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Nortel VPN Router Troubleshooting — Server

NORTEL

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Contents

Preface

This guide provides information about how to manage and troubleshoot the Nortel VPN Router.

Before you begin

This guide is for network managers who monitor and maintain the Nortel VPN Router. This guide assumes that you have experience with system administration and familiarity with network management.

Text conventions

This guide uses the following text conventions:

angle brackets (< >)	Indicate that you choose the text to enter based on the description inside the brackets. Do not type the brackets when entering the command. Example: If the command syntax is **ping** <*ip_address*>, you enter **ping 192.32.10.12**
bold Courier text	Indicates command names and options and text that you need to enter. Example: Use the **show health** command. Example: Enter **terminal paging** {**off** | **on**}.

braces ({})	Indicate required elements in syntax descriptions where there is more than one option. You must choose only one of the options. Do not type the braces when entering the command. Example: If the command syntax is **`ldap-server source {external | internal}`**, you must enter either **`ldap-server source external`** or **`ldap-server source internal`**, but not both.
brackets ([ ])	Indicate optional elements in syntax descriptions. Do not type the brackets when entering the command. Example: If the command syntax is **`show ntp [associations]`**, you can enter either **`show ntp`** or **`show ntp associations`**. Example: If the command syntax is **`default rsvp`** [**`token-bucket`** {**`depth`** | **`rate`**}], you can enter **`default rsvp`**, **`default rsvp token-bucket depth`**, or **`default rsvp token-bucket rate`**.
ellipsis points (. . .)	Indicate that you repeat the last element of the command as needed. Example: If the command syntax is **`more disk`***n*`:`*<directory>*`/...`*<file_name>*, you enter **`more`** and the fully qualified name of the file.
italic text	Indicates new terms, book titles, and variables in command syntax descriptions. Where a variable is two or more words, the words are connected by an underscore. Example: If the command syntax is **`ping`** *<ip_address>*, *ip_address* is one variable and you substitute one value for it.
`plain Courier text`	Indicates system output, for example, prompts and system messages. Example: `File not found.`
separator (,)	Shows menu paths. Example: Choose **Status**, **Health Check**.

vertical line (|)	Separates choices for command keywords and arguments. Enter only one of the choices. Do not type the vertical line when entering the command. Example: If the command syntax is **`terminal paging`** {**`off`** | **`on`**}, you enter either **`terminal paging off`** or **`terminal paging on`**, but not both.

Related publications

For more information about the Nortel VPN Router, see the following publications:

- Release notes provide the latest information, including brief descriptions of the new features, problems fixed in this release, and known problems and workarounds.
- *Nortel VPN Router Configuration — Basic Features* (NN46110-500) introduces the product and provides information about initial setup and configuration.
- *Nortel VPN Router Configuration — SSL VPN Services* (NN46110-501) provides instructions for configuring services on the SSL VPN Module 1000, including authentication, networks, user groups, and portal links.
- *Nortel VPN Router Security — Servers, Authentication, and Certificates* (NN46110-600) provides instructions for configuring authentication services and digital certificates.
- *Nortel VPN Router Security — Firewalls, Filters, NAT, and QoS* (NN46110-601) provides instructions for configuring the Stateful Firewall and VPN Router interface and tunnel filters.
- *Nortel VPN Router Configuration — Advanced Features* (NN46110-502) provides instructions for configuring advanced LAN and WAN settings, PPP, frame relay, PPPoE, ADSL and ATM, T1CSU/DSU, dial services and BIS, DLSw, IPX, and SSL VPN.
- *Nortel VPN Router Configuration — Tunneling Protocols* (NN46110-503) configuration information for the tunneling protocols IPsec, L2TP, PPTP, and L2F.
- *Nortel VPN Router Configuration—Routing* (NN46110-504) provides instructions for configuring RIP, OSPF, and VRRP, as well as instructions for configuring ECMP, routing policy services, and client address redistribution (CAR).
- *Nortel VPN Router Using the Command Line Interface* (NN46110-507) provides syntax, descriptions, and examples for the commands that you can use from the command line interface.
- *Nortel VPN Router Configuration — TunnelGuard* (NN46110-307) provides information about configuring and using the TunnelGuard feature.

Hard-copy technical manuals

You can print selected technical manuals and release notes free, directly from the Internet. Go to www.nortelnetworks.com/documentation, find the product for which you need documentation, then locate the specific category and model or version for your hardware or software product. Use Adobe Reader to open the manuals and release notes, search for the sections you need, and print them on most standard printers. Go to the Adobe Web site at the www.adobe.com to download a free copy of the Adobe Reader.

How to get help

This section explains how to get help for Nortel products and services.

Finding the latest updates on the Nortel Web site

The content of this documentation was current at the time the product was released. To check for updates to the latest documentation and software for VPN Router, click one of the following links:

Link	Website
Latest software	Nortel page for **VPN Router** software located at: support.nortel.com/go/main.jsp?cscat=SOFTWARE&poid=12325
Latest documentation	Nortel page for **VPN Router** documentation located at: support.nortel.com/go/main.jsp?cscat=DOCUMENTATION&poid=12325

Help from the Nortel Web site

The best way to get technical support for Nortel products is from the Nortel Technical Support Web site:

www.nortel.com/support

This site provides quick access to software, documentation, bulletins, and tools to address issues with Nortel products. From this site, you can

- download software, documentation, and product bulletins
- search the Technical Support Web site and the Nortel Knowledge Base for answers to technical issues
- sign up for automatic notification of new software and documentation for Nortel equipment
- open and manage technical support cases

Help over the phone from a Nortel Solutions Center

If you do not find the information you require on the Nortel Technical Support Web site, and you have a Nortel support contract, you can also get help over the phone from a Nortel Solutions Center.

In North America, call 1-800-4NORTEL (1-800-466-7835).

Outside North America, go to the following Web site to obtain the phone number for your region:

www.nortel.com/callus

Getting help from a specialist by using an Express Routing Code

To access some Nortel Technical Solutions Centers, you can use an Express Routing Code (ERC) to quickly route your call to a specialist in your Nortel product or service. To locate the ERC for your product or service, go to

www.nortel.com/erc

Getting help through a Nortel distributor or reseller

If you purchased a service contract for your Nortel product from a distributor or authorized reseller, contact the technical support staff for that distributor or reseller.

New in this release

The following sections detail what's new in *Nortel VPN Router Troubleshooting — Server* (NN46110-602) for Release 8.0:

Features

See the following sections for information about feature changes:

Branch office NAT Traversal

Release 8.0 includes Network Address Translation (NAT) Traversal for branch office connections. For more information about how to troubleshoot NAT Traversal on branch office tunnels, see "Troubleshoot connectivity problems" on page 100.

Core dump retrieval

"Configuring core dump retrieval on diskless routers" on page 57 is added to the document.

Hardware LEDs

This document provides a list of hardware LEDs. For more information, see "Hardware LEDs" on page 40.

IGMP

Release 8.0 includes the Internet Group Management Protocol (IGMP). For more information about how to troubleshoot IGMP, see "Troubleshooting tools" on page 51 and "Solving routing problems" on page 126. For information about the supported management information base (MIB), see "MIB support" on page 179.

LDAP problems

"Diagnosing LDAP problems" on page 132 is added to the document.

Recovery procedures

"Emergency recovery" on page 91 is updated with "Recovering the V08_00 backup of ldap and config files" on page 97 and "Recovering the pre V08_00 backup of ldap and config files" on page 98.

SFTP

Release 8.0 supports the Secure File Transfer Protocol (SFTP). For information about how to troubleshoot SFTP, see "SFTP" on page 20.

System messages

"Troubleshooting system messages" on page 135 is updated to include more system messages.

Supported software and hardware

This document includes a matrix of features by release. For more information, see "Supported software and hardware" on page 23.

Two factor authentication

Release 8.0 includes two factor authentication for branch office and user tunnels. For more information about how to troubleshoot branch office tunnels, see "Branch office connection problems" on page 104. For more information about how to troubleshoot user tunnels, see *Nortel VPN Router Troubleshooting — Client* (NN46110-700).

Other changes

See the following sections for information about changes that are not feature-related:

Removed content

The content in Appendix D Configuring for interoperability is moved to *Nortel VPN Router Configuration — Advanced Features* (NN46110-502).

Content about software upgrade is moved to *Nortel VPN Router Configuration Upgrades — Server Software Release 8.0* (NN46110-407).

The following topics are moved to *Nortel VPN Router Administration* (NN46110-603):

- administrator settings
- lost user names and passwords
- dynamic passwords

- Simple Network Management Protocol (SNMP)
- system shutdown
- automatic backups
- disabling new logons
- PPP configuration and options

The following topics are moved to *Nortel VPN Router Troubleshooting — Client* (NN46110-700):

- Diagnosing client connectivity problems
- Common client connectivity problems

Restructured content

Content in this document is reorganized to provide clarity.

Title change

This document is renamed from *Nortel VPN Router Troubleshooting* (NN46110-602).

Chapter 1
Troubleshooting fundamentals

This chapter provides basic information to assist in troubleshooting. This chapter includes the following topics:

Supported software and hardware

VPN Router Release 8.0 supports the following hardware platforms:

- 600
- 1010 Bluefin
- 1050 Bluefin
- 1100 Bluefin
- 1600
- 1700
- 1740
- 1750
- 2600
- 2700
- 2750
- 4600
- 5000
- 5000E

The following table identifies the VPN Router software releases that Nortel supports and the features and functionality that each software release supports. The table lists features and functions in alphabetical order.

Table 1 Supported features by release

Feature	6.0	6.05	6.05.140	6.05.170	7.0	8.0
1000BASE-T (1000 GT)	Yes	Yes	Yes	Yes	Yes	Yes
1000BaseSX PCI	Yes	Yes	Yes	Yes	Yes	Yes
1000BaseT PCI	Yes	Yes	Yes	Yes	Yes	Yes
256 Advanced Encryption Standard (AES) for branch office tunnels	Yes	Yes	Yes	Yes	Yes	Yes
2750 hardware platform	No	No	No	No	Yes	Yes
2nd generation Hardware Accelerator 7811	Yes	Yes	Yes	Yes	Yes	Yes
4096-bit certificates	No	No	No	No	No	Yes
56/64K Channel Service Unit/ Data Service Unit (CSU/ DSU)-Digital Data System (DDS)	Yes	Yes	Yes	Yes	Yes	Yes
802.1Q phase 2	Yes	Yes	Yes	Yes	Yes	Yes
802.1Q VLAN	Yes	Yes	Yes	Yes	Yes	Yes
Ability to configure the Network Time Protocol (NTP) on an interface other than LAN 0	No	No	No	No	No	Yes
Asynchronous branch office tunnel (ABOT), branch office to branch office tunnels	Yes	Yes	Yes	Yes	Yes	Yes
ABOT for 4800 and 9600	Yes	Yes	Yes	Yes	Yes	Yes
ABOT Layer 2 Tunneling Protocol (L2TP), Point-to-Point Tunneling Protocol (PPTP), and L2TP/IPsec	Yes	Yes	Yes	Yes	Yes	Yes
Address pools	Yes	Yes	Yes	Yes	Yes	Yes
Asymmetric Digital Subscriber Line PCI option card	Yes	Yes	Yes	Yes	Yes	Yes
Advanced routing	Yes	Yes	Yes	Yes	Yes	Yes

Table 1 Supported features by release (continued)

Feature	6.0	6.05	6.05.140	6.05.170	7.0	8.0
Adaptive Server Enterprise (ASE) encryption	Yes	Yes	Yes	Yes	Yes	Yes
AES client support	Yes	Yes	Yes	Yes	Yes	Yes
Autobackup interval configuration	Yes	Yes	Yes	Yes	Yes	Yes
Automatic backups	No	No	No	No	Yes	Yes
Backup Interface Service	Yes	Yes	Yes	Yes	Yes	Yes
Border Gateway Protocol 4	Yes	Yes	Yes	Yes	Yes	Yes
Branch office control tunnels	Yes	Yes	Yes	Yes	Yes	Yes
Bulk load	Yes	Yes	Yes	Yes	Yes	Yes
Certificate authority key update	Yes	Yes	Yes	Yes	Yes	Yes
Certificate cross certification	No	No	No	No	No	Yes
Certificate Management Protocol (CMP)	Yes	Yes	Yes	Yes	Yes	Yes
Certificate revocation list (CRL) distribution points	Yes	Yes	Yes	Yes	Yes	Yes
Circuitless IP	Yes	Yes	Yes	Yes	Yes	Yes
CLI (minimal)	Yes	Yes	Yes	Yes	Yes	Yes
CLI enhancements	Yes	Yes	Yes	Yes	Yes	Yes
Client address redistribution	Yes	Yes	Yes	Yes	Yes	Yes
Client autoconnect	Yes	Yes	Yes	Yes	Yes	Yes
Client medium access control (MAC) address logging	No	No	No	No	No	Yes
Client policies	Yes	Yes	Yes	Yes	Yes	Yes
CMP retrieval for certificates	No	No	No	No	Yes	Yes
Cone Network Address Translation (NAT)	Yes	Yes	Yes	Yes	Yes	Yes
Configurable Ethernet interface speed	Yes	Yes	Yes	Yes	Yes	Yes
Configurable management security banner	No	No	No	No	No	Yes

Table 1 Supported features by release (continued)

Feature	6.0	6.05	6.05.140	6.05.170	7.0	8.0
Configurable maximum transmission unit (MTU)	Yes	Yes	Yes	Yes	Yes	Yes
Configurable Point-to-Point Protocol (PPP) TX ring buffer	Yes	Yes	Yes	Yes	Yes	Yes
Configurable Secure Shell (SSH) server	No	No	No	No	Yes	Yes
Configuration warning for certificate expiration	Yes	Yes	Yes	Yes	Yes	Yes
Corrected interoperability issue with Secure Router	No	No	No	No	No	Yes
CRL update specific time	No	No	No	No	Yes	Yes
Crypto API	No	No	No	No	Yes	Yes
Custom API	No	No	No	No	Yes	Yes
Customizing firewall user authentication logon	No	No	No	No	Yes	Yes
Data Link Switching	Yes	Yes	Yes	Yes	Yes	Yes
Demand Services	Yes	Yes	Yes	Yes	Yes	Yes
Domain Name Service (DNS) enhancements	Yes	Yes	Yes	Yes	Yes	Yes
Dynamic Host Control Protocol (DHCP) client public side	Yes	Yes	Yes	Yes	Yes	Yes
DHCP Relay	Yes	Yes	Yes	Yes	Yes	Yes
Dynamic password	Yes	Yes	Yes	Yes	Yes	Yes
Elliptic curve for user	Yes	Yes	Yes	Yes	Yes	Yes
Enhanced group level user IP address source and pool name	No	No	No	No	No	Yes
Entrust client support phase 2	Yes	Yes	Yes	Yes	Yes	Yes
Equal Cost Multi Path	Yes	Yes	Yes	Yes	Yes	Yes
Encapsulating Security Payload (ESP) NULL	Yes	Yes	Yes	Yes	Yes	Yes
Ethernet driver MAC pause flow control	Yes	Yes	Yes	Yes	Yes	Yes
Event log enhancements	Yes	Yes	Yes	Yes	Yes	Yes

Table 1 Supported features by release (continued)

Feature	6.0	6.05	6.05.140	6.05.170	7.0	8.0
External Lightweight Directory Access Protocol (LDAP) authentication	Yes	Yes	Yes	Yes	Yes	Yes
External LDAP authentication phase 2	Yes	Yes	Yes	Yes	Yes	Yes
External LDAP proxy enhancement	Yes	Yes	Yes	Yes	Yes	Yes
Federal Information Processing Standard (FIPS)	Yes	Yes	Yes	Yes	Yes	Yes
File backup management	No	No	No	No	Yes	Yes
Filters for management access using HTTPS and SSH	No	No	No	No	No	Yes
Firewall enhancements	Yes	Yes	Yes	Yes	Yes	Yes
Firewall Session Initiation Protocol (SIP) application level gateway (ALG)	Yes	Yes	Yes	Yes	Yes	Yes
Firewall User Authentication (FWUA)	Yes	Yes	Yes	Yes	Yes	Yes
First generation Hardware Accelerator	Yes	Yes	Yes	Yes	Yes	Yes
Forced logoff	Yes	Yes	Yes	Yes	Yes	Yes
Frame Relay	Yes	Yes	Yes	Yes	Yes	Yes
Frame Relay phase II	Yes	Yes	Yes	Yes	Yes	Yes
Framed E1	Yes	Yes	Yes	Yes	Yes	Yes
FRF 12	Yes	Yes	Yes	Yes	Yes	Yes
FTP server passive mode	No	No	No	No	Yes	Yes
Fully qualified domain name registration	Yes	Yes	Yes	Yes	Yes	Yes
Gratuitous Address Resolution Protocol (ARP)	Yes	Yes	Yes	Yes	Yes	Yes
Group 2 Diffie Helman	Yes	Yes	Yes	Yes	Yes	Yes
Group level access control for certificates	Yes	Yes	Yes	Yes	Yes	Yes

Table 1 Supported features by release (continued)

Feature	6.0	6.05	6.05.140	6.05.170	7.0	8.0
Group level Remote Authentication Dial In User Service (RADIUS) authentication	Yes	Yes	Yes	Yes	Yes	Yes
Hewlett Packard Open View discovery of management IP address	No	No	No	No	No	Yes
HTTP retrieval of certificate revocation list	No	No	No	No	No	Yes
Improved branch office scaling	Yes	Yes	Yes	Yes	Yes	Yes
Improved system software performance	Yes	Yes	Yes	Yes	Yes	Yes
Increase the upper bounds of the forced logoff timer	No	No	No	No	No	Yes
Integrated Services Digital Network (ISDN) basic rate interface (BRI) option for PPP multilink	No	No	Yes	Yes	Yes	Yes
ISDN traffic engineering (TE) processing	No	No	No	No	Yes	Yes
Interface groups for the Virtual Router Redundancy Protocol (VRRP)	Yes	Yes	Yes	Yes	Yes	Yes
Internet Group Management Protocol (IGMP) multicast support for client connections	No	No	No	No	No	Yes
Internet Security Association and Key Management Protocol (ISAKMP) nailed up branch to branch tunnels	Yes	Yes	Yes	Yes	Yes	Yes
Inverse split tunneling	Yes	Yes	Yes	Yes	Yes	Yes
IPsec domain name	Yes	Yes	Yes	Yes	Yes	Yes
IPsec subnet mask	Yes	Yes	Yes	Yes	Yes	Yes
LDAP 3DES encryption	No	No	Yes	Yes	Yes	Yes
LDAP optimization scheduling	No	No	No	No	Yes	Yes
LDAP proxy password for AD	No	No	No	No	Yes	Yes

Table 1 Supported features by release (continued)

Feature	6.0	6.05	6.05.140	6.05.170	7.0	8.0
LDAP proxy user authentication	Yes	Yes	Yes	Yes	Yes	Yes
LDAP special characters	Yes	Yes	Yes	Yes	Yes	Yes
LDAP user key encryption	No	No	Yes	Yes	Yes	Yes
License keys	Yes	Yes	Yes	Yes	Yes	Yes
Licensing enhancements	Yes	Yes	Yes	Yes	Yes	Yes
Log message for admin user password change	No	No	No	No	No	Yes
Management virtual address	Yes	Yes	Yes	Yes	Yes	Yes
Microsoft Challenge Handshake Authentication Protocol (MSCHAP) V2	Yes	Yes	Yes	Yes	Yes	Yes
Multinetting	Yes	Yes	Yes	Yes	Yes	Yes
Multiple boot	Yes	Yes	Yes	Yes	Yes	Yes
NAT (branch office)	Yes	Yes	Yes	Yes	Yes	Yes
NAT enhancements	Yes	Yes	Yes	Yes	Yes	Yes
NAT Hairpinning	Yes	Yes	Yes	Yes	Yes	Yes
NAT SIP ALG	Yes	Yes	Yes	Yes	Yes	Yes
NAT Traversal	Yes	Yes	Yes	Yes	Yes	Yes
NAT Traversal for branch office tunnels	No	No	No	No	No	Yes
NetLock logging	Yes	Yes	Yes	Yes	Yes	Yes
Next-hop traffic filters	Yes	Yes	Yes	Yes	Yes	Yes
NNCLI Phase 1	Yes	Yes	Yes	Yes	Yes	Yes
NNCLI Phase 2	Yes	Yes	Yes	Yes	Yes	Yes
NTP	Yes	Yes	Yes	Yes	Yes	Yes
NTP support for Daylight Saving Time (DST) 2007	No	No	No	No	Yes	Yes
Online Certificate Status Protocol (OCSP) server for certificates	No	No	No	No	Yes	Yes
OCSP	No	No	No	No	No	Yes

Table 1 Supported features by release (continued)

Feature	6.0	6.05	6.05.140	6.05.170	7.0	8.0
Open Shortest Path First (OSPF)	Yes	Yes	Yes	Yes	Yes	Yes
OSPF virtual links	Yes	Yes	Yes	Yes	Yes	Yes
Packet Capture (PCAP)	Yes	Yes	Yes	Yes	Yes	Yes
Passgo token authentication	No	No	No	No	No	Yes
PCAP enhancements	No	No	No	No	Yes	Yes
PCAP to disk	No	No	No	No	Yes	Yes
Perfect Forward Secrecy	Yes	Yes	Yes	Yes	Yes	Yes
Ping to validate default route	Yes	Yes	Yes	Yes	Yes	Yes
PPTP and L2TP branch office to branch office	Yes	Yes	Yes	Yes	Yes	Yes
Preempt mode in VRRP	No	No	No	No	Yes	Yes
Quality of Service (QoS)	Yes	Yes	Yes	Yes	Yes	Yes
QoS menu enhancements	Yes	Yes	Yes	Yes	Yes	Yes
Quad T1/E1 support	Yes	Yes	Yes	Yes	Yes	Yes
Quality improvements	Yes	Yes	Yes	Yes	Yes	Yes
RADIUS attribute–Filter ID	Yes	Yes	Yes	Yes	Yes	Yes
RADIUS attribute–IP Mask	Yes	Yes	Yes	Yes	Yes	Yes
RADIUS attributes–WINS and DNS	Yes	Yes	Yes	Yes	Yes	Yes
RADIUS authentication public side	Yes	Yes	Yes	Yes	Yes	Yes
RADIUS dynamic filtering	No	No	No	No	Yes	Yes
RADIUS enhanced access challenge	Yes	Yes	Yes	Yes	Yes	Yes
RADIUS interim accounting	Yes	Yes	Yes	Yes	Yes	Yes
RADIUS service	Yes	Yes	Yes	Yes	Yes	Yes
RADIUS timeouts	Yes	Yes	Yes	Yes	Yes	Yes
Respond Internet Control Message Protocol (ICMP) packets	No	No	No	No	Yes	Yes
Respond ICMP packets in VRRP	No	No	No	No	Yes	Yes

Table 1 Supported features by release (continued)

Feature	6.0	6.05	6.05.140	6.05.170	7.0	8.0
Restrict mode	Yes	Yes	Yes	Yes	Yes	Yes
Restricting source IPs access	No	No	No	No	Yes	Yes
Routing Information Protocol (RIP)	Yes	Yes	Yes	Yes	Yes	Yes
Route policy enhancements	Yes	Yes	Yes	Yes	Yes	Yes
Routing Table Manager enhancements for GUI	Yes	Yes	Yes	Yes	Yes	Yes
Secure FTP (SFTP) server	No	No	No	No	No	Yes
Secure Hash Algorithm-1	Yes	Yes	Yes	Yes	Yes	Yes
Secure Sockets Layer (SSL) administration	Yes	Yes	Yes	Yes	Yes	Yes
SSL VPN integration	Yes	Yes	Yes	Yes	Yes	Yes
Serial interface PPP	Yes	Yes	Yes	Yes	Yes	Yes
Shasta Server Farm	Yes	Yes	Yes	Yes	Yes	Yes
Single V.35	Yes	Yes	Yes	Yes	Yes	Yes
Simple Network Management Protocol (SNMP) CSU/DSU management information base (MIB)	Yes	Yes	Yes	Yes	Yes	Yes
SNMP host resource MIB	Yes	Yes	Yes	Yes	Yes	Yes
SNMP interface index	No	No	No	No	Yes	Yes
SNMP support for expired certificates	Yes	Yes	Yes	Yes	Yes	Yes
SNMP traps	No	No	No	No	Yes	Yes
SNMP traps and acknowledgement	Yes	Yes	Yes	Yes	Yes	Yes
SSH server	No	No	No	No	Yes	Yes
Static IFIndex enhancement	No	No	No	No	Yes	Yes
Static multicast relay	Yes	Yes	Yes	Yes	Yes	Yes
Static tunnel failover for branch office to branch office	Yes	Yes	Yes	Yes	Yes	Yes

Table 1 Supported features by release (continued)

Feature	6.0	6.05	6.05.140	6.05.170	7.0	8.0
Support for two hardware encryption accelerators	Yes	Yes	Yes	Yes	Yes	Yes
Support for 24 byte LDAP user encryption	No	No	No	Yes	Yes	Yes
Syslog	Yes	Yes	Yes	Yes	Yes	Yes
System log lifetime and disk size limit	No	No	No	No	Yes	Yes
T1 CSU/DSC	Yes	Yes	Yes	Yes	Yes	Yes
Time and date for LDAP optimization	No	No	Yes	Yes	Yes	Yes
Token authentication through FWUA	Yes	Yes	Yes	Yes	Yes	Yes
TunnelGuard	Yes	Yes	Yes	Yes	Yes	Yes
TunnelGuard update	No	No	No	No	No	Yes
Two Factor Authentication	No	No	No	No	No	Yes
UNISTEM virtual ALG for firewall	No	No	No	No	Yes	Yes
User control tunnels	Yes	Yes	Yes	Yes	Yes	Yes
User-configurable time for CRL retrieval	No	No	Yes	Yes	Yes	Yes
Vendor ID	Yes	Yes	Yes	Yes	Yes	Yes
Vendor-specific RADIUS	Yes	Yes	Yes	Yes	Yes	Yes
VeriSign public key infrastructure (PKI)	Yes	Yes	Yes	Yes	Yes	Yes
VPN Router 5000E–Restriction of Hazardous Substances (RoHS)	No	No	No	No	Yes	Yes
VPN Router 1700 and 2700	Yes	Yes	Yes	Yes	Yes	Yes
VPN Router Firewall	Yes	Yes	Yes	Yes	Yes	Yes
VPN Router IPsec Mobility	Yes	Yes	Yes	Yes	Yes	Yes
VPN Router Security Accelerator	Yes	Yes	Yes	Yes	Yes	Yes
VPN Router Stateful FireWall	Yes	Yes	Yes	Yes	Yes	Yes
VRRP	Yes	Yes	Yes	Yes	Yes	Yes

Table 1 Supported features by release (continued)

Feature	6.0	6.05	6.05.140	6.05.170	7.0	8.0
WAN as private interface	Yes	Yes	Yes	Yes	Yes	Yes
Year 2000 compliance	Yes	Yes	Yes	Yes	Yes	Yes

PCAP

The Packet Capture tool (PCAP) is a troubleshooting tool that you use, in conjunction with other tools such as statistics, logging, network analyzers, and testers, to remotely troubleshoot the VPN Router and network problems. Use packet capture to troubleshoot the VPN Router 1010, 1050, and 1100, which are typically in a small office where no technical expertise is available. You can only configure PCAP with the command line interface (CLI).

Two options exist when you capture packets:

- No packet loss—This option captures all packets. If the RAM buffer is full, a forced flush to disk occurs.
- Packet loss—This option skips some packets. If the RAM buffer is full, the VPN Router drops packets and inserts a malformed packet in the place where the packets were not captured. The malformed packet stores the number of dropped packets.

Note: Capturing packets with packet loss does not affect forwarding performance but capturing packets with no packet loss can affect performance.

When you capture packets that traverse the VPN Router, you can perform one of the following actions:

- write them to files in a circular buffer of maximum 999 files
- stop after the number of files reaches the specified maximum

PCAP initially occurs to the RAM buffer. A low priority task writes the RAM buffer to disk files, called the disk capture files. Although you can configure the maximum size of this file, PCAP can continue to write the captured data. You specify the directory where to save the files, and you use the automatic backup option (specific backup) to copy or move the files to another machine. If you use the automatic backup option, you must specify the path that specific backup uses to save PCAP files. If you want to back up a file every time the file changes, select auto trigger for the specific backup. For more information about automatic backup, see *Nortel VPN Router Administration* (NN46110-603).

If you configure the size of a disk capture file to a value other than 0, PCAP automatically saves the capture in a file and creates a new file with a name as follows:

<prefix>YYMMDD.<extNr>

where

<prefix> is a two-digit prefix derived from the capture name that identifies the capture.

