PATTON

WAN Routers Product Guide

"Link-Up For Less"

WAN Routers

Product Line Summary

Product Line		Ethernet Ports	Integrated WAN Interfaces	Model	Description	Pg
Low-Cost WAN Routers 		1 private	One T1/E1	2603	Low-Cost Single Port T1/E1 Access Router	8
		4 private	Two T1/E1	2620	Low-Cost Dual-Port T1/E1 Access Router	9
		1 private	One E1	2701/I	Low-Cost Single E1 Access Bridge	10
		1 private	One T1	2720/I	Low-Cost Single T1 Access Bridge	11
Serial Routers 	Public Access	1 private	V.35	2635	WAN Router V.35	12
		1 private	X.21	2621	WAN Router X.21	12
		1 private	V.35	2135	V.35 Micro Bridge	13
		1 private	X.21	2121	X.21 Micro Bridge	13
		1 private	V.24 (RS-232)	2124	V.24/RS-232 Micro Bridge	13
Managed VPN Routers 	Private Access	1 private, 1 public	1 public Ethernet	2802	SOHO-Secure VPN Router Appliance	14
		4 private, 1 public	1 public Ethernet	2805	Enterprise-Secure VPN Router Appliance	14
		2	One T1/E1	2803	Integrated VPN WAN Access Device T1/E1	15
		2	V.35	2835	Integrated VPN WAN Access Device V.35	16
		1 private, 1 public	X.21	2821	Integrated VPN WAN Access Device X.21	16
Edge Routers 	Edge	2	2,4,8,12 or 16 T1/E1	2688	Multi-Port T1/E1 Edge Router	17
		Up to 11	Up to 128 T1/E1 Ports	6400	Modular T1/E1 Edge Router	18

								
Model	2603	2620	2635	2621	2701/I & 2720/I	2135	2121	2124
Description	Low-Cost Single Port T1/E1 Access Router	Low-Cost Dual Port T1/E1 Access Router	WAN Router V.35	WAN Router X.21	Ethernet-over-T1/E1 WAN Bridge	V.35 Micro Bridge	X.21 Micro Bridge	V.23 (RS-232) Micro Bridge
Form Factor	Desktop				Micro Unit			
Feature Set	Basic Internet Access/Delivery Feature Set				PPP Bridging Feature Set			
Routing & Protocols IP Connectivity Features	RIP V1 and V2, Frame Relay, Inverse ARP, PPP with BCP or IPCP, PPPoE				PPP/BCP			
QoS	NAT/NAPT, DHCP server and relay, DNS relay, SNTP client, PPPoE				–			
VPN/Security	–				–			
Key Features	DoS Detection/Protection. Intrusion detection, blacklisting with automated configurable actions, packet filtering firewall, access list.				–			
	• Lowest Cost Internet Access Router in the Market • Integrated WAN interfaces • Full Featured IP Router				• Transparent LAN Bridging • Standard PPP Bridge Control Protocol • Auto Learning and Aging Supports 4096 MAC Address			

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Product Highlights

Basic T1/E1/ Routers

- Single and dual port T1/E1
- Intrusion Detection and ACL/Filters
- Full Frame Relay & PPP Support
- Advanced IP features include NAT, DHCP, DNS relay

Sync-Serial Routers

- X.21 and V.35 interfaces
- Basic Firewall Functionality
- Advanced IP feature set
- Simple SNMP/HTTP management interface

QoS VPN Routers

- IPSec with DES/3DES/AES
- ACLs and active Packet Filtering
- Active traffic classification, scheduling & prioritization
- Service login feature set (PPPoE/NAT/DHCP)
- T1/E1, Ethernet and Sync-Serial Interfaces

Edge Routers

- Modular interfaces support up to 208 T1/E1s
- Tunneling protocols supported for port wholesaling
- VPN (PPTP & L2TP) for secure networking

						
2802	2805	2803	2835	2821	2688	6400
SOHO-Secure VPN Router Appliance	Enterprise-Secure VPN Router Appliance	Integrated VPN WAN Access Device T1/E1	Integrated VPN WAN Access Device V.35	Integrated VPN WAN Access Device X.21	Multi-Port T1/E1 Edge Router	Modular T1/E1 Edge Router
Desktop					Desktop & 19" Rack Mount	Rack Mount Modular
Secure, QoS, VPN Feature Set					Edge Router Feature Set	
RIP V1 and V2, Frame Relay, PPP, PPPoE					RIP V1 & V2, OSPFv2 & v3, RIPng, PPP with BCP & IPCP, Frame Relay, Multi-Link PPP	
NAT/NAPT, DHCP server and client, PPPoE, VLAN .p/Q					NAT/NAPT, VLAN .p/Q, Tunneling/port wholesaling with L2TP; IP filtering	
ToS and DiffServ labeling: Active QoS with traffic scheduling and classification. Weighted fair queuing and shaping of traffic classes with configurable burst tolerance; DownStreamQoS™ with dynamic restriction of inbound TCP traffic; IKE; IPSec encryption of voice (VoVPN)					ToS and DiffServ labeling: Active QoS with traffic scheduling and classification. Weighted fair queuing and shaping of traffic classes with configurable burst tolerance; Random Early Discard (RED) for uplink ports. Eight priority queues dedicated for the classification of VLAN traffic.	
DoS Detection/Protection. Intrusion detection, packet filtering firewall, Static Firewall ACLs, IPSec with DES/3DES/AES including Internet Key Exchange (IKE), VPN-Passthrough for PPTP/GRE, PPTP VPN.					Packet filtering firewall, PPTP VPN, L2TP, VLAN.	
• IPSec VPN Tunneling • DES/3DES/AES Encryption • Firewall and Intrusion Detection • Built-In Router					• OSPF, BGP, and other advance Routing Features • nxE1 and STML1 Connectivity • Voice and Data Quality QoS with 8 levels of prioritization	

