Model 2960 Remote Access Server

A Technical Overview of a new Remote Access Server for Digital T1/PRI and E1/PRI Dial-Up Networks

Service Providers are expanding their dial-up access systems as more and more users connect to the Internet for entertainment, education, and e-commerce. A dial-up Remote Access Server is also the method used by most telecommuters and mobile users wanting temporary access to their Corporate Intranet.

Our new Model 2960 Remote Access Server connects these ISDN, V.90, K56Flex, and V.34+ dial-up users to your networks using a high-density package that is fully redundant. It's an ideal solution for expansion sites (new PoPs), the data center, or disaster recovery systems.

Document 07MD2960-PO1

Model 2960 Remote Access Server
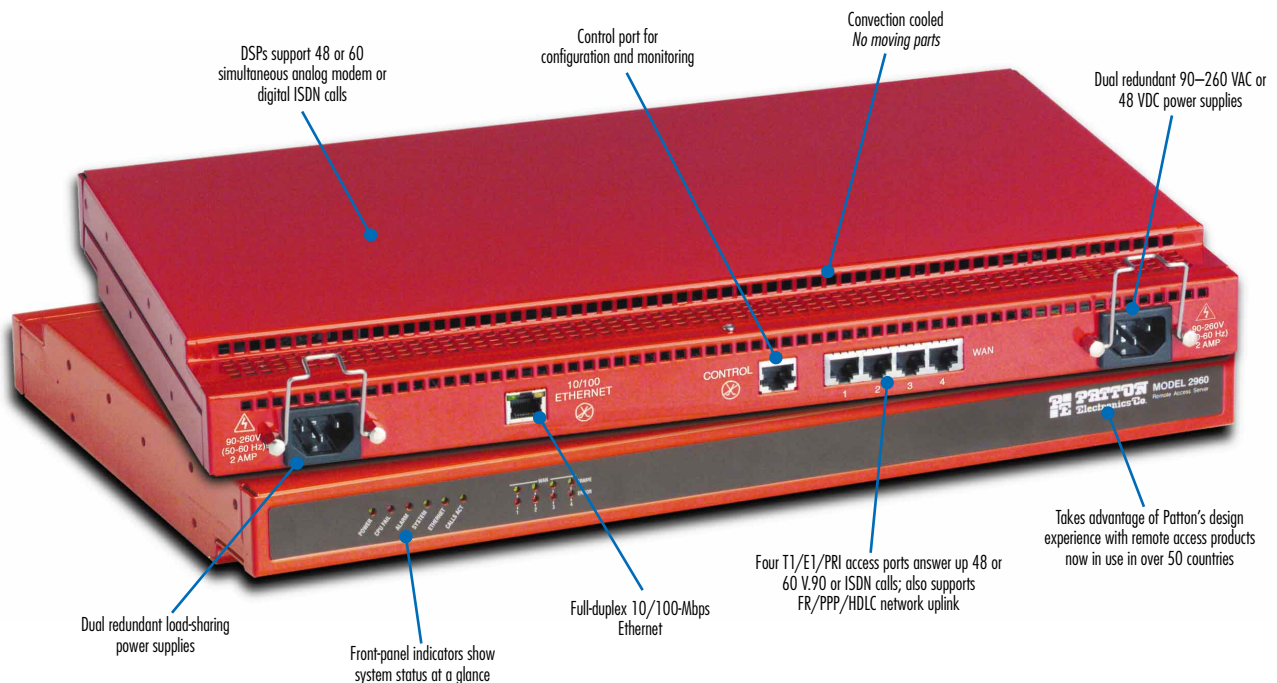## Product Overview

What are the features, functions, and key benefits of the new Model 2960 Remote Access Server?

Introduction

The Model 2960 is a central site Remote Access Server solution with integrated modems to terminate dial-up analog and digital users. The Model 2960 Remote Access Server combines 48 or 60 analog and digital modems, RAS software, a 10/100 Ethernet port, IP Routing, Frame Relay/PPP forwarding, and four T1/E1 WAN ports.

The 2960 RAS terminates one or two digital T1/PRI or E1/PRI circuits from the PSTN/ISDN network. It then connects 48 or 60 dial-up ISDN, V.90, K56Flex, V.34+,

and other modem users to the Internet, IP LANs, or Corporate Intranet. The 2960 RAS software performs all the functions needed to deliver IP data traffic to a Frame Relay/PPP network through dual WAN uplinks, or to an external Router through its 10/100 Ethernet port. Load-sharing, dual redundant power supplies, and an integrated Web-based SNMP/HTTP management system make our 2960 RAS the highest density, most reliable, and easiest to use RAS in the industry

DSPs support 48 or 60 simultaneous analog modem or digital ISDN calls

Control port for configuration and monitoring

Convection cooled *No moving parts*

Dual redundant 90–260 VAC or 48 VDC power supplies

Dual redundant load-sharing power supplies

Front-panel indicators show system status at a glance

Full-duplex 10/100-Mbps Ethernet

Four T1/E1/PRI access ports answer up 48 or 60 V.90 or ISDN calls; also supports FR/PPP/HDLC network uplink

Takes advantage of Patton's design experience with remote access products now in use in over 50 countries

Key Product Features

PATTON's Model 2960 RAS Dial-Up Access Server addresses the new Point of Presence (PoP) requirements demanded by today's ISPs. Based on the latest DSP advancements in low-power, high-performance V.90 digital modem technology, the 2960 RAS integrates analog and digital modems, IP Routing, four CSU/DSUs and Frame Relay/PPP uplink support.