YYMMDD is the year, month, and day.

<XXX> is a monotonically incrementing number that is the file extension.

The default value for the buffer size is

- minimum five packets when capturing packets on disk, with no packet loss
- minimum 20 packets when capturing packets on disk, with packet loss
- 1 megabyte (Mbyte) for capturing packets in RAM

PCAP features

The VPN Router uses PCAP to perform the following tasks:

- simultaneously capture network traffic at different sources (physical interfaces, tunnels, and the VPN Router as a whole)
- capture inbound or outbound traffic, or both

- limit the traffic that the filters capture
- automatically start and stop packet capture with triggers

Note: The VPN Router does not provide tools to open and view captured data. You must offload the PCAP files to view them.

Security features

Packet capture on the VPN Router provides the following features to enhance security:

- Packet capture is disabled by default. You can use packet capture using the CLI through the serial port only.
- To enable packet capture, you must configure a separate capture password.
- When you save a capture buffer to a file on disk, the router encrypts the file. You must provide the capture password to decrypt PCAP files.
- To open a capture file, the VPN Router ships with a tool called *openpcap*. The tool works for both 128-bit and 56-bit versions and uses the same cryptographic library that the server code uses. The openpcap tool prompts you for a password.
- The router does not save packet capture configuration in LDAP or in the configuration file. After you restart the VPN Router, you lose the packet capture configuration.

File format

The router stores packets in PCAP/TCPDUMP file format. Many tools recognize this file format. The router saves packets with the following additional information:

- timestamp of the packet
- length of the portion of the packet present in the PCAP file
- length of the entire packet as the router received it or sent it on the wire

Capture types

The VPN Router captures packets from the following sources:

- physical interfaces, including the following
  - Asynchronous digital subscriber line (ADSL) or asynchronous transfer mode (ATM)
  - Fast Ethernet and Gigabit Ethernet, including traffic not directed to the VPN Router (promiscuous mode)
  - Dial (V.90 and asynchronous Point-to-Point Protocol [PPP])
  - Integrated services digital network basic-rate interface (ISDN BRI)
  - serial
- tunnels
  - branch offices (all types)
  - user tunnels
- all IP traffic on the VPN Router

The following sections describe each type of capture.

Physical interface captures

Packet capture of traffic on a physical interface can help you troubleshoot Layer 2 issues, connectivity issues, and performance issues. The router saves the Layer 2 header in the PCAP file for each packet. You can convert PCAP files containing traffic captured on a physical interface to most file formats, including Network General Sniffer.

Tunnel captures

You can use packet capture of traffic over tunnels to help troubleshoot a specific tunnel problem. For example, you can create a tunnel capture object to diagnose the following types of problems:

- a protocol not working for a particular user
- performance issues for a particular user
- OSPF not working properly inside a specific branch office tunnel

The router encapsulates tunnel captures saved to disk with raw IP encapsulation. When you convert these files to file formats that do not support raw IP encapsulation (including Sniffer), you need Layer 2 encapsulation.

You can configure a capture object for an existing tunnel or for uninitiated tunnels. You can also use persistent mode for tunnel capture objects. If you use persistent mode and a captured tunnel disconnects, packet capture restarts automatically after another tunnel session that matches the capture criteria begins. Tunnel capture criteria include the following:

- tunnel type: user tunnel, branch office, ABOT initiator, or ABOT responder
- tunnel protocol: IPsec, L2TP, PPTP, or Layer 2 Forwarding (L2F)
- IP address of the remote peer on the tunnel session
- user ID (or another criterion to specify the user)

If you start a tunnel capture object and more than one tunnel matches the capture criteria, the capture object captures only the first tunnel. If no tunnel matches the criteria, packet capture waits for a tunnel that matches the criteria. If you configure more than one capture object with the same criteria, the first matching tunnel uses the first PCAP object, and the next matching tunnel uses the other capture object. This way you can capture a set of tunnels with the same criteria in different capture files.

For performance reasons, only one capture object runs at a time for a specific tunnel. Multiple tunnel capture objects can run at the same time, but each object must capture a different tunnel.

Global IP captures

Global (raw) IP packet capture captures all IP traffic traversing a physical interface or tunnel on the VPN Router. Only one global IP capture object can run at one time. The router captures packets as they are encapsulated or decapsulated (depending on the capture direction that you configure). To restrict the amount of traffic that a global IP can capture, see “Filters and triggers” on page 38.

A global IP capture object captures packets starting from the IP header; the capture object does not save Layer 2 header information in the capture file. Because the router captures both encrypted and decrypted packets, global IP packet capture is useful in troubleshooting VPN issues.

Note: If capture objects for physical interfaces or tunnels run at the same time as a global IP capture object, this action affects performance on the VPN Router.

Filters and triggers

You can apply existing interface filters to a capture object as a capture filter or as a start or stop trigger. You configure capture filters, start triggers, and stop triggers independently.

Note: You cannot configure filters and triggers on ADSL and ATM interfaces.

Capture filters

To troubleshoot a specific type of problem and to limit the amount of data stored in the capture buffer, you can configure a predefined interface filter so that non-IP frames do not match a filter. For example, if you configure a capture object with a filter for a serial interface configured with PPP, no Link Control Protocol (LCP) traffic matches filter criteria on a capture object. You can configure the capture object to always capture non-IP frames or to always discard them.

To apply a filter to a capture object, you must first stop the capture object.

Triggers

By default, the system saves frames to the capture buffer as soon as a capture object starts. You can configure predefined or user-defined interface filters as triggers for capture objects. A trigger causes a capture object to start or stop automatically after it receives certain packets.

- A start trigger causes the system to wait for a specific packet before it starts saving packets to the capture buffer.

- A stop trigger causes the system to stop saving traffic in the capture buffer after the system encounters a specific packet that matches the stop trigger. The packet capture object, however, does not fully stop. A start trigger can still restart the capture.

A trigger works only for the direction for which you configure the capture. For example, if you enable packet capture for outgoing traffic only, and the type of packet that triggers the capture to start or stop arrives only in incoming packets, the trigger does not work.

You can use triggers with filters. Like filters, triggers never match non-IP frames. The router captures the packets that triggered the capture object to start or stop if they match capture filters.

You can use a start trigger with a stop trigger to capture specific transaction-oriented traffic. If you configure both a start and a stop trigger, the start trigger can reenable saving traffic to a capture buffer. You can activate both a start trigger and a stop trigger on the same packet. In this case, only one packet is captured.

Memory considerations

The number of packet capture objects allocated on a VPN Router depends on the available contiguous memory. When you create a capture object, you can specify the capture buffer size (the default buffer size is 1 MB).

You can create new capture objects until the maximum block size reaches 25 MB. (The VPN Router does not allow you to reduce the maximum block size to less than 25 MB.) If you allocate too much memory to packet capture buffers, you receive an error message suggesting a smaller buffer size.

To check the maximum block size, choose Status, Statistics, and then click Memory in the Resources section. Scroll to the bottom of the window to find the maximum block size. The output looks similar to the following

```
Shared Heap Statistics:
 status   bytes    blocks   ave block  max block
 ------ --------- -------- ---------- ----------
current
   free  40542960       18    2252386  39532912
  alloc  64815872      135     480117         -
```

You can display the same information by entering the command `show status statistics resources memory`.

Performance considerations

Running packet capture can affect VPN Router performance. You can run only one capture object at a time for a specific source (interface or tunnel). Multiple capture objects can exist for the same source, but only one object can start. You can run capture objects for different sources at the same time with no limitations.

To reduce the effect on VPN Router performance, use packet capture for troubleshooting only and observe the following guidelines:

- Configure the capture object to capture the least amount of data needed for troubleshooting: for example, only inbound or outbound traffic, only the first n bytes of the packet.
- Configure a capture object for promiscuous mode only when necessary. (Promiscuous mode affects VPN Router performance.)
- Configure filters and triggers to capture only relevant traffic, in particular if you need to run the global IP object.
- Delete a capture object or capture files when you no longer need them to free up memory or disk space.
- Do not run capture objects for physical interfaces or tunnels at the same time that you run the global IP capture object (the router captures some packets more than once).

Hardware LEDs

This section describes the meaning of Light Emitting Diodes (LED) on Nortel VPN Router products and associated optional interface cards. For more information about alerts and alarms, see "Status and logging" on page 81. For more information about each hardware platform, see the installation document for the specific platform.

The following table identifies the LEDs on a VPN Router 600.

Table 2 Nortel VPN Router 600 LEDs

LED	Condition	Indicates
Power	On	The gateway receives DC power.
Power	Off	The gateway does not receive DC power.
Alert	Red	A serious alarm condition exists that requires attention.
Attention	Amber	A nonfatal alarm condition exists.
Ready	Green	The gateway starts and is operational.
Boot	Amber	The gateway is starting and is in a nonready state.

If the Boot LED and the Ready LED light at the same time, the Nortel VPN Router 600 is in recovery mode.

The following table identifies the LEDs on a VPN Router 1010, 1050, or 1100.

Table 3 Nortel VPN Router 1000 Series LEDs

LED	Condition	Indicates
Boot/Ready	Yellow	The gateway is booting and is in a nonready state.
	Green	The restart process is complete and the gateway is in a state of readiness.
Alert	Yellow	An alarm condition exists. The alarm can indicate a serious condition, such as a hardware defect or a software attention condition.
	Off	No alarm condition exists.

The following table identifies the LEDs on a VPN Router 1600.

Table 4 Nortel VPN Router 1600 LEDs

LED	Condition	Indicates
Nortel logo	Blue	The power is on.
	Off	The power is off.
Alert/Fail	Yellow	A nonfatal status requires attention.
	Red	A hardware error exists, which also causes the beeping condition.
Boot/Ready	Yellow	The system boot is in process or a nonready state.
	Green	The system is in a state of readiness.

The following table identifies the LEDs on a VPN Router 1700, 1740, and 1750.

Table 5 Nortel VPN Router 1700 Series LEDs

LED	Condition	Indicates
Nortel logo	On	The gateway receives AC power.
	Off	The gateway does not receive AC power.
Alert	Yellow	A nonfatal alarm condition exists.
	Red	A serious alarm condition exists that requires attention.
Boot/Ready	Yellow	The gateway is booting and is in a nonready state.
	Green	The boot process is complete and the gateway is in a state of readiness.

The following table identifies the LEDs on a VPN Router 2600.

Table 6 Nortel VPN Router 2600 LEDs

LED	Condition	Indicates
Nortel logo	On	The gateway receives AC power.
	Off	The gateway does not receive AC power.
Alert	Yellow	A nonfatal alarm condition exists.
	Red	A hardware error exists, which causes the beeping condition.
Boot/Ready	Yellow	The gateway is booting and is in a nonready state.
	Green	The boot process is complete and the gateway is in a state of readiness.

The following table identifies the LEDs on a VPN Router 2700.

Table 7 Nortel VPN Router 2700 LEDs

LED	Condition	Indicates
Nortel logo	On	The gateway receives AC power.
	Off	The gateway does not receive AC power.
Alert/Fail	Yellow	A nonfatal alarm condition exists.
	Red	A serious alarm condition exists that requires attention.
Boot/Ready	Yellow	The gateway is booting and is in a nonready state.
	Green	The boot process is complete and the gateway is in a state of readiness.

The following table identifies the LEDs on a VPN Router 2750.

Table 8 Nortel VPN Router 2750 LEDs

LED	Condition	Indicates
Nortel logo	On	The gateway receives AC power.
	Off	The gateway does not receive AC power.
Alert	Yellow	A nonfatal alarm condition exists.
	Red	A serious alarm condition exists that requires attention.
Boot/Ready	Yellow	The gateway is booting and is in a nonready state.
	Green	The boot process is complete and the gateway is in a state of readiness.

The following table identifies the LEDs on a VPN Router 4600.

Table 9 Nortel VPN Router 4600 LEDs

LED	Condition	Indicates
Alert/Fail	Yellow	A nonfatal alarm condition exists.
	Red	A serious alarm condition exists that requires attention.
Boot/Ready	Yellow	The gateway is booting and is in a nonready state.
	Green	The boot process is complete and the gateway is in a state of readiness.
Power	Green	The gateway receives AC power.
	Flashing	A hardware failure exists. Contact Global Nortel Technical Support.
Hard Disk	Green	The LED becomes a U for unlocked after the hard drive is unlocked by using the hard drive key. When locked the LED indicates the hard drive number, 0 or 1.
	Flashing	The switch reads or writes to the disk.

Table 9 Nortel VPN Router 4600 LEDs

LED	Condition	Indicates
LAN Port	Green (right)	The LAN port operates at 100 Mb/s.
	Off (right)	The LAN port operates at 10 Mb/s.
	Flashing (right)	The switch transmits or receives data.
	Orange (left)	The cable connections between the LAN port and the hub are good.
	Off (left)	The cable connections between the LAN port and the hub are faulty.

The following table indicates the LEDs on the VPN Router 5000 and 5000E.

Table 10 Nortel VPN Router 5000 LEDs

LED	Condition	Indicates
Alert	Yellow	A nonfatal alarm condition exists.
Fail	Red	A serious alarm condition exists that requires attention.
Boot	Yellow	The gateway is booting and is in a nonready state.
Ready	Green	The boot process is complete and the gateway is in a state of readiness.
Power supply	Steady green	This power supply and the system receive power.
	Flashing green	This power supply receives power, but the system is not turned on.
	Yellow	The power cord is not plugged into this power supply or the power supply failed and you need to replace it.
1000BASE-T Ethernet port Activity Link	Steady green	The port connects to a valid link partner.
	Flashing green	The LAN port sends or receives network data.
	Off	The port does not link to a valid partner.

Table 10 Nortel VPN Router 5000 LEDs (continued)

LED	Condition	Indicates
1000BASE-T Ethernet port 10/100/1000	Orange	The LAN port operates at 1000 Mb/s.
	Green	The LAN port operates at 100 Mb/s.
	Off	The LAN port operates at 10 Mb/s.
10/100BASE Ethernet port Activity Link	On	The cable connections between the LAN port and the hub are good.
	Flashing	The LAN port sends or receives network data.
	Off	The cable connections between the LAN port and the hub are faulty.
10/100BASE Ethernet port 10/100	On	The LAN port operates at 100 Mb/s.
	Off	The LAN port operates at 10 Mb/s.

The following table identifies the LEDs on optional cards for the Nortel VPN Router.

Table 11 Option card LEDs

Card	LED	Condition	Indicates
10/100BASE	ACT/LINK	Steady or flashing green	The card sends or receives network data. The frequency of the flashes increases with increased traffic.
		Off	The card does not send or receive data.
	10/100TX	Green	The port operates at 100 Mb/s.
		Off	The port operates at 10 Mb/s.

Table 11 Option card LEDs (continued)

Card	LED	Condition	Indicates
1000BASE-T (1000GT)	ACT/LNK	Steady green	The port connects to a valid link partner.
		Flashing green	The LAN port sends or receives network data.
		Off	The port does not link to a valid partner.
	10/100/1000	Off	The LAN port operates at 10 Mb/s.
		Green	The LAN port operates at 100 Mb/s.
		Orange	The LAN port operates at 1000 Mb/s.
1000BASE-SX	ACT/LNK	Steady green	The port connects to a valid link partner.
		Flashing green	The LAN port sends or receives network data.
		Off	The port does not link to a valid partner.
ADSL WAN	Tx/Rx and CONN	Steady green	The ADSL interface card is not initialized; the software driver is not installed.
		Off	The ADSL interface card initializes, but does not establish a link with the ADSL network.
		Flashing green and off	The ADSL interface card attempts to establish a link with the ADSL network.
		Steady green and off	The ADSL interface card establishes a link with the ADSL network.
		Steady green and flashing green	The ADSL interface card sends or receives network data. (The LED can appear dim.)

Table 11 Option card LEDs (continued)

Card	LED	Condition	Indicates
T1/E1 CSU/ DSU WAN	LED 1 (top left)	Red	A loss-of-signal or out-of-frame condition is detected on the receive signal.
	LED 2 (top right)	Blue	An upstream failure is received denoted by an alarm indication signal.
	LED 3 (bottom left)	Yellow	The far-end equipment is in the red alarm condition.
	LED 4 (bottom right)	Green	Normal operation.
Quad T1/E1 CSU/DSU WAN	LED 1 (top left)	Off	Port 1 is disabled.
		On	Port 1 is enabled and operates normally.
		Flashing	Port 1 is enabled and in an alarm state (red, yellow, or blue).
	LED 2 (top right)	Off	Port 2 is disabled.
		On	Port 2 is enabled and operates normally.
		Flashing	Port 2 is enabled and in an alarm state (red, yellow, or blue).
	LED 3 (bottom left)	Off	Port 3 is disabled.
		On	Port 3 is enabled and operates normally.
		Flashing	Port 3 is enabled and in an alarm state (red, yellow, or blue).
	LED 4 (bottom right)	Off	Port 4 is disabled.
		On	Port 4 is enabled and operates normally.
		Flashing	Port 4 is enabled and in an alarm state (red, yellow, or blue).

Table 11 Option card LEDs (continued)

Card	LED	Condition	Indicates
V.35/X.21 WAN	LED 1 (top left)	Red	No external transmit clock source is available.
	LED 2 (top right)	Green	The signals CDC and DSR are on between the DSU and the adapter. LED 2 detects receive link status.
	LED 3 (bottom left)	Green	Power to the adapter is on and the onboard microcode is loaded.
	LED 4 (bottom right)	Green	The cable is detected.
SSL VPN Module 1000	Online	Steady green	Indicates the SSL VPN Module 1000 operates normally.
		Yellow	Indicates a reset on the module.
		Off	Indicates the module does not receive power.
	Activity LED1	Steady green	Indicates the module operates normally.
		Flashing green	Indicated activity occurs.
		Yellow	Indicates a reset on the module.
	Activity LED2		This LED is often lit, but it has no meaning.
	Utilization	One LED steady green	CPU utilization is approximately 25 percent.
		Two LEDs steady green	CPU utilization is approximately 50 percent.
		Three LEDs steady green	CPU utilization is approximately 75 percent.
		Four LEDs steady green	CPU utilization is approximately 100 percent.
		Flashing in unison	The SSL VPN 1000 Module is idle.

Chapter 2
Troubleshooting tools

The VPN Router supports standard IP tools such as ping, Traceroute, and Address Resolution Protocol (ARP) show and delete. You access these tools through the Admin, Tools window. You can also use special tools beyond the standard tools available. These special tools include client- and VPN Router-based tools.

For more information, see the following sections:

Standard tools

Ping

The ping command generates an Internet Control Message Protocol (ICMP) echo-request message, which a host can send to test node reachability across a network. The ICMP echo-reply message indicates that the message reached the node. To use ping, enter the following command in User EXEC mode:

```
ping <IP address> <1-999> [data-size <1-4048>] [source
address|source hostname]
```

The following list explains the command parameters:

- IP address—the address to ping
- 1–999—(Optional) the number of echo requests to return
- 1–4048—(Optional) the size of the ping request packet
- source address|source hostname—(Optional) the source address or hostname of the outgoing ping request

To use ping from the GUI

1. Choose **Admin**, **Tools**.

   The System Tools window appears.

2. Provide the necessary details in the **Ping** section.
3. Click **Ping**.

Traceroute

The traceroute tool measures a network round-trip delay. The tool sends messages for each hop and the wait occurs between each message. If the address is unreachable, the tool uses the following formula to determine how long it takes for the traceroute command to time out.

```
maximum hops (30) x the wait timeout (5) x 3 seconds
```

To use traceroute, enter the following command in User EXEC mode:

```
trace ip <IP address> [source <IP address>] [hops <0-60>]
[wait <0-60>]
```

The following list explains the command parameters:

- source <IP address>—IP address of the outgoing trace packet
- hops—maximum number of hops to traverse
- wait—the wait, in seconds, for a response

To use traceroute from the GUI

1. Choose **Admin**, **Tools**.

   The System Tools window appears.

2 Provide the necessary details in the **Trace Route** section.

3 Click **Traceroute**.

mtrace

The multicast traceroute (mtrace) tool is a multicast diagnostic tool that uses special Internet Group Management Protocol (IGMP) packets with a different type code than normal IGMP packets. The mtrace tool requires the Advanced Routing license.

To use mtrace, the network topology must be a standard IGMP-based tree of routers. All interfaces in the tree must be IGMP-enabled.

For more information, see Figure 1 "IGMP-based tree" on page 54, where S is the source, Q is the mtrace querier and destination, and G is the host that subscribes to group G.

Figure 1 IGMP-based tree

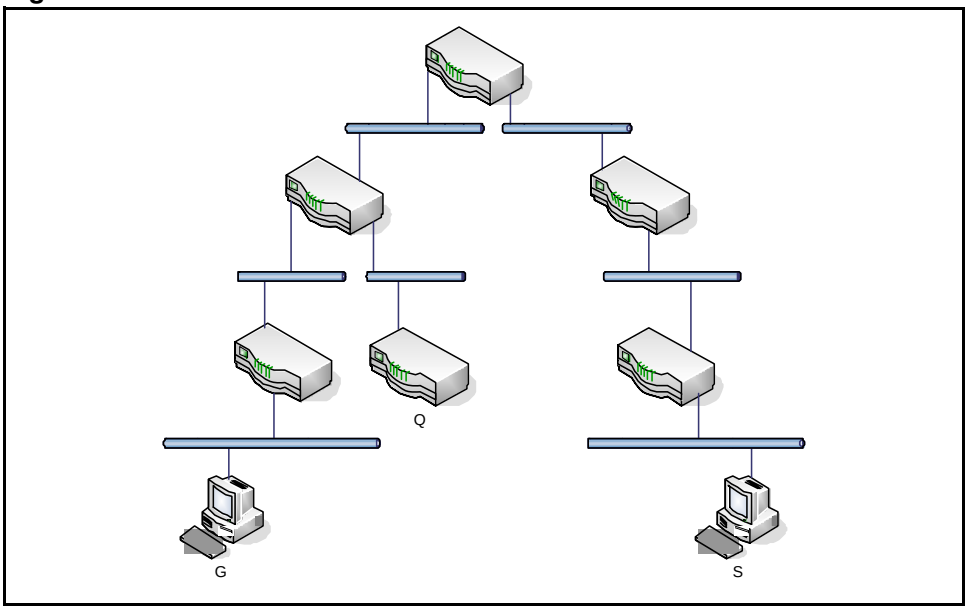
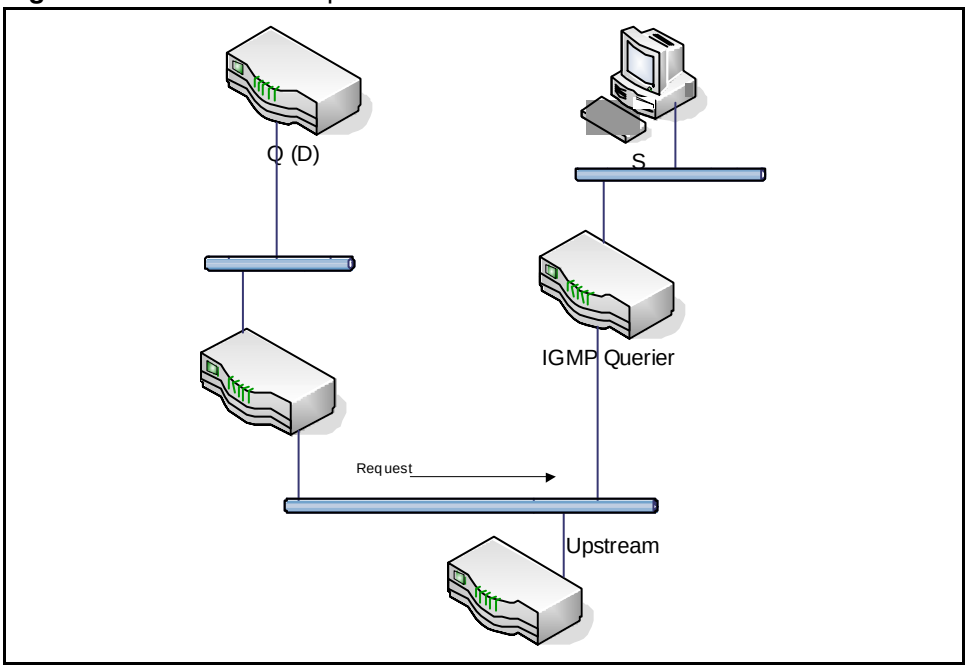


Table 2 “Non-mtrace compliant network” on page 55 shows a network topology where the mtrace response does not contain the full trace between the destination and source. The request message goes to both the upstream interface of one router and the IGMP downstream Querier interface of another router. The first router responds with the code RPF_IF (Traceroute request arrived on the expected RPF interface for this source, group).

Figure 2 Non-mtrace compliant network



To use mtrace, enter the following command in User EXEC mode:

```
mtrace [source] [destination] [group] [response
<response-address>| max-hops <max-hops> | response-ttl
<resp-ttl> | verbose | response-time <response- time>]
```

The following list explains the command parameters:

- source—unicast IP address of the source of the traceroute
- destination—(Optional) unicast address of the destination

  The default is the system on which you enter the command.
- group—(Optional) multicast group address to trace

  The default group is MBONE AUDIO—224.2.0.1.
- response-address—(Optional) unicast or multicast address where the response is sent

  The default is the system on which you enter the command.
- max-hops—(Optional) maximum number of hops to traverse

The default number of maximum hops is 32.

- resp-ttl—(Optional) time-to-live (TTL) to use for the multicast response on the response packet

  The default response TTL is 64.

- verbose—(Optional) show additional statistics like the route that forwarded the initial trace
- response-time—(Optional) the time to wait for a trace response

  The default response time is 3 seconds.

To use mtrace from the GUI

1. Choose **Admin**, **Tools**.

   The System Tools window appears.

2. Provide the necessary details in the **Multicast Trace Route** section.
3. Click **MTrace**.

ARP

The ARP dynamically discovers the low-level physical network hardware address that corresponds to the high-level IP address for a host. Use ARP on physical network systems that support broadcast packets heard by all hosts on the network.

To delete ARP table entries, enter the following command in the Global Configuration mode:

```
arp <IP address> [word]
```

Word represents the optional 48-bit hardware address of the ARP entry.

To delete ARP table entries from the GUI

1. Choose **Admin**, **Tools**.

   The System Tools window appears.

2. Type the target address.

3 Click **ARP Delete**.

Client-based tools

IPsec VPN Client Monitor provides network statistics on device, connection, and network errors that help monitor traffic flow and assess IPsec connection performance. Statistic counters update once a second. For more information about the IPsec VPN Client Monitor, see the Nortel VPN Client online Help.

Microsoft Point-to-Point Tunneling Protocol (PPTP) Dial-Up Networking Monitor provides network statistics on device, connection, and network protocols that help monitor traffic flow and assess PPTP connection performance. For more information about the PPTP Dial-Up Networking Monitor, see the PPTP help or the Microsoft PPTP client documentation.

System-based tools

Use the Status, Health Check menu path to view colored status indicators that evaluate individual component status, and click associated hyperlinks to go directly to manager windows for corrective action.

Use the Status, Statistics menu path to view detailed system and network statistics.

Use the Status, Security, Config Log, System Log, and Event Log menu paths to view various log recording systems and network events that help you trace problems and determine their origins.

Configuring core dump retrieval on diskless routers

The VPN Routers 1010, 1050, and 1100 use a compact flash disk, instead of a traditional hard disk, which provides 64 MB of flash disk storage. Because of the limited storage capacity, core dump files do not save on the router and, therefore, you must upload the generated core dump file to a File Transfer Protocol (FTP) server for later troubleshooting.

1. Choose **Admin**, **Administrator**.

   The Administrator window appears.

2. In the FTP Coredump section, select **Enabled**.
3. In the **Host** box, type the FTP server IP address.
4. In the **Path** box, type the directory path where you want to save the core dump file. If you leave this box blank, the file saves in the root directory.
5. In the **UserID** box, type the FTP user logon name.
6. In the **Password** box, type the FTP user password.
7. Confirm the user password.
8. Click **OK**.

In the command line interface (CLI), use the **`ftp-coredump`** command. For more information about this command, see *Nortel VPN Router Using the Command Line Interface* (NN46110-507).

Enabling packet capture on a VPN Router

You must use a serial connection to capture packets. You cannot enable packet capture through a Telnet session.

To prepare to run packet capture on the VPN Router

1. If necessary, start the VPN Router with a software version that includes the PCAP feature.
2. Turn on the terminal or PC.
3. Configure the terminal or PC as follows:
   - 9600 baud
   - 8 data bits
   - 1 stop bit
   - No parity
   - No flow control
4. Connect the serial cable (supplied with the VPN Router) from the VPN Router serial port to the terminal or to the communications port on the PC.