WAN Routers

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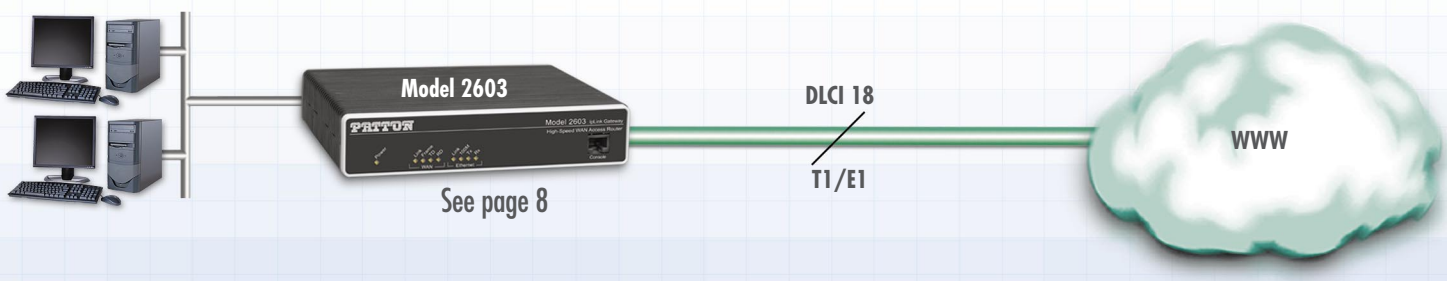
Pg	Model	Product	Application	Solution
4	2603	T1/E1 WAN Access Router	Low-Cost Network Access	Inexpensive T1/E1 Internet access with basic routing support
5	2621/2635 2821/2835	Serial Access Routers	Legacy Network Integration	Convert serial interfaces to Ethernet Add VPN security to serial interfaces
5	2620	Dual Port T1/E1 Drop & Insert Router	Integrated TDM and IP Data	Simultaneous delivery of digital voice over fractional T1/E1 and IP data with IP terminated on Ethernet port and voice switched to second T1/E1 port
5	2800	Managed T1/E1 VPN Routers	Secure Managed Service	Service provider based Internet Access and IPSec VPN service overlay for remote branch connectivity
6	2800	Managed VPN Routers	Enterprise VPNs	Use existing broadband and T1/E1 Internet access networks to create secure private networks with firewalls using strong VPN encryption
6	2805	Managed Ethernet VPN Routers	Secure VLAN Services	Multiple VLANs bearing encrypted IPSec traffic eases secure MPLS migration
7	2802/2805	Managed Ethernet VPN Routers	Secure Triple-Play Router	Manage encrypted voice, video and data flows over IP to create secure building ingress points
7	2800	Managed VPN Routers	Multimedia IP Demarc	Create a service handoff point with advanced per flow QoS, support for per flow strong encryption of voice, video and data, and advanced service delivery such as IP Centrex and IP multicast video

Low Cost Network Access

T1/E1 Router



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The Model 2603 T1/E1 Router provides basic IP access across T1/E1 lines.

This is our lowest cost T1/E1 router providing basic "Ethernet to T1/E1 converter" functionality. So if you need a low cost WAN router for basic internet access, or IP monitoring of a remote site this series of products are right for you.

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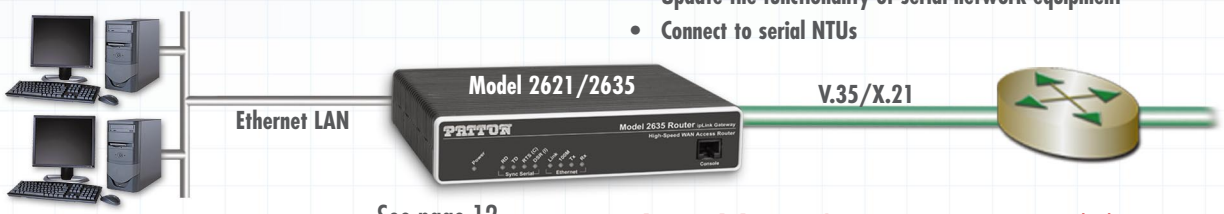
Legacy Network Integration

Serial (V.35/X.21) to Ethernet Conversion

- Extend life of serial routers
- Update the functionality of serial network equipment
- Connect to serial NTUs



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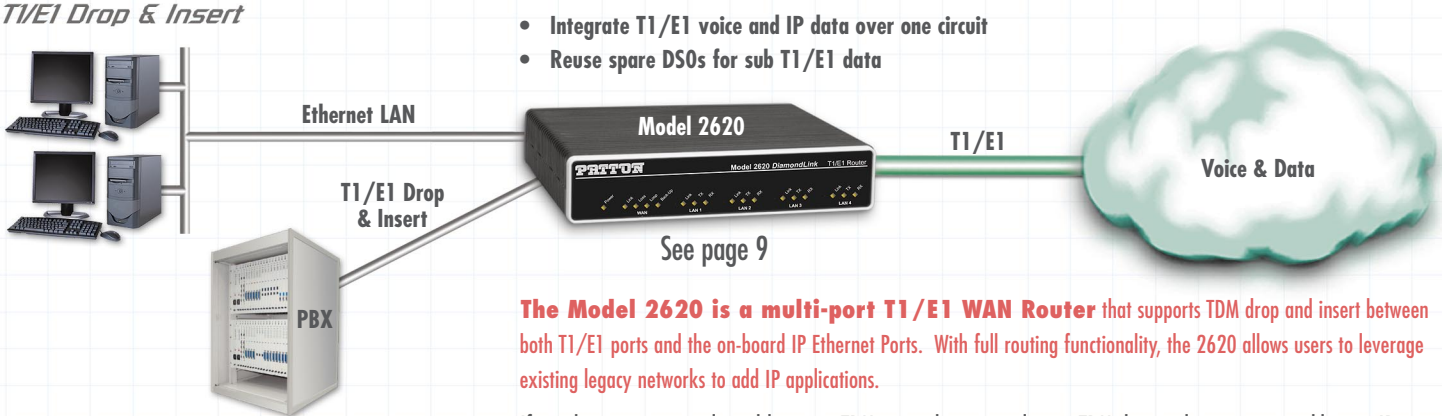
The Model 2621/2635 WAN Router provides basic IP access across any TDM WAN network by providing standard X.21 and V.35 WAN interfaces

These units are low cost WAN routers which provide "Ethernet to X.21 or V.35 converter" functionality. If you need to add a second Ethernet port to an existing modular router or provide IP access for existing leased-line based networks the 2621 and 2635 are right for you.

