

T1/E1/Fiber

RAS

xDSL

..CSU/DSU...xDSL...High Speed Internet Access...

..Radius...TCP/IP...Dial-up Internet Access...

Remote Access Solutions Guide

Lower costs for the local loop

- ***Enterprise Solutions***
- ***Service Provider Solutions***
- ***RAS Product Overviews***
- ***Additional Resources***

ACCESS

<http://access.patton.com>

Top 10 Reasons

.....You should choose PATTON's RAS

- FREE Top-Notch Technical Support For Life.
- Every unit comes with a Two year Warranty.
- There is No Risk...We offer a 30 Day Money Back Guarantee.
- All Hardware and Software for Dial-Up RAS in one Low-Cost Package.
- It's Very Easy To Use... with web-based HTTP or SNMP Network Management.
- It scales from 24/30 to 96/120 ports in a high-density 1U high chassis.
- Patton's product is the latest on the market with the best price/performance ever.
- The products are tested, approved and deployed in over 40 countries.
- We offer financing. Ask about our divide-by-12 or other payment plans.
- Buying our product won't take the shirt off your back, that's why we send you a free T-Shirt with every box. Like our RAS, you even choose the size (LG, XL, XXL).

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



Free T-shirt with each purchase

“ QUOTES ”

"We just bought one and love it. The box works great. After it shipped, they called me to find out if it arrived and if I needed any assistance in getting setup. Never had that happen before! A lot of people could take a lesson from PATTON on service. Technical Support and a 2 year warranty are included in the price of the box."

-Patti Jones, V.I.P. Link Internet

RAS

Our dial-up remote access servers terminate 24 - 120 analog (V.90, K56Flex, V.34+) and digital (ISDN) modem calls from T1/PRI or E1/PRI lines. Patton's RAS is driving the price-per-port to new record lows for ISPs, carriers, and corporate customers. Learn more about our RAS, visit access.patton.com



ENTERPRISE SOLUTIONS **P1**

For corporations and private enterprises

SERVICE PROVIDER SOLUTIONS **P3**

Solutions for ISP and TELCO/CLEC/PTT

RAS PRODUCT OVERVIEWS **P5**

Your dial-up on-ramp to the Internet

Model 2800 - 24/30 Port RAS **P5**

Model 2960 - 48/60 Port RAS **P7**

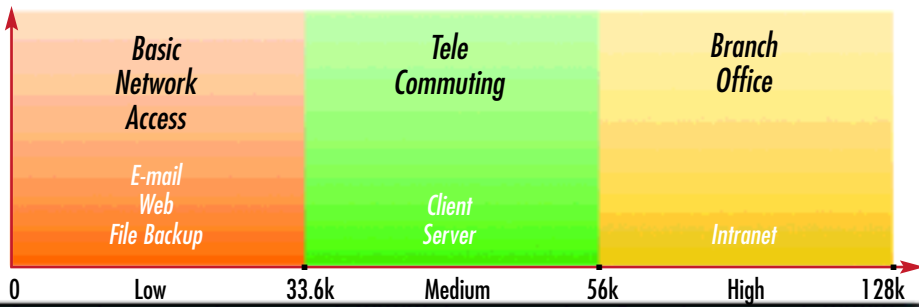
Model 3120 - 48 to 120 Port RAS **P9**

ADDITIONAL RESOURCES **P11**

Articles, white papers, technical descriptions and ordering information



ENTERPRISE SOLUTIONS



Dial-Up Access Speeds/Applications

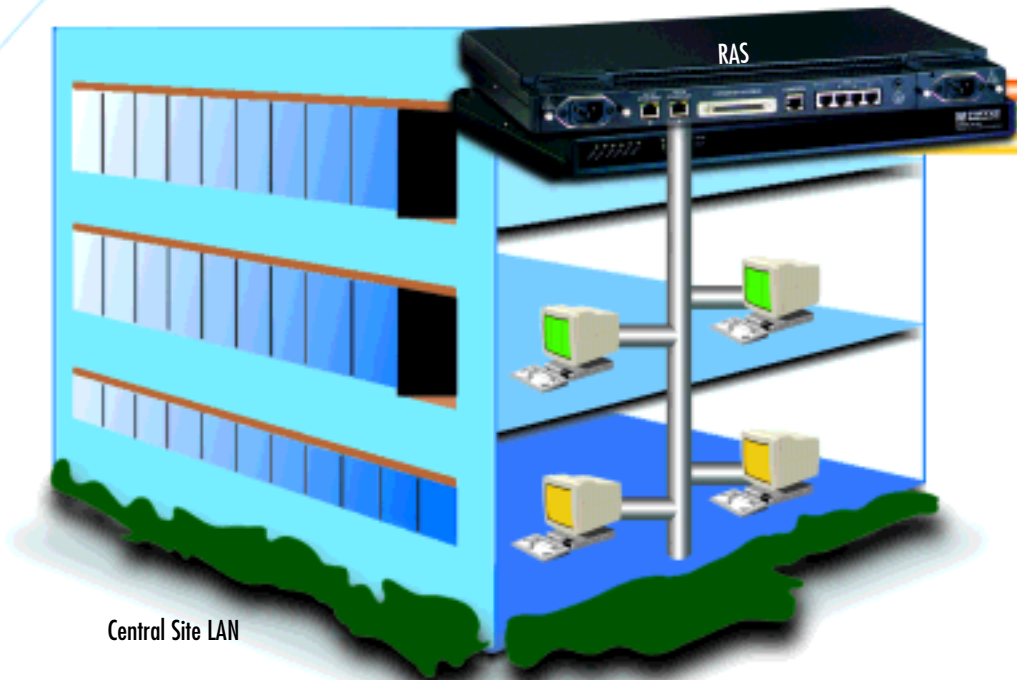
Still Using Modems?

Some offices continue to use dial-up modems, terminal servers and external routers to address their remote access requirements. Our RAS includes integrated routing and digital signal processing to answer up to 120 digital ISDN or analog V.90 modem calls in a 1U high chassis. This integrated solution saves on equipment costs, installation, technical support, maintenance and day-to-day network management.

Enterprise Remote Access Services

The new corporate office is quickly being defined as "any place where work is done." Legislative mandates, highway traffic and employee retention issues are speeding the growth of telecommuting. As more companies respond to this trend, reliable remote access equipment is needed. We have it.

PATTON's Remote Access Servers provide dial-up access to company e-mail, to the corporate Intranet and to other resources for telecommuters and remote users. The PATTON family of products delivers the right solution for small, medium and large offices.