5 On the PC, start HyperTerminal or another terminal emulation program, and then press **Enter**.

The Welcome window appears.

```
Welcome to the VPN Router
Copyright (c) 2007 Nortel Networks Ltd.

Version:          V04_90.185
Creation date:    May 27, 2004, 20:51:06
Date:             05/27/2004
Unit Serial Number:317563

Please enter the administrator's user name:
```

6 Enter the administrator user name and password.

```
Please enter the administrator's user name: admin

Please enter the administrator's password: *****
```

The serial main menu appears.

```
Main Menu: System is currently in NORMAL mode.

   1) Interfaces
   2) Administrator
   3) Default Private Route Menu
   4) Default Public Route Menu
   5) Create A User Control Tunnel(IPsec) Profile
   6) Restricted Management Mode FALSE
   7) Allow HTTP Management TRUE
   8) Firewall Options
   9) Shutdown
   B) System Boot Options
   P) Configure Serial Port
   C) Controlled Crash
   L) Command Line Interface
   R) Reset System to Factory Defaults
   E) Exit, Save and Invoke Changes

   Please select a menu choice (1 - 9,B,P,C,L,R,E): L
```

7 Access the command line interface by typing the letter **L** (uppercase or lowercase) at the prompt.

The User EXEC prompt appears:

```
CES>
```

8 Enter Privileged EXEC mode.

```
CES>enable
Password:*****
```

9 Enable packet capture globally on the VPN Router and create the capture password. Use this password to open capture files with the openpcap utility. Use at least eight characters for the capture password and include at least one number.

```
CES#capture enable
Please specify password for encrypting capture files.
Password: ********
Reenter password: ********
```

10 Optionally, you can now change the VPN Router administrator password.

```
CES#configure terminal
Enter configuration commands, one per line. End with
Ctrl/z.
CES(config)#adminname <admin_name> password <new_password>
CES(config)#exit
CES#
```

After you enable packet capture, it remains enabled until you explicitly disable it with the `no capture enable` command or until you reboot the VPN Router. You can now configure and start packet capture objects.

Saving captured data

By default, packet capture stops copying data to the capture buffer after the buffer becomes full. To configure a capture object to overwrite the data in the buffer with new data, run the `wrapping` command.

Use the command `capture save` to save captured network traffic from the capture buffer in memory to a file on the VPN Router disk. You must stop packet capture before you can save the buffer to a file. For more information, see "Starting, stopping, and saving capture objects" on page 67.

Capturing packets to disk file

To configure PCAP, you must first enter CLI Capture Configuration mode. For more information about CLI Capture Configuration mode, see *Nortel VPN Router Using the Command Line Interface* (NN46110-507).

Five CLI commands exist to capture packets to disk file. These commands are

- **filepath**—sets the PCAP file path
- **buffersize**—sets the size of the RAM buffer
- **filesize**—sets the size of a disk capture file
- **maxfiles**—sets the maximum number of disk capture files
- **capture-all**—sets PCAP capture mode to either loss or no loss

The following sections describe each of these commands.

Setting the PCAP file path

To configure the file path to save PCAP files, from CLI Capture Configuration mode, enter the following command:

filepath *<path>*

where path specifies the location to which to save the PCAP files.

For example, enter

```
CES(capture-ethernet)#filepath /ideX/system/log
```

Note: To back up later using the autobackup functionality, the specified file path for the PCAP files must be a directory under /ideX/system.

Setting the size of the RAM buffer

To configure the RAM buffer size, from CLI Capture Configuration mode enter the following command:

buffersize *<size>*

where size is the size of the RAM buffer.

For example, enter

```
CES(capture-ethernet)#buffersize 1048576
```

Setting the size of a disk capture file

To configure the size of the disk capture file, from CLI Capture Configuration mode enter the following command:

filesize <*max_size*>

where max_size is the size of the capture file.

For example, enter

```
CES(capture-ethernet)#filesize 10485760
```

Setting the maximum number of disk capture files

To configure the maximum number of disk capture files, from CLI Capture Configuration mode enter the following command:

maxfiles <*max_files*>

where max_files is the maximum number of files to save to disk for this capture

For example, enter

```
CES(capture-ethernet)#maxfiles 99
```

Saving captured data

To configure the PCAP capture mode to loss or no loss, from CLI Capture Configuration mode enter the following command:

capture-all

or

```
No capture-all
```

For example, enter

```
CES(capture-ethernet)#capture-all
```

Configure and run packet capture objects

This section provides instructions to create, configure, start, and stop capture objects, as well as instructions to save captured traffic to a file on disk. For more information about the complete syntax of the packet capture commands shown in this section, see the *Nortel VPN Router Using the Command Line Interface* (NN46110-507).

Creating a capture object

To create a capture object, use the `capture add` command. For more information about the types of object that you can create, see "Capture types" on page 36.

1. To view the types of capture objects that you can configure, enter the following command at the Privileged EXEC prompt.

   ```
   CES# capture add <object_name> ?
   ```

   For example, enter the following command:

   ```
   CES# capture add test1 ?
    atm            ATM interface capture
    bri               Bri interface capture
    dial              Dial interface capture
    FastEthernet      Fast Ethernet interface capture
    GigabitEthernet   Gigabit Ethernet interface capture
    global            Global RAW IP capture
    serial            Serial interface capture
    tunnel            Tunnel capture
   ```

2. Create a capture object by specifying an object name and type.

In the following example, you create a capture object called test_ethernet1 that captures traffic on Ethernet interface 1/2.

```
CES# capture add test_ethernet1 FastEthernet 1/2
CES#
```

In the following example, you create a capture object called test_tunnel that captures tunnel traffic.

```
CES# capture add test_tunnel tunnel
CES#
```

Configuring a capture object

After you create a capture object, you can configure it to capture a subset of the traffic that travels over the physical interface, tunnel, or the VPN Router as a whole. You can configure a capture object to do the following:

- capture inbound or outbound traffic or both
- capture a nondefault number of octets from each packet
- apply an interface filter to the object
- configure start and stop triggers for the object
- specify whether the capture stops after the buffer is full or whether new data overwrites the existing data

To configure a capture object

1. Browse to Capture Configuration mode by entering the `capture` command with the object name.

   ```
   CES#capture ether0
   CES(capture-ethernet)#
   ```

   The resulting prompt shows the type of capture object (physical interface, tunnel, or global IP).

2 Display all parameters that you can configure for that type of capture object.

```
CES(capture-ethernet)#?
Packet capture mode
  direction        Captures in one direction
  exit             Exits capture mode
  filter           Applies interface traffic filter to
                   capture only matching traffic
  length           Specifies how many octets to capture for
                   every packet
  no               Disables features and settings
  promiscuous      Enables promiscuous mode when capture is
                   running
  trigger          Enables triggers
  wrapping         Continues capturing when buffer gets full
CES(capture-ethernet)#
```

3 Edit one or more parameters as required.

Note: The promiscuous parameter is available for Ethernet capture objects only.

For more information about command syntax, see *Nortel VPN Router Using the Command Line Interface* (NN46110-507).

Tunnel capture parameters

Capture objects for tunnels use several unique parameters. The following example creates a tunnel object called *bot1*, navigates to Capture Configuration mode, and displays the commands for tunnel objects. The bold commands are available only for tunnel objects. For more information about tunnel capture objects, see "Tunnel captures" on page 36.

```
CES#capture add bot1 tunnel
CES#capture bot1
CES(capture-tunnel)#?
Packet capture mode
  direction      Captures in one direction
  exit           Exits capture mode
  filter         Applies interface traffic filter to capture
                 only matching traffic
  length         Specifies how many octets to capture for
                 every packet
  no             Disables features and settings
  persistent     Restarts capture on session disconnect
  remoteip       Captures sessions from this IP address
  trigger        Enables triggers
  type           Captures only sessions of specific type
  userid         Captures sessions from this user
  wrapping       Continues capturing when buffer gets full
CES(capture-tunnel)#
```

For more information about command syntax, see *Nortel VPN Router Using the Command Line Interface* (NN46110-507).

Global IP parameters

The configurable parameters for the global IP capture object are the same as the parameters available for physical interface objects. The following example creates a global capture object called *rawip*, navigates to Capture Configuration mode, and displays the commands for the global capture object. For more information about global IP capture objects, see "Global IP captures" on page 37.

```
CES#capture add rawip global
CES#capture rawip
CES(capture-global)#?
Packet capture mode
  direction        Captures in one direction
  exit             Exits capture mode
  filter           Applies interface traffic filter to
                   capture only matching traffic
  length           Specifies how many octets to capture for
                   every packet
  no               Disables features and settings
  trigger          Enables triggers
  wrapping         Continues capturing when buffer gets full
CES(capture-global)#
```

Starting, stopping, and saving capture objects

The following example shows how to start a capture object called *test_ether1*, stop it, save the buffer to a file (called *test_ether1.cap*), and finally, clear the capture buffer. You must run all commands in Privileged EXEC mode.

```
CES#capture test_ether1 start
CES#capture test_ether1 stop
CES#capture test_ether1 save test_ether1.cap
Saving capture test_ether1 to file /ide0/test_ether1.cap
please wait . . .
220 frames written successfully
CES#clear capture test_ether1
CES#
```

Displaying capture status

Use the `show capture` command to display a list of capture objects and to display the configuration and status of a specific capture object.

In the following example, the **show capture** command is run with no object name to display a list of all the capture objects configured on the VPN Router.

```
CES# show capture
Name         Type            Size     Buffer use   Count
    State
bot1         TUNNEL          1048576     0%          0
      EMPTY
ether0       ETHERNET        1048576     7%          984
    STOPPED
rawip1       GLOBAL          1048576     0%          0
    EMPTY
CES#
```

The following example shows the type of output you see after you enter the **show capture** command for a specific capture object.

```
CES# show capture bot1
Capture state:                          STOPPED
Capture buffer size:                    1048576
Capture type:                           TUNNEL
Tunnel type to capture:                 IPSEC
Tunnel encapsulation to capture:        INITIATOR
Restarting capture on tunnel logoff:    DISABLED
Capturing MAX octets per frame:         4096
Captured frames:                        0
Capture buffer utilization:             0%
Capturing direction:                    BIDIRECTIONAL
Capture buffer wrapping:                DISABLED
Capture buffer wrapped:                 FALSE
Capture filter applied:                 permit all
Capture filter discards:                0
Start trigger applied:                  permit all
Start trigger discards:                 0
Stop trigger applied:                   permit all
CES#
```

Sample packet capture configurations

This section provides sample configurations and the commands used to create them.

Interface capture object using a filter and direction

In the following example, you configure a capture object called *test-filter-in* on Fast Ethernet interface 0/1. This object captures inbound FTP traffic only.

Note: The filter used in this example is a predefined VPN Router filter. If you need a filter that is not provided with VPN Router software, you must create the filter before you configure the capture object.

To create and use this capture object, run commands like the ones in this example.

1 Create a capture object called **test-filter-in** on Fast Ethernet interface 0/1:

```
CES#capture add test-filter-in FastEthernet 0/1
```

2 Enter **Capture Configuration** mode for the object:

```
CES#capture test-filter-in
```

3 Configure the direction for the capture to inbound:

```
CES(capture-ethernet)##direction inbound
```

4 Configure the filter to capture FTP traffic only:

```
CES(capture-ethernet)#filter "permit FTP"
```

5 Exit **Capture Configuration** mode:

```
CES(capture-ethernet)#exit
```

6 Start the capture:

```
CES#capture test-filter-in start
CES#
```

To view the status of the running capture object, as well as its configuration, use the **show capture** command. In this example, the buffer captures 20 frames.

```
CES#show capture test-filter-in
Capture state:                              RUNNING
Capture buffer size:                        1048576
Capture type:                               ETHERNET
Capturing on interface:                     FastEthernet 0/1
Promiscuous mode is:                        DISABLED
Capturing MAX octets per frame:             4096
Captured frames:                            20
Capture buffer utilization:                 0%
Capturing direction:                        INBOUND
Capture buffer wrapping:                    DISABLED
Capture buffer wrapped:                     FALSE
Capture filter applied:                     permit FTP
Capturing non-ip frames:                    DISABLED
Capture filter discards:                    329
CES#
```

To stop the capture and save the buffer contents to a file called *test3.cap*, enter the following commands:

```
CES#capture test-filter-in stop
CES#capture test-filter-in save test3.cap
Saving capture test-filter-in to file /ide0/test3.cap please
wait . . .
20 frames written successfully
CES#
```

Interface capture object using triggers

In the following example, you configure a capture object called *test-trigger* on Fast Ethernet interface 0/1. This object uses FTP traffic as the start trigger and Telnet traffic as the stop trigger.

Note: This example uses predefined VPN Router filters. If you need a filter that the VPN Router software does not provide, you must create the filter before you configure the capture object.

To create and use this capture object, you run commands like the ones illustrated in this example. These commands do the following:

1. Create a capture object called **test-trigger** on Fast Ethernet interface 0/1.
2. Enter **Capture Configuration** mode for the object.
3. Configure the start trigger to permit FTP.
4. Configure the stop trigger to permit Telnet.
5. Exit **Capture Configuration** mode.
6. Start the capture.

```
CES#capture add test-trigger fastethernet 0/1
CES#capture test-trigger
CES(capture-ethernet)#trigger start "permit FTP"
CES(capture-ethernet)#trigger stop "permit Telnet"
CES(capture-ethernet)#exit
CES#capture test-trigger start
CES#
```

To view the status of the running capture object, as well as its configuration, use the **`show capture`** command. In this example, you can see that

- The captured frames field indicates that the receipt of FTP traffic triggered the capture.
- The start trigger discards field shows the number of packets discarded before the receipt of FTP traffic activated the start trigger.

```
CES#show capture test-trigger
Capture state:                          RUNNING
Capture buffer size:                    1048576
Capture type:                           ETHERNET
Capturing on interface:                 FastEthernet 0/1
Promiscuous mode is:                    DISABLED
Capturing MAX octets per frame:         4096
Captured frames:                        107
Capture buffer utilization:             0%
Capturing direction:                    BIDIRECTIONAL
Capture buffer wrapping:                DISABLED
Capture buffer wrapped:                 FALSE
Start trigger applied:                  permit FTP
Start trigger discards:                 362
Stop trigger applied:                   permit Telnet
CES#
```

After Telnet traffic activates the stop trigger, the **show capture** command resembles the following example. The Capture state field now shows that the stop trigger stopped the capture.

```
CES#show capture test-trigger
Capture state:                          STOPPED by stop
trigger
Capture buffer size:                    1048576
Capture type:                           ETHERNET
Capturing on interface:                 FastEthernet 0/1
Promiscuous mode is:                    DISABLED
Capturing MAX octets per frame:         4096
Captured frames:                        188
Capture buffer utilization:             1%
Capturing direction:                    BIDIRECTIONAL
Capture buffer wrapping:                DISABLED
Capture buffer wrapped:                 FALSE
Start trigger applied:                  permit FTP
Start trigger discards:                 362
Stop trigger applied:                   permit Telnet
CES#
```

To stop the capture object and save the buffer contents to a file called *test4.cap*, enter the following commands:

```
CES#capture test-trigger stop
CES#capture test-trigger save test4.cap
Saving capture test-trigger to file /ide0/test4.cap please
wait . . .
220 frames written successfully
CES#
```

Tunnel capture object using a remote IP address

In the following example, you configure a capture object called *test-remote-IP* that captures traffic arriving over a tunnel with the specified remote IP address.

To create and use this capture object, you run commands like the ones illustrated in this example. These commands do the following:

1. Create a capture object called *test-remote-ip*.
2. Enter Capture Configuration mode for the capture object.
3. Configure the remote IP address to 192.168.100.1.
4. Exit Capture Configuration mode.
5. Start the capture.

```
CES#capture add test-remote-ip tunnel
CES#capture test-remote-ip
CES(capture-tunnel)#remoteip 192.168.100.1
CES(capture-tunnel)#exit
CES#capture test-remote-ip start
CES#
```

To stop the capture and save the buffer contents to a file called *test6.cap*, enter the following commands:

```
CES#capture test-remote-ip stop
CES#capture test-remote-ip save test6.cap
Saving capture test-trigger to file /ide0/test6.cap please
wait . . .
10 frames written successfully
CES#
```

View a packet capture output file on a PC

After you save a capture buffer to a file on the VPN Router disk, download the file to a workstation, and analyze the contents offline using one of many available tools. The VPN Router does not provide utilities to view and analyze packet capture data; however, the VPN Router software CD provides a utility called *openpcap* that you use to open and decrypt PCAP files on a PC or workstation.

- To view a packet capture file with Ethereal software, use the openpcap utility supplied with the VPN Router software.
- To view a packet capture file with Sniffer Pro software, use the openpcap utility supplied with the VPN Router software along with the Ethereal editcap utility.

Installing Ethereal software

To install Ethereal (free of charge)

1. Log on to www.ethereal.com, and then click **Download**.
2. In the **Other Platforms** section, locate the Microsoft Windows row, and then click **local archive**.
3. Click **ethereal-setup-*n.nn.n*.exe**.
4. Save the executable file on the hard drive.
5. Double-click the executable file to install Ethereal software in the **c:\Program Files\Ethereal** directory.
6. After you install the software, click the **Ethereal** application icon to open the **Ethereal** window.

Saving, downloading, and viewing PCAP files

To save and download a PCAP file and view it using the VPN Router openpcap utility and Ethereal software

1. On the PC, create a PCAP directory called **c:\pcap**.
2. In the **c:\pcap** directory, copy the **openpcap.exe** file that is provided with the VPN Router packet capture software.

3 On the VPN Router, stop the packet capture object and save the output to a file, for example

```
CES#capture ethernet1 stop
CES#capture ethernet1 save ethernet.cap
Saving capture ethernet to file /ide0/ethernet.cap
please wait . . 82 frames written successfully.
```

Note: If you run PCAP on a VPN Router that uses two hard drives, save the PCAP files to directory /ide1.

4 On the PC, use FTP software to connect to the VPN Router and copy the **ethernet.cap** file from the **/ide0/** directory to the **c:\pcap** directory on the PC.

5 Open a DOS window and from the **c:\pcap** directory, open the PCAP file **ethernet.cap** by using the openpcap executable. For example, enter this command (syntax is **openpcap** *<input_file> <output_file>*):

```
openpcap ethernet.cap ether1.cap
```

6 Type the password that you use to enable packet capture (for more information, see "Enabling packet capture on a VPN Router" on page 58).

Note: If you plan to use Sniffer Pro to view the capture file, see "Viewing a PCAP file with Sniffer Pro" on page 75.

7 From the open **Ethereal** window, disable **Enable network name resolution**.

If you enable this parameter, a large PCAP file takes a long time to open because every address captured tries to perform name address resolution.

8 Open the packet capture file (for example, ethernet.cap).

Viewing a PCAP file with Sniffer Pro

Because Sniffer Pro is not free shareware, this procedure assumes that you installed the software on the PC. To view a VPN Router PCAP file with Sniffer Pro

1. Install Ethereal software (for more information, see "Installing Ethereal software" on page 74).
2. Save the packet capture file and download it to the PC as described in steps 1 to 6 of "Saving, downloading, and viewing PCAP files" on page 74.
3. Open a new DOS window and change the directory to the **c:\Program Files\Ethereal** directory to access the **`editcap`** command.
4. Run the **`editcap`** command so that Sniffer Pro can view the capture. If you perform the capture on an Ethernet interface or on a tunnel, type the extension **`.enc`**; if you perform the capture on a WAN interface, type the extension **`.syc`**. The following are sample commands.

   Ethernet interface capture

   ```
   editcap -F ngsniffer d:\pcap\ether.cap ether1.enc
   ```

   IPsec tunnel capture

   ```
   editcap -T ether -F ngsniffer d:\pcap\ipsec.cap ipsec.enc
   ```

   Global IP capture

   ```
   editcap -T ether -F ngsniffer d:\pcap\rawip.cap rawip.enc
   ```

   T1 frame relay capture

   ```
   editcap -F ngsniffer d:\pcap\fr.cap frelay.syc
   ```

5. From Sniffer Pro, open the **.enc** file or the **.syc** file to view the trace.

   For a global IP trace or tunnel trace, you must perform an extra step on Sniffer Pro because PCAP only records Layer 3 traffic.

6. Before you open a global IP or tunnel trace, configure the **Protocol Forcing** option in Sniffer Pro to view the correct Layer 3 information.

   a. Click **Tools, Options, Protocol Forcing**.

   b. Click **Rule 1** and specify if **<Frame Start>**, **Skip 0 bytes**, then **Internet Protocol**.

   c. Click **OK,** and then open the file.

Deleting capture objects and disabling packet capture

After you no longer need a capture object, delete it to free memory. You can also disable packet capture globally to remove all configured capture objects, and free the memory used to store them.

Note: If you disable packet capture globally, you must use the serial port to reenable it again (For more information, see "Enabling packet capture on a VPN Router" on page 58).

Capture data that you saved in a file using the **`capture save`** command remains stored on the disk until you explicitly delete the file.

To delete a packet capture object

1. Display all configured capture objects on the VPN Router to locate the object or objects that you want to delete.

```
CES#show capture
Name            Type       Size     Buffer use Count State
test-fast       ETHERNET   1048576      0%      10    STOPPED
test-filter-in  ETHERNET   1048576      0%      20    STOPPED
test-raw-ip     GLOBAL     1048576      0%      33    STOPPED
test-remote-ip  TUNNEL     1048576      0%      9     STOPPED
test-trigger    ETHERNET   1048576     1%     188   STOPPED by
stop trigger
test-user       TUNNEL      1048576     0%      56    STOPPED
CES#
```

2. Run the **`no capture`** command for the specific object.

   For example, the following command deletes the capture object *test-trigger*.

```
CES# no capture test-trigger
CES#
```

To disable packet capture globally and delete all configured capture objects, run the **`no capture enable`** command:

```
CES#no capture enable
CES#
```

TunnelGuard tools

You can use several sources of information when you initially configure or troubleshoot TunnelGuard. TunnelGuard places an icon in the system tray. If a status message exists because a Software Requirement Set (SRS) check failed, a red x appears next to the icon. Right-click on the icon to present an option to display the log. The log shows what SRS rule TunnelGuard uses and why the check fails.

You can find a TunnelGuard log file in the \Program Files\Nortel Networks\TunnelGuard\logs directory. This file contains the same alert information as the status display, and additional information.

The normal client-side log file for the Nortel VPN Client does not contain information about TunnelGuard. In fact, if TunnelGuard disconnects a VPN session, the log only records that the server requested the disconnection.

The event log contains information about TunnelGuard status. The event log records if a check fails, if the restricted filter is lifted, or if no communication establishes with the agent.

IPsec commands

The following commands are useful troubleshooting commands for the VPN Router.

Load the show.bat and ipsec.bat script files on to the router flash card for quick troubleshooting and configuration information.

The **`show ipsec esp sa`** command provides a list of established IPsec tunnels.

The **`show ipsec policy`** command lists all IPsec policies and proposals configured within each policy.

The **`show ipsec selectors out`** command provides a list of all interfaces and the policies configured on each interface.

Other tools

Table 12 "Troubleshooting tools" on page 79 lists the tools that you can use to diagnose connectivity problems from Windows NT, Windows 2000, and Windows XP workstations.

Table 12 Troubleshooting tools

Windows NT	Windows 2000/XP	Use
Ipconfig command	Ipconfig command	Obtain IP address, DNS, WINS information
Netstat command	Netstat command	View statistics from Microsoft TCP/IP stack
Ping and tracert commands	Ping and tracert commands	Test connectivity, name resolution, route tracing
Dial-Up Monitor status	Dial-Up Networking Monitor	View modem settings, throughput and errors
n/a	PathPing command	Shows the path and packet losses at each router to a host

System configuration

Use the Admin, Configs window to save the current or delete existing system configuration files. Additionally, you can select one of the previously named configurations and restore it as the current configuration.

File management

Use the Admin, File System, File System Maintenance window to navigate through the VPN Router file system. This window lists the devices (drives) and directories, which provides flexibility in viewing details of a file or directory and allows you to delete unnecessary files. For example, if you cannot perform an FTP transfer for a specific file, you can view the file details to learn the file size and the modification date for troubleshooting purposes. Additionally, you can switch between hard drives if a backup drive is available.

Chapter 3
Status and logging

The Status windows show which users log on, their traffic demands, and a summary of the VPN Router hardware configuration, including available memory and disk space.

This chapter includes the following topics:

Introduction

The VPN Router uses the following logs that provide different levels of information:

- security log
- config log
- system log
- event log

The router stores the logs in text files on disk, and they indicate what happened, when, and to which user (IP address and user ID).

The event log captures real-time logging over a relatively short period of time (for example, the event log can wrap 2000 possible entries in minutes). The system log captures data over a longer period of time, up to 61 days.

Most events log to the event log first. Significant events from the event log log to the system log. Not all data that the system log saves comes from the event log. From the system log, the VPN Router filters security entries for the security log and configuration entries for the configuration log. You can use the different log options to write specific event levels to the log files and view them, including:

- Normal
- Urgent
- Detailed
- All

Sessions

You can monitor which users tunnel into the VPN Router, when they log on, and the number of bytes and packets they transmit or receive. Additionally, you can see selected session details, and you can log off users.

After a session with the router starts, detailed information about the connection is available from the Active Sessions window (Status, Sessions menu path). This window lists all connected sessions, including administrative sessions. As well as statistics, this information contains negotiated encryption and the Son of IKE (SOIs) of the security associations. Click the appropriate buttons beside each session to either log off from the session or view detailed information about it.

Reports

Use the Status, Reports window to view system and performance data in text or graphical format. You generate reports in an on-screen tabular format, and you can import the reports into a spreadsheet or database through the comma-delimited format.

At midnight (12:00 a.m.), the data collection task performs summary calculations and rewrites history files, along with other management and cleanup functions. To perform this task, leave the VPN Router running overnight. The VPN Router must run at midnight to generate a historical graph for the day.

If you use multiple VPN Routers throughout the world, use the Greenwich Mean Time (GMT) standard to synchronize the various log files so that the timestamps directly compare.

System

The Status, System window shows the VPN Router up time, software and hardware configurations, and the current status of key devices. If a shutdown is pending or an Internetwork Packet Exchange (IPX) public network address changes and requires a restart, the top of this window lists these events.

Health check

Choose Status, Health Check to view an overall summary of the current state of the VPN Router hardware and software components at a glance. The Health Check window lists all aspects of unit operation, with the most critical information to check at the top of the window. Click the link on the right side of the window to go directly to the window for configuration of that feature.

Statistics

Choose Status, Statistics to view general and diagnostic information about the system hardware, software, and connections. Much of the information is specifically designed for Nortel Customer Support personnel to assist them in diagnosing problems. Some Statistics windows, however, such as the LAN Counters, Interfaces, and WAN Status windows, provide you with traffic information. Use the Statistics window to view information about system-level statistics to resolve lower-level problems with connections. These displays are similar to command-line output from the operating system.

In normal operation and routine troubleshooting, you need not examine many of these windows. Some of the information, such as routing information, is also available through other areas, such as System, Routing.

Accounting

The accounting log provides information about user sessions. This log provides last and first names, user ID, tunnel type, session start and end dates, and the number of packets and bytes transferred. You can use most of these fields to search the log.

Accounting records

Accounting records are detailed logs that record the various activities the VPN Router performs. The logs are directly available from the management interface and you can export them to other applications for additional processing. The VPN Router gathers and stores data about the current state of the VPN Router and the connections in files on the hard drive.

- Session status: RADIUS accounting—The VPN Router stores copies of RADIUS accounting records. These records, which you can retrieve through FTP or send to a RADIUS server, contain information about each VPN session initiated to the VPN Router.
- System data: data collection task—The data collection task runs on the VPN Router and gathers data about the system status. Each minute, the task captures data and writes it to a data file. You use the information the task captures to create the graphs and reports available from Status, Reports.

Note: The results of accounting record searches can be incorrect if another administrator initiates a new search before the first search is complete. Therefore, ensure that not more than one administrator searches accounting records at one time.

The data collection system stores records in text-based files stored in the system/dclog subdirectory. The system stores the most recent 60 days of data. The system stores daily files, summary files, and summary history files. Ongoing administration tasks include monitoring the configuration files, backing up and restoring the VPN Router or the LDAP database, and upgrading images and clients.

Note: The VPN Router does not sort accounting records and displays them in a random order.

RADIUS accounting

The VPN Router stores copies of Remote Authentication Dial In User Service (RADIUS) accounting records and normally sends these records to a standard RADIUS Accounting server. To configure a RADIUS accounting server, select Servers, RADIUS Acct.

To view the information in the standard RADIUS accounting records, select Status, Accounting. The VPN Router creates a file for each day and keeps the most recent 60 days of data, storing them in the SYSTEM/ACCTLOG directory.