Integrated TDM & IP Data

T1/E1 Drop & Insert

- Integrate T1/E1 voice and IP data over one circuit
- Reuse spare DSOs for sub T1/E1 data



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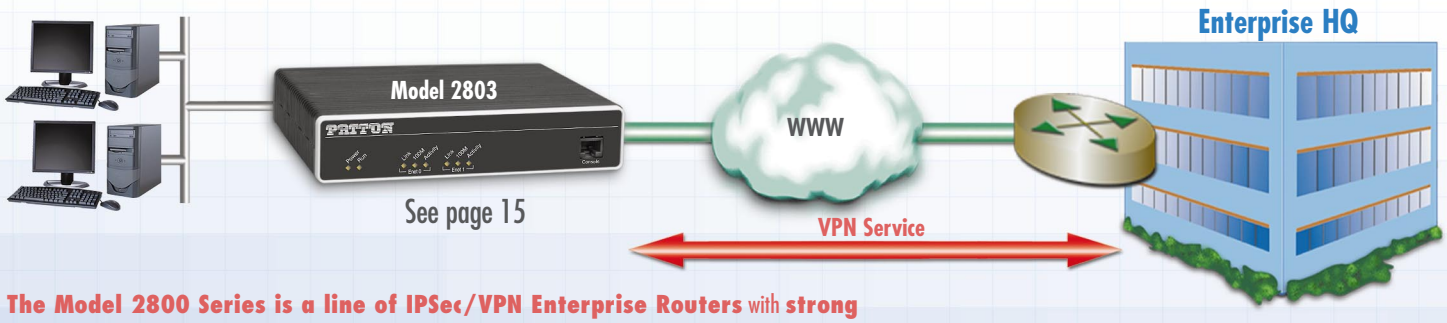
The Model 2620 is a multi-port T1/E1 WAN Router that supports TDM drop and insert between both T1/E1 ports and the on-board IP Ethernet Ports. With full routing functionality, the 2620 allows users to leverage existing legacy networks to add IP applications.

If you have an existing leased line or a TDM network carrying legacy TDM data and you want to add some IP connectivity between locations the Model 2620 is right for you.

Secure Managed Service

Internet Access with Enterprise VPN Service Overlay



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The Model 2800 Series is a line of IPSec/VPN Enterprise Routers with **strong encryption** and a variety of integrated WAN interface options.

If you are a Carrier or Service Provider delivering a managed IP VPN service across WAN circuits, the 2803 series is right for you. Boasting QoS, IPSec/VPN Tunneling as well as DES/3DES and AES encryption, plus Firewall and IKE security, the 2800 series is ideal for your banking, government, and other security-minded customers.

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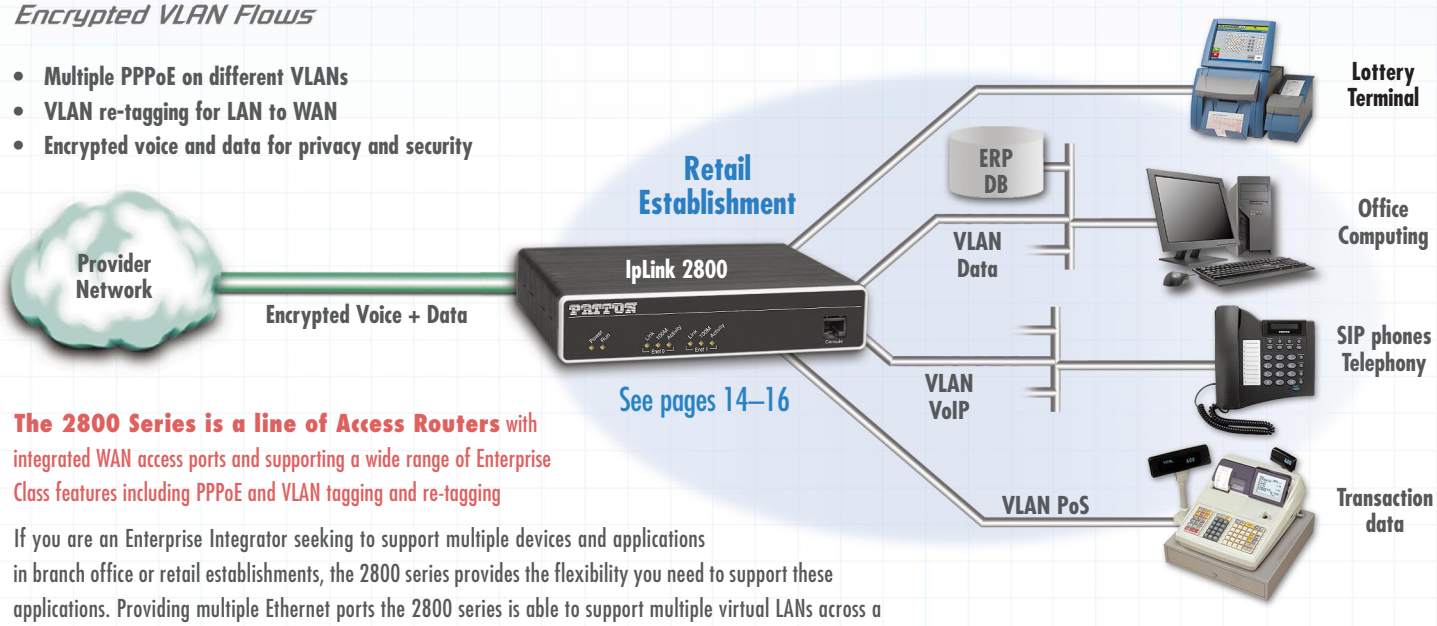
Secure VLAN Services

Encrypted VLAN Flows

- Multiple PPPoE on different VLANs
- VLAN re-tagging for LAN to WAN
- Encrypted voice and data for privacy and security