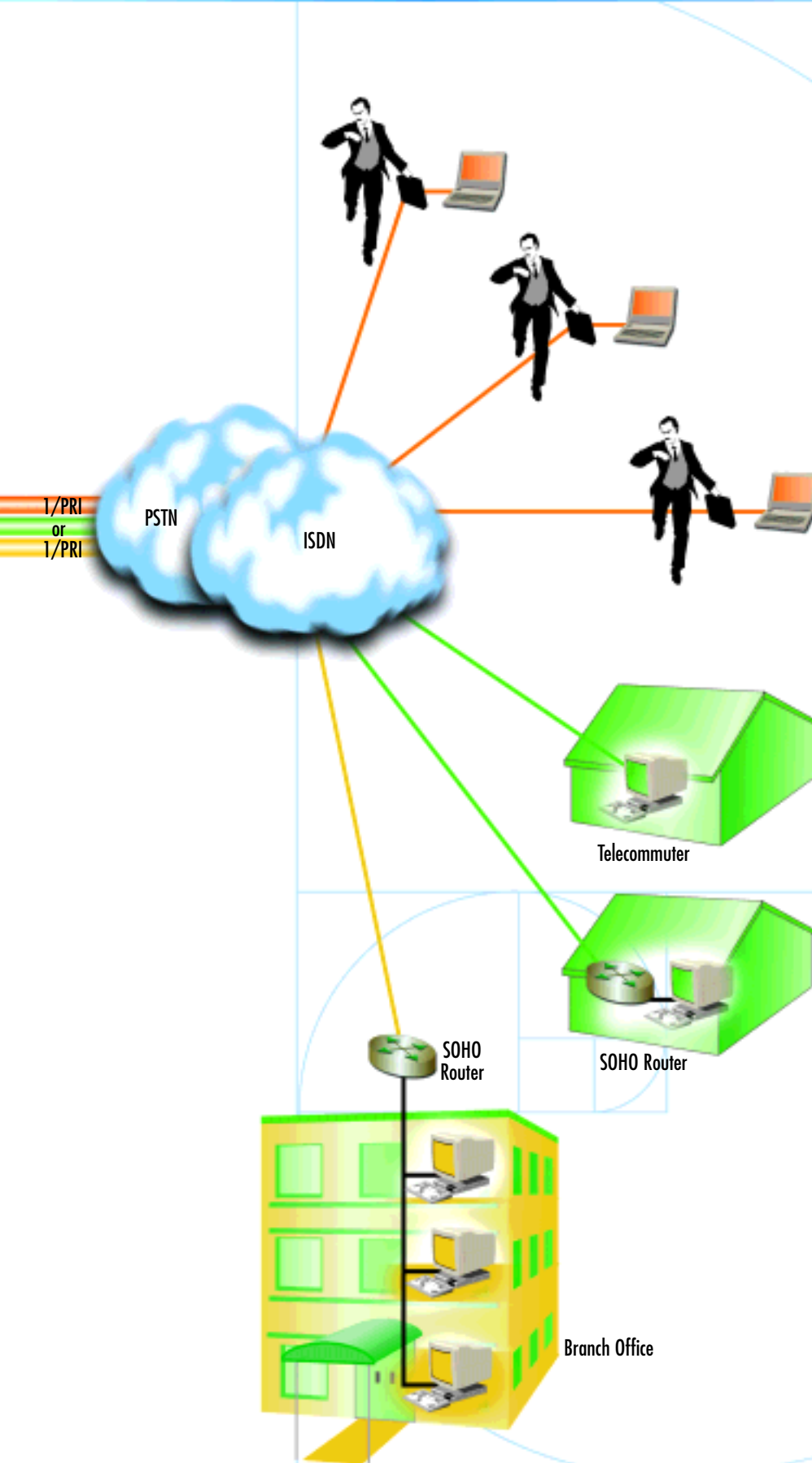
"QUOTES"

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

-Larry Sanford, CEO, Sanford Industries

Why Corporations Deploy PATTON's RAS

- 1 Saves On Office Costs**
Maintaining common work areas for flex-time staff saves money. Employers spend an average of \$10,000 per employee providing basic office space, insurance and other infrastructure. Remote staff costs less.
- 2 Helps Retain Employees**
Most corporations spend 30% of an employee's salary to recruit the employee. Offering even a little relief from sitting in traffic and providing your employees with more-flexible work hours pleases your workforce and promotes employee retention.
- 3 Extends Geographic Reach**
From business services to recruiting new employees, offering network access and telecommuting programs makes your company more competitive and attractive.
- 4 Environmentally Responsible**
You can do your part to improve air quality before being subject to pending legislation, regulation and local ordinances.
- 5 It Just Makes Sense**
The number of US telecommuters continues to grow as businesses realize telecommuting is fiscally sound, good for employees and environmentally responsible.



Network Access on the Road

On the road, users want to get online quickly, send their reports and get their e-mail. The NetLink RAS offers fast V.90/ISDN/Mobile connections. By providing a built-in modem pool, users won't get busy signals either. The next available modem will answer.

The NetLink RAS includes built-in analog and digital modems, support for new services like the Wire Access protocol (WAP) and support for well-known services like V.42bps compression. If the goal is to get on and off the network quickly, we offer the fastest turnaround time.

Tele-Commuting

Rather than fight traffic, telecommuters answer their e-mails or work at home each day. Their requirements are for client-server Intranet Access and the greater bandwidth this application demands. The NetLink RAS provides for this through integrated ISDN support and the combining of services using standards-based Multichassis and MultiLink. With MultiLink, the bandwidth available from two or more calls is combined to provide the dial-up user a blazingly-fast connection. Its just like being at the office - without the lengthy travel or the wait to get there.

Branch Office Access

When telecommuting prohibits the right level of customer contact or employee interaction, a Remote or Satellite office may be the right answer.

Corporate network managers can outfit a small office with a Remote Access Server. Now, users can access their e-mail, check status reports on the Intranet and upload projects to their colleagues at headquarters. The low-cost NetLink Remote Access Server equipment from PATTON makes this possible.



Dial-Up

Remote Access Server

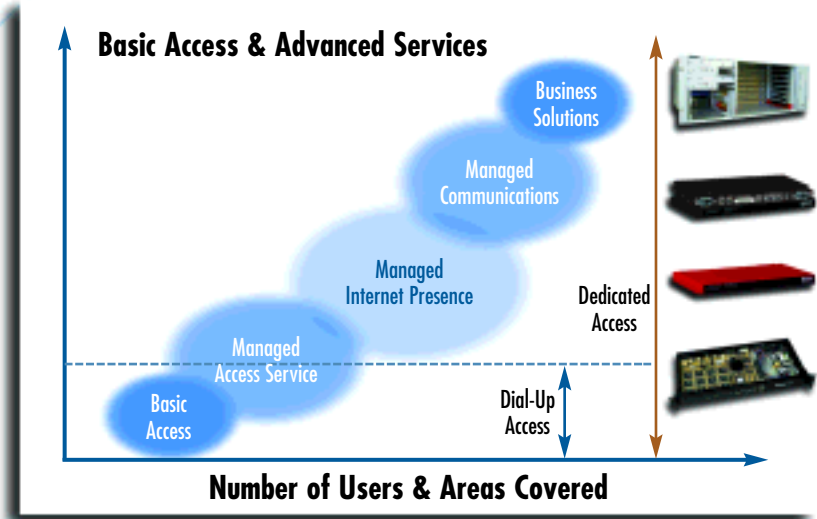
Service Providers are expanding their dial-up access systems as more users connect to the Web for entertainment, education and e-commerce. Dial-up is also the method used to terminate virtual private networks (VPNs) for Corporate Intranet access.