The PATTON 2960 provides dual-redundant, load-sharing power supplies, permitting the 2960 RAS to run without interruption—even when the power fails! The compact 1U-high form factor optimizes valuable rack space. Engineered with a temperature-driven self-cooling system, the 2960 RAS has no fans or moving parts to wear out.

> *"I've had one in production for about three weeks now. Yes, Patton's support is phenomenal.... Kudos guys, and if you want more particulars from a non-biased type. Drop me a line :)"*
>
> **Sean Kearns, Catskill Online**

Key Product Features (continued)

The 2960's comprehensive feature set ensures seamless integration into an existing provider network. With most installations taking only 10 minutes to set up, configure, and operate, the intuitive WWW interface takes the guesswork out of management. Using our integrated Web Server, the operator can check on user traffic, examine statistics or upload new software from anywhere in the world.

Key Feature	Product Highlight/Customer Benefit
48/60 simultaneous analog modem or digital ISDN calls	The 2960 RAS simultaneously connects 48 or 60 digital ISDN or analog (V.90, K56Flex, V.34+) modem users to the Internet, IP LANs, or Corporate Intranet. When calls are received, the different modem modulations are auto-detected and the user's data is managed by its digital signal processors. Each DSP provides 33 MIPS of raw processing that offloads the main CPU – so it can concentrate on RAS functionality, IP routing and frame forwarding. The 2960's distributed architecture provides consistent performance, from one to sixty users. **Customer Benefit:** By connecting more ports in the same chassis, providers can scale their operations systematically. Supporting both ISDN and Analog modems within the same chassis and with the same hardware, means the 2960 RAS delivers more revenue-producing services with lower equipment costs.
Dual T1/E1/PRI for modem calls & dual FR/PPP/HDLC network uplinks	Each Model 2960 RAS includes four WAN ports, each of which is software-selectable for T1, E1, PRI, Frame Relay or PPP/HDLC operation. To answer 48/60 calls, the 2960 uses two of its T1/E1/PRI access ports. These ports are software-configurable for connection to any T1/PRI or E1/PRI network in the world. The access ports provide signaling for all kinds of interfaces, including MFCR2 and modified MFCR2. In remote POP applications, the two additional WAN ports may be configured as Frame Relay/PPP uplinks . These dual WAN uplinks provide for WAN redundancy by allowing one port to be linked to the provider's NOC, while the other port is connected to the Internet. If a link fails, data is automatically routed to the operational link attached to the other WAN port. **Customer Benefit:** With T1/E1, Channelized T1, and PRI all standard in the 2960, our RAS will connect to your telco with a large variety of signaling methods. In conjunction with its built-in router, the extra two T1/E1 ports can be seamlessly connected to your IP network. Open a new POP without the extra cost of a router, CSU/DSU and switch! With two ports, you can setup 1:1 protection and give your POP redundant data links. Power protection, reliable construction, and dual-redundant WAN uplinks mean that your Model 2960 RAS will provide years of worry-free operation.
Convection cooled— No moving parts	The 2960 uses less than 30 watts of power in a 1U-high chassis that stays cool — without fans. It is convection cooled—there are no fans to fail and no moving parts to wear out. **Customer Benefit:** Patton's unique thermal transfer design increases reliability without moving parts. More heat means more operating costs. Why use a RAS that will cost you more $$$ right out of the box? Why pay more $$$ for power to drive your RAS? Get the cool running 2960.

Key Feature	Product Highlight/Customer Benefit
Redundant load-sharing power supply	Inside the 2960 RAS, dual-redundant, load-sharing power supplies share the load in normal operation. In the event of a power supply failure, the on-line supply automatically manages the full load. And, our dual power input feeds protect against source power disruptions. **Customer Benefit:** Offering high-availability services requires a RAS that can meet the challenge. With standard dual redundant PS, not only are you protected against hardware failures, but you can now engineer your system to protect against power delivery failures as well. Other vendors charge extra for reliability, our redundant features come standard from PATTON.
Control port for configuration and monitoring	An on-board RS-232 port provides for initial configuration of the Model 2960. The RS-232 port also supports: • Asynchronous data rates up to 230 kbps • An RJ-45 connector for simple connectivity • A management interface that supports VT-100 terminals • Hardware flow control and CD and DTR signals for connecting external modems **Customer Benefit:** Command line is king! The 2960's command line interface can be reached either through the external RS-232 console port or via TELNET. By supporting standard RS-232 control leads, you can easily connect your 2960 to an external modem or terminal server.
Full-duplex 10/100-Mbps Ethernet	In a 48/60 port environment having a 10Mbps-only port may cause a bottleneck. The 2960 RAS includes an auto-sensing 10/100-Mbps Ethernet LAN port that supports full-duplex 10Base-T or 100Base-T operation. The Ethernet port includes Auto detection and fallback and has link and status indicators. **Customer Benefit:** With its 100Mbps full duplex Ethernet port, the 2960 gives your users the bandwidth for high-speed surfing. Many providers are looking for speed…a faster connection means happier customers.

What are the features, functions, and benefits of PATTON's new Model 2960 Remote Access Server?