See pages 14–16

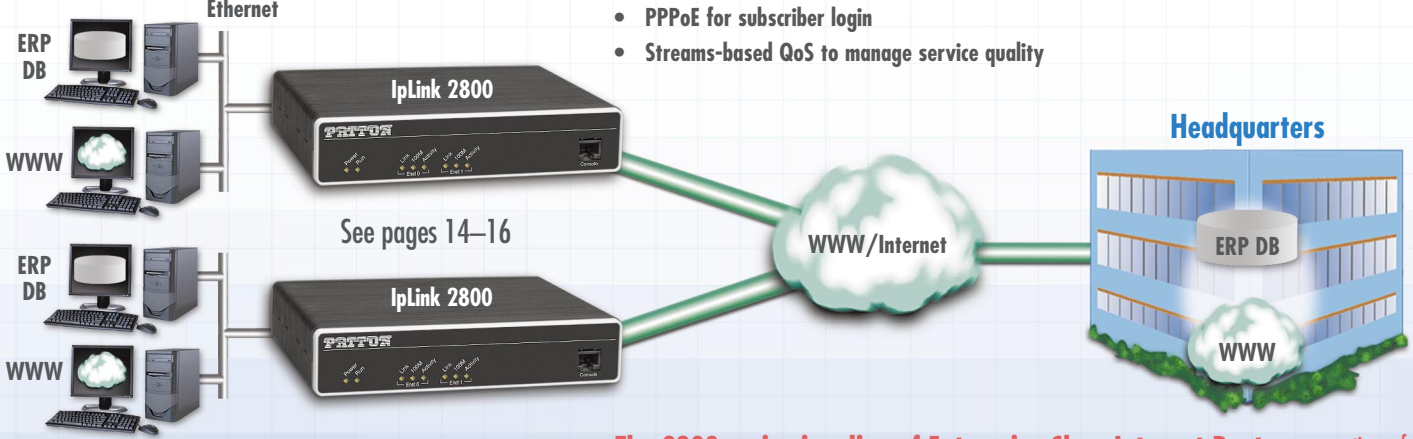
The 2800 Series is a line of Access Routers with integrated WAN access ports and supporting a wide range of Enterprise Class features including PPPoE and VLAN tagging and re-tagging

If you are an Enterprise Integrator seeking to support multiple devices and applications in branch office or retail establishments, the 2800 series provides the flexibility you need to support these applications. Providing multiple Ethernet ports the 2800 series is able to support multiple virtual LANs across a single WAN circuit. Supporting multiple PPPoE authentications, the 2800 series is ideal for retail environments.

Enterprise VPNs

Internet Access with Enterprise VPN Service Overlay

- ACL Firewall
- Encrypted voice & data
- PPPoE for subscriber login
- Streams-based QoS to manage service quality



See pages 14–16

The 2800 series is a line of Enterprise Class Internet Routers supporting a full suite of IP Routing and VPN network functionality

If you are building a secure multi-branch enterprise network, using an existing broadband access network, the 2800 is right for you. Boasting ACL access control, QoS, IPSec/VPN Tunneling as well as DES/3DES and AES encryption, plus Firewall and IKE security, the 2800 series is the most secure way to build enterprise VPNs

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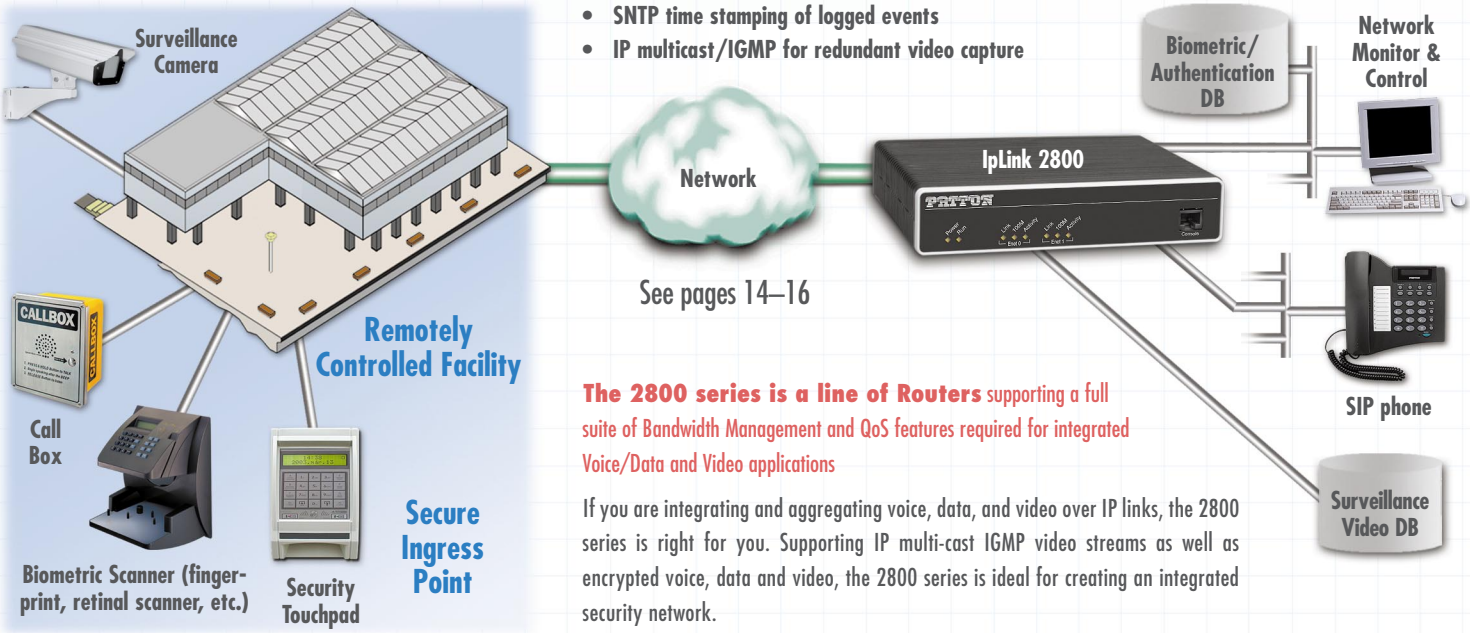
Secure Triple-Play Router

Secure Voice, Video, & Data

- Firewall with ACLs
- Encrypted voice & data for data integrity
- SNTP time stamping of logged events
- IP multicast/IGMP for redundant video capture