Note: The Status, Accounting window can provide misleading branch office session information because it displays rekeyed branch office tunnels as separate entries. The VPN Router does not send RADIUS accounting records to external servers for branch office connections.

Data collection task

The VPN Router runs the data collection task runs and gathers data about the system status. The task captures data every minute and writes it to a data file. The VPN Router uses the information this task captures to create the graphs and reports available from the Status, Reports window and stores this information in text-based files in the system/dclog directory. The VPN Router creates the following types of files in this directory:

- Daily files that contain interval records gathered every 60 seconds. These values are interval values and a file exists for each day (for example 20040622.DC).

- Summary file, summary.dc, with exactly five records that contain summary data. These values give historical graphs and reports about specific values.
- Summary history file that contains records representing cumulative daily data for the most recent 60 days in a file called *summs.dc*. Four records represent the daily summary. These records are for the current, total, average, and maximum values for the day.

A data collection record consists of 16 pairs of entries for each data collection object. Each value pair consists of a Field ID and an integer value. The following is a sample data collection record:

0-930057960,1-3,2-3,3-0,4-0,5-0,6-0,7-0,8-0,9-0,10-56,11-76,12-1,13-11021,14-40,15-38,16-0

Table 13 "Field IDs for data collection records" on page 86 lists the field IDs.

Table 13 Field IDs for data collection records

Field identification	Collected field value	Description
0	TIMESTAMP	Seconds since Jan 1, 1970 - 00:00:00 Hours
1	TOTALSESSIONS	Summary of all sessions
2	ADMINSESSIONS	Number of Admin sessions
3	PPTPSESSIONS	Number of PPTP sessions
4	IPSECSESSIONS	Number of IPsec sessions
5	L2FSESSIONS	Number of L2F sessions
6	L2TPSESSIONS	Number of L2TP sessions
7	IPADDRESSUSE	Percentage of total IP addresses in use
8	CPUUSE	Unfiltered CPU usage measurement {integer representing a percent between 0 and 100}
9	CPUSMOOTH	Filtered CPU usage measurement {integer representing a percent between 0 and 100}

Table 13 Field IDs for data collection records (continued)

Field identification	Collected field value	Description
10	MEMUSE	Filtered memory usage measurement {integer representing a percent between 0 and 100}
11	BOXPACKETSIN	Number of Inbound Packets
12	BOXPACKETSOUT	Number of Outbound Packets
13	BOXBYTESIN	Number of Inbound bytes
14	BOXBYTESOUT	Number of Outbound bytes
15	BOXDROPPEDPACKETS	Number of discarded packets
16	FAILEDAUTHATTEMPTS	Number of failed authentication attempts
17	LASTFIELDID (this field is never written to data record)	—

Logs

The VPN Router uses several logs that provide different levels of information. The router stores the logs in text files, and the logs indicate what happened, when the event occurred, and the IP address and user ID of the person causing the event.

Event log

The event log is a detailed recording of all events that take place on the system. These entries are not necessarily written to disk, as with the system log. The event log retains all system activity in memory, but you must configure the system to save the event log either automatically or in a specified file.

The event log includes information about tunneling, security, backups, debugging, hardware, security, daemon processes, software drivers, and interface card driver events.

As the event log adds information, it overwrites the oldest entries. The event log retains the most recent 2000 entries and discards old entries when it refreshes.

To configure event logging

1. Select **Status, Event Log**.

   The Event Log window appears.

2. In the **Save Events to** section, type a filename, and then click **Save** to manually save the current event log.
3. In the **Auto Save Events to** section, select the maximum number of files that you want to save, and then select **Enabled**, and click **OK** to automatically save the event log.
4. The Capture and Display filters are hidden by default. Click **Show** to view or configure the capture and display filter capabilities.
5. You configure the capture filter and display filter using Entity-Subentity or Severity. Click **Configure Capture Entity** or **Configure Display Entity**.
6. Select an **Entity** from the list.
7. Select a **Subentity** from the list.
8. Click **Add** to add the selected entity-subentity pair to the filter.
9. Click **Accept** to complete the changes to the filter.
10. Click **Remove** to delete a selected item from the list.
11. Click **Configure Capture Severity** or **Configure Display Severity** to configure the level of severity that you want to display on the window from the log.
12. Select a severity message from the **Severity** list, and then click **Add** to add it to the **Captured Severity** list or **Displayed Severity** list. Select **Remove** to remove a selected item currently in the **Severity** list.
13. Click **Accept** to save changes you make.
14. To sort the log based on key word matches, type a list of key words, separated by a space or a comma.
15. Select the type of match you want. Select **And** to match all key words. Select **Or** to match a key word.
16. Click **Clear** to clear the entire log. Only Administrators can clear the log.

17 Click **Refresh** to display new log entries.

18 Click **Reverse Chronological Order** to log in reverse chronological order.

System log

The system log contains all system events that are significant enough to write to disk, including those that appear in the configuration and security logs. Events that appear in the system log include:

- LDAP activity
- configuration activity
- server authentication and authorization requests

The following list shows general log entries:

- indicates time stamp
- indicates task that issued the event (tEvtLgMgr, tObjMgr, tHttpdTask)
- number that indicates the CPU that issued the event (0=CPU 0, 1=CPU 1)
- indicates software module that issued the event
- indicates the priority code assignment (number in brackets) (For more information about these codes, see "Event log" on page 87)
- indicates that the packet matched the rule in the listed section
- indicates the matching packet source, destination, protocol, and action configured for that rule

The following example shows a system log:

11:29:31 tEvtLgMgr 0 : CSFW [12] Rule[OVERRIDE 1]Firewall: [192.32.250.204:1024-10.0.18.12:2048, icmp], action: Allow

Security log

The Security log records all activity about system or user security. It lists all security events, both failures and successes. The events can include

- authentication and authorization
- tunnel or administration requests

- encryption, authentication, or compression
- hours of access
- number of session violations
- communications with servers
- LDAP
- Remote Authentication Dial-In User Service (RADIUS)

Configuration log

The Configuration log records all configuration changes. For example, it tracks adding, modifying, or deleting the following configuration parameters:

- group or user profiles
- LAN or wide area network (WAN) interfaces
- filters
- system access hours
- shutdown or startup policies
- file maintenance or backup policies

Chapter 4
Emergency recovery

In the unlikely event that a hard disk crash occurs, use the Recovery window to configure a recovery diskette to restore the software image and file system to the hard drive of the VPN Router. The recovery diskette ships with VPN Router. You can also use this window to create additional copies of the recovery diskette, as well as to reformat a diskette.

Note: The VPN Router 1000, 1010, 1050, and 1100 do not include a floppy drive in the unit. Although the VPN Router 600 does not include a floppy drive, a PROM stores the recovery image, and you press a switch on the back of the unit to invoke recovery.

This chapter includes the following topics:

Accessing the diskette drive

If the VPN Router has a front cover, you must remove it to gain access to the diskette drive. For more information about how to remove the front cover, see the installation guide. Starting the VPN Router with the recovery diskette does the following:

- reformats the hard disk
- allows FTP access to the hard disk
- restores the previously backed-up software image and file system from a backup host to the hard disk
- downloads a new factory default software image and file system from a file server to the hard disk

Access these utilities through the Hypertext Transfer Protocol (HTTP) after the router starts from the recovery diskette.

Creating a recovery diskette

The recovery diskette ships with VPN Router. You can also create additional copies of the recovery diskette.

1. If necessary, remove the front cover from the router to gain access to the disk drive. For more information about removal details, see the installation guide.
2. Insert a blank diskette into the disk drive.
3. Choose **Admin**, **Recovery**.
4. If the diskette is new or previously unformatted, select **Full Reformat**, and then click **Reformat Diskette**.
5. If the diskette is formatted, select **Quick Reformat**, and then click **Reformat Diskette**.
6. Click **OK** in response to the prompt that appears.
7. Select the **Create Diskette Option**.
8. Click **OK**.

Starting from a recovery diskette

Start the router from a recovery diskette to restore the software image and file system to the hard drive of the VPN Router.

1. Remove the front cover.
2. Insert the recovery diskette into the drive, and then press **Reset** on the back of the VPN Router.

   This supplies a minimal configuration utility so that you can view the VPN Router from a Web browser.

3. In a Web browser, type the management IP address of the VPN Router.

   The Recovery Diskette window appears, which you can use to

   — restore the factory default configuration or the backup configuration
   — reformat the hard disk
   — apply a new software version to the VPN Router
   — perform file maintenance
   — view the event log
   — restart the system

Using recovery on a diskless system

Certain hardware platforms do not use a diskette drive but you can still access the recovery functions.

1. Restart the router.
2. During the memory test, for 1010, 1050, and 1100 platforms, push **REC** on the back panel. For the 600 platform, push **RC** on the back panel. You do not need to hold the button.
3. After the startup is complete, use a Web browser to connect to the management IP address to open the GUI.
4. Complete the recovery action as required.

Restoring factory defaults or a backup configuration

Restore the factory default configuration if you lose the administrator password.

1. Start with the recovery diskette.
2. To restore the factory default configuration or the backup configuration, select the hard disk drive to which you want to restore the system files, **either ide0** (drive 0) or **ide1** (drive 1), and then do one of the following:

   — Select **Restore Factory Configuration**, and then click **Restore** to return the VPN Router to its original factory default configuration. This erases data in flash memory and in the configuration file.

Warning: Selecting this option requires you to rebuild the entire configuration.

An online message specifies the result of the Factory Configuration reset action.

— Click **Restore** to restore the backed-up configuration. If you previously chose to automatically backup the file systems, the backup server host (or IP address) and path name, user ID, and password appear in the table.

Check **Partial Backup** if you want to restore the configuration files, log files, or system files from a previous partial backup. The system restores the corresponding directory or files.

Select the preferred backup server. The latest backup copy of the file system, including software image and configuration files, is restored to the hard drive of the VPN Router.

You can use the same backup server for multiple VPN Routers. Each VPN Router creates a unique directory based on its serial number. The following example shows the host, path, and serial number (where the serial number [SN] is five digits):

```
C:/software/backup/v101/SN01001
```

You can use the serial number to differentiate backup configurations from multiple VPN Routers that save on the same backup server. The serial number uniquely identifies the backup data of each router.

If you did not configure automatic backup server locations, use the blank row in the server backup field to manually enter a backup server.

Note: FTP servers are often different, so check for information in the server documentation about setting paths that can help you with the upgrade procedure.

You can use a new factory default software image and file system to restore the VPN Router hard disk. Specify the name or address and path of the network file server onto which to install the software from the Nortel CD.

Note: This restores the disk to an operable but clean condition (for example, configuration values are at factory defaults).

To view the serial number after the VPN Router is operational, select Status, System. The serial number is also on the bar code label on the back of the VPN Router.

Reformatting the hard disk

Reformat the hard disk for one of the following reasons:

- You cannot restore the configuration.
- You want to reconfigure the VPN Router from scratch.
- You need to install a new disk.

1. Start with the recovery diskette.
2. Click **Reformat**.

Caution: This option erases anything on the hard disk.

An online message indicates whether the reformat of the hard disk is successful.

3 Select the image version that you want to activate from the list of available software image and file systems stored on the hard disk.

4 Click **Apply** to apply the new version and restart automatically. Changes are active. The VPN Router starts using the version that you select in the previous step.

5 Click **Files** to bring up the **File Maintenance** window, which allows you to view the entire hard disk file system.

6 Click **View** to display the **Event Log** beneath the **Recovery Diskette** window. This step is especially useful if a restore operation fails.

7 To configure the boot disk, select either **ide0 (drive 0)** or **ide1 (drive 1)**.

8 Click **Set**.

9 Click **Synchronize** to immediately synchronize the primary and secondary disks. Thereafter, the disks automatically synchronize every hour.

10 From the list, select the drive on which you want to upgrade the system boot software.

11 If the system boot sector is corrupted, click **Upgrade** to rewrite the boot software to the hard disk.

12 To restart the system, remove the diskette, and then press **Reset** on the back of the VPN Router. Reposition the Web browser to the Management IP address, and select **Reload** or **Refresh** from the browser menu to access the management window of the software running on the hard disk.

Note: You cannot use this procedure for the VPN Router 1000 due to the lack of a floppy drive in the unit. Although the VPN Router 600 does not include a floppy drive, a PROM stores the recovery image; to invoke recovery, press RC on the back of the unit.

Navigating the file system from the recovery diskette

Use the File System Maintenance screen to navigate through the switch file system. The top level lists the devices (drives) and lists the directories beneath a drive. Use this option to view details of a file or directory, and delete unnecessary files. For example, if you cannot use FTP to transfer a specific file, you can view the file details to learn the file size and modification date for troubleshooting purposes. Additionally, you can switch between hard drives if a backup drive exists.

1. Start with the recovery diskette.
2. In the **Perform file maintenance** section, click **Files**.
3. Select the device, such as **ide0** or **ide1**.
4. Click **Display**.
5. Select a directory.
6. Click **Details**.

Viewing the event log from the recovery diskette

View the event log to see events that occur on the router to resolve problems.

1. Start with the recovery diskette.
2. In the **View event log** section, click **View**.

Recovering the V08_00 backup of ldap and config files

Recover a NVR to a known running configuration when having V08_00 backup of ldap and config files.

1. Save the LDAP and the config files on an NVR running a previous release.
2. Download the files using FTP. (These files can be used to recover the unit when it is at this current version of code)

The unit is upgraded to the latest 8.0 build, configurations are preserved and the upgrade is successful.

3 You must again save the LDAP and config files on this new software version as you cannot restore the LDAP and config files from a previous version of code.

4 For some reason, the NVR configuration is lost.

5 Enable the FTP access and upload the last saved LDAP and config files (corresponding to version 8.0, not the older one) to the unit and initiate the recovery process.

Recovering the pre V08_00 backup of ldap and config files

Recover a NVR to a known running configuration when having pre V08_00 backup of ldap and config files.

1 Save the LDAP and the config files on an NVR running a previous release.

2 Download the files using FTP. (These files can be used to recover the unit when it is at this current version of code)

The unit is upgraded to the latest 8.0 build.

3 For some reason, the NVR configuration is lost.

4 Boot the NVR into the pre V08_00 build version used when the LDAP and config files were saved.

5 The LDAP and config files are uploaded to the box and the recovery process is initiated.

6 Once the NVR is recovered, you can upgrade to the new version again.

Chapter 5
Troubleshooting

This chapter introduces the concepts and practices of advanced network configuration and troubleshooting for the Nortel VPN Router. Use this chapter when you establish or modify the extranet, and when you diagnose network problems. This chapter includes the following topics:

Introduction

Typically, three types of problems occur when you manage an extranet:

- connectivity
- performance
- general

The primary concern is to maintain connectivity. For extranet access, this means maintaining the secure connections between the remote users and the private intranet serviced by the VPN Router. Performance is another area of concern. Monitor performance to address issues before they become problems.

Connectivity problems occur when the remote user cannot establish a connection with areas of their private corporate network. Several points of failure can exist. Problems can range from something as simple as a modem configuration error on the client workstation to a complex HDLC protocol error on the T1 WAN interface.

Troubleshooting remote access problems typically starts at the client end when the remote user cannot establish a connection, loses a connection, cannot browse the network, or print. When connectivity problems occur and the source of the problem is unknown, follow the Open Systems Interconnection (OSI) network architecture layers. Therefore, start diagnosing the physical environment, the modem, and the cables before moving up to the network and application layers (for example, pinging a host and Web browsing). For information about troubleshooting client connectivity, see *Nortel VPN Router Troubleshooting — Client* (NN46110-700).

By regularly checking the network statistics, logs, and health check information, and by informing users of good network practices, you can often avoid problems and enhance the productivity of the extranet.

This section categorizes general problems as problems other than those related to connectivity or network performance. For more information about the most recent release-specific problems, see the release notes.

Troubleshoot connectivity problems

This section lists many of the common connectivity problems that occur and their recommended solutions. Problems, and some typical client user responses that can help with diagnosis, categorize as follows:

Modem and dial-up problems

“I cannot browse the Web or check my e-mail over my dial-up connection.”

“I cannot ping my ISP site.”

Extranet connection problems

“I can browse the Web over my dial-up connection, but I cannot log on to my network over the extranet connection.”

Problems with name resolution using DNS services

"I logged into my corporate network, but I get messages saying the host is unknown."

"I can ping the host using its IP address, but not using its host name."

Network browsing problems

"I cannot browse the corporate network."

"I cannot print."

"I cannot access the Internet over my extranet connection."

This section includes the following topics:

Client connection problems

After you upgrade to 8.0, Nortel VPN Clients cannot connect to the router

Cause: You did not define the pool name on the external DHCP server.

Action: Add the pool name on the external DHCP server or leave the pool name blank in the user group.

Serial PPP problems

You use Serial Point-to-Point Protocol (PPP) to manage the VPN Router from a remote location using PPP and the serial interface. If the VPN Router becomes unreachable over the Internet, you can still dial up and manage it through the serial interface menu. After you configure the serial port for PPP only, you can still perform inband Web management.

Cause:

I connected a modem, but I cannot form a PPP connection.

Actions:

- Verify that the modem supports the selected baud rate. Most connection problems occur because the modem does not operate at the same baud rate as the VPN Router. For example, a 3Com/US Robotics 56 Kb/s modem uses a default baud rate of 38 400 when it attempts to establish a connection to the VPN Router, but the VPN Router default baud rate is 9600.
- Verify that the VPN Router uses PPP over the serial port. You can verify this by checking the settings in the Web interface (System, Settings).
- Verify that you clicked Reset from the Web interface when you make changes to the window (System, Settings). This action guarantees the serial port resets and initializes the modem. This action is required for a modem that connects to a VPN Router that you restart.
- Check the event log for failures.
- Make sure you use the correct dial-up networking settings.
- Make sure you configure the remote modem to auto answer and that it runs in smart mode so that it can respond to the AT command set.
- Verify that the auto detection did not fail, and that the VPN Router operates in serial menu mode.

Cause:

You were dialed in and managing the VPN Router remotely using PPP and you changed the baud rate and applied it, but now you cannot manage the VPN Router.

Action:

To manage the VPN Router, disconnect the dial-up connection and try to reestablish it. This gives the modem a chance to renegotiate the baud rate with the VPN Router.

Cause:

You configure the port to use PPP but you want to use the serial port for the serial menu.

Action:

Choose the serial port mode Serial Menu. Press OK using the Web management interface (System, Settings) and restart the VPN Router. To use the Serial Menu, you must install a serial cable in place of the modem. Remember to turn off the VPN Router when plugging in and unplugging the serial port connection; otherwise, you can damage system components.

Cause:

You configure the post to use the Serial Menu but want to use the port for PPP.

Action:

You can change the serial port settings (System, Settings) or the Serial Menu itself. For these changes to take effect, restart the VPN Router. For the best results, connect the modem while the VPN Router is off.

Cause:

You use a dial-up serial PPP connection and you encounter repeated CRC errors.

Action:

Make sure that the modem that connects to the VPN Router uses hardware flow control.

SFTP connection problems

If you cannot connect to the VPN Router using the SFTP, ensure that SSH works properly. In Global Configuration mode, view the SSH from CLI using the **`show ssh-server state`** command or from the GUI by choosing Servers, SSH.

Restart the SSH server.

Branch office connection problems

If the connection that fails is a branch office tunnel that passes through a NAT device, ensure that you globally enable NAT Traversal from the Services, IPSec menu path. Adjust the keep alive interval from the Profiles, Branch Office, Group Configure, IPsec Configure menu path.

If the branch office uses two factor authentication, globally enable two factor authentication by choosing Profiles, Groups, and then configure the IPsec authentication. If authentication fails, verify the certificates and the preshared keys exist on both ends of the tunnel and that the preshared keys match.

DNS name resolution problems

DNS misconfiguration is usually the problem if a client can ping a host using an IP address but not with the host name, or if messages appear that indicate the host name cannot be resolved.

Cause: You cannot configure a DNS server for PPTP or IPsec connections on the VPN Router.

Action: Validate that the Nortel VPN Client uses a DNS entry. Open a command prompt and enter **`ipconfig/all`**. Verify that a DNS server entry exists. Record the information that appears under the DNS Server entry and verify it with the network administrator.

Cause: The hostname uses both a public and a private IP address, commonly referred to as a split-horizon DNS.

Action: Open a command prompt and ping the host with a fully qualified host name (for example, www.nortel.com). If you receive a response, verify that the IP address returned on the first line (for example, www.nortel.com [207.87.31.127]) is an IP address from the remote corporate network. If the address is not from the remote network, notify the network administrator that you need to modify the internal hostname so that it is not the same as the external hostname.

Network browsing problems

Cannot browse the network (with NetBEUI)

Cause: For both PPTP and IPsec, the VPN Router does not currently support the NetBEUI protocol.

Action: To browse resources on a remote domain through a connection to a VPN Router, you must remove the NetBEUI protocol and configure a WINS server. By removing NetBEUI, the Microsoft Client uses NetBIOS over TCP/IP to browse network resources. This applies to both the PPTP dial-up client provided by Microsoft and the Nortel VPN Client.

Cannot access Web servers on the Internet after establishing a VPN client connection

Cause: For both PPTP and IPsec, this condition occurs because all network traffic passes through the corporate network. Typically, firewalls and other security measures on the corporate network limit access to the Internet.

Action: You can configure a default route on the VPN Router to forward traffic to the Internet. If this default route is not configured, you must disconnect the extranet connection to Web browse the Internet through the ISP connection.

Alternatively, if you use a proxy-based firewall, you must configure the Web browser to use the firewall to proxy for HTTP traffic when the tunnel connection is in use.

Cannot access network shares after establishing an extranet access connection

Cause: A Windows Internet Name Service (WINS) server is not configured for PPTP or IPsec connections on the VPN Router.

Action: Verify that the Nortel VPN Client uses a WINS server. Follow the steps outlined in "DNS name resolution problems" on page 104. Verify that a primary WINS server appears under the section for the adapter named *IPsecShm*. If no primary WINS server appears, notify the network administrator that the VPN Router is not properly configured.

Cause: The system uses a different domain than the one on the remote network.

Action: Skip the initial domain logon when the operating system starts and choose Log on to the Remote Domain under the Options menu of the Nortel VPN Client dialog box. You receive a prompt to log on to the domain of the remote network after the extranet connection is made. Nortel recommends that you use this method for users with docking station configurations.

Alternatively, complete the following steps to make the workstation a member of a workgroup instead of a domain:

Table 14 Steps to join a workgroup

	Windows NT/2000	**Windows XP**
1	Start, Settings, Control Panel, Network	Start, Control Panel, System
2	Identification tab	Computer name tab
3	Click Change.	Click Change.
4	Change to use a Workgroup, and then verify that the computer name does not match the entry on the remote network. The name for the workgroup is not important; you can use anything.	
5	Click OK to save the changes and reboot the machine.	

When you access a resource on the remote domain, if you receive a prompt for a user name and password, the domain name must precede the user ID. For example, if the user ID is JSmith and you access a machine on the remote domain named CORP, type your user name as **`CORP\JSmith`**.

Diagnosing WAN link problems

WAN link problems can occur between the VPN Router and the public data network (PDN) at three levels:

1. T1/V.35 interface
2. HDLC framing
3. PPP layer

If a connectivity problem occurs with the WAN link, two approaches exist to diagnose and correct the problem.

- Start from the bottom to verify that physical connectivity exists, and then make sure that the HDLC link is active, and finally examine the PPP status to see if it passes IP packets back and forth.
- Start from the top to go in the opposite direction, look at PPP first and work down to the physical connection. An important point to remember when you use this approach is that at the higher protocol layers, more options exist to misconfigure, but it is easy to change them and generally involves less effort than lower protocol layers.

A key point to remember when you diagnose WAN link problems is to involve the T1 service provider in the troubleshooting effort. This requirement is not only because they can help diagnose the problem, but also because an ISP can bring down a link if it detects errors on the line. Notify the ISP administrator if you plan to work on the link.

Checking the T1/V.35 interface

To diagnose a problem at the WAN physical layer, use the following steps to verify that the T1/V.35 interface to the public data network (PDN) operates correctly, and that the T1 line is properly connected:

1. Ask the ISP to run a loopback test from their end to the CSU/DSU to verify that the external line works correctly.
2. Check the connections between the VPN Router and the CSU/DSU. Make sure that the V.35 cable is a straight-through cable and firmly seated, that the

CSU/DSU is configured to use internal clocking, and that NRZ is encoded with CCITT CRC for the checksum.

3. Make sure that all the control signals assert (CTS, DCD, DSR, RTS, and DTR). You can check these signals on the VPN Router from the **Manager WAN Statistics** window. If one of these signals are incorrect, you can disable or enable the link from the **Manager WAN Interfaces** window, or unplug and plug in the link. If these steps do not resolve the problem, switch ports on the same card, switch cables, or switch to a new card, if available.
4. If the previous steps fail to resolve the problem, and you still suspect a problem with the physical connection, try rebooting the VPN Router to reinitialize the WAN interface.

Checking the HDLC framing

Assuming that the T1/V.35 interface operates correctly, use the following steps to determine whether the HDLC layer is running properly, and to provide information to Nortel Customer Support for further diagnosis:

1. Check that no input or output errors report on the **Manager WAN statistics** window. Also look to see if the input and output counters increment. If the input and output counters do not increment, or increment by huge amounts, framing or timing errors exist on the link. Also, a large percentage of input errors can indicate a problem with the Frame Check Sequence (FCS) calculation.
2. Examine the **Manager Statistics event log** with debugging enabled. WAN-related log messages indicate some sort of error.
3. Report the preceding errors and messages to Nortel Customer Support for assistance in diagnosing the HDLC framing problem.

Check the PPP layer

If the WAN link passes frames back and forth, but IP packets do not flow, the problem can be the PPP configuration.

To examine the state of the PPP connection, and to provide information for Nortel Customer Support for further diagnosis

1. Check whether the state of the PPP connection changes by periodically clicking **Refresh** while you view the WAN statistics window. If the state is always Down, PPP does not know that the link is up. If the state toggles between Dead and LCP Negotiating, PPP is trying to come up but cannot. This situation is probably due to a problem with the underlying layers, although it can also be a bad configuration of the LCP options.
2. If the connection fails during authentication, try disabling the PPP Authentication settings. Problems during network negotiating are typically misconfigured IPCP options.
3. Verify that all the authentication settings match the ISP-recommended router configuration.
4. If the PPP layer still does not come up, enable the interface debugger to generate large amounts of packet traces in the event log. Report this information to Nortel Customer Support for further diagnosis.

Hardware encryption accelerator connectivity

If the hardware encryption accelerator fails, all sessions automatically move over so that the software can handle them.

Troubleshoot performance problems

This section describes ways to improve the performance of the remote workstation connection to the corporate network through a VPN Router. It also includes Microsoft networking and client setup and operation tips. This section includes the following topics:

Eliminating modem errors

Modem hardware errors can impact performance when you connect to the corporate network over a dial-up connection. If modem hardware errors occur, try the following techniques to correct these errors and improve performance:

- Adjust the modem speed—If the speed of the modem is too high, it can cause hardware overruns. Reset the modem speed to match the real speed of the modem.
- Disable hardware compression—The data passed through the extranet connection is encrypted, and encrypted data is typically not compressible. Depending on the algorithm the modem uses to compress the encrypted (noncompressible) data, the data can expand in size and overrun the buffers of the modem.

Performance tips for configuring Microsoft networking

For Microsoft networking to work as designed over the extranet, each of the following components, if configured, must work together:

- DHCP Server assigns IP addresses to clients
- WINS Server provides a translation of the NetBIOS domain name to the IP address
- DNS Server provides a translation of the IP Host name to the IP address
- Master Browser is an elected host that maintains lists of all NetBIOS resources
- Domain Controller maintains a list of all clients in the NetBIOS domain and manages administrative requests such as logons
- VPN Router terminates tunnels and routes Microsoft networking requests

The following questions and answers apply to the WINS server and browsing issues. These questions and answers can help verify whether you correctly configure these components.

What do I need to configure on the VPN Router for network browsing?

In the group profiles, configure the values of the DNS server and the WINS server. Remember that subgroups inherit these values, so if all subgroups use the same servers, you can configure them in the parent group.

If you cannot reach these servers directly from the VPN Router, or through a default VPN Router, you must configure a static route on the VPN Router to reach them.

What do I need to configure on the PPTP or IPsec client?

The client needs the protocols for NetBIOS and TCP/IP configured. NetBEUI is not normally configured.

Configure a Windows 2000 or Windows XP or Vista client so that it exists in the correct workgroup for the NT domains it tries to reach. For example, if domains named Engineering and Admin exist, and the client needs to use the Engineering domain, you must configure the client to exist in the Engineering domain.

For PPTP only, you must also select Log onto Network under My Computer, Dial Up Networking, Connection_Name.