2960 RAS Product Highlights

- 48 or 60 simultaneous analog modem or digital ISDN calls in a stackable 1U-high chassis
- Four WAN ports support T1, E1, or PRI on any interface—mix and match as needed
- 10/100 full-duplex, auto-sensing Ethernet LAN port
- Frame Relay/PPP network uplink support
- Integrated WWW server for managing and configuring *all* Model 2960 functions
- Multichassis Multilink enable the 2960 to scale-in high-density PoPs.
- 16 LED indicators show RAS status at a glance
- Built-in digital cross-connect for flexible call management
- Dual-redundant load-sharing power supplies with built-in power supply fail alarms
- Uses less than 30 watts of power.
- Low heat monitored by an on-board temperature sensor and no fans or moving parts to wear out or fail

- 2,350 MIPS of built-in processing power
- E1/PRI signaling software supporting installations in over 50 countries

> "*Just wanted to let you know that I'm pleased with the 2800. Connections are very sound and it seems to be less overly aggressive than the PM3 in negotiating speeds, which results in more solid connects. The detail information in the web administration is superior to the Lucent unit as well…*"
>
> **Michael Colucci, CoyoteNet**

- Free technical support
- Free software upgrades via FTP download
- Available in your choice of colors: *Ultra Red*, *Cool White*, and *Black Ice*

Features	Benefits
✔ All features come standard	✔ Nothing extra to buy and no surprises. All software comes *pre-installed* with every unit.
✔ Dual-redundant, load-sharing power supplies	✔ Increased reliability without spending thousands extra.
✔ Convection-cooled system	✔ No fans to fail and no moving parts to wear out.
✔ Built-in HTTP/SNMP management	✔ Fast installation, typically less than 10 minutes. Management from any location in the world via the Internet. User-friendly management software and familiar web-browser-style interface.
✔ Free Technical Support & Software Updates	✔ Top-notch *personal* support without a service contract
✔ Two-Year Warranty	✔ PATTON's commitment to stand by its products.

2960 Competitive Summary

Two years ago, the dominant players in the RAS market (Ascend, Cisco, 3COM, Shiva, and Livingston) had the lion's share of the business—from small ISPs to the carriers. What ever happened to the products they were pushing and their companies? Let's do a rundown:

✗ In 1999, Ascend merged with Lucent and now focuses on the larger ISPs and Telcos. Their product line is now voice-enabled and they are looking for opportunities to sell voice/data solutions. The MAX 4000, widely used by the small/medium-sized ISP, has been replaced by the larger, more expensive, MAX 6000.

✗ Cisco's RAS dominates the corporate segment. But their ISP product strategy has not been as successful. They have eliminated both the AS5100 and AS5200 that were introduced in 1997 and 1998, respectively. The primary product now is the AS5300–a scalable but expensive Octal T1/E1 RAS. At the lower end, they are positioning the more expensive Model 36xx, an enterprise-focused integrated access device (IAD).

✗ Recently, 3COM announced a major change in business strategy, whereby 3COM will divest some of it's networking elements, maybe even RAS. This uncertainty terrifies every service provider, especially those with an investment in 3COM RAS gear.

✗ In networking, Intel is known for NIC cards, hubs, and LAN switches. They purchased Shiva in 1998 to bolster their ISP and corporate networking business. But, Intel/Shiva are targeting the corporate enterprise customer with virtual private networking solutions.

✗ Livingston, a manufacturer of Remote Access Servers for small/medium-sized ISPs, was purchased by Lucent in 1998. Following the completion of the Lucent/Ascend merger in 1999, Lucent replaced the popular Livingston PortMaster product line with the more expensive (Ascend) MAX series of Remote Access Servers. Since then, the PortMaster 4 has been eliminated and the PortMaster 3 is not being enhanced.

The blizzard of corporate restructuring and mergers that took place these past two years resulted in discontinued products, disappearing players, and terminated product lines. The remaining products from Lucent and Cisco address larger carrier/PTT/telco RAS requirements, but neglect the needs of other market segments. The direct impact on the small/medium-sized ISP is twofold:

✗ Competitive pressures to reduce costs and introduce new services mean that successful small- and medium-sized ISPs can't afford to invest in RAS products not tailored to their needs.

✗ Now when it is required the most, personal service and technical support are scarce and expensive

2960 Competitive Positioning

		Patton 2960	Lucent MAX 4000	Lucent PM3
Base Features	Number of V.90 calls	48/60	48/60	48/60
	T1/E1/PRI ports	2	2	2
	Backhaul/Uplink ports	2	2	Add'l $$$
Key Selling Points	Built-in HTTP/WEB Mgmt	YES	NO	NO
	100Base-T Ethernet ports	YES	NO	NO
	Self Cooling	YES	NO	NO
	Rack Height	1U	2U	2U
	Dual Redundant Power	FREE	Add'l $$$	Add'l $$$
	Tech Support	FREE	Add'l $$$	Add'l $$$
	Software Upgrades	FREE	Add'l $$$	Add'l $$$

Our new Model 2960 RAS matches the base features the other guys provide and adds the redundancy and ease of management that you require. Plus, *our extras are free*: installation support, technical services, two-year warranty, and software upgrades.

The Model 2960 sets the new standard for dial-up Remote Access Servers for small/medium-sized ISPs.

With the 2960 RAS, PATTON delivers the products, know-how, and reliability you want from your ISP technology partner.