See pages 14–16

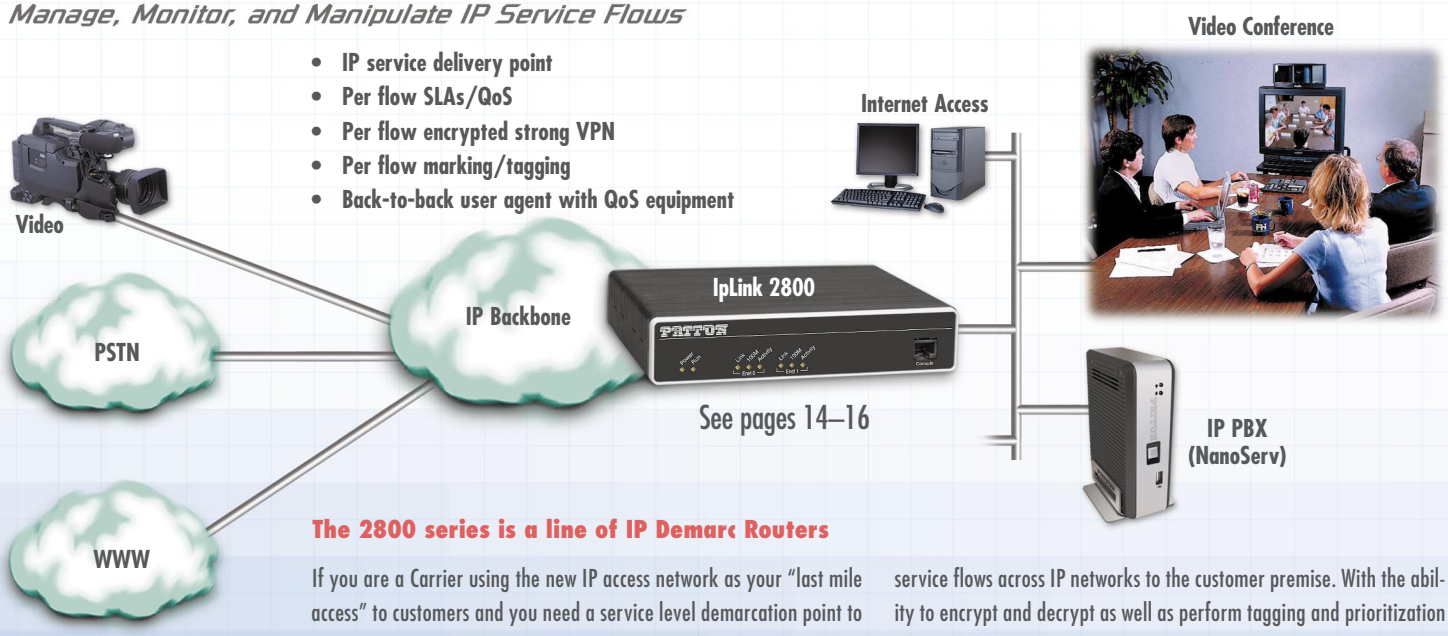
The 2800 series is a line of Routers supporting a full suite of Bandwidth Management and QoS features required for integrated Voice/Data and Video applications

If you are integrating and aggregating voice, data, and video over IP links, the 2800 series is right for you. Supporting IP multi-cast IGMP video streams as well as encrypted voice, data and video, the 2800 series is ideal for creating an integrated security network.

Multimedia IP Demarc

Manage, Monitor, and Manipulate IP Service Flows

- IP service delivery point
- Per flow SLAs/QoS
- Per flow encrypted strong VPN
- Per flow marking/tagging
- Back-to-back user agent with QoS equipment



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The 2800 series is a line of IP Demarc Routers

If you are a Carrier using the new IP access network as your "last mile access" to customers and you need a service level demarcation point to terminate your services, the 2800 series is right for you. By establishing differential Quality of Service metrics for voice, data and video services the 2800 series allows the Carrier to manage and control IP service flows across IP networks to the customer premise. With the ability to encrypt and decrypt as well as perform tagging and prioritization of any IP flow (voice/data/video) and provide management data, the 2800 series is an idea IP Demarc for Next Generation Carriers and Service Providers

Low-cost T1/E1 WAN Access Router

IPLink Model 2603

This WAN Gateway Router is a complete all-in-one network access device which easily connects your IP/LAN to any T1/E1 network interface with routed or bridged connections

The Models 2603 Gateway Router is the ideal solution for connecting any small to medium-sized enterprise or remote office to an IP/Internet network using standard telco and WAN interfaces.

Combining ease-of-use with a full suite of LAN/WAN routing features, the IPLink routers provide selectable bridging or routing functionality along with advanced IP features such as NAT/NAPT, Firewall, and DHCP. A complete set of configurable FR/PPP/IP WAN protocols allow a wide range of choices when connecting branches via common WAN services. The IPLink Routers boast easy installation offering Console/VT-100, Telnet, and HTTP/SNMP management options.

The IPLink 2603 come with an auto-sensing full-duplex 10/100Base-T Ethernet port, cross-over switch, and internal power supply. The Model 2603 is equipped with an integrated T1/E1 CSU/DSU for connection to full and fractional T1/E1 services.

Patton's new series of high-speed routers offer the versatility and reliability demanded for business-class applications at the most affordable price.

Why use our IPLink Router?

Patton's IPLink 2603 Gateway router delivers all the advanced features for secure, reliable, and high speed Internet data connections. It combines ease-of-use with powerful data routing to make shared Internet connectivity simple and easy.

With NAT support, the IPLink router offers convenient and economical operation by using a single IP address while the integrated DHCP server automates IP address assignment for connected LAN computers. Security is standard with built-in firewall and violation alerting features that protect the network from would-be intruders.

Patton stands behind our products-we are the only company in the industry offering free configuration support, free technical services, and a minimum one-year warranty on all our products.

ORDERING INFORMATION

2603/K/48: T1/E1 (RJ45/BNC) Router with 48 VDC power supply (PS)
2603/K/E: E1 (RJ45/BNC) Router with no PS
2603/K/EUI: E1 (RJ45/BNC) Router with external 120–220 VAC PS
2603/K/UI: E1 (RJ45/BNC) Router with internal 120–220 VAC PS
2603/T/48: T1/E1 (RJ45) Router with 48 VDC PS
2603/T/E: T1 (BNC) Router with no PS
2603/T/EUI: T1 (RJ-45) Router with UI
2603/T/UI: T1 (RJ-45) Router with internal 120–220 VAC PS

FEATURES & BENEFITS

T1/E1 WAN interface in industry-standard connectors

PPP and Frame Relay — Versatile WAN options enable deployment into any network. Use routed IP or bridged Ethernet for transparent networking. Bridge passes VLAN tagged frames (no VLAN tagging within the 2603)

NAT/NAPT, Firewall, DHCP — Powerful routing features make shared Internet connectivity simple and secure.