The NetBIOS name of the client system must be unique in the private network to which the client connects. Do not use the same name as the office desktop machine or something like my computer. The name must be unique.

What is the preferred way to access neighbors on the network?

Microsoft recommends that you do not browse the Network Neighborhood when tunneling. Another way to access a network resource is through the **`run`** command. For example, to access shared folders on the machine HotDog, choose Start, Run, and then type **`\\HotDog`**. If you experience delays using Network Neighborhood, try this method instead.

Why are WINS settings different for extranet access?

WINS servers cache a correspondence between IP addresses and NetBIOS names. Only a timer invalidates these cached values, not network activity. Therefore, if clients heavily use a WINS server, configure low expiration timeouts.

In a static environment, where names and addresses correspond permanently, expiration timeouts are not an issue. But in the extranet environment, clients receive new IP addresses whenever they form a tunnel. The correspondence is transitory.

Microsoft default values for the timeouts are large, for example, 3 weeks. Reduce these values for an extranet environment.

What WINS settings does Nortel recommend?

Use the Start menu, Programs, Administrator Tools to configure the WINS settings on the WINS server. The values for a WINS server are

- Server Configuration
- Renewal Interval: 41 minutes
- Extinction Interval: 41 minutes
- Extinction Timeout: 24 hours
- Verify Interval: 576 hours

The renewal interval governs how often a client must reregister its name with the WINS server. It begins trying at one-half of the renewal interval. The extinction interval governs the length of time between when a client name is released and when it becomes extinct.

A trade-off occurs if you configure these intervals. If you make the intervals too small, too much additional client registration network activity occurs. If you make the intervals too large, transient client entries do not time out soon enough. If you also use secondary WINS servers, make the renewal interval the same on the secondary servers as on the primary server.

For more information about setting interval values for a WINS configuration, see the Microsoft Knowledge Base article *Min. and Max. Interval Values for WINS Configuration*. A WINS server with a heavy CPU load or network load does not perform well. To help performance

- Do not run other intensive tasks on the WINS server.
- In the WINS configuration, disable detailed logging.
- If you use primary and secondary WINS servers, assign them a balanced load.

For hosts that never change IP addresses, you can give static entries in the WINS database. For example, you can configure the address of the Primary Domain Controller as static. To do this, you also need a statically reserved DHCP address for the primary domain controller.

What can I try on the WINS server if it does not work?

You can request a cleanup of the WINS server database by choosing Mappings, Initiate Scavenging.

If the database becomes very large, you can compact it by using the jetpack.exe program in \winnt\system32. Consult the WINS Help before doing this because the server must shut down.

In the WINS mappings entry, enter a **`show database`** command. Note the entry for -__MSBROWSE__. This entry is the machine that is the elected master browser, and it changes frequently. If this entry points to an invalid machine, it can cause problems.

Can I control which machine is the master browser?

After you start a computer running Windows NT Workstation or Windows NT Server, the browser service looks in the registry for the configuration parameter MaintainServerList to determine whether a computer becomes a browser. This parameter is under

```
\HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\Browse
r\
Parameters
```

For Windows 2000 or Windows XP or Vista, this parameter is under

```
HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\VNETSUP
\
MaintainServerList
```

MaintainServerList parameter values are

- No—this computer can never participate as a browser.
- Yes—this computer can become a browser.
- Auto—this computer, referred to as a potential browser, can or cannot become a browser, depending on the number of currently active browsers.

The registry parameter IsDomainMasterBrowser impacts which servers become master browsers and backup browsers. The registry path for this parameter is

```
\HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\Browse
r\
Parameters.
```

Setting the IsDomainMasterBrowser parameter entry to True or Yes makes the computer a preferred master browser.

After the browser service starts on the preferred master browser computer, the browser service forces an election. Preferred master browsers receive priority in elections, which means that if no other condition prevents it, the preferred master browser always wins the election. This gives an administrator the ability to configure a specific computer as the master browser.

To specify a computer as the preferred master browser, configure the parameter for IsDomainMasterBrowser to True or Yes in the following registry path:

```
\HKEY_LOCAL_MACHINE\System\CurrentControlSet\Services\Browse
r\
Parameters
```

Unless the computer is configured as the preferred master browser, the parameter entry is always False or No. No user interface exists to make these changes; you must modify the registry.

Why are subnet masks important?

If a client does not use a WINS server or is unable to contact it, it must broadcast a query to try to locate a host. Unfortunately, Windows 2000, Windows XP, and Windows NT clients do not always use the correct broadcast address when tunneling.

The following example explains this problem. You use a private 10 network address space. Assume further that a client uses IP address 10.1.2.3 and subnet mask 255.255.0.0. The 10 network space is used like a class B address space, which is perfectly legal. The correct broadcast for this client is 10.1.255.255. However, Microsoft clients can broadcast to 10.255.255.255, using the natural class A for the 10 network, in spite of their configuration.

If all hosts that the client tries to reach lie on the same physical segment, the contact fails. This failure is because every host on the physical network receives all the subnets broadcast and probably responds, if appropriate.

All hosts on the segment receive the broadcast to 10.255.255.255, even if they exist on different subnets (10.1.x.x. and 10.2.x.x). However, in a routed environment the situation changes. In this case, a broadcast from 10.1.2.3 to 10.255.255.255 is not forwarded to the other 10.2 subnet.

In the extranet environment, make the remote client appear to be on the local LAN. If the extranet host uses the address 10.1.2.3, it behaves as if it is on the 10.1 LAN.

When 10.1.2.3 broadcasts to find a network neighbor, it (incorrectly) sends to 10.255.255.255. Normal routing functionality does not forward such a packet. The VPN Router finds the best match among its physical interfaces (10.1 in this case) and makes the broadcast correct for that interface (10.1.255.255).

In this example, if you configure the 10.1 interface with a subnet mask other than 255.255.0.0, the broadcast does not convert as desired.

What must I do about subnets?

Configure every private interface on the VPN Router to use the same subnet mask as all of the clients that reside on that subnet.

Why is there a delay in discovering the Network Neighborhood (with tunnels)?

NetBIOS treats the modem interface as if it is two different interfaces: the original modem and the tunnel. It designates the original modem as the primary interface. (You can observe this by typing **`route print`** in a DOS command shell.) If you tunnel over a LAN instead of a modem, the LAN adapter is the primary interface.

When first instructed to seek the Network Neighborhood, NetBIOS always tries the primary interface first. The primary interface is always the wrong choice because NetBIOS tries to send using the IP address assigned by the ISP (or possibly the address of another adapter) instead of the address assigned to the tunnel by the VPN Router.

The outcome is somewhat different for IPsec and PPTP. For IPsec, the client recognizes this incorrect behavior and refuses to even send the packets. You can see a counter of the number of invalid packets of this type on the client under the status Invalid IP address.

With PPTP, the client does send the packets, but the VPN Router rejects them as invalid tunneled packets because the source address does not match the VPN Router-assigned address. If you inspect the event log, messages of the form Bad source address in tunnel appear and the session and details counter for source address drops increases.

After about 10 to 15 seconds, NetBIOS gives up on the primary interface, moves to the correct tunnel interface, and starts to browse the Network Neighborhood.

Why can I not browse another client in a different tunnel?

Cause: If you do not use a WINS server, this action is not possible because network browsing requires broadcasts from one tunnel to another.

Action: Use a WINS server to browse another client in a different tunnel. After the clients tunnel in, they must register with the WINS server. On the client you want to browse, enable Log onto Network under My Computer, Dial Up Networking, Connection_Name.

Where can I get more information about troubleshooting dial-up connections?

For more information about the Microsoft Knowledge Base article *Dial-Up Networking 1.2 Dun12.doc* file, go to the Microsoft Web site: www.microsoft.com.

Depending on the service provider, a point of presence (POP) does not always support LCP options. If the connection is constantly declined after the modems synchronize, and you know the password is correct, disable LCP options. For more information, see the Microsoft Knowledge Base article *Service Pack 2 May Cause Loss of Connectivity in Remote Access*.

Where can I get more information about configuring PPTP on my client?

Many articles exist in the Microsoft Knowledge Base about how to configure PPTP for Windows NT, Windows 2000, and Windows XP. For more information, see "Additional information" on page 119". In addition, Microsoft provides the following white papers that contain helpful information:

- Microsoft Windows 2000/Windows NT White Paper, *Installing, Configuring, and Using PPTP with Microsoft Clients and Servers*
- Microsoft Windows NT Server White Paper, *Understanding PPTP*

You must create a connection definition for the initial Internet link through the service provider. You need a separate connection definition to create the PPTP tunnel. A common configuration problem experienced during initial PPTP setup is the failure to select the PPTP VPN adapter (instead of the modem) on the PPTP connection definition in Dialup Networking.

What DNS and WINS servers do I configure for the dial-up connection?

You need not configure these servers statically on the dial-up client because information dynamically downloads from the VPN Router for PPTP, IPsec, and Layer 2 Forwarding (L2F) tunnels at connect time.

Why does DNS resolve hosts to different addresses when a tunnel connection is active?

Cause: After a tunnel connection activates, additional DNS servers download from the extranet device to the client. In the case of Microsoft Windows 2000, Windows XP, and Windows NT operating systems, the new DNS servers add to the list of DNS servers that the ISP assigns. This applies to PPTP as well as IPsec tunnels. In general, the DNS servers downloaded by the extranet device provide host-name-to-address translation for hosts within a private network while the ISP-based DNS servers translate public host names.

For Windows 2000 or XP, and Windows NT, after a host name translates to an IP address (for example, to browse the Web or use e-mail), the host queries all DNS servers. The first server to respond with an IP address provides the information to the host. This can produce interesting behavior if a host name resolves to one address on the private network and another on the public Internet. For example, host mail.mycompany.com can internally resolve to 10.0.0.282 and externally to 146.113.64.231.

Action: To avoid problems when you use a mixture of internal and external DNS services, avoid using names that resolve to different addresses. In the preceding example, rename the host 10.0.0.282 to pop.mycompany.com. Then users use the hostname pop.mycompany.com to retrieve electronic mail, whether in the office or if they connect through a tunnel link.The original retail release of Windows 2000/XP requires the Winsock DNS Update (wsockupd) to properly function with multiple DNS servers.

My downloaded DNS servers for my tunnel connection do not work

Cause: The Microsoft Windows 2000 or Windows XP and Windows NT operating systems attempt to ping new DNS servers before adding them to the current list of servers.

Action: As a quick test, try to ping (with the tunnel connection active) the DNS servers that the extranet device downloads at tunnel startup. If you cannot ping the servers, a basic connectivity problem using the tunnel connection exists.

To view the current list of DNS servers, use the MS-DOS command **`ipconfig/all`** on Windows NT or **`winipcfg`** on Windows 2000 or Windows XP.

Why, after disconnecting a PPTP tunnel, do I get an immediate error reconnecting?

Cause: After you disconnect a PPTP tunnel, and then immediately try to reconnect, the PPTP client indicates that the connection is busy or otherwise unavailable. On Windows 2000/XP, the client improperly shuts down the PPTP control channel socket.

Action: You can wait for the socket to time out, but it is often more expedient to reboot. On Windows NT a similar problem occurs, but the cause is a TCP checksum error generated by the Microsoft IP stack. The only current resolution for the Windows NT error condition is to reboot.

Additional information

Following is a list of some of the Microsoft Knowledge Base topics you can use to find information about dial-up and tunnel configuration. For more information, go to the Microsoft Web site: www.support.microsoft.com. Use the search feature to search on the title you want:

- Troubleshooting Internet Service Provider Login Problems
- Service Pack 2 May Cause Loss of Connectivity in Remote Access
- Troubleshooting Modem Problems Under Windows NT 4.0
- Dial-Up Networking 1.2 Dun12.doc File (Windows 2000/XP PPTP Troubleshooting)
- How to Troubleshoot TCP/IP Connectivity with Windows NT
- Remote Access Service (RAS) Error Code List for Windows NT 4.0
- RAS Error 720 When Dialing Out
- Troubleshooting PPTP Connectivity Issues in Windows NT 4.0
- PPTP Registry Entries
- Connecting to Network Resources from Multihomed Computer
- How to Force 128-bit Data Encryption for RAS
- Login Validation Fails Using Domain Name Server

Troubleshoot general problems

This section contains general recommendations and explains some common problems that can occur with common Web browsers, the Nortel VPN Router Web Manager, and the VPN Router. This section includes the following topics:

- "Web browser problems and the Nortel VPN Client Manager" on page 120
- "Enabling Web browser options" on page 120
- "Web browser error messages" on page 122

Web browser problems and the Nortel VPN Client Manager

If you experience a problem browsing the Nortel VPN Client Manager, start by checking the following recommendations to ensure that you use the correct Web browser version and settings. For additional troubleshooting, check the described Web browser problems and solutions, error messages, and tips described later in this section.

Nortel VPN Client Manager uses Java and HTML features. For the management interface to function properly, verify that the Web browser meets the following minimum requirements:

- Platforms supported include Windows 2000, Windows XP, Windows NT, or Macintosh.
- Display setting of 256 colors or greater.
- Browser versions supported include Microsoft Internet Explorer, Version 4.0 or later and Netscape Communicator, Version 4.0 or later. Not using a recent version of Internet Explorer causes the upper-left corners of the management windows to remain dim rather than displaying the navigational menu and the current menu selection, respectively.
- For ActiveX Scripts, Java, and JavaScript, you must enable both ActiveX and Java programs in Internet Explorer, and enable both Java and JavaScript in Netscape Communicator for proper VPN Router Web management windows. Both Web browsers use these options by default.

Enabling Web browser options

Verify that Internet Explorer uses these options. From the Internet Explorer 7 menu bar, select **Tools**, **Internet Options**, **Security tab**, **Custom Level button** and then select one of the following options:

- Run ActiveX scripts—If you disable this option, navigational titles do not update, and the Logoff and Help buttons do not work.
- Enable Java programs—If you disable this option, navigational menus do not appear.

Verify that Netscape uses these options. From the Netscape menu, select **Edit**, **Preferences, Advanced**, and then select one of the following options:

- Enable Java – If you disable this option, navigational menus do not appear.
- Enable JavaScript – If you disable this option, navigational titles do not update, and the Logoff and Help buttons do not work.

Long delays when Web browsing

Cause: HTTP—Sometimes when you use HTTP to connect to the Web interface, you can experience long delays (greater than 5 minutes).

Action: Wait until the requested window is fully delivered before you click on a new window request.

Improving performance with Internet Explorer 4.0

Nortel recommends that you create a DNS server entry for the management IP address. This alleviates a noticeable delay in loading the initial Main menu and navigational windows.

Clearing the Web browser cache when upgrading

To avoid problems when you upgrade software revision levels, Nortel recommends that you clear the browser cache and exit the browser and all associated windows (such as mail and news readers). For more information about browser cache clearing instructions, see the following section.

Clearing cache

A browser caches windows to improve performance when you request the same window again. The HTTP server allows browsers to cache Java class files and all image files, but does not allow browsers to cache body windows that contain the dynamically generated information. For both Internet Explorer and Netscape, you

can clear the browser cache, which causes the browser to request all windows the next time you try to access them. To manually clear the browser cache in Internet Explorer V4.x, select **Tools**, **Internet Options**, and then click **Delete Files**. To manually clear the browser cache in Netscape V4.x, select **Edit**, **Preferences**, **Advanced**, **Cache**, and then click **Clear disk and memory cache**.

Web browser error messages

Following are the common error messages that can occur with Web browsers:

No data in post message

Cause: This message often appears on the main body window if you use the back arrow in the browser to revisit a previously displayed window. The browser displays this message when it knows you revisit a dynamically generated window.

Action: To see the window, use the left navigational area to select it.

Internal error message

Cause: The HTTP server cannot allocate memory. This message indicates that the VPN Router is very low on memory.

Action: Terminate unnecessary tasks to free up memory. Reboot the VPN Router. If this condition recurs, there can be a serious problem. Contact Nortel Customer Support.

Document not found message

Cause: This message appears after the HTTP server cannot find the requested window. This problem can happen because the Java navigation index file is out of synch with the rest of the system. A corrupted or incorrectly cached index file can also cause this problem.

Action: Clear the browser cache or restart the browser to correct this problem.

New administrator logon ignored

Cause: Internet Explorer saves the user ID and password in its cache and automatically resends those values on subsequent logon attempts. Therefore, after an idle timeout, the browser ignores the user ID and password value you type and Internet Explorer sends the original user ID and password. For example, if you log on as administrator with password abc123De, log off, and then log on again, this time as DottieDoe with password FGh45678, Internet Explorer sends Administrator with passwordabc123De.

Action: After you log off the VPN Router, close the Web browser completely (shut down the browser). This action clears the cache and the next time that you log on, you start fresh.

Excess resource consumption using Internet Explorer

Cause: This message indicates a known problem with excessive memory consumption using Java applets. Over time, this problem can cause serious overall system performance degradation.

Action: If you notice that the system performance seems to slow down for no reason, close and restart Internet Explorer. This releases unused memory and improves system performance. For more information, go to the Microsoft Web site: www.microsoft.com.

Internet Explorer 4.0 multiple help windows

Cause: In Internet Explorer 4.0, if you select context-sensitive help and do not close the help window after viewing, you can end up with multiple help windows open.

Action: Close help windows after viewing them.

Distorted background images

Cause: In Netscape versions prior to 4.0, if you configured the Windows 2000, Windows XP, or Windows NT system for 8-bit color (256 colors or less), images can appear distorted in the navigational area.

Action: To avoid this situation, increase the color display setting to 256 or greater. Check with the video card manufacturer documentation to confirm that the video card supports 256 colors or greater.

Reporting a problem with a Web browser

When you report a problem with a browser to Nortel, include the following information:

- workstation operating system and version
- browser vendor and version (major and minor version)
- cache setting (size in Netscape, percent of drive for Internet Explorer)
- Verify document setting (every time or once for each session)

System problems

Following are the common system problems that can occur with Web browsers, the Nortel VPN Router Web Manager, and the VPN Router:

Excessive active sessions logged

Cause: The number of active sessions can reach more than 4 billion. This number is an erroneous number that results from a negative number of sessions.

Action: Restart the system.

Power failure

Cause: The power supplies can become unseated during shipping. When this problem occurs, the VPN Router either does not start or a warning posts to the Status, Health Check window that indicates a potential problem.

Action: If necessary, remove the front bezel as described in the installation guide, and then push the bottom of the power supply in to reseat it.

Cannot convert from an internal address pool to an external DHCP server

Cause: You cannot convert IP address distribution from an internal address pool to an external DHCP server while sessions are active.

Action: Select Admin, Shutdown, and select Disable Logins after Restart. After everyone logs off, you can convert from an internal address pool to an external DHCP server.

Group and user profile settings not saved

Cause: After you use the Save Current Configurations option from the Admin, Configs menu path, the router saves only the operational parameters in the configuration file, such as interface IP addresses and subnet masks, backup host IP addresses, DNS names.

Action: To completely back up the VPN Router configuration, you must also back up the LDAP database, which contains the group and user profiles, filters, and backup file names. To do this

1. Select **Servers**, **LDAP**.
2. Click **Stop Server**.
3. Enter a file name in **Backup/Restore LDAP Database**. Make sure this name conforms to the MS-DOS naming conventions, and append the filename with LDF (for example, ldapone.ldf). The restore process can take anywhere from 5 minutes for a very small LDAP database to several hours for a very large database.
4. You can view the progress of the restoration from the **Status**, **Health Check** window.

Restart fails after using recovery and reformatting the hard disk

Cause: After you use the recovery disk to reformat the hard disk, sometimes the system does not restart.

Action: Power-cycle the system using the green power button on the back of the VPN Router.

Solving routing problems

The following sections describe routing problems.

The number of current Utunnel host users can display more than the configured maximum.

Cause: This message is not an error and indicates the running state of the system. For example, if you configure a maximum of 200 users and use 150 logons, the window shows the maximum as 200 and the current as 150. If you then modify the maximum to 100, the window displays the maximum as 100 and the current as 150. As users log off, the current number is eventually no greater than the maximum.

Action: No action.

Client address redistribution is enabled and the client is logged on, but the client does not communicate with the private network.

Cause: Client address redistribution is not enabled.

Action: Get the client to log on again. Client address redistribution only takes effect if the client logs in after it is enabled.

1. Choose **Routing**, **Policy**, and then enable **Utunnel routes**.
2. Check that you properly configured OSPF and Routing Information Protocol (RIP).
3. Check that you used the correct address ranges if you configured summarization.
4. Check that you used an Advanced Routing license if you used OSPF for client address redistribution.

The routing table cannot be altered after the Extranet Connection has been established.... The Extranet Connection has been Closed

Cause: This error message appears on the client machine after the routing table changes on the client machine. Changing the routing table poses a potential risk of bypassing the policy the VPN Router passes to the client, which in turn leads to a potential security risk by providing unauthorized access. After the VPN RouterC detects the routing table change, the VPN Router drops the tunnel connection to stop the intrusion. The following list identifies possible causes for the routing table changes:

- The client machine uses several network interface cards (NIC). The tunnel establishes through one NIC and after changes occur to the other cards, the routing table changes.
- The client uses a short lease time for the IP address acquired through the DHCP. The routing table changes after the address renewal or acquisition (if the IP changes).
- Applications on the client machine rewrite the routing table (for example, issue the route add command).
- Routing updates from dynamic protocols like RIP or OSPF change the table.
- The client machine receives ICMP redirect messages.
- MTU discovery causes Windows systems to install a specific route to a destination with a lower MTU (one of the major reasons for disconnects with DSL users).
- The client shares the Internet connection.

Action: If possible, upgrade the Nortel VPN Client to the most recent version available.

If an upgrade does not solve the problem or is not desirable, determine the cause of the routing table change. Use the **`netstat -nr`** or **`route print`** commands before, during, and after the Nortel VPN Client connects and disconnects. Compare the output to locate the installed route and determine the origin. Enter the commands rapidly as the route installs for only a few seconds. Capture traffic on the client PC to provide additional information about routing updates origin. After you determine the cause, try to eliminate it during the time the tunnel is up.

If you cannot determine the cause for the routing update, consider using mandatory tunneling for the users with problems; avoid using split tunneling for these users. If none of these methods solve the problem, contact Global Nortel Technical Support (GNTS).

Cannot enable IGMP Global

Cause: This problem can occur if you enable Multicast Relay. The error message `Please disable Multicast Relay before enabling IGMP globally` appears.

Action: Disable Multicast Relay, and then enable IGMP Global.

No IGMP traffic (control, data) goes through the upstream interface

Cause: The IGMP upstream interface is down.

Action: The VPN Router posts the warning `No Upstream interface is up` to the Status, Health Check window.

IGMP needs exactly one upstream interface with IGMP enabled. Try to bring the upstream interface back online. Even if the upstream interface is down, the proxy exchanges messages through downstream interfaces and even passes data traffic that enters through one of the downstream interfaces.

No multicast data traffic passes

Cause: The last IGMP downstream interface is down.

Action: The VPN Router posts the alert `No downstream interface is up` to the Status, Health Check window.

IGMP needs exactly one downstream interface with IGMP enabled. Try to bring the downstream interface back online. If no downstream interface is up, the proxy does not pass data traffic. Eventually all memberships expires.

No IGMP control traffic flows towards or from downstream

Cause: The last IGMP downstream interface is down.

Action: The VPN Router posts the alert `No downstream interface is up` to the Status, Health Check window.

IGMP needs exactly one downstream interface with IGMP enabled. Try to bring the downstream interface back online. If no downstream interface is up, the proxy does not pass data traffic. Eventually all memberships expire.

Solving firewall problems

An error occurred while parsing the policy

Cause: The policy that you view or edit cannot open because it does not conform to the required format. An error in the LDAP database or a problem with the connection to the VPN Router causes this problem.

Action:

1. Close the **Stateful Firewall Manager**.
2. Close all instances of the browser used to load the **Stateful Firewall Manager**.
3. Check that the connection to the VPN Router established.
4. Check that the LDAP server that contains the policy is properly configured and is active.
5. Restart the browser and browse to the **Services, Firewall/NAT** window.
6. Reload the **Stateful Firewall Manager**.

An error occurred while communicating with the VPN Router

Cause: The Stateful Firewall Manager encountered an error while retrieving the data from the VPN Router. A network error or if the VPN Router stops responding can be the cause.

Action:

1. Close the **Stateful Firewall Manager**.
2. Close all instances of the browser used to load the **Stateful Firewall Manager**.

3 Check that the connection to the VPN Router established.

4 Restart the browser and browse to the **Services, Firewall/NAT** window.

5 Reload the **Stateful Firewall Manager**.

Authorization failed. Please try again.

Cause: This error occurs after you provide the wrong authentication credentials. The router prompts you for credentials until they are either correct or you click Cancel.

Action: No action required.

Unable to communicate with the VPN Router

Cause: The Stateful Firewall Manager cannot establish a connection to the VPN Router. A network error or the VPN Router not responding to requests causes this problem.

Action:

1 Close the **Stateful Firewall Manager**.

2 Close all instances of the browser used to load the **Stateful Firewall Manager**.

3 Check that the connection to the VPN Router established.

4 Restart the browser, and then choose **Services**, **Firewall/NAT**.

5 Reload the **Stateful Firewall Manager**.

The contents of the database may have changed

Cause: This error occurred because the LDAP database changed in such a way that the current data in the Stateful Firewall Manager is not valid. This error appears after the following events occur:

- The internal LDAP server shuts down and restarts.
- The external LDAP server in use switches to the internal LDAP server.
- The internal LDAP server in use switches to an external LDAP server.

- The port or IP address of the external LDAP server changes.

Action:

To ensure that the most current data is loaded, perform the following activities:

1. Close the current policy, if opened. You cannot save until you fix this error.
2. From the policy selection window, select **All** from the **Refresh** menu.

System files were not loaded properly

Cause: This error occurred because the files necessary to load the Stateful Firewall Manager were either not downloaded from the VPN Router properly or were not initialized properly.

Action:

If you encounter this error, perform the following activities:

1. Close the **Stateful Firewall Manager**.
2. Close all instances of the browser used to load the **Stateful Firewall Manager**.
3. Restart the browser, and then choose **Services**, **Firewall/NAT**.
4. Reload the **Stateful Firewall Manager**.

If the error continues to occur or if you access the Stateful Firewall Manager through a user tunnel:

1. Open the **Java Plug-in Properties** window.
2. On Windows 2000, select **Start**, **Settings**, **Control Panel**, **Java Plug-in**. For all other systems, see the Java Plug-in documentation.
3. Deselect **Cache JARs in Memory**.
4. Click **Apply,** and then close the **Java Plug-in Properties** window.
5. Close the **Stateful Firewall Manager**.
6. Close all instances of the browser used to load the **Stateful Firewall Manager**.

7 Restart the browser and browse to the **Services**, **Firewall/NAT** window.

8 Reload the **Stateful Firewall Manager**.

Diagnosing LDAP problems

Use the event log and traffic captures to troubleshoot problems that can arise when you configure the VPN Router to send the LDAP to an external LDAP server. The most common problem is the VPN Router cannot contact the external LDAP server. The LDAP server unavailable error message appears on the Servers, LDAP screen and an Error status appears as the Status.

1 Verify connectivity exists between the VPN Router and the external LDAP server by pinging from and to the router. To ping a destination from the router use the **Admin**, **Tools** window.

2 Verify the external LDAP listens on the configured LDAP port using, for example, the **`netstat -a`** command. This command lists all the ports the server that hosts the directory listens on.