Application 1: PoP-in-a-Box

Traditionally, setting up a new point-of-presence (PoP) meant accepting a multi-box solution that included a remote access server (for connecting the PoP to the PSTN for local dial-up access), a router (for providing local IP services), and a wide area network interface (for connecting the PoP to the Internet). Such multi-box solutions are costly, prone to failure, and exceedingly complicated to manage.

An ISP expanding into a new calling area needs a reliable solution that minimizes equipment costs. The 2960 RAS delivers a dial-up RAS, IP Routing, and WAN uplinks into a *single* tightly integrated package.

With its four T1/E1/PRI CSU/DSU WAN ports, 48/60 modems, and dual-redundant power supplies, the 2960 RAS provides the line termination, routing, and dial-up capabilities an ISP needs to begin offering new services.

Two of the four T1/E1/PRI ports on the 2960 provide dial-up access for 48/60 modem or ISDN calls in the new local service area. A 10/100 Ethernet port connects E-mail, web caching, and other local servers, while the integrated IP routing software provides basic and enhanced IP services (including the default gateway).

The remaining two WAN ports can be configured as Frame Relay/PPP wide-area network uplinks at T1/E1 speeds. The WAN links provide for additional bandwidth and network redundancy and *multi-homing* capabilities. (Multi-homing enables one WAN port to be directly linked to the provider's NOC, while the other port can be connected to the Internet.)

The ISP with the most reliable network attracts and retains customers by offering a low-cost dependable service. Integrated access/Ethernet/uplink ports, redundant power supplies, *and* multi-homing capabilities make the 2960 RAS the best single-box solution available for your new remote PoP.

2960 Remote Access Server Configuration in a Remote PoP
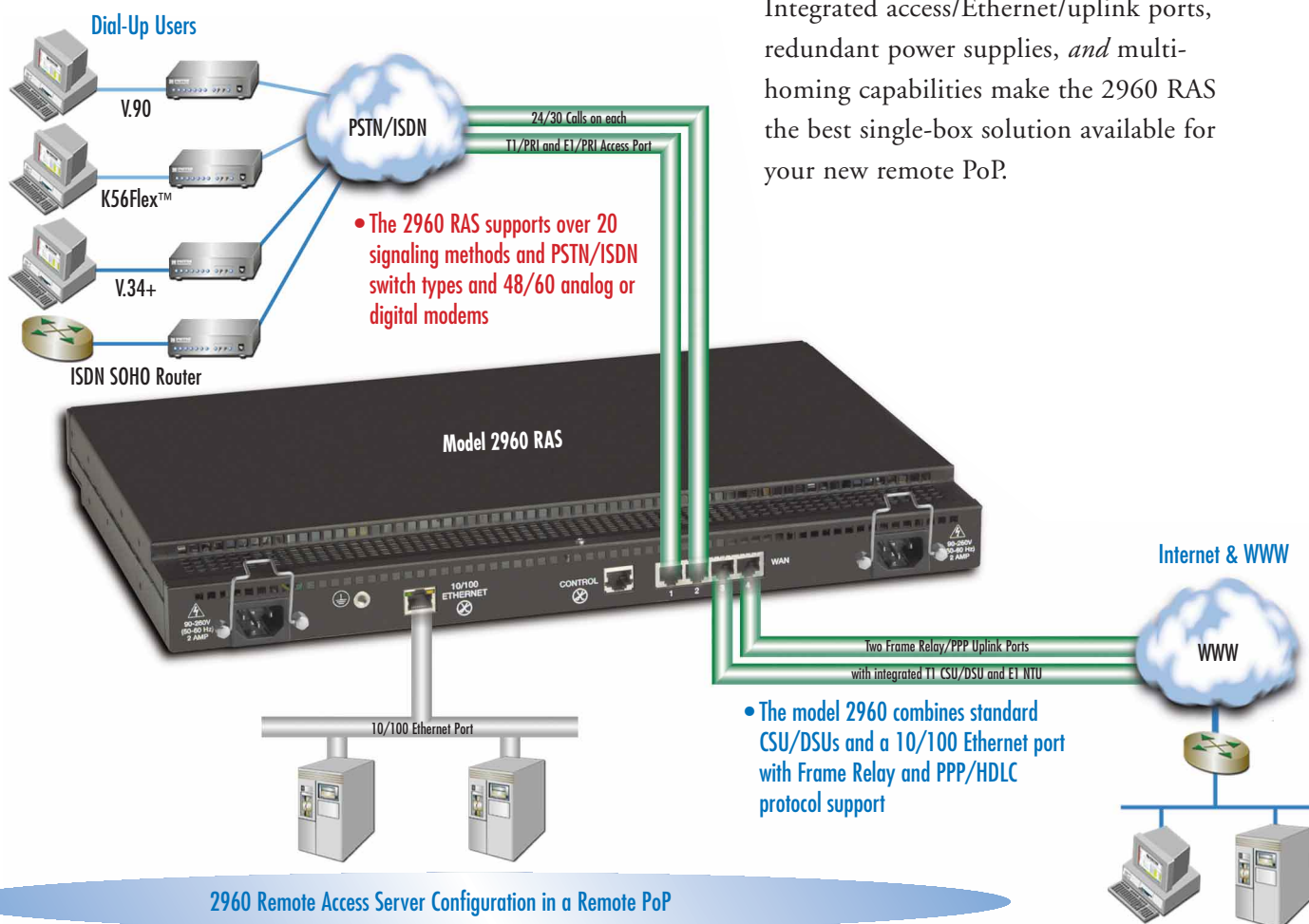
Application 2: Virtual Modem Pool and Bandwidth Management Control

As ISPs expand their operations by adding dial-up (T1/E1/PRI) WAN access ports, they must be able to combine calls received on different dial-up access servers. Combining calls offers a low-cost mechanism to get more bandwidth. By using multiple modems and multiple dial-up lines, users get the higher bandwidth they want without the expense of a dedicated link. The facility that makes this possible, without rejecting calls or services is PATTON's Multichassis MultiLink PPP (MLPPP).