Our family of Remote Access Servers connect these dial-up users to your network using high-density, fully-redundant, cost-effective systems.

Dial-Up: Your Foundation

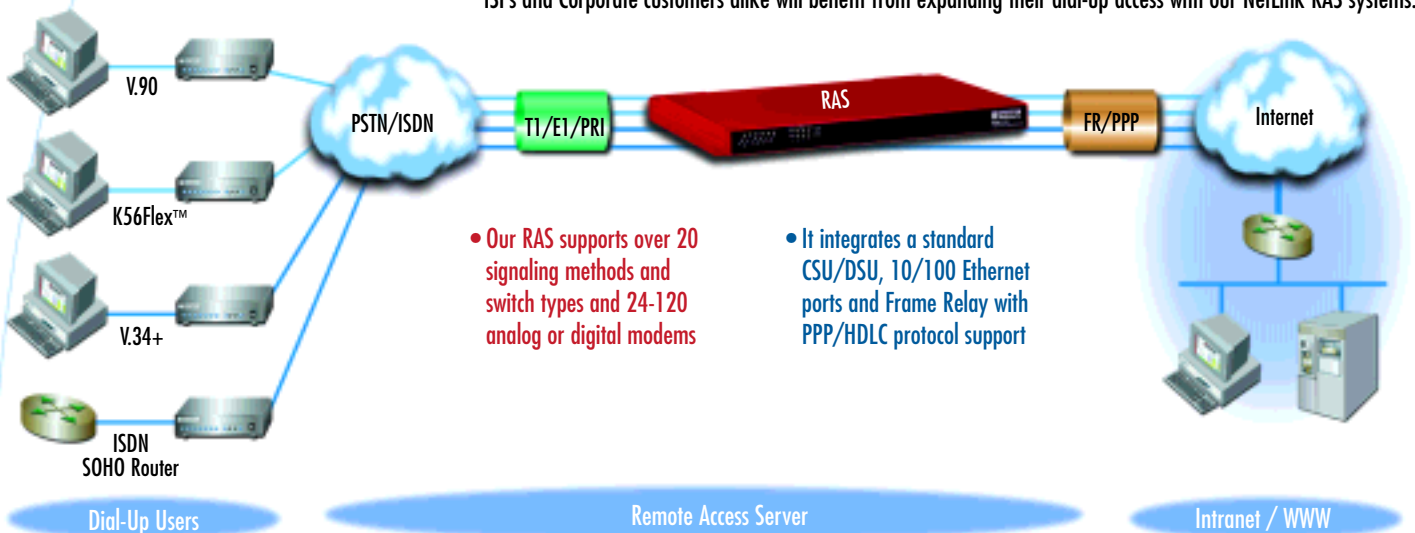
RAS Systems are the foundation of the Internet Service Provider (ISP) business: they ensure that customers can dial up when a dedicated connection is either unavailable or unaffordable.

Every telecommuter, mobile user and consumer wanting to temporarily access the Internet or an Intranet does so through a dial-up connection between an analog modem or ISDN Terminal Adapter and a Remote Access Server.



Use High-Density Dial-Up Access

Dial-Up RAS systems have come a long way since the days of 1200bps modems, terminal servers and bulletin boards. The NetLink RAS uses the latest in digital signal processor (DSP) technology to terminate both analog (V.90, K56Flex, V.34+, etc.) and digital (ISDN BRI) modem calls. This architecture provides the highest density and ensures the highest connection speeds at the lowest possible costs. With technology advances driving the continued reduction in price-per-port, ISPs and Corporate customers alike will benefit from expanding their dial-up access with our NetLink RAS systems.



Access Network •

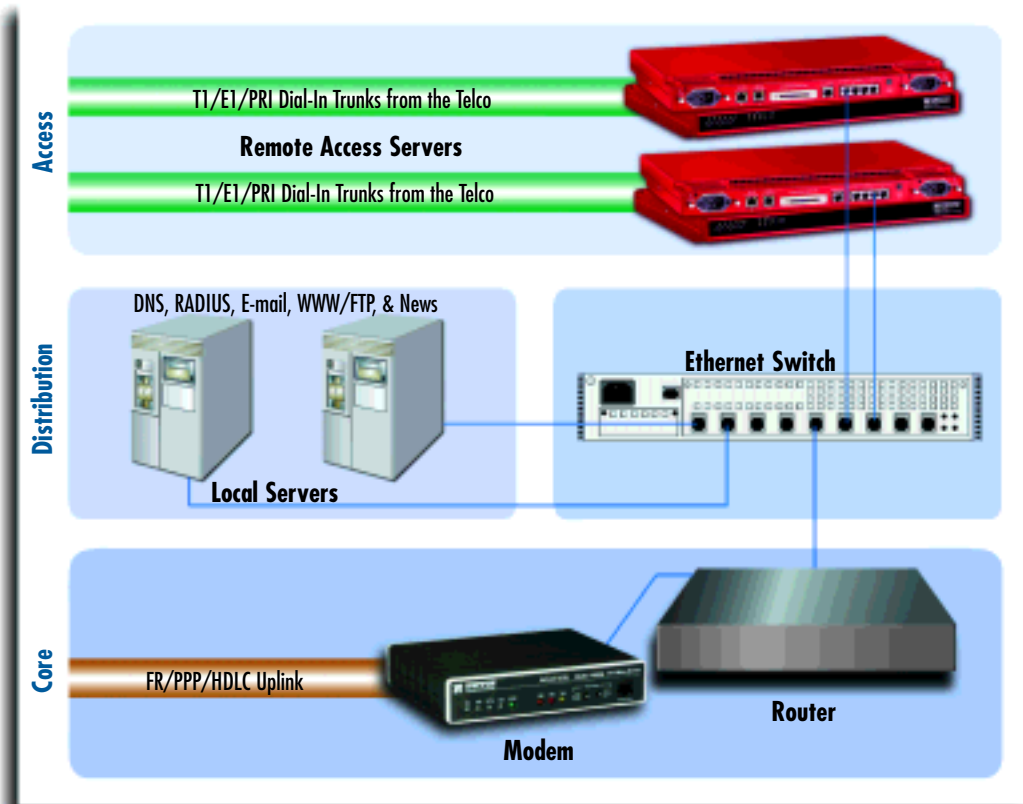
This is where access services are added. For example, these can be remote access servers for terminating dial-up modems or DSL modems for leased-line connections.

Distribution Network •

This is where your access services connect to your backbone network. Ethernet defines the ISP's backbone and glues everything together.

Core Network •

This is the backbone connection to the Wide-Area-Network. As the Internet is a network-of-networks, this connection is to another ISP.



An Overview of Dial-Up...