3 Check the Event Log for additional information.

- The following message in the Event Log indicates that the provided bind user ID does not exist in the external LDAP database. Make sure you enter the bind user name correctly:

```
02/25/2005 11:49:30 0 Security [12] Ldap: Open ldap_bind_s
failed: - LDAP: No such object
```

- The following message in the Event Log indicates that the provided bind credentials are incorrect; the bind user name exists but the password provided is incorrect:

```
02/25/2005 11:51:44 0 Security [12] Ldap: Open ldap_bind_s
failed: - LDAP: Invalid credentials
```

- The following message indicates that the selected external LDAP server does not support the uniqueness plugin. Nortel VPN Router interoperates only with servers that support the uniqueness plugin.

```
02/25/2005 11:47:36 0 Security [11] Ldap: 51800c0 connected
192.168.10.85[389] cn=ldap ldap,cn=Users,dc=example,dc=com
!SSL CACHE size 2097152 timeout 15m 02/25/2005 11:47:36 0
Security [11] ModifyServerConfig: Server does not support
uid uniqueness plugin
```

- The following message indicates that you need to disable the uniqueness plugin on the external LDAP server before the VPN Router can use it as an LDAP store:

```
02/25/2005 12:00:34 0 Security [11] Ldap: 51800c0 connected
192.168.10.95[389] cn=Directory Manager !SSL CACHE size
2097152 timeout 15m 02/25/2005 12:00:34 0 Security [11]
ModifyServerConfig: Uid uniqueness plugin must be disabled.
Please disable and restart Netscape Directory Server to take
effect.
```

- The following messages indicate that the specified base DN does not exist on the external LDAP. Verify that you enter the base DN correctly:

```
02/25/2005 12:03:33 0 Security [11] LdapMonitorTask:
Creating database at 192.168.10.95[389]...
02/25/2005 12:02:13 0 Security [11] LdifCls: Modify failed
dc=example, dc=com - LDAP: No such object <NULL>
02/25/2005 12:03:33 0 Security [11] LdapMonitorTask:
Database create at 192.168.10.95[389] failed - LDAP: No such
object
```

- Messages similar to the following messages can appear in the event log and indicate that the entry or an attribute exists in the external LDAP. These types of messages are informational messages and usually occur if the VPN Router switches between external and internal LDAPs. The VPN Router tries to write the complete LDAP to the external LDAP, but the entries already exist from previous use of the external LDAP.

```
02/25/2005 10:29:00 0 Security [11] AttrCls: Attribute
account exists in database schema [account]
02/25/2005 10:29:00 0 Security [11] AttrCls: Attribute audio
exists in database schema [audio]
02/25/2005 10:29:00 0 Security [11] AttrCls: Attribute
authorityrevocationlist exists in database schema
[authorityRevocationList]
02/25/2005 12:06:40 0 Security [11] OcCls: ObjectClass
newOakRadiusAcctServer exists in database schema
[newoakradiusacctserver]
```

Chapter 6
Troubleshooting system messages

System forwarding (syslog) uses the system logging daemon (syslogd) to forward information from the VPN Router system log to different host machines.

This chapter provides a listing of possible syslog messages that the VPN Router can write to a remote system. A description and the recommended corrective action, if available, follows each message. The messages in this chapter use example configuration information; the messages that appear in the syslog include data relevant to the configuration. This chapter includes the following topics:

Certificate messages

Error removing CA certificate file: *xxx*

Description: Nortel manufactures VPN Router with a trusted certificate authority (CA) certificate for use by Secure Sockets Layer (SSL). The first time that you start the router, it removes the temporary manufacturing file that contains the certificate. This error message indicates that the VPN Router cannot remove the temporary certificate file. A general problem with the local file system can cause this error.

Action: Manually delete all files in the /system/cert/ca directory.

Installed new CA certificate from file: *xxx*

Description: Nortel manufactures the VPN Router with trusted CA certificates for use by SSL. This informational message indicates Nortel installed a trusted SSL CA certificate when Nortel manufactured the VPN Router.

Action: No action required.

tCert: Shutdown complete

Description: This informational message indicates that the task that maintains certificates is shut down. This message is part of the normal system shutdown.

Action: No action required.

tCert: task creation failed

Description: The task that maintains X.509 certificates on the VPN Router failed to start properly. This message indicates severe resource exhaustion on the VPN Router.

Action: Restart the VPN Router. If the restart does not fix the problem, contact Global Nortel Technical Support (GNTS).

tCert: X.509 certificates disabled in flash memory

Description: This message is an informational message that indicates the use of X.509 certificates by the VPN Router is disabled.

Action: No action required.

Warning: System CA certificates may have been tampered with, please reinstall!

Description: The VPN Router performs a periodic integrity check of the SSL-related X.509 certificates that are stored on the local file system. This message signals a failure during the integrity check. This message indicates that one or more of the SSL-related certificates were tampered with, or corrupted.

Action:

1. Delete, and then reinstall SSL-related certificates. You do not need to delete and reinstall the tunnel-related certificates because the Lightweight Directory Access Protocol (LDAP) database, not the local file system, stores tunnel certificates.
2. Manually verify the tunnel-related certificate fingerprints. Perform this procedure when you suspect tampering.

ISAKMP messages

ISAKMP [13] No proposal chosen in message from *xxx* (a.b.c.d)

In many cases, a Session:IPsec message precedes the ISAKMP message. If the Session:IPsec message indicates an error, the Session message describes the cause and required action. If no Session:IPsec error message exists, see the following list of causes and solutions for explanations.

Description: The encryption types proposed by branch office *xxx* do not match the encryption types configured locally.

Action: Check the encryption types on both sides to make sure they match. If necessary, reconfigure the encryption on one system.

Description: The requested authentication method (for example, RSA Digital Signature) is not enabled.

Action: Enable all required authentication types. Disable the types you do not need.

Description: One side of the connection supports dynamic routing while the other side supports static routing. *xxx* represents the branch office.

Action: Configure both sides to use the same routing type.

Description: Both sides are configured to support static routing. However, the local and remote network definitions of the two sides do not match. *xxx* represents the branch office.

Action: Configure both sides to use the same local and remote network definitions.

Description: The Perfect Forward Secrecy (PFS) setting of the two sides do not match. The local settings require PFS but you did not enable it for branch office *xxx*.

Action: Make sure the PFS settings on both sides match. Either enable PFS on the remote side, or disable PFS locally.

ISAKMP [13] Error notification (No proposal chosen) received from *xxx* (a.b.c.d)

Description: The Nortel VPN Client rejects the proposal made by the local VPN Router. This problem usually indicates that the client uses an international version (56-bit) while the VPN Router uses stronger encryption.

Action: The encryption methods that the client and the VPN Router use must match. Either provide the user with a Nortel VPN Client version that supports the stronger encryption method, or enable 56-bit encryption on the VPN Router.

Description: A remote branch office VPN Router, or an IPsec implementation from another vendor rejects the proposal made by the local VPN Router.

Action: Check with the administrator of the remote system to determine the cause of the problem. If the remote system is another VPN Router, the cause is recorded in the system log.

ISAKMP [13] Authentication failure in message from *xxx* (a.b.c.d)

In many cases, a Session:IPsec message precedes the ISAKMP message. If the Session:IPsec message indicates an error, the Session message describes the cause and required action. If no Session:IPsec error message exists, see the following list of causes and solutions for explanations.

Description: No encryption types are enabled for the account in question.

Action: Enable the desired encryption types.

Description: The requested authentication method (for example, RSA Digital Signature) is not enabled.

Action: Enable all required authentication types. Make sure the unneeded types are disabled.

ISAKMP [13] Error notification (Authentication failure) received from *xxx* (a.b.c.d)

Description: A VPN client attempted to connect, but the user supplied the wrong password.

Action: Make sure that the user and the VPN Router use the same password.

Description: A remote branch office rejected the attempt by the VPN Router to authenticate.

Action: Contact the administrator of the remote system. If the remote system is a VPN Router, the cause is recorded in that system log.

No response from client—logging out

Description: The VPN Router loses network connectivity with the remote side.

Action: Verify the network connectivity between the VPN Router and the remote side.

Description: A remote branch office that uses preshared key authentication uses a different key from what is configured on the local VPN Router. Because the two sides use a different encryption key, the local VPN Router cannot decrypt the encrypted messages from the other side, and therefore drops the messages.

Action: Make sure that both systems are using the same preshared key.

ISAKMP [13] *xxx* (a.b.c.d) has exceeded idle timeout—logging out

Description: The remote system is idle for the amount of time configured in the Idle Timeout parameter (Profiles, Groups, Connectivity).

Action: If the Idle Timeout value is too low, increase it. To disable idle timeouts entirely, configure the Idle Timeout value to 00:00:00.

ISAKMP [13] Invalid ID information in message from *xxx* (a.b.c.d)

Description: One side of the connection supports dynamic routing while the other side supports static routing. *xxx* identifies the branch office.

Action: Configure both sides to use the same routing type.

Description: Both sides supports static routing, however the local and remote network definitions of the two sides do not match. *xxx* identifies the branch office.

Action: Configure both sides to use the same local and remote network definitions.

ISAKMP [13] Error notification (Invalid ID information) received from *xxx* (a.b.c.d)

Description: One side of the connection supports dynamic routing while the other side supports static routing. *xxx* identifies the branch office.

Action: Configure both sides to use the same routing type.

Description: Both sides are configured to support static routing. However, the local and remote network definitions of the two sides do not match. Branch office is *xxx*.

Action: Configure both sides to use the same local and remote network definitions.

ISAKMP [13] Error notification (Invalid ID information) received from a.b.c.d

Description: The router processes ISAKMP informational exchange (Notify and Delete) messages and receives an error notification from the peer.

Action: Contact GNTS.

ISAKMP [03] ReRegistering tunnel failed 9337d48 7072c0cd f8ffffff 96a8c0 ffffff

Description: Reregistration of the tunnel failed. The cause can be due to one of the following incorrect parameters: local address, local mask, remote gateway address, remote address, or remote mask.

Action: Check the tunnel configuration.

ISAKMP [13] Malformed R-U-THERE notify message received from a.b.c.d

Description: When the router checks for the dead peer detection (DPD) keepalive exchange, the payload does not contain the sequence number size, for example, 4 bytes.

Action: No action is required.

ISAKMP [13] xxx (a.b.c.d) logged off by administrator

Description: After the expiration of a user session, the user is logged off and this message is logged to indicate that the session is removed and the socket is closed.

Action: No action is required.

Diffie-Hellman group mismatch for a.b.c.d—terminating connection attempt

Description: This message indicates a mismatch in the Diffie-Hellman configuration.

Action: Configure the Diffie-Hellman group profiles (Profiles, Branch Office, Group Configure, IPsec Configure).

Failed Remote Network Login: Username=: Date/Time=xx/xx/xxxx xx:xx:xx

Description: This message generally indicates a mismatch in the local and remote network pairs between the VPN Router and the end point of the branch office tunnel.

Action: Configure the network pairs (Profiles, Branch Office, Connection Configure).

Failed Login Attempt: Username=x.x.x.x: Date/Time=xx/xx/xxxx xx:xx:xx

Description: This message generally indicates in the preshared key or a mismatch in the local and remote network pairs.

Action: Configure the preshared key and network pairs (Profiles, Branch Office, Connection Configure).

IPsec messages

Authentication failure detected--npbuf 0x009d7c60

Description: An authentication failure occurs on the hardware accelerator.

Action: No action is required.

Unable to send ESPUDP data, destination UDP port unknown—packet dropped

Description: The destination User Datagram Protocol (UDP) port is 0; therefore the router drops the Encapsulating Security Payload (ESP) packet.

Action: No action is required.

Inbound ESP from *a.b.c.d* to *a.b.c.d* SPI 0x0015607b [13] authentication failure detected--npbuf 0x007e6b60

Description: An authentication failure occurred on the hardware accelerator. The receive packet cannot be authenticated because of decapsulation failure.

Action: No action is required.

Branch office messages

Couldn't install route for *remxxx@xxx*

Description: The VPN Router cannot install the route for the remote network (indicated by *remxxx@xxx*). This error occurs after the route collides with an existing static route.

Action: Remove the existing static route, or change the route for the remote network to be a subset or superset of the static route.

Soft data limit reached—notifying key management

Description: This message indicates that the size of a packet in Quick Mode exceeds a certain data limit and notifies the key management.

Action: Contact GNTS.

ReRegistering tunnel 16a43d50 cc5a0a ffffff 10278ac2 f8ffffff f56b1155 0

Description: After the Quick Mode is removed, it reregisters tunnels.

Action: No action is required.

Secondary authentication failed for session %s[%.*s]:%d

Description: The secondary authentication for the branch office tunnel fails. The user name and password you configure locally or externally for two factor authentication does not match the user name and password provided on the other end of the branch office connection.

Action: Verify the user name and password.

'RFC 3947' NAT traversal Vendor-ID received on local address a.b.c.d:x from a.b.c.d:x

Description: The router receives an RFC NAT Traversal vendor ID message.

Action: No action is required.

'draft-ietf-ipsec-nat-t-ike-00' NAT traversal Vendor-ID received on local address a.b.c.d:x from a.b.c.d:x

Description: The router receives a draft NAT Traversal vendor ID message.

Action: No action is required.

Using RFC 3947 NAT traversal

Description: The router uses RFC NAT Traversal mode.

Action: No action is required.

Using draft-ietf-ipsec-nat-t-ike-00 NAT traversal

Description: The router uses draft NAT Traversal mode.

Action: No action is required.

NAT NOT detected. Local address a.b.c.d:x, remote address a.b.c.d:x

Description: The router does not detect NAT between the peers.

Action: No action is required.

NAT detected. Local address a.b.c.d:x, remote address a.b.c.d:x

Description: The router detects NAT between the peers.

Action: No action is required.

IPSec NAT traversal disabled in system

Description: NAT Traversal is disabled on the router.

Action: If you need NAT Traversal, enable it from Services, IPSec.

User tunnel messages

Syslog [25] Session: IPSEC[ysc09]:148 Incoming client version (V04_65), minimum version (unknown) push action (none), action not needed

Description: The user ID contains a percentage sign (%).

Action: No action is required.

Session: %s[%.*s]:%d authentication failed using Two Factor Authentication

Description: The secondary authentication for the user tunnel fails. The user name and password you configure locally or externally for two factor authentication does not match the user name and password the user types in the Nortel VPN Client.

Action: Verify the user name and password.

SSL messages

Checking chain: invalid parent cert, *xxx*

Description: The certificate in the chain is not valid. This message indicates that the certificate installed at the external LDAP server expired or is invalid in some other way.

Action: Verify that the certificate is valid, or use a certificate that you know is valid.

Checking chain: invalid child cert, *xxx*

Description: The certificate in the chain is not valid. The certificate installed at the external LDAP server expired or is invalid in some other way.

Action: Verify that the certificate is valid, or use a certificate that you know is valid.

Child cert *[xxx]* not valid signature by *[xxx]—xxx*

Description: The certificate in the chain is not properly signed. This message indicates that you did not correctly install the certificate at the external LDAP server.

Action: Reinstall the certificate at the external LDAP server.

Invalid root cert, *xxx*

Description: One of the root certificates passed to the VPN Router during SSL negotiations is invalid.

Action: Configure the remote side to pass a valid chain of certificates to the VPN Router.

No matching trusted CA certs

Description: None of the certificates in the chain are trusted CA certificates. This message appears if you did not install the CA certificate or if it is not marked as trusted on the VPN Router.

Action: Install the CA certificate, and verify that the certificate is marked as trusted on the VPN Router.

Database messages

Configuration file: *xxx* does not exist

Description: The slapd.cnf file does not exist on the disk; therefore the internal LDAP server cannot start. This message occurs if the VPN Router disk is modified.

Action: Reinstall the VPN Router software.

Failed to start

Description: The internal LDAP server did not start because of a missing configuration file.

Action: Reinstall the VPN Router software.

Index file for attribute *xxx* from file *xxx* could not be created

Description: The router does not create the attribute index file for the internal LDAP server. This message can indicate that the VPN Router disk is full or that the database index files are corrupt.

Action: Restore the VPN Router software from a File Transfer Protocol (FTP) backup, or reimport the database from the Lightweight Directory Interchange Format (LDIF) file.

LDIF file: *xxx* could not back up

Description: The internal LDAP server database cannot back up to the specified LDIF file. This error can occur if the name of the LDIF file is not in 8.3 format.

Action: Make sure the backup file uses an 8.3 file name.

LDIF file: could not restore *xxx*

Description: The internal LDAP server database cannot restore from the specified LDIF file. This indicates that the LDIF file does not exist.

Action: Choose an LDIF file that currently resides on the VPN Router disk.

Security messages

Account: *xxx[xxx]* uid *xxx* not found in account

Description: The user ID of the remote entity is not found in the account that initiates a branch office connection. The UID entry in the message is a UID for Point-to-Point Tunneling Protocol (PPTP) or Layer 2 Tunneling Protocol (L2TP) and a remote address for IPsec. You receive this message if the credentials provided by the remote side of the branch office connection do not match the local configuration.

Action: Make sure the Remote Identity information of the IPsec Authentication Certificates section (Profiles, Branch Office, Edit Connection) is configured properly.

AuthServer: ldap inconsistent; no server type in entry *xxx*

Description: An LDAP entry for an authentication server does not contain a server type. The LDAP server is not accessible.

Action: Start the LDAP server, or change the external LDAP server configuration to make it accessible.

CaAuthServer: failed remove—*xxx*

Description: The LDAP server does not create an LDAP entry for a CA authentication server; the router cannot remove the entry. The LDAP server is not accessible.

Action: Start the LDAP server, or change the external LDAP server configuration to make it accessible.

CaAuthServerCollection: authenticate *xxx* cert *[xxx]* invalid signature by *[xxx]—xxx*

Description: The certificate passed with the authentication request does not use a valid signature, based on the CA certificate you configured on the VPN Router. This message indicates either an incorrect certificate at the remote side (either a client or branch office), or an incorrect CA certificate installed on the VPN Router.

Action: Install the correct certificates on both sides.

CaAuthServerCollection: authenticate *xxx[xxx]:xxx* bad certificate—*xxx*

Description: The certificate passed with the authentication request is not a valid X.509 certificate. This error occurs if the certificate configured either at the client or the other side of the branch office is incorrect.

Action: Install the correct certificates.

Conn backlog reached, possible SYN attack

Description: The number of connections on a socket reaches the maximum number of queued connections.

Action: The device can be under a syn attack. Notify your IS department.

Security: store new system IP address *xxx* failed—*xxx*

Description: The VPN Router configuration LDAP entry cannot store the system IP address. The LDAP server is not accessible.

Action: Start the LDAP server, or change the external LDAP server configuration to make it accessible.

Security: store new system name *xxx* failed—*xxx*

Description: The VPN Router configuration LDAP entry cannot store the system name. This error can indicate that the LDAP server is not accessible.

Action: Start the LDAP server, or change the external LDAP server configuration to make it accessible.

Security: store new system subnet mask *xxx* failed—*xxx*

Description: The VPN Router configuration LDAP entry cannot store the system subnet mask. This error can indicate that the LDAP server is not accessible.

Action: Start the LDAP server, or change the external LDAP server configuration to make it accessible.

Entry is referenced *[xxx]—xxx*

Description: Another LDAP entry references the LDAP entry, for example, a filter set referenced by a user group or branch office connection.

Action: Remove all references to the LDAP entry in question, and then delete the entry.

Error copying entry *[xxx]* to *[xxx]—xxx*

Description: An error occurred while copying an LDAP entry.

Action: Delete the new copy that caused the error and retry the rename operation.

Error copying subentries of *[xxx]* to *[xxx]—xxx*

Description: An error occurred while copying a set of LDAP entries. The LDAP server is unreachable.

Action: Start the LDAP server, or change the external LDAP server configuration to make it accessible.

Error copying tree *[xxx]* to *[xxx]—xxx*

Description: An error occurred while copying a tree of LDAP entries. This error indicates that the LDAP server is not accessible.

Action: Start the LDAP server, or change the external LDAP server configuration to make it accessible.

Error deleting entry *[xxx]—xxx*

Description: An error occurred while deleting an LDAP entry. This error indicates that the LDAP server is not accessible.

Action: Start the LDAP server, or change the external LDAP server configuration to make it accessible.

Error deleting tree *[xxx]—xxx*

Description: An error occurred while deleting a tree of LDAP entries. This error indicates that the LDAP server is not accessible.

Action: Start the LDAP server, or change the external LDAP server configuration to make it accessible.

LocalAuthServer: failed remove—*xxx*

Description: The LDAP server does not create an LDAP entry for an LDAP authentication server; the router cannot remove the entry. The LDAP server is not accessible.

Action: Start the LDAP server, or change the external LDAP server configuration to make it accessible.

SchemaCls: Database schema not available

Description: The external LDAP server does not support a schema entry so it is not possible to update the schema over the network. This error occurs if the external LDAP server does not support the cn=schema entry.

Action: Update the external LDAP server schema manually, and then reconnect to it.

xxx xxx being referenced by *xxx*

Description: Another LDAP entry references the specific LDAP entry, for example, a filter set referenced by a user group or branch office connection.

Action: Remove all references to the LDAP entry in question, and then delete the entry.

Session: *xxx* uid invalid—authentication failed

Description: The IPsec hashed user ID (UID) is not found in the LDAP database. This error occurs if the UID typed at the client is invalid, or the account no longer exists.

Action: Make sure the user types the correct UID at the client, and make sure the account is valid.

Session: *xxx[xxx]* invalid uid—authentication failed

Description: The group UID is not found in the LDAP database, or the UID is found under a group account, and this is not a group logon. This error occurs if the UID is mistyped at the client, or the account no longer exists.

Action: Make sure the user types the correct UID at the client, and make sure the account is valid.

Session: *xxx[xxx]* session rejected—system is initializing

Description: The VPN Router rejected an incoming request because it is still initializing.

Action: Wait to make sure that the VPN Router initializes, and then try again.

Session: *xxx[xxx]* session rejected—system is shutting down

Description: The VPN Router rejected an incoming request because it is shutting down.

Action: Wait for the VPN Router to restart, and then try again.

Session: *xxx[xxx]:xxx xxx* auth method not allowed

Description: The authentication method of the incoming request is not permitted by the group to which the session is bound. The session is bound to a group by one of the following:

- the group to which the user account belongs (in LDAP)
- Remote Authentication Dial In User Service (RADIUS) default group
- RADIUS class attribute
- CA authentication server default group

Action: Enable the authentication method for the bound group.

Session: *xxx[xxx]:xxx*—authentication failed using all authservers

Description: Configured authentication servers (LDAP, RADIUS, or CA) cannot authenticate the incoming request.

Action: Provide the correct credentials. For example, create a new user account.

Session: *xxx[xxx]:xxx* AddLink failed *[xxx]* current links *xxx*

Description: The router cannot create the multilink session. This message is caused by one of the following:

- New logons are disabled.
- The maximum sessions on the VPN Router is reached.
- Not enough heap memory exists on the VPN Router.

- The call admission priority slot is full.
- The call admission priority slot is outside of access hours.
- The maximum links configured for the group is reached.

Action: Verify the correct settings for each of the possible causes.

Session: *xxx[xxx]:xxx* IP address assignment failed

Description: The router cannot assign an address to the session. This message occurs if the static address for the session is in use or if the address pool is exhausted.

Action: Expand the number of addresses in the pool, or change the static address on the account.

Session: *xxx[xxx]:xxx* L2TP host *[xxx]* account misconfigured

Description: The L2TP access concentrator (LAC) on the branch office connection does not exist or does not use a LAC or VPN Router UID.

Action: Recreate the L2TP access concentrator entry, and make sure this entry links to the branch office connection.

Session: *xxx[xxx]:xxx* account has max links *(xxx)*

Description: The maximum number of multilink sessions is reached.

Action: Increase the maximum number of allowed PPP links (Profiles, Groups, Edit, Connectivity).

Session: *xxx[xxx]:xxx* account has max sessions *(xxx)*

Description: The account reaches the maximum number of sessions.

Action: Increase the number of logons (Profiles, Groups, Edit, Connectivity).

Session: *xxx[xxx]:xxx* account is disabled

Description: The account is not currently enabled. This error occurs if the branch office connection request uses a different tunnel type than the local VPN Router.

Action: Make sure that both sides support the same tunnel type.

Session: *xxx[xxx]:xxx* account not allowed now

Description: The session request is outside the permitted hours of access.

Action: Change the access hours setting assigned to the group (Profiles, Groups, Edit, Connectivity).

Session: *xxx[xxx]:xxx* authentication failed using *xxx*

Description: The authentication servers cannot validate the credentials for the session.

Action:

1. Make sure you use the correct credentials.
2. Expand the capability of the RADIUS authentication server to handle the authentication method.
3. Add a new account with the correct credentials.

Session: *xxx[xxx]:xxx* client assigned address *[xxx]* already in use

Description: The address the tunnel client provides is currently in use. This message indicates that either a static or dynamic route uses the address, or that an active tunnel uses the address.

Action: Configure the client to use a different address.

Session: *xxx[xxx]:xxx* connect Qos level *xxx* full

Description: No more slots are available for the call admission priority of the session. This indicates that the configured Call Admission Priority for the group to which the request is assigned is too low.

Action: Increase the Call Admission Priority (Profiles, Groups, Edit, Connectivity).

Session: *xxx[xxx]:xxx* invalid password—master admin authentication failed

Description: The primary administrator password is invalid. This results from using the wrong password or from making a mistake while typing the password.

Action: Make sure you are using the correct password, and make sure you typed it correctly.

Session: *xxx[xxx]:xxx* login rejected—new logins disabled

Description: New logons are currently disabled. This error occurs if the VPN Router is shut down with one of the following settings selected on the System Shutdown window:

- The Disable new logins box is selected.
- The Disable logins after restart box is selected.

Action: Choose Admin, Shutdown. Clear the disable logon settings, and then restart the VPN Router.

Session: *xxx[xxx]:xxx* no memory free: *xxx* threshold: *xxx*

Description: Not enough heap memory is available to establish the session. This error occurs if the VPN Router consumed a large amount of memory while processing management requests.

Action: Increase the amount of physical memory on the VPN Router, or wait until the management requests are complete.

Session: *xxx[xxx]:xxx* only one session/static address allowed

Description: Only one session can use an address. This error occurs if the VPN Router receives a second logon to an account that uses a static address.

Action: Change the account to use dynamic addresses from either a static address pool or through the Dynamic Host Configuration Protocol (DHCP).

Session: *xxx[xxx]:xxx* pool address *[xxx]* already in use

Description: The returned static pool address is currently is use. This error occurs if another tunnel uses this address through a static address configuration or another address pool. The error also occurs if a static host route using this address is added.

Action: No action is necessary. The VPN Router tries to allocate a different address.

Session: *xxx[xxx]:xxx* session directed to use server *xxx*

Description: This message is an informational message that indicates that load balancing is enabled and the session is redirected to another VPN Router. This error occurs if one VPN Router is either more heavily CPU-loaded or session-loaded than the other VPN Router.

Action: No action is necessary.

Session: *xxx[xxx]:xxx* static address *[xxx]* already in use

Description: The static address assigned to the account is in use by another tunnel or through a static host route.

Action: Change the static address.

Session: *xxx[xxx]:xxx* system has max sessions *(xxx)*

Description: The VPN Router reached its maximum number of sessions. This situation occurs after the VPN Router reaches the maximum number of configurable tunnels.

Action: Use load balancing with another VPN Router (if you use IPsec clients), or upgrade the VPN Router to a higher model.

Ethernet [02] ArpResolve: convert_npbuf_to_arpmbuf() failed for addr 0x92b6

Description: No Address Resolution Protocol (ARP) npbufs are available. The ARP npbufs exceeds the 512 maximum limit.

Action: Contact GNTS.

TUNNELGUARDd [13] USER[johndoe]: Connection error 60 with agent PC occurred on socket 25

Description: This message is an informational message. A socket is available for writing. The message is an indication that a new socket connection established, and an error occurs on that socket.

Action: No action is required.

TUNNELGUARDd [04] USER[0143224:47.102.179.240]: Connection error 60 with agent PC occurred on socket 304.

Description: This message is an informational message. A socket is available for writing. The message is an indication that a new socket connection established, and an error occurs on that socket.

Action: No action is required.

TUNNELGUARDd [04] An error occurred with socket 304 so we're clearing all the resources from the client table

Description: This message is an informational message. An error occurs in the connection with a user.

Action: No action is required.

tEvtLgMgr 0 : Security [12] Session 15fc2c68: IPSEC[u440875]:90024 sib 0 logged out

Description: This message shows that the session is removed from the account collection. For example, every branch office uses a session while it is up; after the branch office goes down, that session is destroyed.

Action: No action is required.

RADIUS accounting messages

RADIUS: Cannot send accounting request to <*server-name*>, possibly due to DNS translation failure

Description: This message indicates a connection failure. While sending a request, an error occurred due to a socket creation problem. This usually indicates a Domain Name Service (DNS) resolution problem.

Action: Verify the following information:

- DNS host name is correct
- DNS server is configured properly
- DNS server is available

RADIUS: no reply from server <*server-name*>(<*port number*>)

Description: This message indicates a connection failure. The connection timed out while waiting for a response.

Action: Verify the following information:

- RADIUS server IP address and port number
- RADIUS server availability
- shared secret

RADIUS: <*server-name*> server timed out

Description: This message indicates a connection failure. The connection timed out while waiting for a response.

Action: Verify the following information:

- RADIUS server IP address and port number
- RADIUS server availability
- shared secret

RADIUS: network socket failure with <*server-name*>, recvfrom error: <*error*>

Description: This message indicates a connection failure. An error occurred while receiving the response.

Action: Retry authentication attempt, and verify that RADIUS server packets form properly.

RADIUS: <*server-name*> server failed

Description: This message indicates a connection failure. An error occurred while receiving the response.

Action: Retry authentication attempt, and verify that RADIUS server packets form properly.

Indicated packet length too large

Description: This message indicates that the router receives an invalid response. The length of the response packet is not equal to the number of bytes received.

Action: Retry authentication attempt, and verify that RADIUS server packets form properly.