Multichassis MultiLink PPP enables providers to present the entire dial-up system as a single entity: one large, scalable, virtual modem pool.

MultiLink (or MultiLink PPP) is a mechanism that enables two or more calls from the same user (with the same IP address) to be combined, providing greater dial-access bandwidth. For example, using MLPPP, two V.90 calls at 53 kbps achieve a data throughput of *106 kbps*. Calls are combined at the Remote Access Server where the calls are terminated.

Since dial-up sessions appear on the next available time-slot within a T1/E1/PRI dial-up link, there exists the possibility that a user's call can occupy several timeslots across different T1/E1/PRI lines. MultiLink can only combine channels in the *same* T1/E1/PRI.
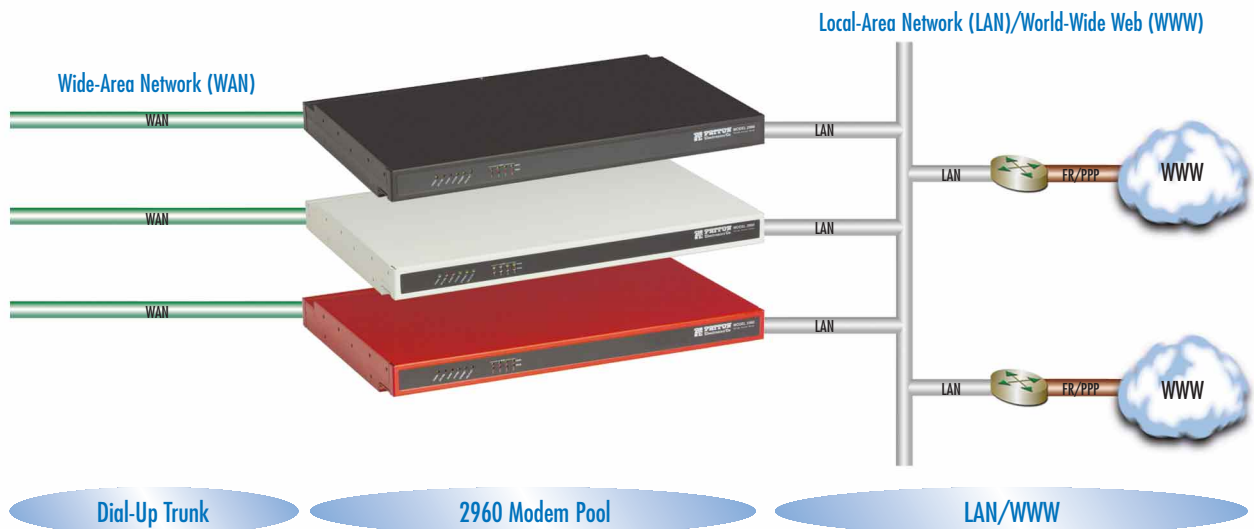
Which is why PATTON's Multichassis MLPPP feature is so useful. It enables customers to combine channels *across access servers* and *across multiple T1/E1/PRI lines* without rejecting calls. With Multichassis MLPPP, calls are *linked* together regardless of which physical chassis the call is terminated on, thereby enabling multiple Model 2960 units to provide a single high-speed dial-up session.

> **"***We just bought one and love it! The box works great. After it shipped, they called me to find out if it had arrived and if I needed any assistance in getting set up. Never had that happen before! A lot of people could take a lesson from PATTON on service. Technical Support and a two-year warranty are included in the price of the box.***"**
>
> **Patti Jones, V.I.P., Link Internet**

For example, Multichassis Multilink PPP enables ISDN users to *bond* two 64-kbps B channels to achieve a single high-speed 128-kbps data pipe.

With Multichassis and MultiLink PPP, ISPs can combine multiple calls on different servers, thus providing a higher-bandwidth solution for their end users. These features are critical for service providers and enterprise customers alike.

Wide-Area Network (WAN)

Local-Area Network (LAN)/World-Wide Web (WWW)

Dial-Up Trunk   2960 Modem Pool   LAN/WWW

Application 3: Building a Trouble-Free PoP

Q: How do you design a network with high availability in mind?

A: Protect against single-points-of-failure.

By creating a product with dual-redundant power supplies, dual feeds, convection cooling, and dual-redundant WAN uplinks, the 2960 protects your network from single-points-of-failure.

- **Power protection**

  Inside the 2960, dual-redundant, load-sharing power supplies automatically manage the full load in the event of a power supply failure. And, dual power input feeds protect against source power disruptions.

- **Reliable construction**

  The 2960 uses less than 30 watts of power in a chassis that stays cool. It is convection cooled—there are no fans to fail and no moving parts to wear out.

- **Dual redundant WAN uplinks**

  To answer 48/60 calls, the 2960 has two T1/E1/PRI access ports. Two additional WAN ports can be configured as Frame Relay/PPP uplinks. The dual WAN uplinks provide for WAN redundancy by allowing one port to be linked to the provider's NOC, while the other port is connected to the Internet. If one link fails, data sent to the failed link is automatically routed to the link attached to the other WAN port.