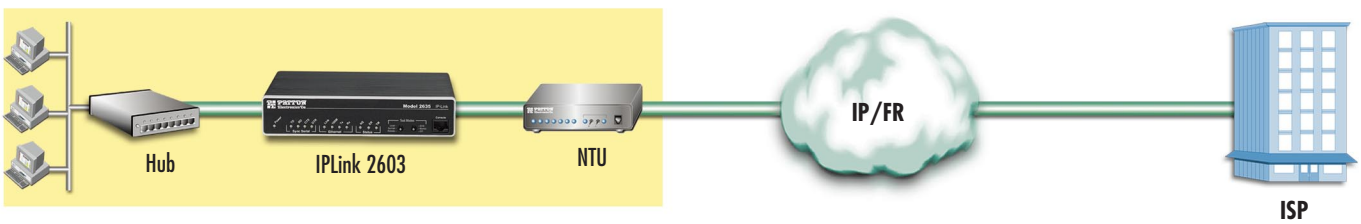
10/100 Ethernet with MDI-X — Easily connect to any computer or LAN — the built-in communication crossover switch eliminates messy configuration cables.

WWW/SNMP Manageable — Built-in VT-100 console port makes setup a *snap*, and you can use the embedded HTTP/SNMP agent to manage an IPLink router from anywhere in the world.

SPECIFICATIONS

WAN Interface: T1/E1 (RJ-48C)
Ethernet Connection: Single-port 10/100Base-T switch, auto-sensing, full/half-duplex operation, built-in MDI-X
Management: EIA-561 RJ-45 RS-232, VT-100 CLI, TELNET, Embedded WEB/HTTP, SNMP, Logging events: POST, POST errors, line/DSL, PPP/DHCP.
Protocol: IP (RFC 741), TCP (RFC 793), UDP (RFC 768), ICMP (RFC 950), ARP (RFC 826), BCP (RFC 1638) • IP Router with RIP (RFC 1058), RIPv2 (RFC 2453), Integrated DHCP Server (RFC 2131 • Selectable IP leases and MAC/IP pairings • DHCP relay agent (RFC 2132/RFC 1542) with 8 address pools. DNS Relay. IGMP v1 and v2 • Ethernet Bridging • NAT/NAPT with integrated application support, MultiNat with 1:1 mapping, Many:1, Many:Many mapping, NAT Port/IP redirection and mapping
Security: DoS Detection/protection. Intrusion detection, Logging of session, blocking and intrusion events and Real-Time alerts, Password protected system management with a username/password for console and virtual terminal, Packet filtering firewall for controlled access to and from LAN/WAN • Support for 255 rules in 32 filter sets • 16 individual connection profiles • Access list determining up to 5 hosts/networks which are allowed to access management system SNMP/HTTP/TELNET
Indicators: 12 LEDs: Power, Link, Loss, Loop, Back-Up WAN signals; Link, TX, RX LAN signals
Power Supply: Internal universal 90-260 VAC input or 48 VDC input.
Compliance: FCC Part 15A, CE Mark, EMC Directive 89/336/EEC, Low-Voltage Directive 73/23/EEC, EN60950, EN55022 (CISPR 22) • FCC part 68.
Environment: Temp.: 32–122°F (0–50°C) • Humidity: 5-90%, non-condensing
Dimensions: 7.3 x 6.6 x 1.62 inch (185 x 168 x 41 mm)

Application diagram



Integrated TDM & IP Routers

IPLink 2620

Link up effortlessly with the Patton Model 2620 Dual-Port T1/E1 IPLink Router combines two T1/E1 and four 10/100 Ethernet ports to deliver drop and insert and multi-link WAN bandwidth to the most demanding access applications.

This dual-port T1/E1 router is a versatile access router supporting drop and insert T1/E1 applications as well as dual-port routing for additional WAN flexibility.

Combining ease-of-use with a full suite of LAN/WAN routing features, the Model 2620 provides selectable bridging or routing functionality along with advanced IP features such as NAT/NAPT, DNS relay, and DHCP server and relay. Numerous firewall features, including the ability to filter by IP address and by IP port, support for Intrusion Detection (IDS), and the capability of "blacklisting" offending traffic flows, likewise come standard with the unit.

A complete set of configurable FR/PPP/IP WAN protocols allow a wide range of choices when connecting equipment via common WAN services. By supporting the latest version of PPP/BCP, the IPLink transparently negotiates the passing of VLAN traffic. Deployments can also take advantage of the Model 2620's full implementation of Frame Relay to support Frame Relay VPN deployments over switched carrier networks.

The Model 2620 boasts easy installation offering Console/VT-100, Telnet, and HTTP/SNMP management options. All IPLink Routers come with a four port auto-sensing full-duplex 10/100Base-T Ethernet switch, the choice of internal or external power supply and one or two T1/E1 WAN ports with built in CSU/DSU.

Patton's series of high-speed access routers offer the versatility and reliability demanded for business-class applications at the most affordable price.

FEATURES & BENEFITS

Dual T1/E1 with Drop & Insert—Easily take any DS0 from one T1/E1 port and switch it to the other.

Four 10/100 Ethernet—Easily bridge the gap between the LAN and WAN.

2 T1/E1 WAN Ports—Terminate Frame Relay or PPP encapsulated IP traffic on channelized software-configurable interfaces.

Enhanced IP Services—DNS relay, NAT/NAPT, DHCP server and relay, make it easy to offer any service.

Firewall with Standard DoS & Filtering—Built-in IP address and IP port filtering, intrusion detection and blacklisting capabilities make firewall services a snap.

ORDERING INFORMATION

2620/KK/UI: E1 Router, D&I port, Quad 10/100 Ethernet, internal 90–260 VAC PS

2620/TT/UI: T1 Router, D&I with Quad 10/100 Ethernet, internal 90–260 VAC PS

2620/KK/48: E1 Router, D&I port, Quad 10/100 Ethernet, internal 36–72 VDC PS

2620/TT/48: T1 Router, D&I with Quad 10/100 Ethernet, internal 36–72 VDC PS

SPECIFICATIONS

WAN ports: Two software configurable ports. E1—G.703/G.704 with HDB3 and AMI encoding support. T1—ANSI T1.403 & AT&T TR54016 with AMI coding/D4 framing or B8ZS coding/ESF framing

Ethernet Ports: Four port 10/100Base-T (RJ-45 connector) • auto-negotiating • half or full duplex operation with built-in MDI-X

Management: HTTP/SNMP, Telnet Ethernet, RS-232 Console Port, SYSLOG Client, Software upgrade via TFTP, SNTP

Protocols: IP (RFC 741), TCP (RFC 793), UDP (RFC 768), ICMP (RFC 950), ARP (RFC 826) • IP Router with RIP (RFC 1058) and RIPv2 (RFC 2453), integrated DHCP Server (RFC 2131) with selectable IP leases and MAC/IP pairings • DHCP relay agent (RFC 2132/RFC 1542) with 8 address pools • DNS Relay, IGMP v1 and v2, Ethernet Bridging • NAT/NAPT with integrated application support, MultiNat with 1:1 mapping, Many:1, Many:Many mapping, NAT Port/IP redirection and mapping

Security: DoS Detection/protection • Intrusion detection, Logging of session, blocking of intrusion events and Real-Time alerts, Password protected system management with a username/password for console and virtual terminal, Packet filtering firewall for controlled access to and from LAN/WAN. Support for 255 rules in 32 filter sets. 16 individual connection

Power: Internal universal 90–260 VAC input or 48 VDC input.