The RAS connects to the local phone company through a T1/E1 or PRI line and to your local Ethernet switch. When users call to get on-line, the RAS is the box that will answer the call with a modem. After a dial-in user connects, the RAS will take IP packets and send them off to the Internet. Here is how a remote access server works:

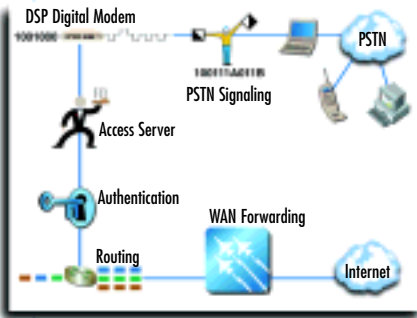
- A user dials the ISP's access phone number using their Modem/ Terminal Adapter and Windows Dial-Up Networking. The call is answered by the RAS with a modem.
- Once the modems connect, a PPP session begins between the user and the RAS.
- Through PPP, the RAS obtains the username and password. This is the same username and password that was typed in by the user before dialing the ISP.
- The RAS queries a RADIUS server and asks to authenticate the user.
- Assuming the user is valid, the RAS will automatically issue an IP address to the user and finish setting up the connection. The user is now connected and can access any of the ISP's local servers (E-mail, News, etc.) or any Internet-connected Server.

...And Our RAS Product Family

The PATTON family of Remote Access Servers provide a standard feature set for Internet and Intranet Access. Our RAS products fit a variety of user environments:

- A start-up ISP will prefer the lower-cost 24/30 port Model 2800 and grow one T1/E1 at a time
- An established ISP expanding into a new location would need the Model 2960 to answer 48/60 calls.
- A PTT/Telco building high-density POPs would use our Model 3120 to answer 96/120 dial-up connections and deliver DSL/T1/E1 dedicated connections too.

PATTON's family of RAS products **support more calls**, come equipped with **more uplink ports**, and provide **greater reliability** in a **smaller package** than any of our competitors.



Use 3rd Generation RAS

The NetLink Model 2800 Remote Access Server can answer a maximum of 30 dial-in modem calls from V.90, K56Flex™, ISDN, V.34+ and legacy modems—all through its built-in T1/E1/PRI ports. Once the user is authenticated, the IP data is processed by a RISC CPU that is connected to a Ethernet LAN or a Frame Relay/PPP WAN port. Our unique architecture ensures that the NetLink RAS can scale to meet the demanding requirements of any application including: Call Centers, Web advertising, ISP access and traditional Corporate remote access. The NetLink RAS serves many applications, including: ISP Dial-Up, Corporate Intranet Access and Hotel Dedicated Internet Access (see diagram at lower right).

NetLink RAS Technical Summary

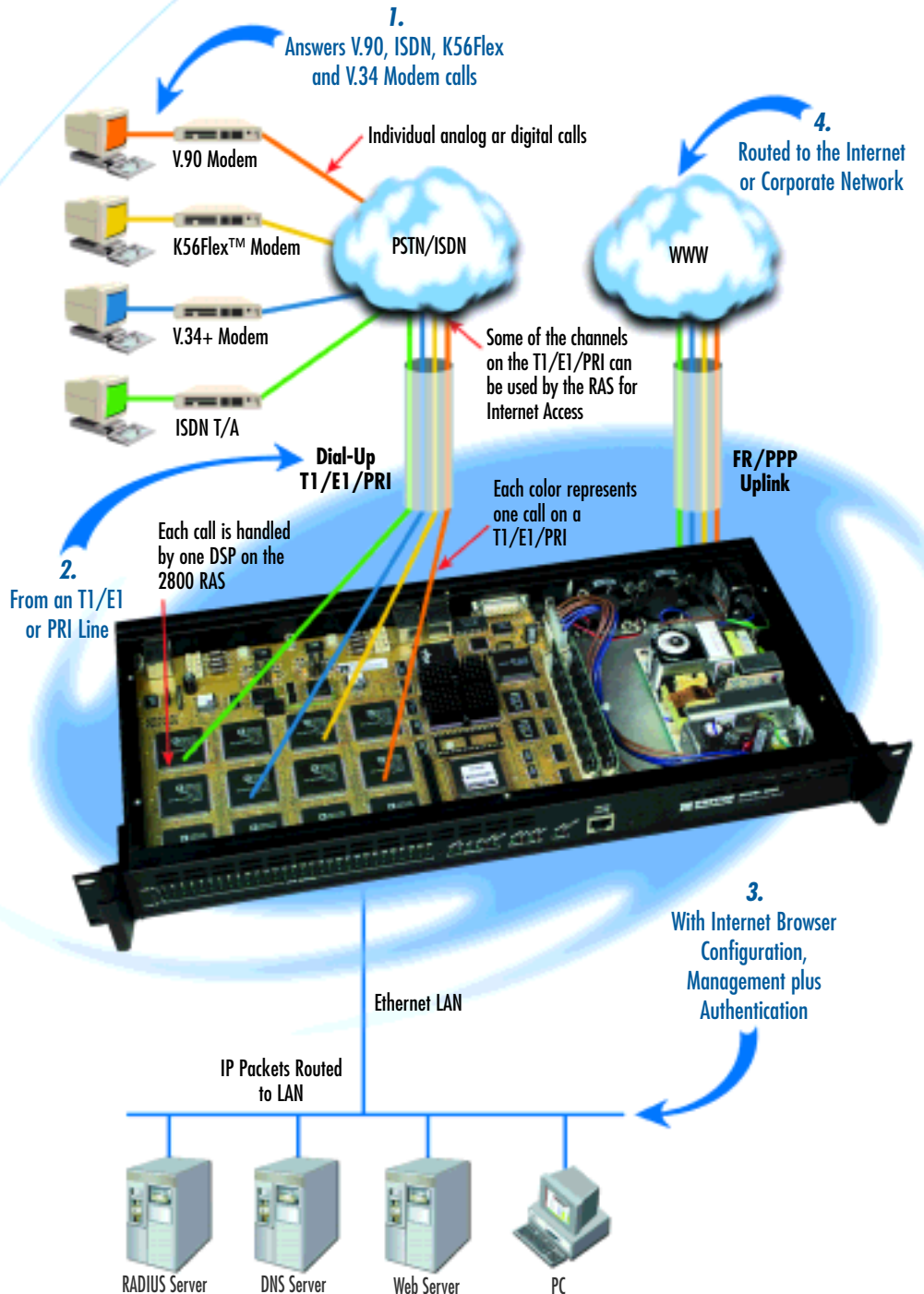
Legacy solutions using analog-to-digital conversion result in lower connection speeds. These legacy devices also require separate analog modems and ISDN terminal adapters.

The NetLink RAS' significant advantage is its use of digital signal processors (DSPs) as dynamic communications processors. The 24/30 DSPs terminate both analog and ISDN connections within the same hardware and using the same T1/PRI or E1/PRI trunk. This solution provides the fastest connections and allows linear growth: one T1/E1 port at a time.

“QUOTES”

"Just wanted to let you know I'm pleased with the 2800. Connections are very sound and it seems to be less 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



ISP Dial Access

The NetLink Remote Access Server can be managed from a variety of local and remote methods, simultaneously. Each RAS has a built-in SNMP agent, an embedded HTTP web server and a TELNET management interface.

All forms of management are available through the Internet, any dial-up port, the RS-232 console port or the Ethernet port. Operators can configure, control, monitor or receive status from any interface.