Power protection, reliable construction, and dual-redundant WAN uplinks mean that your Model 2960 RAS will provide years of worry-free operation.
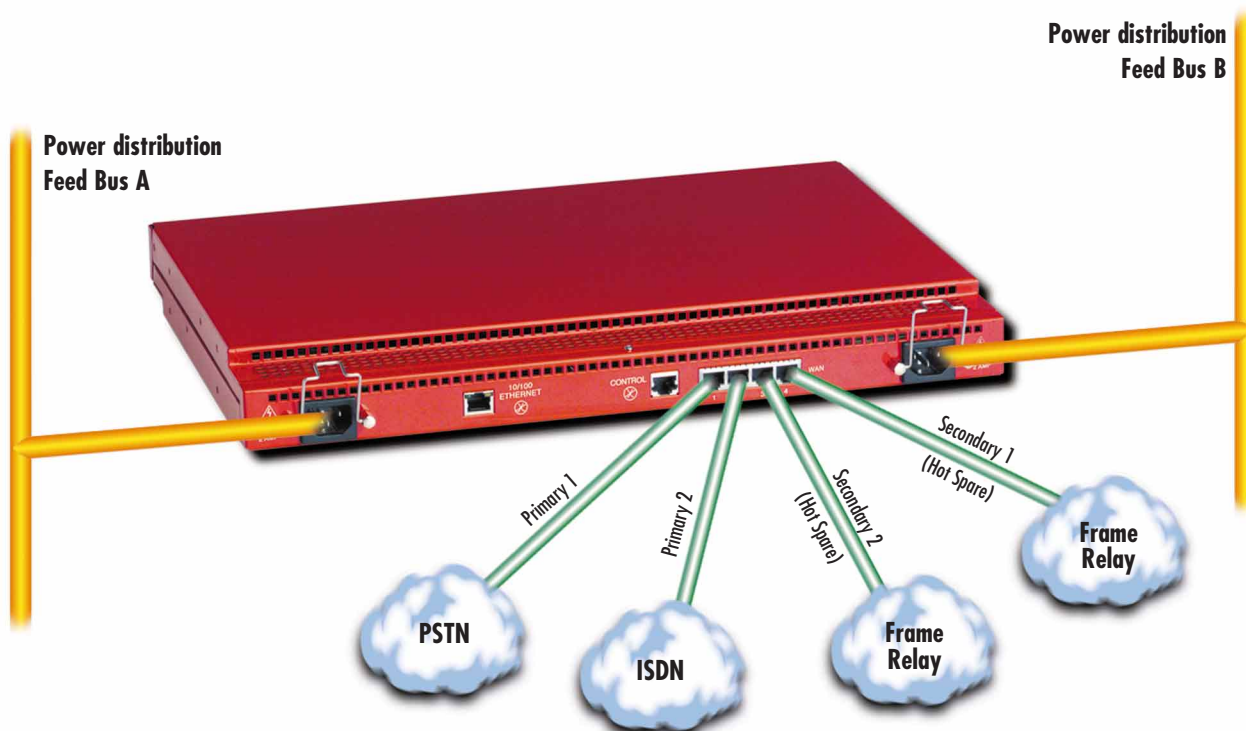
Software Overview

The Patton Model 2960 supports all common remote access services as well as integrated routing and forwarding. Authentication and network management offer control and detailed monitoring from any web browser. From the PSTN, the 2960 RAS will accept either T1/E1 or PRI connections, with support for both channel associated or common channel signaling. The Model 2960 combines state-of-the-are digital processing techniques with robust system software.

Parameter	Description
Modem Support	V.90 (28,000–56,000) • K56 Flex (32,000–56,000) • V.34 Annex 12 (2,400–33,600) • V.34 (2,400–28,800) • V.8bis (capabilities negotiations) • V.32bis (7,200–14,400 with trellis encoding) • V.32 (4,800 & 9,600) • V.22 (600, 1,200, & 2,400) • V.22bis (600, 1,200, & 2,400) • V.21 (300 bps) • Bell 212A (1,200 bps) • Bell 103 (300 bps) • Bell 202 (75/1,200 bps) • EIA PN-2330 and low-speed data modem automode procedures • Modulation supervision for automatic rate selection • Bit error performance monitoring for automatic fallback and fall-forward • V.14 synch to async conversion (buffered/direct) • V.42 sync to async conversion with error correction • V.42bis compression • 64K HDLC Digital ISDN • User-selectable modulation and speeds
WAN Protocols	SLIP • Sync/Async PPP with dial-up auto-detection • Multilink PPP & Multichassis MultiLink with L2TP tunneling • LCP • IPCP with MS extensions • Frame Relay RFC 1490 IP Encapsulation • User configurable PVCs • User-selectable 2-, 3-, or 4-byte DLCI address field formats • Congestion recognition and management • Individual DLCI statistics • Current throughput indication (10-second average) • Online help
LAN Protocols	802.3 Ethernet, ARP, RARP, IP over Ethernet
PSTN Connectivity	T1/CT1 • Robbed Bit with Ground Start, Loop Start, E&M Wink, E&M Immediate, Taiwan R1 • Office Side Robbed Bit • PRI/ Q.931 Switch Support: NI1, AT&T/Lucent, DMS •T1/E1 Near- and Far-end Statistics • User Selectable Time Slot allocation • E1/CE1 with MFR2 with user configurable inter-register codes o PRI Switch Support: NET5/CTR-4, TS014, INS1500 • Drop & Insert with signaling conversion • Digital Cross Connect with multiple clock source fail-over protection
IP Services	TCP/IP suite with extensive protocol statistics • ICMP with redirect enable/disable • TFTP • FTP • RLOGIN • TELNET • Proxy ARP • IP over Point-to-Point Protocol • IP over Ethernet • Van Jacobson TCP Header Compression • PPP address and protocol compression • RIP and RIPv2 dynamic route distribution with support for Multiple RIP interfaces • OSPF with support for RIP redistribution • User configurable static routes with gateway/host/interface routes • TCP clear connection (TCPRAW) • Dial-in NetBIOS UDP broadcast enable/disable
Management	HTTP • SNMPv2 with MIB II • TELNET • RS232 Console port • SYSLOG client • Remote software upgrade via FTP • Complete dial-in statistics including the viewing of active calls, previous 15 dead calls, administrative call termination • Selectable login time limit • Selectable idle time limit • Selectable session total time limit • Dial-in dynamic IP address pool management • Dial-out via Telnet with user configurable port numbers • Layer 3 & Layer 4 IP Filters with auto-default for dial-in users
Authentication	RFC 2138 & RFC 2139 RADIUS client with packet format selection and authentication statistics with user configurable timeout/retry parameters • PAP & CHAP • CLID/ANI/DNIS • ASCII Username & Password • Internal Static Users Database (111 entries)