RADIUS: failure sending <*user-name*> accounting record to <*server-name*>

Description: This message indicates that the router receives an invalid response. The length of the response packet is not equal to the number of bytes received.

Action: Retry the authentication attempt, and verify that RADIUS server packets form properly.

Non-matching ID in server response

Description: This message indicates that the router receives an invalid response. The transaction ID in the response packet is not the expected value.

Action: Retry authentication attempt, and verify that RADIUS server packets are properly formed.

Unsupported response type (<*number*>) received from server

Description: This message indicates that the router receives an invalid response. The response packet type is not one of the expected types: Access-Accept, Access-Reject, or Access-Challenge.

Action: Retry authentication attempt, and verify that RADIUS server packets form properly.

Received bad attribute type from server

Description: This message indicates that the router receives an invalid response. The RADIUS attribute value is incorrect.

Action: Retry authentication attempt, and verify that RADIUS server packets form properly.

Response OK

Description: This message indicates that the router receives a valid response.

Action: No action necessary.

RADIUS: <*user-name*> accounting record sent to <*server-name*> OK

Description: This message indicates that the router receives a valid response.

Action: No action necessary.

RADIUS authentication messages

RADIUS: Cannot send request to <*server-name*>, possibly due to DNS translation failure

Description: This message indicates a connection failure. While sending a request, an error occurred due to a socket creation problem. This message usually indicates a DNS resolution problem.

Action: Verify the following information:

- DNS host name is correct
- DNS server configuration is correct
- DNS server is available

Login failure due to: Server network connection failure

Description: The Nortel VPN Client receives this message, and it indicates a connection failure. While sending a request, an error occurred due to a socket creation problem. This message usually indicates a DNS resolution problem.

Action: Verify the following information:

- DNS host name is correct
- DNS server configuration is correct
- DNS server is available

RADIUS: no reply from RADIUS server <*server-name*>(<*port number*>)

Description: This message indicates a connection failure. The connection timed out while waiting for a response.

Action: Verify the following information:

- RADIUS server IP address and port number
- RADIUS server availability
- shared secret

RADIUS: <*server-name*> server timed out authenticating <*user-name*>

Description: This message indicates a connection failure. The connection timed out while waiting for a response.

Action: Verify the following information:

- RADIUS server IP address and port number
- RADIUS server availability
- shared secret

RADIUS: network socket failure with <*server-name*>, recvfrom error: <*error*>

Description: This message indicates a connection failure. An error occurred while receiving the response.

Action: Retry the authentication attempt, and verify that RADIUS server packets form properly.

RADIUS: <*server-name*> server error while authenticating <*user-name*>

Description: This message indicates a connection failure. An error occurred while receiving the response.

Action: Retry authentication attempt, and verify that RADIUS server packets form properly.

Indicated packet length too large

Description: This message indicates that the router receives an invalid response. The length of the response packet is not equal to the number of bytes received.

Action: Retry the authentication attempt, and verify that RADIUS server packets form properly.

RADIUS: <*server-name*> sent invalid response packet for <*user-name*>

Description: This message indicates that the router receives an invalid response. The length of the response packet is not equal to the number of bytes received.

Action: Retry authentication attempt, and verify that RADIUS server packets form properly.

Non-matching id in server response

Description: This message indicates that the router receives an invalid response. The transaction ID in the response packet is not the expected value.

Action: Retry authentication attempt, and verify that RADIUS server packets are properly formed.

Unsupported response type (<*number*>) received from server

Description: This message indicates that the router receives an invalid response. The response packet type is not one of the expected types: Access-Accept, Access-Reject, or Access-Challenge.

Action: Retry authentication attempt, and verify that RADIUS server packets are properly formed.

Received bad attribute type from server

Description: This message indicates that the router receives an invalid response. The RADIUS attribute value is incorrect.

Action: Retry authentication attempt, and verify that RADIUS server packets are properly formed.

Invalid reply digest from server, possible shared secret mismatch

Description: This message indicates that the router receives an invalid response. The computed authenticator does not match the value in the packet.

Action: Verify that the shared secrets match.

RADIUS: <*server-name*> sent packet with invalid response authenticator for <*user-name*>

Description: This message indicates that the router receives an invalid response. The computed authenticator does not match the value in the packet.

Action: Verify that the shared secrets match.

RADIUS server returned access challenge

Description: This message indicates that the router receives a valid access-challenge response.

Action: No action required.

RADIUS: <*server-name*> sent challenge for <*user-name*>

Description: The router receives a valid access-challenge response.

Action: No action required.

RADIUS access challenge received

Description: The Nortel VPN Client receives this message. The client receives a valid access-challenge response.

Action: No action required.

RADIUS server rejected access

Description: This message indicates that the router receives a valid access-reject response.

Action: No action required.

RADIUS: <*user-name*> access DENIED by server <*server-name*>

Description: This message indicates that the router receives a valid access-reject response.

Action: No action required.

Response OK

Description: This message indicates that the router receives a valid access-accept response.

Action: No action required.

RADIUS: <*user-name*> access OK by server <*server-name*>

Description: This message indicates that the router receives a valid access-accept response.

Action: No action required.

Routing messages

Unable to create *xxx* for OSPF

Description: The VPN Router cannot create the necessary components to initialize OSPF. This happens if the VPN Router runs out of free memory.

Action: Choose Routing, OSPF. Disable and enable Open Shortest Path First (OSPF) globally. If this does not work, disable OSPF, restart the VPN Router, and then enable OSPF.

OSPF Disabled

Description: The administrator globally disabled OSPF.

Action: No action required.

Closing OSPF-RTM connection

Description: OSPF closed the Routing Table Manager (RTM) connection, which occurs if the administrator disables OSPF from the Routing, OSPF window.

Action: No action required.

Ospf_Global.State changed from ENABLED to DISABLED by user 'admin' @ *x.x.x.x*

Description: The administrator disabled OSPF from the Routing, OSPF window.

Action: No action required.

Opened OSPF-RTM connection

Description: The administrator enabled OSPF from the Routing, OSPF window and successfully registered with RTM.

Action: No action required.

OSPF Enabled

Description: The administrator enabled OSPF from the Routing, OSPF window.

Action: No action required.

Ospf_Global.State changed from DISABLED to Enabled by user 'admin' @ *a.b.c.d*

Description: The administrator disabled OSPF from the Routing, OSPF window.

Action: No action required.

Can not accept *a.b.c.d* as router id

Description: OSPF can not accept the router ID. Invalid router IDs are 127.0.0.1 and 0.0.0.0.

Action: You must change the router ID (Routing, OSPF).

LoadOspfAreas Failed

Description: OSPF failed to load all areas of information from the configuration file. This error happens if the configuration file is damaged.

Action: Delete all OSPF areas, recreate them (Routing, OSPF), and then restart the VPN Router.

LoadOspfIntf Failed

Description: OSPF failed to load information for all interfaces from the configuration file. This error happens if the configuration file is damaged.

Action: Delete all OSPF interfaces, recreate them from the Routing, Interface menu path, and then restart the VPN Router.

VR *xxx*: Starting *xxx* as Master for *xxx*

Description: This message logs after the Virtual Router Redundancy Protocol (VRRP) starts as a master for an address. The parameters are

- the VRID of this VR
- the reason for the start, either because you enable it or the interface is up
- the IP address

Action: No action required.

VR *xxx*: Starting *xxx* as Backup for *xxx*

Description: This message logs after VRRP starts as a backup for an address. The parameters are

- the VRID of this VR
- the reason for the start, either because you enable it or the interface is up
- the IP address

Action: No action required.

VR *xxx*: Starting *xxx* as master delayed Backup for *xxx*

Description: This message logs when master delay mode is in effect. The parameters are

- the VRID of this VR
- the reason for the start, either because you enable it or the interface is up
- the IP address

Action: No action required.

VR *xxx*: Shutting down *xxx* on *xxx*

Description: This message logs when VRRP stops. The parameters are

- the VRID of this VR

- the reason for the stop, either because you disable it or the circuit went down
- the IP address

Action: No action required.

Unable to get configuration for VR *xxx*

Description: This message is an error event that is logged when VRRP is enabled, but the common configuration parameters are missing.

Action: Configure the common parameters from the Routing, VRRP menu path.

RIP *xxx*: RIP Enabled

Description: This message is logged when the Routing Information Protocol (RIP) is globally enabled.

Action: No action required.

RIP *xxx*: RIP Disabled

Description: This message is logged when RIP is globally disabled.

Action: No action required.

RIP *xxx*: Can't alloc main node

Description: This message is logged when not enough memory exists to allocate RIP parameters.

Action: No action required.

RIP *xxx*: Circuit *xxx* created

Description: This message is logged when the RIP circuit is created. The parameter stands for circuit ID.

Action: No action required.

RIP *xxx*: Circuit *xxx* deleted

Description: This message is logged when the RIP circuit is deleted. The parameter stands for circuit ID.

Action: No action required.

RIP *xxx*: Unable to register with UDP

Description: This message is logged when you cannot register with the UDP.

Action: No action required.

RIP *xxx*: setsockopt RIP socket *xxx* SO_RCVBUF *xxx* failed

Description: This message is logged when RIP receive buffers are too small. This situation happens after a large numbers of RIP neighbors send their RIP updates simultaneously. The first parameter is the socket number and the second parameter is the maximum receive buffer size.

Action: No action required.

RIP *xxx*: bind RIP socket *xxx* failed

Description: This message is logged when RIP fails to bind the socket.

Action: No action required.

RIP *xxx*: Unable to spawn Dispatcher task *xxx* for RIP

Description: This message is logged when RIP fails to spawn the main task responsible for receiving RIP packets. The parameter stands for the name of the task.

Action: No action required.

RIP *xxx*: Unable to spawn timer task *xxx* for RIP

Description: This message is logged when RIP fails to spawn the timer task. The parameter stands for the name of the task.

Action: No action required.

RIP *xxx*: cid xxx mismatched auth password from *xxx*

Description: This message is logged when RIP authentication fails while receiving RIP packets. The first parameter is the circuit ID on which the interface receives RIP packets, and the second parameter is the IP address from which it received RIP packets.

Action: No action required.

lpb.074b41e8 [00] SN: Classification failed

Description: This message is an informational message. The packet classification action fails.

Action: No action is required.

IP Redirector [15] StaticAddrDereg: ip 0.0.0.0 mask 0.0.0.0 gw *a.b.c.d* extract static route failed

Description: The removal of the static route fails. A probable cause is that the router does not find the route.

Action: Verify the route exists before you remove it. If the route does exist and you cannot remove it, contact GNTS.

IP Redirector [11] FEM DynRoutingAddrReg: ip *a.b.c.d* mask x.x.x.x deleting old rt 0x35d4ca84 flags 0x500003 pr 13 prio 4

Description: The routing table includes a route, for example route *a.b.c.d*, obtained through route exchange by the following protocols: Border Gateway Protocol (BGP), OSPF, or RIP. If the priority of this route is greater than or equal to another route already in the routing table that uses the same IP address and mask, route *a.b.c.d* is deleted from the routing table.

Action: No action is required.

DynRoutingAddrReg: ip *a.b.c.d* mask x.x.x.x deleting old rt 0x151a9e6c flags 0x500003 pr 13 prio 4

Description: The routing table includes a route, for example route *a.b.c.d*, obtained through route exchange by the following protocols: BGP, OSPF, or RIP. If the priority of this route is greater than or equal to another route already in the routing table that uses the same IP address and mask, route *a.b.c.d* is deleted from the routing table.

Action: No action is required.

Sys [31] Conn backlog reached, possible SYN attack

Description: This message is an informational message for network administrators.

Action: Restart the VPN Router. If this message persists, contact GNTS.

CircuitRegion [01] FAILED to deactivate, ie remove from hash table failed!!!

Description: The removal of a circuit from a circuit region fails.

Action: Contact GNTS.

RSVP [06] AddRsvpSource for dst 0xa78327c2, srcport 0 rate 3500 bkt 3000

Description: This message is an informational message. The address is modified to appear in IP form.

Action: No action is required.

PPP messages

Ppp0x04ade338 [06] SimpleDeFrame failed

Description: Decapsulation of Point-to-Point Protocol (PPP) packets fails. Faulty PPP packets exist.

Action: Check the line statistics and contact GNTS.

PPPoA 0x05906a40 [06] SimpleDeFrame failed

Description: Decapsulation of PPP over ATM (PPPoA) packets fails. Faulty PPPoA packets exist.

Action: Check the line statistics and contact GNTS.

Ppp0x300dd518 [06] PPP input: Unknown protocol (2700) received!

Description: Decryption or decompression of PPP packets fails due to configuration mismatch.

Action: Verify the configuration between the local and remote ends. If the problem persists, contact GNTS.

582256 10/07/2007 19:37:17 (Ppp0x04d45) INFO IO WANPPP Code 44 packetLogArea Note: The above event repeated xx time(s)

Description: This message is an informational message that indicates that a PPP control packet was transmitted.

Action: No action is required.

Hardware messages

The VPN Router software provides informational messages after cards are removed and replaced. After you exchange two cards with each other, the VPN Router considers this two simultaneous replacements.

Interface [*nnn*] not present, deleting from config

Description: This message indicates that the configuration file contains an interface [nnn] entry, but no card exists in the slot. The interface [nnn] entry is deleted from the configuration.

Action: No action required.

Interface [*nnn*] replaced, resetting config

Description: This message indicates the card type specified in the configuration file does not match the card type currently in the slot. The configuration information resets to defaults, and then initializes with the current hardware.

Action: No action required.

Interface [*nnn*] replaced, deleting from config

Description: This message indicates the card type specified in the configuration file does not match the card currently in the slot. The interface is deleted from the configuration. This error applies when the original card provides more ports than the current card.

Action: No action required.

HWAccel [*nnn*] not present, deleting from config

Description: This indicates the configuration file contains a HWAccel [nnn] entry, but no hardware accelerator exists in the slot. The HWAccel [nnn] entry is deleted from the configuration.

Action: No action required.

ERR ADSL Slot 3 Interface 1 on line (microcode loaded)

Description: The Asymmetric Digital Subscriber Line (ADSL) Eagle modem started successfully. This message is not an error.

Action: No action required.

Hw Accel unit [13] Hw7751QCtxtCls::Close begin.\n

Description: After the expiration or log off of a session, the hardware context associated with the 7751 hardware accelerator card is closed.

Action: No action required.

Hw Accel unit [13] h7751PacketComplete Error-TL_MAC_MISCOMPARE:Unit = 0 result: 0x0000000d. flags: 0x80000. pkt: 008592e0

Description: The 7751 hardware accelerator receives a packet with corruption errors. The packet is dropped

Action: No action required.

ALERT: Number of hardware accelerators found on the system is : NoHW

Description: This message indicates the number of hardware accelerators in the system. NoHW indicates no accelerator is present.

Action: Physically verify that the number of accelerators in the system matches the number in this message. If the numbers do not match, contact GNTS.

Hw Accel unit [03] ppDatap = 0 0x934ec2 npbufStart =0x934d60, getRsltErrNum = 76832

Description: An error occurred in the driver for the 7854 hardware accelerator card.

Action: Verify the hardware accelerator card statistics. If the statistics do not increment, contact GNTS.

Hw Accel unit [13] not 7854, regular open.....\n

Description: The router recognized and initialized a 7811 or 7751 hardware accelerator card.

Action: No action required.

Management messages

Ethernet [02] Unable to deactivate circuit mapping

Description: If you try to delete the management IP, the router cannot deactivate the circuit mapping for the management interface.

Action: Try again to change the management IP address. If the change does not work, reboot the VPN Router, and try the configuration change again. If the change still does not work, contact GNTS.

Sys [13] HTTPD: httpOsalTcp.c: httpsSSLLoadCert: no server cert selected

Description: If you enable the HTTPS server and do not select a server certificate for the SSL Transport Layer Security (TLS), this error indicates that you did not select a certificate for HTTPS authentication.

Action: Select a server certificate for HTTPS authentication from Services, SSL TLS.

DNS messages

DNS_PROXY [14] Listener: new datagram

Description: This message indicates a DNS Proxy datagram was destined for a private interface address. Prior to Release 8.0, the source DNS Proxy lookup worked only with the management IP address; it did not work with a private interface address.

Action: For software releases prior to 8.0, change the destination address to the management IP address.

Appendix A
MIB support

The VPN Router supports the management information base (MIB) for use with network management protocols in TCP/IP (Transmission Control Protocol over IP)-based Internets and TCP/IPX-based networks. The VPN Router supports SNMP (Simple Network Management Protocol) gets only; it does not support SNMP sets.

Nortel also provides proprietary MIBs for VPN Router SNMP trap support. The MIBs, cestraps.mib and newoak.mib, are available on the VPN Router distribution CD in the Doc directory.

SNMP RFC (request for comments) support

This section explains the SNMP-related RFCs that the VPN Router supports.

Novell IPX MIB

The VPN Router supports the IPX MIB distributed by Novell, Inc.

Novell RIP-SAP MIB

The VPN Router supports the IPX RIP-SAP MIB distributed by Novell, Inc.

RFC 1213—Network Management of TCP/IP-Based Internets MIB

The VPN Router supports RFC 1213, *Management Information Base for Network Management of TCP/IP-based Internets: MIB II*. This RFC provides the architecture and system for managing TCP/IP-based internets. Except for the EGP Group (Section 6.10) and the Transmission Group (Section 6.11), the VPN Router provides full support for the RFC.

SNMP interface index (IfIndex) numbers, as defined in RFC 1213, are numbers that third-party network management systems (NMS) rely on to monitor and gather statistics for devices through SNMP. The physical and virtual interfaces on the VPN Router have local significant numbers assigned that the NMS can use to associate statistics with the devices.

Prior to Release 7.0, the router dynamically assigned an IfIndex number to a branch office tunnel (BOT) after the BOT came up. Only up tunnels were reported. This enhancement performs the following:

- assigns a static number to each branch office tunnel
- reports all branch office tunnels, whether they are up or down, in an SNMP query

RFC 1573—IanaIfType MIB

This MIB contains the enumerations for rfc2233 ifTable.ifType. These enumerations describe the various types of interfaces that ifTable can support.

RFC 1724—RIP Version 2 MIB Extension

The VPN Router supports RFC 1724, *RIP Version 2 MIB Extension*. As stated in the introduction to the RFC, the RFC "defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP-based internets. In particular, it defines the objects for managing RIP Version 2."

RFC 1850—OSPF Version 2 Management Information Base

The VPN Router supports RFC 1850, *OSPF Version 2 Management Information Base*. As stated in the introduction to the RFC, the RFC "defines a portion of the Management Information Base (MIB) for use with network management protocols in TCP/IP-based internets. In particular, it defines objects for managing the Open Shortest Path First Routing Protocol."

RFC 2233—If MIB

This MIB is the latest evolution of RFC 1213 Interfaces group, plus several new objects.

RFC2495—DS1 MIB

These objects are used with a DS1, E1, DS2, or E2 interface. At present, this applies to the ifType variable in the Internet-standard MIB ds1 (18).

This MIB provides an alternative reporting method for monitoring line status on a T1 line. The reporting method is either ANSI or DS1 MIB.

RFC 2571—Snmp-Framework MIB

This MIB provides textual conventions and object definitions used in the SNMP agent architecture.

RFC 2667—IP Tunnel MIB

The VPN Router supports RFC 2667, *IP Tunnel MIB*. As stated in the introduction to the RFC, it "describes a Management Information Base (MIB) used for managing tunnels of any type over IPv4 networks, including GRE [16,17], IP-in-IP [18], Minimal Encapsulation [19], L2TP [20], PPTP [21], L2F [25], UDP (e.g., [26]), ATMP [22], and IPv6-in-IPv4 [27] tunnels."

RFC 2737—Entity MIB

This MIB contains five tables two of which are partially implemented.

```
*entPhysicalTable
entLogicalTable
entLPMappingTable
*entAliasMappingTable
entPhysicalContainsTable
```

The entPhysicalTable provides a list of the hardware elements that are present in the system. For example, the list shows each slot, and if a card exists in the slot, then the card and ports on the card appear. The exception to this is the hardware accelerator, which does not appear in the table. The list shows element relationships through the columns entPhysicalContainedIn and entPhysicalParentRelPos. The only columns that are implemented are

```
entPhysicalIndex
entPhysicalDescr (although the value is not strictly what
the MIB specifies)
entPhysicalContainedIn
entPhysicalClass
entPhysicalParentRelPos
entPhysicalName
entPhysicalIsFRU
```

All other columns return an appropriate default value for the object.

The entAliasMappingTable provides a mapping from entPhysicalIndex to ifTable.ifIndex. By walking this table, a management station can deter the ifIndex associated with a physical port.

RFC 2787—VRRP MIB

The VPN Router supports RFC 2787, *Definitions of Managed Objects for the Virtual Router Redundancy Protocol*. As stated in the introduction, RFC 2787 "defines an extension to the Management Information Base (MIB) for use with SNMP-based network management. In particular, it defines objects for configuring, monitoring, and controlling routers that employ the Virtual Router Redundancy Protocol (VRRP)."

RFC2790—Host Resources MIB

The Host Resources MIB defines a uniform set of objects for the managing host computers. Host computers are independent of the operating system, network services, or software application. The Host Resources MIB defines objects that are common across many computer system architectures.

The VPN Router does not support the following groups or objects:

- hrSystem Group
  - — hrSystemInitialLoadDevice
  - — hrSystemInitialLoadParameters
  - — hrSystemNumUsers
  - — hrSystemProcesses
  - — hrSystemMaxProcesses
- hrStorage Group

  hrStorageAllocationFailures
- hrDevice Group
  - — hrDevice Table

    hrDeviceErrors
  - — hrNetworkTable
  - — hrPrinterTable
  - — hrDiskStorageTable

    hrDiskStorageCapacity
  - — hrPartitionTable

    hrPartitionSize
  - — hrFSTable

    hrFSLastFullBackupDate

    hrFSLastPartialBackupDate
- hrSWRun Group

  hrSWRun
- hrSWRunPerf Group

hrSWRunPerf

- hrSWRunTable
  - hrSWRunIndex
  - hrSWRunName
  - hrSWRunType
  - hrSWRunStatus
  - hrSWRunPriority
- hrSWRunPerfTable
  - hrSWRunPerfCPU

RFC 2863—Interface MIB (64 bit counters support)

The interface table adds support for the following entries: ifHCInOctets, ifHCInUcastPkts, ifHCOutOctets, and ifHCOutUcastPkts. These counters already existed and were extended from Counter32 to Counter64.

RFC 2933—Internet Group Management Protocol MIB

The MIB module contains two tables:

- the IGMP interface table, which contains one row for each interface on which you enable IGMP
- the IGMP cache table, which contains one row for each IP multicast group for which members exist on a particular interface

Both hosts and routers can implement these tables, but some columnar objects in each table apply only to routers.

VPN Router MIB

This MIB contains VPN Router proprietary MIB data. For instance, the ping MIB is in this file. The ping MIB, through an SNMP GET REQUEST, causes the VPN Router to ping another device and get statistics based on the results of the ping. For instance, sending a PDU specifying pingAverageTime.192.32.250.248.4.4076 sends four pings, of 4076 bytes, to address 192.32.250.248. (The router actually

sends five pings. One ping is sent by itself so that if the device you ping is the other end of a branch office tunnel, it ensures that the tunnel is brought up before trying to send pings through the tunnel. This ping is not counted in the statistics.) The object returns the values of

```
-2 Invalid parameter(indices).
-1 No reply.
0 Less than 16ms average time.
>0 The average time.
```

The objects and their parameters(indices) are

```
pingAverageTime - returns the average ping time for the set
of specified pings.
pingPercentLoss - returns the percentage of loss.
```

The first index is the IP address to ping. The second index is the number of pings, if you do not specify this value or the value is invalid, it defaults to 3. The third index is the size of the ping request. If you do not specify the size value or it is an invalid value then it defaults to 1024.

VPN Router MIB provides trap acknowledgement.

cestraps.mib—Nortel proprietary MIB

This section lists the contents of the cestraps.mib, the Nortel MIB for the VPN Router.

```
-- Trap #5005 --------------------------------
-- Each Trap contains the Trap OID as well as the following
OIDs:
--    SeverityLevel
--    System Name
--    System Date
--    System Time
--    System Uptime
--
      NEWOAKTRAP DEFINITIONS ::= BEGIN

      IMPORTS
         enterprises             FROM RFC1155-SMI
         DisplayString           FROM RFC1213-MIB
         OBJECT-TYPE             FROM RFC-1212
         TRAP-TYPE               FROM RFC-1215;

   -- This MIB module uses the extended OBJECT-TYPE macro as
   -- defined in [9], and the TRAP-TYPE macro as defined in
[10].

   contivity       OBJECT IDENTIFIER ::= { enterprises 2505
}


   ContivitySnmpTraps OBJECT-TYPE
      SYNTAX  DisplayString
      ACCESS  read-only
      STATUS  mandatory
      DESCRIPTION
      "Nortel Networks Inc's Enterprise trap."
   ::= {contivity 1}

-- Trap #5006 --------------------------------
antiSpoofingStatus OBJECT-TYPE
SYNTAX DisplayString
ACCESS read-only
STATUS mandatory
DESCRIPTION "Status of Anti Spoofing Feature.
```

```
Possible Values:
Disabled: Anti-Spoofing is Disabled;
Warning: Anti-Spoofing : Packets Dropped;
Alert: Anti-Spoofing state not known!;
The values have the following meaning:
-- The first means the feature is disabled
-- The second means packets were dropped due to a detected spoofed
address
-- The third should never happen, but means the status has been set
to a bogus value.
"
::= {serviceCESTrapInfo 6}
antiSpoofingStatusTrap TRAP-TYPE
ENTERPRISE serviceCESTrapInfo
VARIABLES {
severityLevel, antiSpoofingStatus, systemName,systemDate,
systemTime, systemUpTime
}
DESCRIPTION "Status of Anti Spoofing Feature"
::= 5006
```

newoak.mib

This section provides the contents of the newoak.mib, which defines the *newoak* enterprise ID, the *contivity* object identifier, and the sysObjectIDs for each VPN Router model.

```
--  This MIB module uses the extended OBJECT-TYPE macro as
        --  defined in [9], and the TRAP-TYPE macro as
defined in [10].

        newoak    OBJECT IDENTIFIER ::= { enterprises 2505 }

-- The following MODULE-IDENTITY definition can be commented
out if the MIB parser
-- you are using has trouble parsing it. If you do comment it
out, then uncomment
-- the following object identifier definition.
--    contivity OBJECT IDENTIFIER ::= {newoak 1}
--
     contivity  MODULE-IDENTITY
         LAST-UPDATED "0004252130Z"  -- April 25, 2000
7:30pm EST
         ORGANIZATION "Nortel Networks,Inc."
         CONTACT-INFO
           "support@nortelnetworks.com
            Postal: Nortel Networks,Inc.
                    80 Central St.
                    Boxboro, MA 01719
            Tel:    +1 978 264 7100
            E-Mail: support@nortelnetworks.com"

         DESCRIPTION
            "This MIB defines the sysObjectIDs for different
             variations of the Convitiy Extranet Switch."
         ::= { newoak 1 }
-- IDENTIFIER ::= {newoak 1}
     contivityExtranetSwitch2000 OBJECT IDENTIFIER ::=
{newoak 2}
     contivityExtranetSwitch1000 OBJECT IDENTIFIER ::=
{newoak 3}
     contivityExtranetSwitch4500 OBJECT IDENTIFIER ::=
{newoak 4}
     contivityExtranetSwitch15XX OBJECT IDENTIFIER ::=
```

```
{newoak 5}
     contivityExtranetSwitch2500 OBJECT IDENTIFIER ::=
{newoak 6}
     contivityExtranetSwitch2600 OBJECT IDENTIFIER ::=
{newoak 7}
     contivityExtranetSwitch1600 OBJECT IDENTIFIER ::=
{newoak 8}
     contivityExtranetSwitch4600 OBJECT IDENTIFIER ::=
{newoak 9}

      END
```

