E&M — Wink start, immediate start, delay dial
- ISDN BRI (User side)
 - NI2, DMS-100, 5ESS
- FXS (Foreign Exchange Station)
 - Loop-start, Ground-start
 - Supports Type 1 Caller ID
- FXO (Foreign Exchange Office)
 - Loop-start, Ground-start
 - Supports Type 1 Caller ID
- Direct Inward Dialing (DID)
 - E&M — wink start, immediate start, delay dial
- Centralized Automated Message Accounting (CAMA)
 - Emergency calling

Codecs Supported

- G.711 — A-law and u-law
- G.726 — 16, 24, 32 Kbps
- G723.1 — 5.3, 6.3 Kbps
- G.729A — 8 Kbps

DSP Features

- TDM to IP, IP to TDM conversion
- ITU G.168 Echo Canceller
- Voice Activity Detection/Comfort Noise Generation
- DTMF digit detection
- Caller ID generation and detection
- T.38 fax relay
- Fax and Modem Pass-through

“VoIP-friendly” features

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

VPN

- IPSec VPN, NAT-Traversal
- DES/3DES, AES, SHA1, MD5
- Site-to-site and remote access support
- Embedded VPN acceleration hardware
- 1,000 VPN tunnels

IP Multicast

- IGMPv1/2/3 for IPv4; MLDv1/2 for IPv6
- PIM-SM for IPv4/v6
- DVMRPv3 for IPv4

Service Provisioning

- Management Telnet, SSHv2, SFTP, PAP, CHAP, SNMPv2c, Syslog, DHCP, RADIUS, TACACS+, TCL scripting support
- Monitoring Syslog, statistics, alarm
- Diagnostics BERT, loopback testing, trace route, packet capture

Physical specifications

Chassis

- Height x Width x Depth: 3.5" H x 17.3" W x 19.7" D (8.9 cm H x 44.0 cm W x 50.0 cm D)
- Weight with Power Supply: 22 lbs (10.0 kg)
- Chassis slots:
 - 3 medium module slots
 - 4 small module slots
 - 1 large module slot (combining 2 medium slots)
 - All slots are hot swappable
- 2 x 10/100/1000 Ethernet copper/2 x GigE SFP Fiber ports
- Management ports
 - Compact Flash
 - USB
 - Fast Ethernet
 - Auxiliary and Console ports (RJ-45)

Redundant power options

- AC power supply — 50-60 Hz 90-269 VAC, 250 Watts
- AC power supply with PoE — 50-60 Hz 90-269 VAC, 660 Watts; separate +54VDC supply isolated from main AC supply, 410 watts available for PoE
- DC power supply — 40 to 72 VDC, 250 Watts

Environmental

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

Regulatory Approvals

- Safety: cTUVus and GS Certification; EN60950-1, IEC60950-1 and CB Report
- EMC: FCC Part 15 Class A, EN300386, EN55022, EN55024, VCCI
- Telecom: TIA-968-A, CS-03, ETSI TBR 3, 12/13, JATE, A-Tick

Small Module specifications

1 and 2-port T1/E1 Module

- T1 specifications
 - 1.544 Mbps; fractional T1 support
 - B8ZS/AMI coding, ESF/D4 framing
 - Clock: Internal or line
- E1 specifications
 - 2.048 Mbps; fractional E1 support
 - G.704 framing / G.703 electrical
 - Clock: Internal or line

1 and 2-port Serial Module

- Up to 2 Mbps per port
- DTE or DCE mode
- V.35, RS-232/V.28, RS-449/V.11, EIA-530/A, or X.21/RS-422

2-port ISDN BRI Module

- U and S/T interfaces

2 and 4-port FXS Module

- Allows a conventional phone to connect to the Secure Router 4134
- Loop-start and ground-start signaling
- Battery reversal
- Caller ID and Direct Inward Dialing (DID)

2 and 4-port FXO Module

- Allows the Secure Router 4134 to connect to the PSTN
- Loop-start and ground-start signaling
- Battery reversal
- Caller ID
- CAMA for E911 Service
- Private Line Automatic Ringdown (PLAR)

Secure Router 4134 technical specifications

Medium Module specifications

8-Port T1/E1 Module

- T1 specifications
 - 1.544 Mbps; fractional support
 - B8ZS/AMI coding, ESF/D4 framing,
 - Clock: Internal or line
- E1 specifications
 - 2.048 Mbps
 - G.704 framing / G.703 electrical
 - Clock: Internal or line

1-port High-Speed Serial Interface (HSSI) Module

- Up to 52.0 Mbps
- DTE and DCE mode

1-port DS3 — Clear Channel Module

- DS3 specifications
 - 44.736 Mbps, sub-rate DS3 support
 - Framing: C-bit parity or M13 framing
 - 75 Ohm termination via dual BNC connector

1-port DS3/T3 — Channelized Module

- Line speed: 44.736 with 28 DS1/T1 (1.544 Mbps) multiplexed circuits
- Framing: M13; ESF/SF on DS1/T1 circuits
- 75 Ohm termination via dual BNC connector

24-port 10/100 Fast Ethernet Module

- 24 x 10/100 Mbps Unshielded Twisted Pair (UTP) ports
- Non-blocking
- Layer 2/Layer 3 services

24-port 10/100 Fast Ethernet with PoE Module

- 24 x 10/100 Mbps Unshielded Twisted Pair (UTP) ports
- Power over Ethernet / 802.1af (real-time discovery, protection)
- Non-blocking
- Layer 2/Layer 3 services

10-port Gigabit Ethernet Module

- 10 x 10/100/1000 Mbps Unshielded Twisted Pair (UTP) ports/
2 GigE SFP optical ports
- 10 active ports in any combination
- Non-blocking
- Layer 2/Layer 3 services

Mediation Services Module for OCS

- Hosts Microsoft Mediation Server for OCS software and Windows Server 2003 Operating System
- Two USB ports
- SVGA DB-15 video port
- RJ-45 console port
- Compact Flash socket

Voice Carrier Module

- Provides 4 small slots for additional voice interface capacity
- Can host up to 4 FXS or FXO modules (either 2-port or 4-port)
- Occupies a single Secure Router 4134 medium slot

Large Module specifications

44-port 10/100/1000 Mbps Ethernet Module

- 44 x 10/100/1000 Mbps Unshielded Twisted Pair (UTP) ports/
2 GigE SFP optical ports
- 44 active ports in any combination
- 4:1 blocking ratio
- Layer 2/Layer 3 services

Nortel is a recognized leader in delivering communications capabilities that make the promise of Business Made Simple a reality for our customers. Our next-generation technologies, for both service provider and enterprise networks, support multimedia and business-critical applications. Nortel's technologies are designed to help eliminate today's barriers to efficiency, speed and performance by simplifying networks and connecting people to the information they need, when they need it. Nortel does business in more than 150 countries around the world. For more information, visit Nortel on the Web at www.nortel.com. For the latest Nortel news, visit www.nortel.com/news.

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