What are the features, functions, and benefits of PATTON's new Model 2960 Remote Access Server?

Hardware Overview

The Model 2960 is a fully integrated Remote Access Server for central site concentration of analog and digital modem calls. The Model 2960 comprises a 1U-high 19-inch wide chassis that contains a motherboard and two dual-redundant power supplies. A full set of LEDs are present on the chassis front panel, while connections for WAN, LAN, and control ports are present on the rear of the chassis. Two IEC-320 receptacles provide for AC power input.

The following is a detailed description of the 2960 hardware.

WAN

The 2960 includes four WAN ports, each of which is software-selectable for T1, E1 or PRI operation. These WAN ports are provided via balanced RJ-48C interfaces. They also include:

- Built-in T1/E1 CSU/DSU
- T1 1.544 Mbps with: D4 or ESF framing, AMI or B8ZS, FCC part 68 compliant
- E1 2.048 Mbps with: double frame or CRC4 framing, AMI/HDB3, CTR-4, CTR-12, and CTR-13 compliant

LAN

The 10/100-Mbps Ethernet LAN port is presented on an RJ-45 connector with an auto-sensing/full-duplex 10Base-T or 100Base-T interface. It also includes:

- 100Base-TX half-/full-duplex operation (100 + 100)
- 10Base-T half-/full-duplex operation (10 + 10)
- Auto detection and fallback
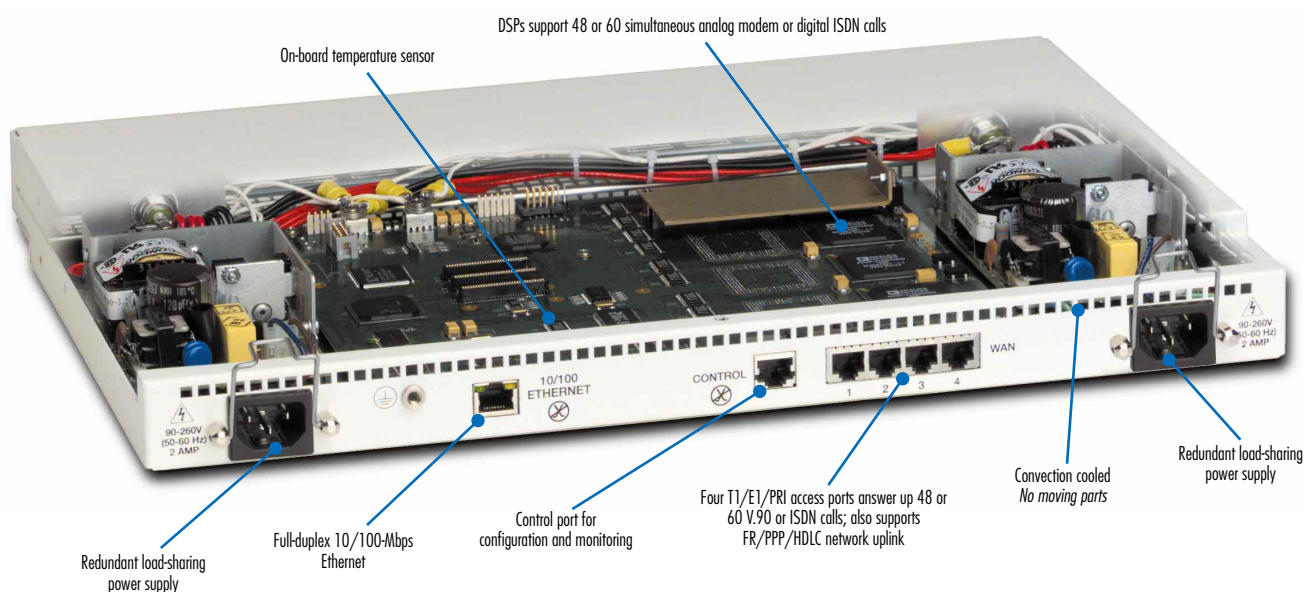- 10/100 Mbps link and status indicators