Hardware-related traps

```
hardwareTrapInfo OBJECT IDENTIFIER
   ::= {ContivitySnmpTraps 1}

-- Trap #1001
hardDisk1Status OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS mandatory
   DESCRIPTION "Hard Disk Number 1 Status."
   ::= {hardwareTrapInfo 1}

-- Trap #1002
hardDisk0Status OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Hard Disk Number 0 Status."
   ::= {hardwareTrapInfo 2}

-- Trap #1003
memoryUsage OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Memory Usage Status."
   ::= {hardwareTrapInfo 3}

-- Trap #1004
LANcardStatus OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of any LAN cards on the system."
   ::= {hardwareTrapInfo 4}

-- Trap #1005
CPUtwoStatus OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of second CPU."
   ::= {hardwareTrapInfo 5}
```

```
-- Trap #1006
fanOneStatus OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of the first CPU fan."
   ::= {hardwareTrapInfo 6}

-- Trap #1007
fanTwoStatus OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of the second CPU fan."
   ::= {hardwareTrapInfo 7}

-- Trap #1008
chassisFanStatus OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of the Chassis fan."
   ::= {hardwareTrapInfo 8}

-- Trap #1009
fiveVoltsPositive OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of +5 Volt power."
   ::= {hardwareTrapInfo 9}

-- Trap #10010
fiveVoltsMinus OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of -5 Volt power."
   ::= {hardwareTrapInfo 10}

-- Trap #10011
threeVoltsPositive OBJECT-TYPE
   SYNTAX  DisplayString
```

```
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of +3 Volt power."
   ::= {hardwareTrapInfo 11}

-- Trap #10012
twoDotFiveVA OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of 2.5VA power."
   ::= {hardwareTrapInfo 12}

-- Trap #10013
twoDotFiveVB OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of 2.5VB power."
   ::= {hardwareTrapInfo 13}

-- Trap #10014
twelveVoltsPositive OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of +12 Volt power."
   ::= {hardwareTrapInfo 14}

-- Trap #10015
twelveVoltsMinus OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of -12 Volt power."
   ::= {hardwareTrapInfo 15}

-- Trap #10016
normalTemperature OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of normal temperature reading."
   ::= {hardwareTrapInfo 16}
```

```
   -- Trap #10017
   criticalTemperature OBJECT-TYPE
      SYNTAX  DisplayString
      ACCESS  read-only
      STATUS  mandatory
      DESCRIPTION "Status of critical temperature reading."
      ::= {hardwareTrapInfo 17}

   -- Trap #10018
   chassisIntrusion OBJECT-TYPE
      SYNTAX  DisplayString
      ACCESS  read-only
      STATUS  mandatory
      DESCRIPTION "The chassis intrusion sensor indicates
that
                  the unit has been opened."
      ::= {hardwareTrapInfo 18}

   -- Trap #10019
   dualPowerSupply OBJECT-TYPE
      SYNTAX  DisplayString
      ACCESS  read-only
      STATUS  mandatory
      DESCRIPTION "Status of the redundant power supplies."
      ::= {hardwareTrapInfo 19}

   -- Trap #10020
   t1WANStatus OBJECT-TYPE
      SYNTAX  DisplayString
      ACCESS  read-only
      STATUS  mandatory
      DESCRIPTION "Status of T1 WAN card(s)."
      ::= {hardwareTrapInfo 20}

   -- Trap #10021
   t3WANStatus OBJECT-TYPE
      SYNTAX  DisplayString
      ACCESS  read-only
      STATUS  mandatory
      DESCRIPTION "Status of T3 WAN card(s)."
      ::= {hardwareTrapInfo 21}
```

Server-related traps

```
   serverTrapInfo OBJECT IDENTIFIER
      ::= {ContivitySnmpTraps 2}

   -- Trap #3001
   radiusAcctServer OBJECT-TYPE
      SYNTAX  DisplayString
      ACCESS  read-only
      STATUS  mandatory
      DESCRIPTION "Status of External Radius Accounting
Server."
      ::= {serverTrapInfo 1}

   -- Trap #3002
   backupServer OBJECT-TYPE
      SYNTAX  DisplayString
      ACCESS  read-only
      STATUS  mandatory
      DESCRIPTION "Status of External Disk Backup Server."
      ::= {serverTrapInfo 2}

   -- Trap #3003
   diskRedundency OBJECT-TYPE
      SYNTAX  DisplayString
      ACCESS  read-only
      STATUS  mandatory
      DESCRIPTION "Status of Local Disk Redundancy."
      ::= {serverTrapInfo 3}

   -- Trap #3004
   IntLDAPServer OBJECT-TYPE
      SYNTAX  DisplayString
      ACCESS  read-only
      STATUS  mandatory
      DESCRIPTION "Status of Internal LDAP Server."
      ::= {serverTrapInfo 4}

   -- Trap #3005
   LoadBalancingServer OBJECT-TYPE
      SYNTAX  DisplayString
      ACCESS  read-only
      STATUS  mandatory
      DESCRIPTION "Status of Load Balancing Server."
```

```
   ::= {serverTrapInfo 5}

-- Trap #3006
DNSServer OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of DNS Server."
   ::= {serverTrapInfo 6}

-- Trap #3007
SNMPServer OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of SNMP Server."
   ::= {serverTrapInfo 7}

-- Trap #3008
IPAddressPool OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of the IP address pool."
   ::= {serverTrapInfo 8}

-- Trap #3009
ExtLDAPServer OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of External LDAP Server."
   ::= {serverTrapInfo 9}

-- Trap #30010
radiusAuthServer OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of Radius Authentication Server."
   ::= {serverTrapInfo 10}

-- Trap #30011
   certificateServer OBJECT-TYPE
```

```
        SYNTAX  DisplayString
        ACCESS  read-only
        STATUS  mandatory
        DESCRIPTION "Status of Certificates Validity."
        ::= {serverCESTrapInfo 11}
```

Software-related traps

```
softwareTrapInfo OBJECT IDENTIFIER
   ::= {ContivitySnmpTraps 3}

-- Trap #5001
NetBuffers OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Network buffer usage."
   ::= {softwareTrapInfo 1}

-- Trap #5002
fireWall OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Status of internal firewall."
   ::= {softwareTrapInfo 2}
```

Login-related traps

```
loginTrapInfo OBJECT IDENTIFIER
   ::= {ContivitySnmpTraps 4}

   -- Trap #101
   failedLogin OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Failed Login Attempt."
   ::= {loginTrapInfo 1}
```

Intrusion-related traps

```
intrusionTrapInfo OBJECT IDENTIFIER
  ::= {ContivitySnmpTraps 5}

-- Trap #201
securityIntrusion OBJECT-TYPE
  SYNTAX  DisplayString
  ACCESS  read-only
  STATUS  mandatory
  DESCRIPTION "Login Security Intrusion."
  ::= {intrusionTrapInfo 1}
```

System-related traps

```
-- Trap #401
powerUpTrap OBJECT-TYPE
   SYNTAX DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Power Up."
   ::= {ContivitySnmpTraps 6}

-- Trap #601
periodicHeartbeat OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "Periodic Heartbeat."
   ::= {ContivitySnmpTraps 12}
```

Information passed with every trap

```
SeverityLevel OBJECT-TYPE
   SYNTAX INTEGER
   {
   fatal(1),
   major(2),
   minor(3),
   informational(4),
   insignificant(5),
   reversal(6)
   }
      ACCESS read-only
      STATUS mandatory
      DESCRIPTION "Severity of specific trap."
      ::= {ContivitySnmpTraps 7}
systemName OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "System Name."
   ::= {ContivitySnmpTraps 8}

systemDate OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "System Date."
   ::= {ContivitySnmpTraps 9}

systemTime OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "System Time."
   ::= {ContivitySnmpTraps 10}

systemUpTime OBJECT-TYPE
   SYNTAX  DisplayString
   ACCESS  read-only
   STATUS  mandatory
   DESCRIPTION "System Up Time."
   ::= {ContivitySnmpTraps 11}
```

Table 15 "Trap categories" on page 199 provides trap categories.

Table 15 Trap categories

Hardware	
1.3.6.1.4.1.2505.1.1.0.1001	hardDisk1StatusTrap
1.3.6.1.4.1.2505.1.1.0.1002	hardDisk0StatusTrap
1.3.6.1.4.1.2505.1.1.0.1003	memoryUsageTrap
1.3.6.1.4.1.2505.1.1.0.1004	lanCardStatusTrap
1.3.6.1.4.1.2505.1.1.0.1005	cpuTwoStatusTrap
1.3.6.1.4.1.2505.1.1.0.1006	fanOneStatusTrap
1.3.6.1.4.1.2505.1.1.0.1007	fanTwoStatusTrap
1.3.6.1.4.1.2505.1.1.0.1008	chassisFanStatusTrap
1.3.6.1.4.1.2505.1.1.0.1009	fiveVoltsPosStatusTrap
1.3.6.1.4.1.2505.1.1.0.10010	fiveVoltsMinusTrap
1.3.6.1.4.1.2505.1.1.0.10011	threeVoltsPositiveTrap
1.3.6.1.4.1.2505.1.1.0.10012	twoDotFiveVATrap
1.3.6.1.4.1.2505.1.1.0.10013	twoDotFiveVBTrap
1.3.6.1.4.1.2505.1.1.0.10014	twelveVoltsPositveTrap
1.3.6.1.4.1.2505.1.1.0.10015	twelveVoltsMinsTrap
1.3.6.1.4.1.2505.1.1.0.10016	normalTemperatureTrap
1.3.6.1.4.1.2505.1.1.0.10017	criticalTemperatureTrap
1.3.6.1.4.1.2505.1.1.0.10018	chassisIntrusionTrap
1.3.6.1.4.1.2505.1.1.0.10019	dualPowerSupplyTrap
1.3.6.1.4.1.2505.1.1.0.10020	t1WANStatusTrap
1.3.6.1.4.1.2505.1.1.0.10021	t3WANStatusTrap
1.3.6.1.4.1.2505.1.1.0.10022	hwAccelTrap
Server	
1.3.6.1.4.1.2505.1.2.0.3001	radiusAcctServerTrap
1.3.6.1.4.1.2505.1.2.0.3002	backupServerTrap
1.3.6.1.4.1.2505.1.2.0.3003	diskRedundencyTrap
1.3.6.1.4.1.2505.1.2.0.3004	intLDAPServerTrap

Table 15 Trap categories (continued)

1.3.6.1.4.1.2505.1.2.0.3005	loadBalancingServerTrap
1.3.6.1.4.1.2505.1.2.0.3006	dnsServerTrap
Server	
1.3.6.1.4.1.2505.1.2.0.3007	snmpServerTrap
1.3.6.1.4.1.2505.1.2.0.3008	ipAddressPoolTrap
1.3.6.1.4.1.2505.1.2.0.3009	extLDAPServerTrap
1.3.6.1.4.1.2505.1.2.0.30010	radiusAuthServerTrap
1.3.6.1.4.1.2505.1.2.0.30011	certificateServerTrap
Software	
1.3.6.1.4.1.2505.1.3.0.5001	netBuffersTrap
1.3.6.1.4.1.2505.1.3.0.5002	FireWallTrap
1.3.6.1.4.1.2505.1.3.0.5003	FipsStatusTrap
Failed Login	
1.3.6.1.4.1.2505.1.4.0.101	FailedLoginTrap
Intrusion	
1.3.6.1.4.1.2505.1.5.0.201	SecurityIntrusionTrap
Presence	
1.3.6.1.4.1.2505.1.0.401	PowerUpTrapEntry
1.3.6.1.4.1.2505.1.0.601	PeriodicHeartbeatTrap

Table 16 "VPN Router traps MIB descriptions" on page 200 provides descriptions for the VPN Router traps.

Table 16 VPN Router traps MIB descriptions

Standard / Proprietary OID	OID	Name	Description
Proprietary	1.3.6.1.4.1.2505.1.1.0.1001	hardDisk1StatusTrap	Hard Disk Number 1 Status.
Proprietary	1.3.6.1.4.1.2505.1.1.0.1002	hardDisk0StatusTrap	Hard Disk Number 0 Status.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Proprietary	1.3.6.1.4.1.2505.1.1.0.1003	memoryUsageTrap	Memory Usage Status.
Proprietary	1.3.6.1.4.1.2505.1.1.0.1004	fanCardStatusTrap	Status of LAN cards on the system.
Proprietary	1.3.6.1.4.1.2505.1.1.0.1005	cpuTwoStatusTrap	Status of second CPU.
Proprietary	1.3.6.1.4.1.2505.1.1.0.1006	fanOneStatusTrap	Status of the first CPU fan.
Proprietary	1.3.6.1.4.1.2505.1.1.0.1007	fanTwoStatusTrap	Status of the second CPU fan.
Proprietary	1.3.6.1.4.1.2505.1.1.0.1008	chassisFanStatusTrap	Status of the chassis fan.
Proprietary	1.3.6.1.4.1.2505.1.1.0.1009	fiveVoltsPosStatusTrap	Status of the +5 Volt power.
Proprietary	1.3.6.1.4.1.2505.1.1.0.10010	fiveVoltsMinusTrap	Status of –5 Volt power.
Proprietary	1.3.6.1.4.1.2505.1.1.0.10011	threeVoltsPositiveTrap	Status of +3 Volt power.
Proprietary	1.3.6.1.4.1.2505.1.1.0.10012	twoDotFiveVATrap	Status of 2.5VA power.
Proprietary	1.3.6.1.4.1.2505.1.1.0.10013	twoDotFiveVBTrap	Status of 2.5VB power.
Proprietary	1.3.6.1.4.1.2505.1.1.0.10014	twelveVoltsPositveTrap	Status of +12 Volt power.
Proprietary	1.3.6.1.4.1.2505.1.1.0.10015	twelveVoltsMinsTrap	Status of –12 Volt power.
Proprietary	1.3.6.1.4.1.2505.1.1.0.10016	normalTemperatureTrap	Status of the normal temperature reading.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Proprietary	1.3.6.1.4.1.2505.1.1.0.10017	criticalTemperatureTrap	Status of the critical temperature reading.
Proprietary	1.3.6.1.4.1.2505.1.1.0.10018	chassisIntrusionTrap	The chassis intrusion sensor indicates that the unit is physically opened.
Proprietary	1.3.6.1.4.1.2505.1.1.0.10019	dualPowerSupplyTrap	Status of the redundant power supplies.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Proprietary	1.3.6.1.4.1.2505.1.1.0.10020	t1WANStatusTrap	Status of T1 WAN card; Possible values for Wanic: Alert: Invalid Device X. Warning: Device WanicX disabled. Alert: Device WanicX down. Warning: Device WanicX not initialized. Warning: Device WanicX PPP negotiating. Alert: Device WanicX PPP down. Alert: Device WanicX FR no support. Alert: Device WanicX Unknown DL. Possible values for T1: Alert: Invalid Device X. Warning: Device LMCDTEX disabled. Alert: Device LMCDTEX down. Warning: Device LMCDTEX not initialized. Possible values for CSU/DSU: Alert: Invalid Device X. Warning: Device LMCCDX disabled. Alert: Device LMCCDX down. Warning: Device LMCCDX not initialized.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Proprietary	1.3.6.1.4.1.2505.1.1.0.10021	t3WANStatusTrap	Status of T3 WAN card Possible Values: Alert: Invalid Index X. Warning: Device HSSIX disabled. Alert: Device HSSIX down. Warning: Device HSSIX not initialized. Alert: Device HSSIX PPP down. Warning: Device HSSIX PP initializing.
Proprietary	1.3.6.1.4.1.2505.1.1.0.10022	hwAccelTrap	Status of hardware accelerator card. Possible Values: Invalid hardware accelerator unit %d. Unknown hardware accelerator unit %d. Healthy: Bulk Accelerator in slot %d: Unit %d Status 1—ATTACHED. Warning: Bulk Accelerator in slot %d: Unit %d Status 2—DISABLED. Healthy: Bulk Accelerator in slot %d: Unit %d Status 3—ACTIVE. Warning: Bulk Accelerator in slot %d: Unit %d Status 4—RECOVERING. Warning: Bulk Accelerator in slot %d: Unit %d Status 5—SHUTDOWN. Alert: Bulk Accelerator in slot %d: Unit %d Status 6—FAILED.
Proprietary	1.3.6.1.4.1.2505.1.1.0.10023	heartBeat	This OID is trap 601—see the preceding section about traps.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Proprietary	1.3.6.1.4.1.2505.1.1.0.10024	v90WANStatusTrap	Status of V.90 Interface card. Possible Values: X corresponds to the unit number of the card. Alert: V.90 Invalid index X. Disabled: Device IntModem-X disabled. Healthy: Device IntModem-X: PPP is UP. Alert: Device IntModem-X down. Warning: Device IntModem-X not initialized. Alert: Device IntModem-X: Call is UP. Internal Error. Warning: Device IntModem-X is Down. Last dial-out attempt FAILED. Healthy: Device IntModem-X is Down (No Active calls). Warning: Device IntModem-X is in an UNKNOWN state.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Proprietary	1.3.6.1.4.1.2505.1.1.0.10025	briWANStatusTrap	Status of ISDN BRI Interface card. Possible Values: X corresponds to the unit number of the card. Alert: BRI Invalid index X. Alert: Device BRI-X not Responding. Needs Host Reboot. Disabled: Device BRI-X disabled. Alert: Device BRI-X down. Warning: Device BRI-X not initialized. Healthy: Device BRI-X: PPP is UP. Alert: Device BRI-X: Call is UP. Internal Error. Warning: Device BRI-X is Down. Last dial-out attempt FAILED. Healthy: Device BRI-X is Down (No Active calls). Alert: Device BRI-X is in an UNKNOWN state.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Proprietary	1.3.6.1.4.1.2505.1.1.0.10026	serUartStatusTrap	Status of Serial (COM) port/ interface. Possible Values: X corresponds to the unit number of the serial interface. Alert: COM port Invalid index X Healthy: Device COMX is set for Serial Menu. Disabled: Device COMX disabled Warning: Device COMX not initialized. Healthy: Device COMX: PPP is UP. Alert: Device COMX: Call is UP. Internal Error. Warning: Device COMX is Down. Last dial-out attempt FAILED. Healthy: Device COMX is Down (No Active calls). Alert: Device COMX is in an UNKNOWN state.
Proprietary	1.3.6.1.4.1.2505.1.1.0.10027	adslWANStatusTrap	Status of ADI ADSL card. Possible Values: X corresponds to the unit number of the serial interface. Alert: Invalid index X. Alert: Device ADIADSLX off line. Disabled: Device ADIADSLX disabled. Alert: Device ADIADSLX down. Warning: Device ADIADSLX not initialized. Healthy: Device ADIADSLX up.
Proprietary	1.3.6.1.4.1.2505.1.2.0.3001	radiusAcctServerTrap	Status of External Radius Accounting Server.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Proprietary	1.3.6.1.4.1.2505.1.2.0.3002	backupServerTrap	Status of External Disk Backup Server.
Proprietary	1.3.6.1.4.1.2505.1.2.0.3003	diskRedundencyTrap	Status of Local Disk Redundancy.
Proprietary	1.3.6.1.4.1.2505.1.2.0.3004	intLDAPServerTrap	Status of Internal LDAP Server.
Proprietary	1.3.6.1.4.1.2505.1.2.0.3005	loadBalancingServerTrap	Status of Load Balancing Server.
Proprietary	1.3.6.1.4.1.2505.1.2.0.3006	dnsServerTrap	Status of DNS Server.
Proprietary	1.3.6.1.4.1.2505.1.2.0.3007	snmpServerTrap	Status of SNMP Server.
Proprietary	1.3.6.1.4.1.2505.1.2.0.3008	ipAddressPoolTrap	Status of the IP address pool.
Proprietary	1.3.6.1.4.1.2505.1.2.0.3009	extLDAPServerTrap	Status of External LDAP Server.
Proprietary	1.3.6.1.4.1.2505.1.2.0.30010	radiusAuthServerTrap	Status of Radius Authentication Server.
Proprietary	1.3.6.1.4.1.2505.1.2.0.30011	certificateServerTrap	Status of Certificates Validity. Possible Values: Healthy: Certificates Validity: Operational. Alert: Certificates Validity: All certificates are going to expire/ expired. Warning: Certificates Validity: One more certificate is invalid. Disabled: Certificates Validity: No certificate defined.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Proprietary	1.3.6.1.4.1.2505.1.2.0.30012	extLDAPAuthServerTrap	Status of External LDAP Authentication Server. Possible Values: Warning: External LDAP Authentication Server: Server is down (indicates at least one server is not reachable and at least one server is reachable). Alert: External LDAP Authentication Server: Server is down (indicates all servers are not reachable).
Proprietary	1.3.6.1.4.1.2505.1.2.0.30013	cmpServerTrap	Status of CMP Server. Possible Values: Either One or more Certificate Requests error: at least one request error exists. Either One or more Certificate Requests processing: at least one request in processing. No Certificate Requests submitted: no request sent.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Proprietary	1.3.6.1.4.1.2505.1.2.0.30014	dhcpServerTrap	Status of DHCP Server. Possible Values: Disabled: DHCP Server is Disabled. Alert: DHCP Server is NOT configured. Alert: DHCP Server is configured and operational, using backup config. Alert: No IP Address available for subnet. Alert: DHCP Server is configured and server is DOWN. Healthy: DHCP Server is Operational. Warning: Subnet low on IP Addresses. Warning: DHCP Server Initializing. Warning: DHCP Server is Enabled, but status Unknown cannot be determined.
Proprietary	1.3.6.1.4.1.2505.1.3.0.5001	netBuffersTrap	Network buffer usage.
Proprietary	1.3.6.1.4.1.2505.1.3.0.5002	fireWallTrap	Status of internal firewall.
Proprietary	1.3.6.1.4.1.2505.1.3.0.5003	fipsStatusTrap	Status of FIPS.
Proprietary	1.3.6.1.4.1.2505.1.3.0.5004	licensingStatusTrap	Status temporary SW Licenses.
Proprietary	1.3.6.1.4.1.2505.1.3.0.5005	natStatusTrap	Status of Network Address Translator.
Proprietary	1.3.6.1.4.1.2505.1.3.0.5006	antiSpoofingStatusTrap	Status of Anti Spoofing Feature.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Proprietary	1.3.6.1.4.1.2505.1.3.0.5007	sslVpnStatusTrap	Status of SSL-VPN Accelerator. Possible values: Disabled: Disabled—The unit is administratively disabled. Disabled: HW not installed—No SSL-VPN Accelerator installed. Warning: Initialization in progress—The unit initializes. Warning: Configuration errors—See eventlog for details. Healthy: Operational—The unit is operational. Alert: Unreachable: Error communicating with SSL-VPN.
Proprietary	1.3.6.1.4.1.2505.1.3.17	igmpStatusTrap	Status of IGMP. Possible values: Disabled: IGMP is not initialized Warning: No upstream interface is up Alert: No downstream interface is up Healthy: Operational
Proprietary	1.3.6.1.4.1.2505.1.4.0.101	failedLoginTrap	Failed Login Attempt.
Proprietary	1.3.6.1.4.1.2505.1.5.0.201	securityIntrusionTrap	Login Security Intrusion.
Standard	1.3.6.1.2.1.11.0.0	coldStart	A coldStart trap signifies that the SNMPv2 entity, acting in an agent role, reinitializes itself and the configuration can be altered.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Standard	1.3.6.1.2.1.11.0.2	linkDown	A linkDown trap signifies that the sending protocol entity recognizes a failure in one of the communication links represented in the agent configuration. Varbind list: ifIndex—ifIndex of the interface. ifAdminStatus—ifAdminStatus of the interface. ifOperStatus—ifOperStatus of the interface. ifDescr—ifDescr of the interface. ifType—ifType, this provides discrimination of interfaces that are tunnels. ifReasonForStatus-ces—reason for the change in status. ifPhysLocation-ces—this is the slot number. ifPhysRelPos-ces—the port number on the board defined in interfacePhysLocation. ifIpAddr-ces—IP address assigned to the phys port or the local IP address of a tunnel. ifName-ces—Name of the tunnel or physical interface. ifTunnelRemoteIpAddr-ces—for non-tunnel interfaces it is zero. sysObjectID—sysObjectID of the unit. sysName—sysName of the unit.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Standard	1.3.6.1.2.1.11.0.3	linkUp	A linkUp trap signifies that the sending protocol entity recognizes that one of the communication links represented in the agent configuration is up. Varbind list: ifIndex—ifIndex of the interface. ifAdminStatus—ifAdminStatus of the interface. ifOperStatus—ifOperStatus of the interface. ifDescr—ifDescr of the interface. ifType—ifType, this provides discrimination of interfaces that are tunnels. ifReasonForStatus-ces—reason for the change in status. ifPhysLocation-ces—this is the slot number. ifPhysRelPos-ces—the port number on the board defined in interfacePhysLocation. ifIpAddr-ces—IP address assigned to the phys port or the local IP address of a tunnel. ifName-ces—Name of the tunnel or physical interface. ifTunnelRemoteIpAddr-ces—for nontunnel interfaces it is zero. sysObjectID—sysObjectID of the unit. sysName—sysName of the unit.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Standard	1.3.6.1.2.1.11.0.5	authenticationFailure	An authenticationFailure trap signifies that the SNMPv2 entity, acting in an agent role, received a protocol message that is not properly authenticated. The snmpEnableAuthenTraps object indicates whether this trap is generated. snmpAuthenOperation-ces identifies the operation (ie. GetRequest, GetNextRequest,...) was attempted. snmpAuthenIpAddress-ces identifies the source IP address of the operation. snmpAuthenCommString-ces identifies the community string used in the operation.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Proprietary	1.3.6.1.4.1.2505.1.14.3.0.1	firewallRuleTriggeredTrap	An event sent at the user request to signal that a rule is matched. firewallPolicyType-ces—Policy type. firewallRuleType-ces—Type of rule that triggered this event. firewallRuleNumber-ces—Number of the rule that triggered this event. ifIndex—ifIndex is the index into the ifTable for the port that received the packet. ifName-ces—The name of the interface, same as ifName. firewallSrcAddr-ces—Source IP address of the packet. firewallSrcPort-ces—Source port address of the packet. firewallDestAddr-ces—Destination IP address of the packet. firewallDestPort-ces—Destination port of the packet. firewallProtocolID-ces—The value of the protocol field in the IP header. firewallRuleAction-ces—Action defined for the triggered rule.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Standard	1.3.6.1.2.1.11.0.2	linkDown	A linkDown trap signifies that the sending protocol entity recognizes a failure in one of the communication links represented in the agents configuration. Varbind list: ifIndex—ifIndex of the interface. ifAdminStatus—ifAdminStatus of the interface. ifOperStatus—ifOperStatus of the interface. ifDescr—ifDescr of the interface. ifType—ifType, this provides discrimination of interfaces that are tunnels. ifReasonForStatus-ces—reason for the change in status. ifPhysLocation-ces—this is the slot number. ifPhysRelPos-ces—the port number on the board defined in interfacePhysLocation. ifIpAddr-ces—IP address assigned to the phys port or the local IP address of a tunnel. ifName-ces—Name of the tunnel or physical interface. ifTunnelRemoteIpAddr-ces—for nontunnel interfaces it is zero. sysObjectID—sysObjectID of the unit. sysName—sysName of the unit.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Standard	1.3.6.1.2.1.11.0.3	linkUp	A linkUp trap signifies that the sending protocol entity recognizes that one of the communication links represented in the agent configuration is up. Varbind list: ifIndex—ifIndex of the interface ifAdminStatus—ifAdminStatus of the interface. ifOperStatus—ifOperStatus of the interface. ifDescr—ifDescr of the interface. ifType—ifType, this provides discrimination of interfaces that are tunnels. ifReasonForStatus-ces—reason for the change in status. ifPhysLocation-ces—this is the slot number. ifPhysRelPos-ces—the port number on the board defined in interfacePhysLocation. ifIpAddr-ces—IP address assigned to the physical port or the local IP address of a tunnel. ifName-ces—Name of the tunnel or physical interface. ifTunnelRemoteIpAddr-ces—for nontunnel interfaces it is zero. sysObjectID—sysObjectID of the unit. sysName—sysName of the unit.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Standard	1.3.6.1.2.1.11.0.5	authenticationFailure	An authenticationFailure trap signifies that the SNMPv2 entity, acting in an agent role, received a protocol message that is not properly authenticated. The snmpEnableAuthenTraps object indicates whether this trap is generated. snmpAuthenOperation-ces identifies the operation (GetRequest, GetNextRequest,...) was attempted. snmpAuthenIpAddress-ces identifies the source IP address of the operation. snmpAuthenCommString-ces identifies the community string used in the operation.

Table 16 VPN Router traps MIB descriptions (continued)

Standard / Proprietary OID	OID	Name	Description
Proprietary	1.3.6.1.4.1.2505.1.14.3.0.1	firewallRuleTriggeredTrap	An event sent at the user request to signal that a rule is matched. firewallPolicyType-ces—Policy type. firewallRuleType-ces—Type of rule that triggered this event. firewallRuleNumber-ces—Number of the rule that triggered this event. ifIndex—ifIndex is the index into the ifTable for port that received the packet. ifName-ces—The name of the interface, same as ifName. firewallSrcAddr-ces—Source IP address of the packet. firewallSrcPort-ces—Source port address of the packet. firewallDestAddr-ces—Destination IP address of the packet. firewallDestPort-ces—Destination port of the packet. firewallProtocolID-ces—The value of the protocol field in the IP header. firewallRuleAction-ces—Action defined for the triggered rule.

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