2800 CONFIGURATION MENU

Patton Home Page

HOME

Import/Export

Authentication

Dial In

Dial Out

Drop and Insert

DSP

Ethernet

Filter IP

Frame Relay

ICMP

Interface

IP

MFR Version 2

RIP Version 2

SNMP

System

System Log

T1/E1 Link

TCP

UDP

About

License

AUTHENTICATION Configuration

Remote Access Server

Validation:

Host Address:

Secondary Host Address:

Hopst Port:

Timeout:

Retries:

Secret:

NAS Identifier:

Accounting Address:

Secondary Accounting:

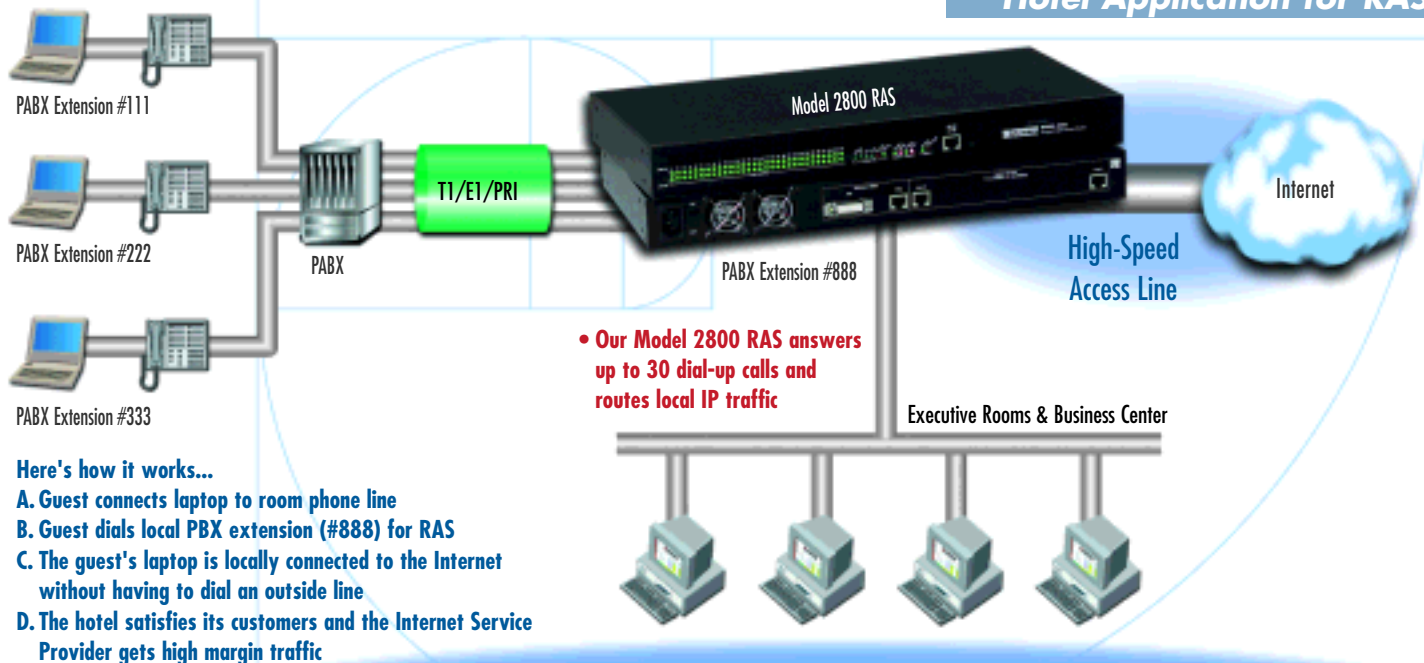
Accounting Port:

Accounting Enable:

RADIUS Packet Format:

To edit specific static users go back and click on the username.

Hotel Application for RAS



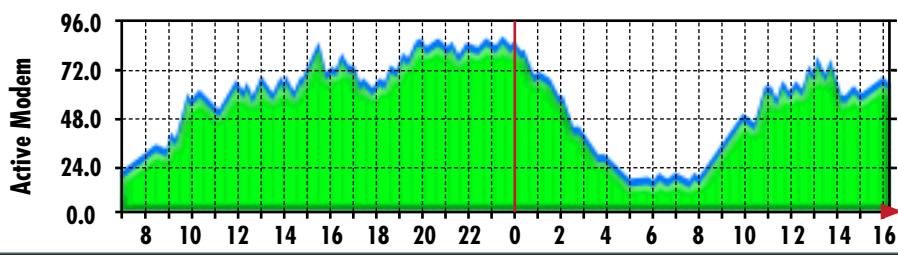
Here's how it works...

- A. Guest connects laptop to room phone line
- B. Guest dials local PBX extension (#888) for RAS
- C. The guest's laptop is locally connected to the Internet without having to dial an outside line
- D. The hotel satisfies its customers and the Internet Service Provider gets high margin traffic

2800 Remote Access Server Configuration in an Internet-Ready Hotel



2960 PRODUCT OVERVIEW



Reporting the Performance

Performance Reporting is built-in to every NetLink RAS. With our integrated HTTP Web Server software, the operator can check on user traffic, examine the statistics, upload new software or simply change the RADIUS server's IP Address from anywhere in the world - using the Internet.