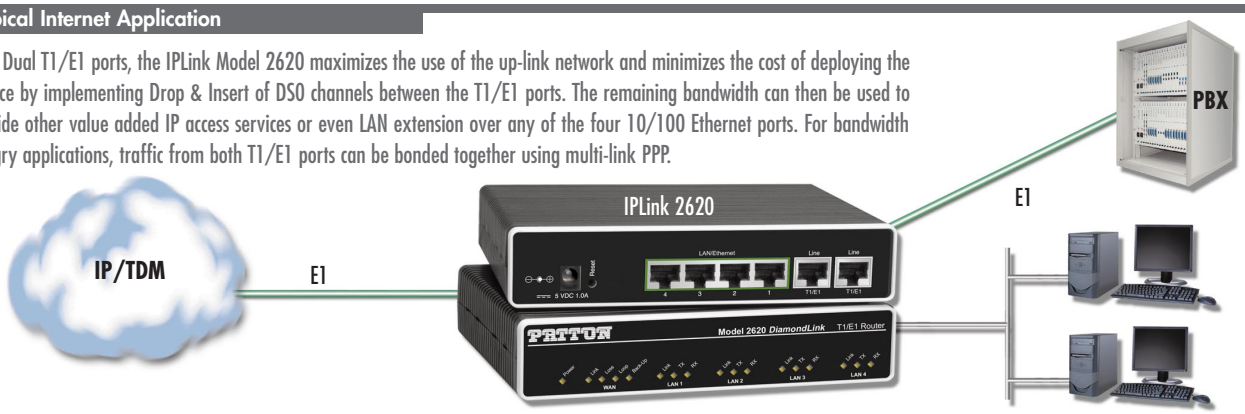
Compliance: FCC Part 15A, CE Mark, EMC Directive 89/336/EEC, Low-Voltage Directive 73/23/EEC, EN60950, EN55022 (CISPR 22) • FCC part 68

Environment: Temp.: 0–50°C (32–122 °F) • Humidity: 5–90% non-condensing

Dimensions: 7.3 x 6.6 x 1.62 in. (185 x 168 x 41 mm)

Typical Internet Application

With Dual T1/E1 ports, the IPLink Model 2620 maximizes the use of the up-link network and minimizes the cost of deploying the service by implementing Drop & Insert of DS0 channels between the T1/E1 ports. The remaining bandwidth can then be used to provide other value added IP access services or even LAN extension over any of the four 10/100 Ethernet ports. For bandwidth hungry applications, traffic from both T1/E1 ports can be bonded together using multi-link PPP.



Compact Ethernet-over-E1 WAN Bridge

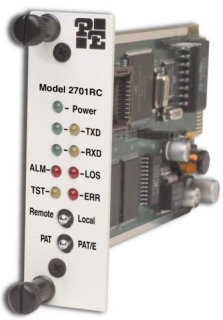
NetLink 2701/I EtherRocket & 2701RC Rack Card

These devices, available in low-cost standalone or rack-mountable versions, terminate G.703/G.704 NTU with on-board transparent Ethernet Bridge extend branch-office LAN segments over E1/FE1 simply and affordably.

Patton Electronics introduces a new way of interconnecting remote branches to a Main Office LAN using the Model 2701/I Ethernet-over-E1 Bridge. Called "Remote Router Porting" (RRP), it offers network managers and integrators a simple and economical way for LAN-to-LAN deployments.

At the branch office, RRP replaces the traditional router and CSU/DSU solution with Patton's Patton's Ethernet-over-E1 Bridge, which includes integrated E1 and 10Base-T transparent bridging. This unit allows for high-speed PPP data connections across the Wide Area Network at scalable data rates of nx56/nx64kbps up to 2.048 Mbps, and also connects directly to the 10Base-T branch office LAN at 10Mbps. The 2701/I transparently forwards Ethernet packets to a headquarters LAN based on their destination MAC address.

At headquarters, RRP builds on the bridging capabilities of a router to extend their serial or WAN ports across town or across the country. In order for the central routed network to connect to a remote branch Ethernet network, the serial or WAN interface of the router needs to be configured as a PPP IP half-bridge. In this configuration the Ethernet-over-E1 Bridge sends bridge packets (BPDUs) to the router's WAN interface. The router will then look at the layer-3 address information and will forward these packets based on its IP address. The router's port, connected through the E1 network and Ethernet-over-E1 Bridge, appears as a virtual interface at the branch office network.



The Model 2701/I Ethernet-over-E1 Bridge supports G.704 framing, and AMI and HDB3 line coding. Data rates, framing, and coding options are programmed by DIP switches or from a VT-100 terminal with menu-driven software. A full range of system and diagnostic features make setup simple and quick.