RS-232 Control Port

An RS-232 port provides for initial configuration of the Model 2960. The RS-232 port also supports:

- Asynchronous data rates up to 230 kbps
- An RJ-45 connector with EIA-561 pinouts
- A management interface that supports VT-100 terminals
- Hardware flow control
- Hardware CD and DTR signals for external modems

Power System

- Internal dual-redundant, load-sharing power supplies
- Universal-input voltage range, 90-264 VAC, 50/60 Hz
- Optional DC power supply with 36 to 72VAC

On-board temperature sensor

DSPs support 48 or 60 simultaneous analog modem or digital ISDN calls

Redundant load-sharing power supply

Full-duplex 10/100-Mbps Ethernet

Control port for configuration and monitoring

Four T1/E1/PRI access ports answer up 48 or 60 V.90 or ISDN calls; also supports FR/PPP/HDLC network uplink

Convection cooled *No moving parts*

Redundant load-sharing power supply

Hardware Overview (continued)

Central Processing Unit

The 2960 is powered by a RISC-based Intel model i80960VH processor operating at 100 MHz. The CPU executes the LAN protocol, IP routing, WAN protocol, management and authentication software. It also supports:

- 4 Mbytes of FLASH memory
- 32 Mbytes of EDO DRAM

LED display

The front panel LEDs show the link states of the four WAN ports, the Ethernet LAN port, and the 2960's operating status. Two LEDs provide the framing state and error indications for each T1/E1/PRI WAN port. A full set of LEDs provide link and data flow indication for the 10/100 Ethernet port. The front panel includes LEDs for:

- POWER: Green if power is being applied/Flashing if a power supply has failed.
- CPU FAIL: Red if the CPU has failed.
- ALARM: Red if the 2960 is in an alarm state.

- SYSTEM: Green if the RAS is operating normally
- ETHERNET: Green if link status is nominal for the Ethernet port
- CALLS ACT: Green to indicate call activity on the Model 2960
- WAN STATUS: Green indicates normal activity at each of the four T1/E1/PRI links/Red indicates an error

Physical & Environmental

The 2960 RAS enclosure is a 17 in. (43.2 cm) wide x 12 in. (30.5 cm) deep x 1.75 in. (4.45 cm) high unit that can be placed on a desktop or mounted in a standard 19-in. wide chassis (removable rack-mounting brackets are included). The 2960 RAS is completely convection cooled in both the 48 and 60-port configurations. A temperature sensor enables the NMS to monitor internal temperatures. It supports an:

- Operating Temperature of 0° to 55°C (32° to 131°F); Humidity: 5 to 95% non-condensing.
- Power consumption of less than 30 watts.

"…Patton's web interface makes setting up the boxes a breeze. Everything is point-and-click and menu driven."

Larry Sanford, CEO, Sanford Industries

Approvals

The 2960 RAS has the following approvals

- FCC Part 15, Class A
- FCC Part 15, Class B
- FCC Part 68
- Complies with UL1950 (MET)
- Canadian cMET
- Canadian CS-03
- EMC Directive 89/336/EEC
- Low Voltage Directive 73/23/EEC (EN60950)
- ITU-T CTR-4, CTR-12 and CTR-13

Address: ▼ http://209.49.110.253/

CONFIGURATION MENU

HOME
Import/Export

Authentication
DAX
Dial In
Dial Out
Drop and Insert
DSP
Ethernet
Filter IP
Frame Relay
ICMP
Interfaces
IP
MFR Version 2
RIP Version 2
SNMP
System
System Log
T1/E1 Link
TCP
UDP

About
License

Software Revision 3.0.3 May 19 2000 16:48:45

STATUS OF Server

Active Calls:	13
Peak Active Calls:	21
Total Calls:	2794
% CPU Idle:	91
DSPs Not Working:	0
Total DRAM Detected:	31093120
Running Since Last Boot:	11 days 03:45:19 hours

IMMEDIATE ACTIONS
[Record Current Configuration]
[Hard Reset]
[Set Factory Default Configuration]

Got a Browser?
Get a RAS Overview

We think you will like our Remote Access Server so much that we've put one on-line. To view our web-based management interface:

Logon to: **http://209.49.110.253**
Username: **monitor**/Password: **monitor**

If you have a question or want a guided tour of our RAS, e-mail our RAS Product Manager at ras@patton.com

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Online Resources a c c e s s . p a t t o n . c o m

APPLICATION NOTES

RAS FAQ—Frequently Asked Questions about Patton's RAS

RADIUS Server Recommendations—Where to find RADIUS server software

Adding Default Gateways—Applications Note About Basic IP Routing

MAXSTAT Software Review—Using MaxSTAT with PATTON's RAS

MRTG Examples —Implementing user statistics and graphic with MRTG

RAS Reference Sites—Some of our customers that will talk to you

RAS Interoperability—Using PATTON's RAS with other network gear

Quick Start Guide—How to set up a 2800 RAS

IP Filtering—How to implement IP security using filters

WHITE PAPERS

How To Become an ISP—The basics of setting up and growing dial-up internet service

RAS Product Overview—In depth RAS applications and product overview

The ISP 80-20 Rule—The generic business elements of small and large ISPs

ARTICLES

I love my RAS because...—The VPN versus RAS debate debunked

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