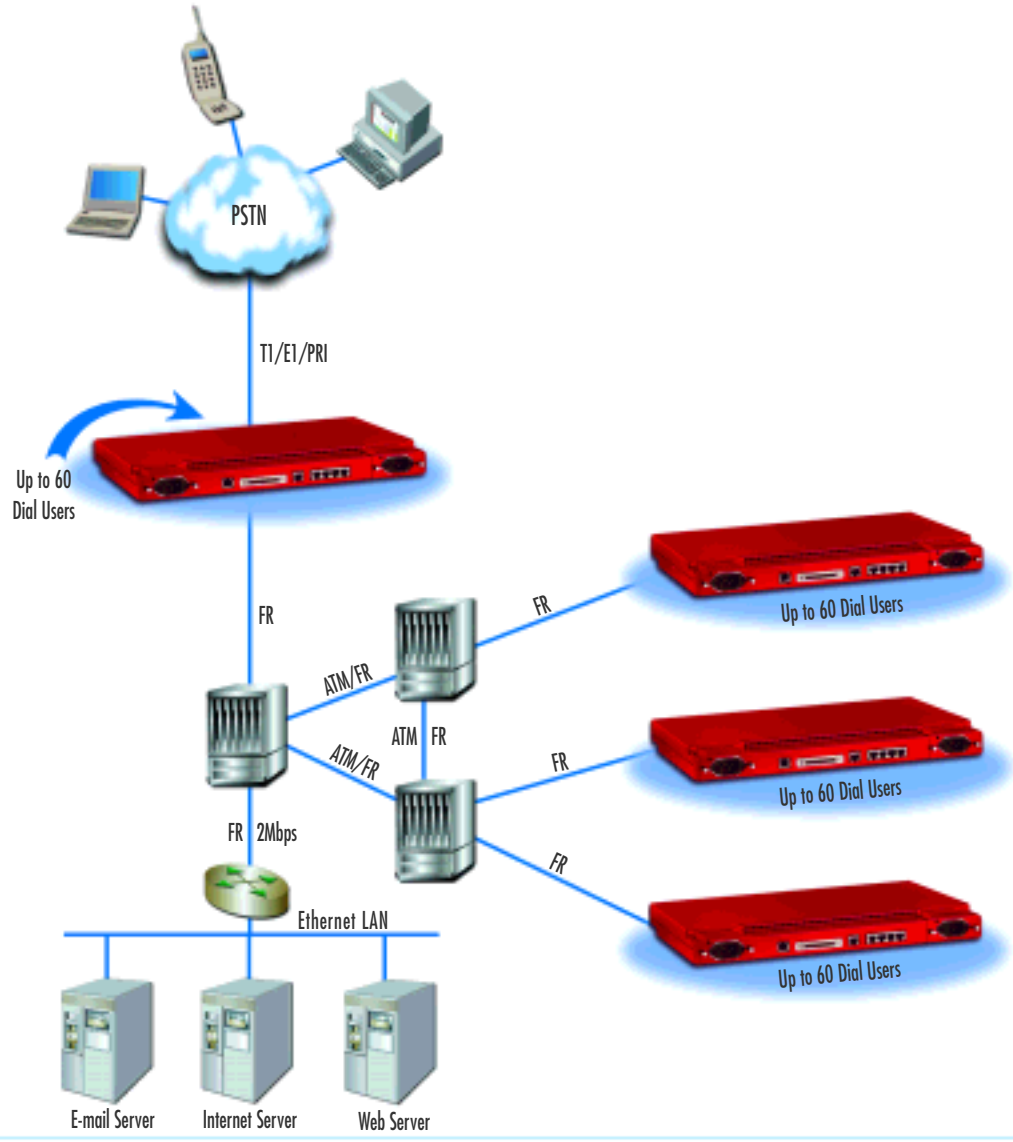
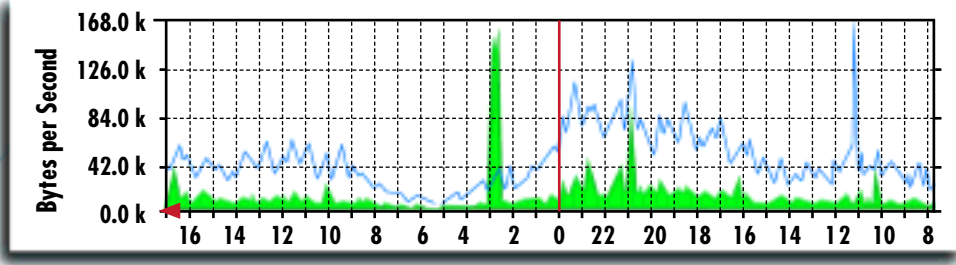
Model 2960

Remote Access Server

The 48/60 port Model 2960 is the latest addition to our NetLink RAS family. Expanding ISPs will be delighted by its dual-redundant power supply, redundant DSPs, no cooling fans and FR/PPP uplink ports.

The Model 2960 supports 48 or 60 digital ISDN or analog (V.90, K56Flex, V.34+, etc.) modem connections in a single 1U-high (1.75 in./4.45 cm), 19-inch wide rackmount chassis.

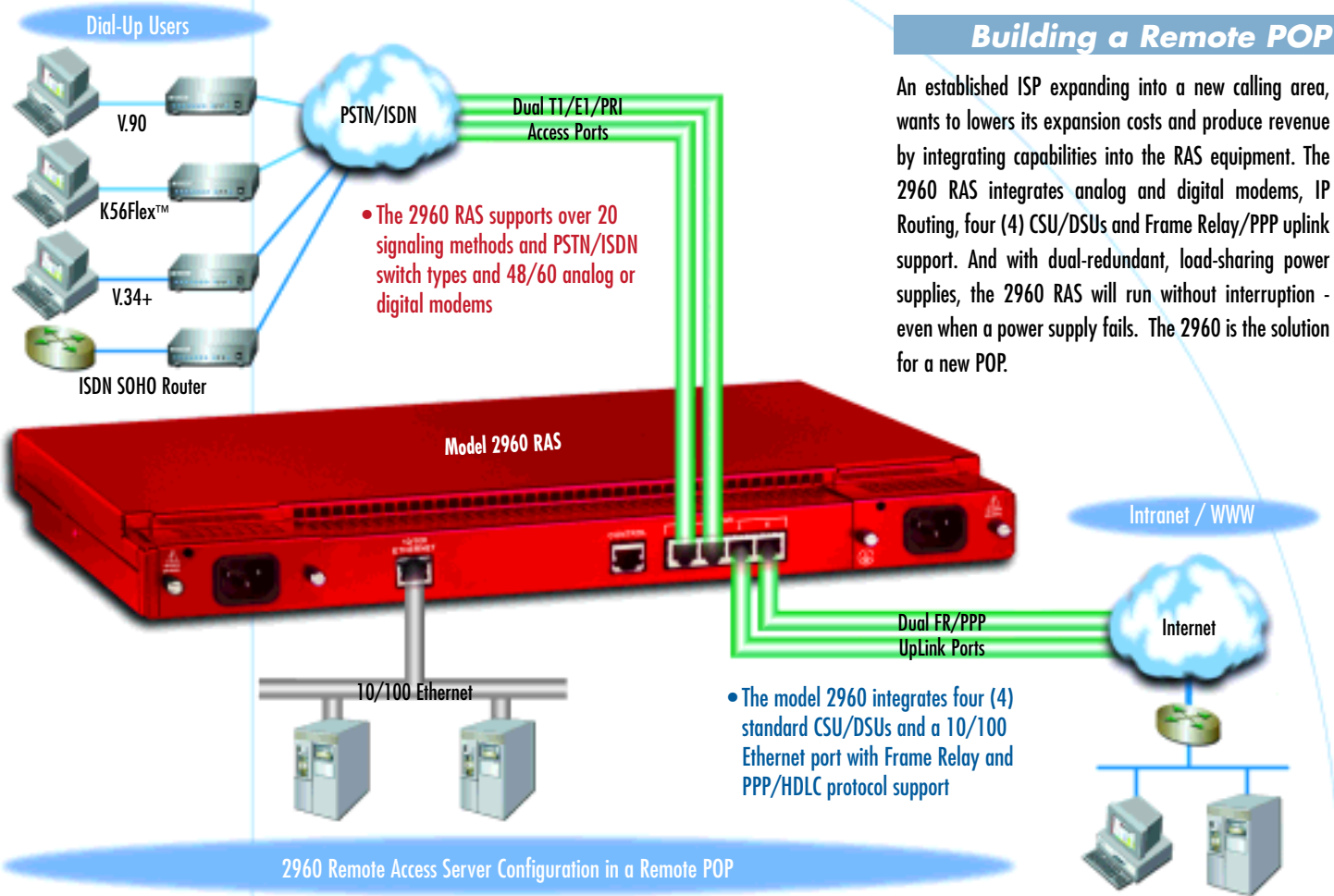
Its standard features include a 10/100 Ethernet port, four T1/E1/PRI ports with built-in CSU/DSUs and Frame Relay or PPP protocol support. The 2960 is the ideal product for high-density ISP environments.



“QUOTES”

"I've had one in production for about 3 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



Building a Remote POP

An established ISP expanding into a new calling area, wants to lower its expansion costs and produce revenue by integrating capabilities into the RAS equipment. The 2960 RAS integrates analog and digital modems, IP Routing, four (4) CSU/DSUs and Frame Relay/PPP uplink support. And with dual-redundant, load-sharing power supplies, the 2960 RAS will run without interruption - even when a power supply fails. The 2960 is the solution for a new POP.

Why use our Model 2960 RAS ?

From HTTP management to dual-redundant power supplies to FR/PPP uplink integration, the NetLink Model 2960 provides an all-in-one package for the expanding ISP. Featuring:

- Integrated T1/E1 uplink ports with Frame Relay and PPP.
- An with a temperature sensor-driven self-cooling system (no fans) and dual-redundant power supplies.
- The lowest cost-of-ownership for an ISP or Telco building a Remote POP for 48/60 ports.

The Model 2960 requires 1/2 the space of existing RAS solutions. With greater reliability and a smaller package than any of its competitors, the Model 2960 is the cost leader in the industry.

2960 Competitive Positioning

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



A **Hot-Swap Dual-Redundant Supplies**
Standard—Supports two AC, two DC, or a mix of AC and DC power supply modules



B **Dual 10/100 Ethernet Ports**
 Flexible integration options for your high-performance network



C **PMC Expansion Port**
 The PCI Mezzanine Card (PMC) provides network expansion to enable the 3120 to offer additional revenue opportunities using the same box

Model 3120 Remote Access Server

The next generation of our popular RAS family is the 3120: a modular platform with more standard features and functions than any of the competition.

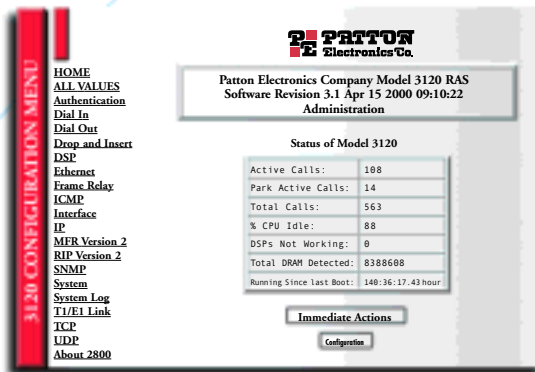
The 3120 supports up to 120 digital ISDN or analog (V.90, K56Flex, V.34+, etc.) modem connections in a single 1U-high (1.75-in./4.45-cm), 19-inch wide rackmount chassis.

Standard features include hot-swap dual-redundant power supplies, dual 10/100-Mbps Ethernet ports, and an expansion slot. By using the expansion slot for DSL/T1/E1 access, service providers can increase their revenue by providing always-on, dedicated access ports.

“QUOTES”

"I've switched to Patton Electronics for RAS boxes. \$1500 less and FREE SUPPORT!"

- Paul Farber, Farber Technology



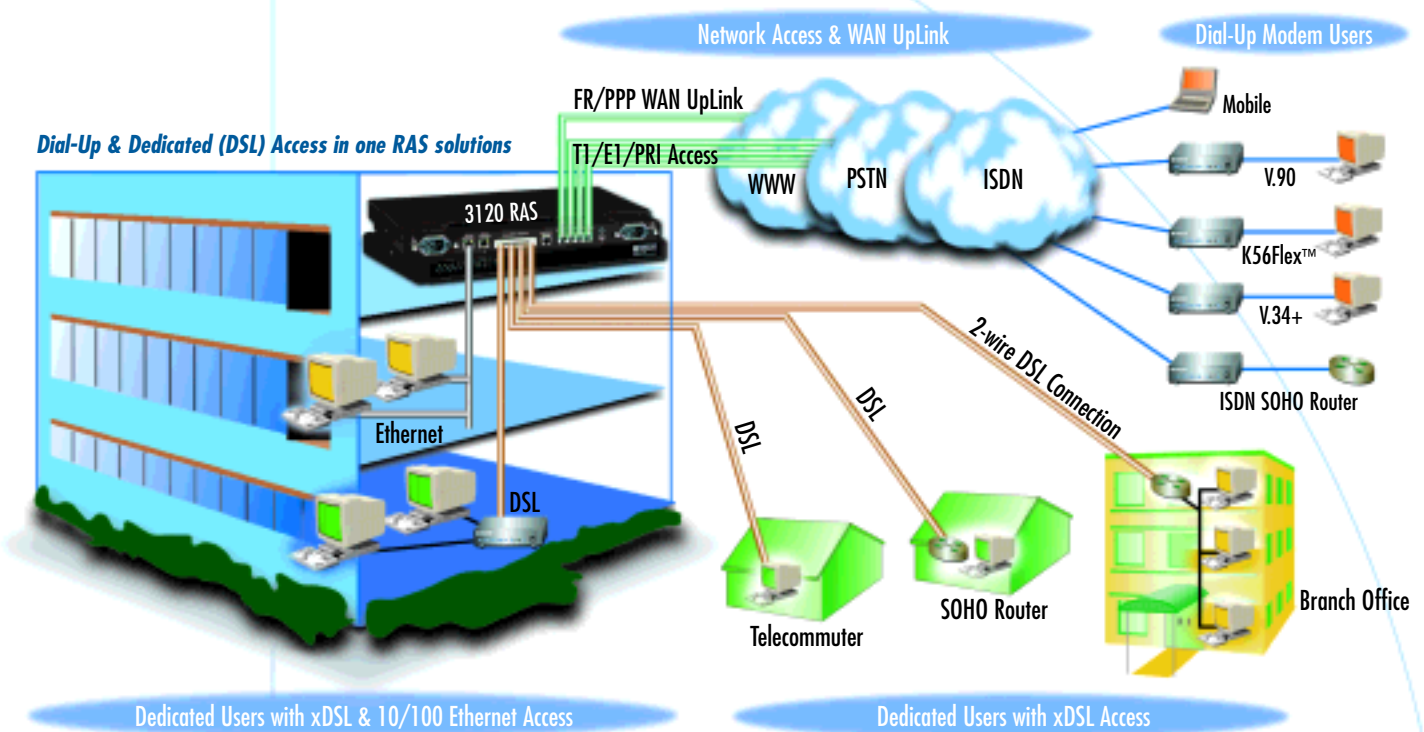
D **Web-Based SNMP/HTTP management**
 An embedded HTTP server provides complete configuration and control using standard web browsers



E **Quad T1/E1/PRI Ports**
 Terminate any combination of 120 V.90/ISDN connections, and expand into remote locations using the 3120 as a complete PoP solution

3120 Products Highlights

120 connections in a 1U high chassis	WEB-based HTTP and SNMP management
Simultaneous Analog/Digital Modems	Dual 10/100-Mbps Ethernet connections
Redundant fans for cool operation	Quad T1/E1/PRI PSTN connections
Redundant AC or DC Power Supplies	Up to 128 DSPs & 32 Meg of DRAM
Dedicated and Dial-up access in one chassis	FLASH download via LAN or WAN ports



3120 RAS...Collect all three



3120 Competitive Positioning

	Patton 3120	Lucent MAX 6000	Cisco AS 5300	3COM TCH 1000
Base Features				
Number of V.90 calls	120	96	120	120
T1/E1/PRI ports	4	4	4	4
Backhaul/Uplink ports	4	1	4	0
Access Expansion ports	16+	NONE	NONE	NONE
10/100 Ethernet ports	2	1	1	2
Key Selling Points				
Built-in HTTP/WEB Mgmt	YES	NO	NO	NO
Rack Height	1U	2U	2U	6U
Dual Redundant Power	INCLUDED	Add'l SSS	Add'l SSS	Add'l SSS
Tech Support	FREE	Add'l SSS	Add'l SSS	Add'l SSS
Software Upgrades	FREE	Add'l SSS	Add'l SSS	Add'l SSS

3120 -Dedicated & Dial Access

The 3120 RAS is designed to scale with your customer's requirements: from dial-up V.90 analog to ISDN 128kbps to dedicated xDSL and fractional T1/E1. Its modular expansion slot can be used for three (3) basic applications:

- Dedicated access using integrated xDSL modems
- Advanced services like Virtual Private Networking (VPN)
- Wide area network uplinks and serial ports, like V.35

And modular expansion means more customers, larger billings for newer Managed Access Services and an overall faster return on your RAS equipment investment. The 3120 RAS delivers a tightly-integrated dial and dedicated access platform that your future requires.

Product Family Overview



	Model 2800			Model 2960		Model 3120				
Model Number	2800	2810	2860	2960/48	2960/60	3120/48	3120/60	3120/72	3120/96	3120/120
Number of Connection	12	24	30	48	60	48	60	72	96	120
Power Supplies	Single AC			Dual Redundant (Fixed) AC		Dual-Redundant (Hot Swap) AC or DC				
Ethernet Ports	One 10Base-T/AUI			One 10/100Base-T		Two 10/100Base-T				
WAN Ports	Two			Four		Four to Twenty				

Modem Modulations	V.90, K56Flex™, V.34 Annex 12, V.34, V.32bps, V.32, V.23, V.22, V.22bps, V.21, Bell 212A, Bell 202, Bell 103, EIA-PN-2330, V.8, V.8bps, Sync/Async receiver/transmitter for V.14, V.42/V.42bps error correction & compression.
PSTN Signaling	E1 Primary Rate interface (Q.931), E1 MFCR2 (R2), T1 Primary Rate Interface, Channelized T1, T1 Robbed bit with Loop/Ground Start or E&M Wink, E&M Immed, Taiwan R1
Management Services	HTTP, SNMP, TELNET Dial-in and Ethernet or RS-232 console port, SYSLOG client, Remote software upgrade via FTP, User configurable login prompts and banners
Authentication	RADIUS, PAP/CHAP, Username/Password, and Static Users Database (111 Entries)
Software Upgrades	Achieved through Flash upgrades via FTP (upgrades available from www.patton.com)
Protocol Services	TCP/IP suite with extensive protocol statistics - ICMP/TFTP/FTP/RLOGIN/TELNET • Ethernet ARP, Proxy ARP and RARP protocols • Point-to-Point Protocol (PPP) • SLIP protocol • Van Jacobson TCP header compression PPP address and protocol compression • RADIUS authentication and accounting, with support for primary and secondary servers • RIP, RIPv2 and OSPF dynamic route distribution - user configurable static routes • MultiLink PPP • Multi-chassis MultiLink • Layer 3 & Layer 4 IP Filtering

Ordering Information

2800/UI	Two T1/E1 ports, 12 digital signal processors (DSPs), 90–260 VAC supply	3120/48/UI*	Quad T1/PRI, 48-port, expandable RAS ; dual redundant AC power supplies
2810/UI	Two T1/E1 ports, 24 digital signal processors (DSPs), 90–260 VAC supply	3120/60/UI*	Quad T1/PRI, 60-port, expandable RAS ; dual redundant AC power supplies
2860/UI	Two T1/E1 ports, 30 digital signal processors (DSPs), 90–260 VAC supply	3120/72/UI*	Quad T1/PRI, 72-port, expandable RAS ; dual redundant AC power supplies
2960/48/UI	Dual T1/PRI, 48-port RAS; load-sharing, dual redundant 90–260 VAC supplies	3120/96/UI*	Quad T1/PRI, 96-port, expandable RAS ; dual redundant AC power supplies
2960/60/UI	Dual E1/PRI, 60-port RAS; load-sharing, dual redundant 90–260 VAC supplies	3120/120/UI*	Quad T1/PRI, 120-port, expandable RAS ; dual redundant AC power supplies

* Call for availability and product details

Online Resources

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
- Hotel Remote Access Applications - Internet Access for the Hospitality Industry
- Patton RAS Competition Roundup - How Patton Compares
- Televisa Case Study - A big media company in Mexico using Patton's RAS

APPLICATION NOTES

- RAS FAQ - Frequently Asked Questions about Patton's RAS
- RADIUS Server Recommendations - Where to find RADIUS server software
- Adding Default Gateways - App Note on 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 RAS with other network gear
- Quick Start Guide - How to set up a 2800 RAS
- IP Filtering - How to implement IP security using filters

**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

PATTON
is known for our Connectivity product
line and our catalogs which we have continuously
grown since 1984. As the definition of "connectivity" has expanded
to include Internet and Intranet access, PATTON has expanded its focus to
include T1/E1, xDSL and Remote Access Servers. These Network Access products
provide solutions for a wide range of service provider and corporate applications as
we've described in this Network Access and Solutions Guide.



Since 1984...



All of our Network Access and Connectivity products
are manufactured at our ISO9001 facility in
Gaithersburg, Maryland, USA. For additional
information, please browse our website
(<http://access.patton.com>), order our new catalog
or contact us by e-mail at
marketing@patton.com

2000

T1

CSU / DSU

NTU

Patton Electronics Company
Gaithersburg, Maryland, USA
Tel: +1 301 975-1000
Fax: +1 301 869-9293
e-mail: marketing@patton.com

Western Europe Office
United Kingdom
Tel: +44 1707 331 447
eFax: +44 870 133-2038
e-mail: europa@patton.com

Latin America/Caribbean Office
Gaithersburg, Maryland, USA
Tel: +1 301 975-1000
Fax: +1 301 869-9293
e-mail: americas@patton.com

Middle East/North Africa Office
Lebanon
Tel: +961 4 712 691
eFax: +1 413 832-9194
e-mail: mena@patton.com

Asia Pacific Office
Hong Kong
Tel: +852 2332 0604
eFax: +1 208 728-1210
e-mail: asia@patton.com



PATTON
Electronics Co.

Datacom • Catalog

RADIUS

...DDS...T1/FT1...G.703...E1...

...V.34...V.90/K56...ISDN PRI...

G703

V.90 / K56

Intranet

TCP/IP

ISDN PRI

<http://access.patton.com>