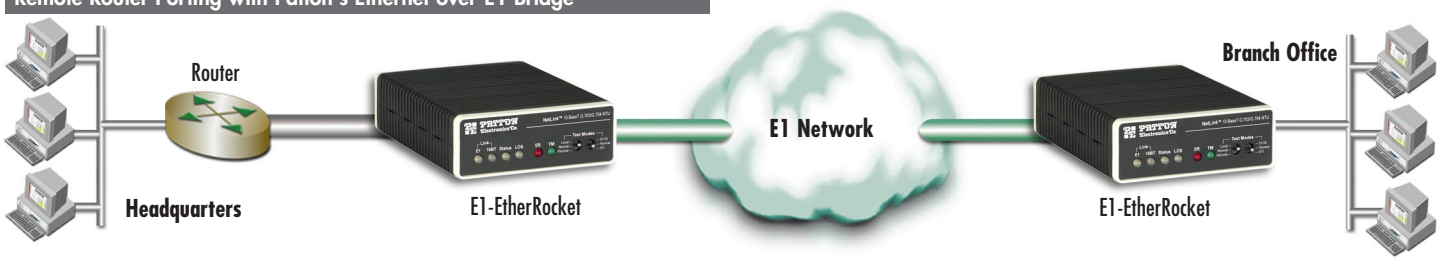
FEATURES & BENEFITS

- Terminates E1/Fractional E1 service
- 10Base-T Ethernet-over-E1 Bridge
- Available in low-cost standalone or rack-mountable (2701RC) versions
- PPP (Point-to-Point Protocol, RFC 1661) with BCP (Bridge Control Protocol, RFC 1638)
- 2 Mbps E1 Line Rate with n x 64 kbps timeslot selection
- Switch-selectable AMI or HDB3 line encoding options
- 75-ohm dual coax and 120-ohm twisted-pair G.703 connections
- Local and remote loopback diagnostics
- Internal and G.703 network timing
- Conforms to ONP requirements CTR 12 and CTR 13 for connection to international Telecom networks
- Rack cards fit into Model 1001 access rack system

ORDERING INFORMATION

2701/I/48: G.703 NTU, with Ethernet interface; 48 VDC power supply (PS)
2701/I/UI: G.703 NTU, with Ethernet interface; 120–220 VAC PS
2701RC/A/I: E1/FE1 Card, V.35 interface
2701RC/C/IA: E1/FE1,10Base-T/RJ-45 interface
2701RC/D/D: E1/FE1 Card, X.21 interface
2701RC/D/V: E1/FE1 Card, X.21 interface

Remote Router Porting with Patton's Ethernet-over-E1 Bridge



SPECIFICATIONS

2701/I
Line Rate: 2 Mbps with nx64 kbps timeslot selection
Network Connector: RJ-48C and Dual Coaxial
DTE Interface: 10Base-T Ethernet
Line Coding: AMI or HDB3
Line Framing: G.703 (unframed) or G.704/G.732 (framed)
Clocking: Internal or Receive Recover
DTE Rates: 10 Mbps (10Base-T)
Indicators: E1 Link Status, TD, RD, Loss of Sync, Error, Test Mode, Ethernet Status
Diagnostics: Local/Remote Loop, 511
Line Isolation: 1500VRMS
Compliance: CE Mark, G.703, G.704, G.723, G.832, CTR-12 and CTR-13
Environment: Temp.: 32–122°F (0–50°C) • Humidity: 5–90% non-condensing
Dimensions: 5.84L x 4.16W x 1.51H in. (14.84L x 10.6W x 3.84H cm)
Weight: 2.225 lbs (1.02 Kg)

2701RC
Data Rate: Smooth Clock 2.048 Mbps
Network Connector: RJ-48C (all versions); Dual Coaxial (X.21 & Ethernet)
DTE Interface: EIA-530, X.21/V.11, V.35, or 10Base-T Ethernet
Line Coding: AMI or HDB3
Line Framing: G.703 (unframed) or G.704/G.732 (framed)
Clocking: Internal, External or Receive Recover
DTE Rates: nx64kbps (EIA-530, X.21/V.11, V.35); 10Mbps (10Base-T)
Indicators: E1 Link Status, TD, RD, Loss of Sync, Error, Test Mode, Ethernet Status (on 10Base-T Version)
Diagnostics: Local/Remote Loop, 511
Line Isolation: 1500VRMS
Compliance: CE Mark, G.703, G.704, G.723, G.832, CTR-12 and CTR-13
Environment: Temp.: 32–122°F (0–50°C) • Humidity: 5 to 90% non-condensing
Dimensions: 5.84L x 4.16W x 1.51H in (14.84L x 10.6W x 3.84H cm)
Weight: 2.225 lbs (1.02 Kg)

Ethernet-Over-T1 WAN Bridge

NetLink 2720/I EtherRocket & 2710RC Rack Card

These devices, available in low-cost standalone or rack-mountable versions, terminate G.703/G.704 NTU with on-board transparent Ethernet Bridge extend branch-office LAN segments over E1/FE1 simply and affordably.

Patton Electronics introduces a novel way of interconnecting remote branches to a Main Office LAN using the Model 2720/I Ethernet-over-T1 Bridge. Called "Remote Router Porting" (RRP), it offers network managers and integrators a simple and economical way for LAN-to-LAN deployments over TDM networks, matching current industry broadband termination practices. By bridging instead of routing, the network is vastly simplified in complexity and can take advantage of provider supplied MPLS/VPLS switched networks as well as modern VLAN switched Ethernet for basic branch office connectivity.

The NetLink Model 2720 Series T1/FT1 CSU/DSU provides high speed WAN connectivity in a compact (1.50H x 4.17W x 5.84D inches) full feature standalone package. The Netlink 2720 is an excellent choice for terminating leased lines carry IP data, Internet access, and LAN-to-LAN IP/PPP based services. When terminating a T1- dedicated digital circuit, the NetLink 2720 supports nx56/nx64 kbps T1 framing. It bridges a 10Base-T Ethernet interface to a PPP/BCP encapsulated WAN T1 circuit.

The Netlink 2720 supports D4/ESF framing options and AMI/B8ZS/B7ZS line coding. Data rates, framing, and coding options are programmed by DIP switches or from a VT-100 terminal with menu-driven software. A full range of system and diagnostic features make setup simple and easy.

The model 2720/I (10 Base-T Ethernet Bridge) is particularly suited for LAN-to-LAN connection without the need for routers! MAC forwarding and PPP/BCP built-in bridging provides seamless connection over the T1 link.

FEATURES & BENEFITS

- Terminates T1/FT1 Circuits over a 4-Wire RJ-48C interface
- 10Base-T Ethernet Bridge
- PPP (Point to Point Protocol, RFC 1661) with Bridge Control Protocol (RFC 1638)
- Nx56/nx64kbps rates up to 1.536 Mbps
- Unstructured rates at 1.544 Mbps
- D4 or ESF Framing Modes
- Supports AMI or B8ZS/B7ZS Line Coding
- Configuration via Software Control Port or Internal DIP Switches
- Six Easy-to-Read LED Indicators Monitor Data & Diagnostics
- Internal or network clocking
- Made in USA

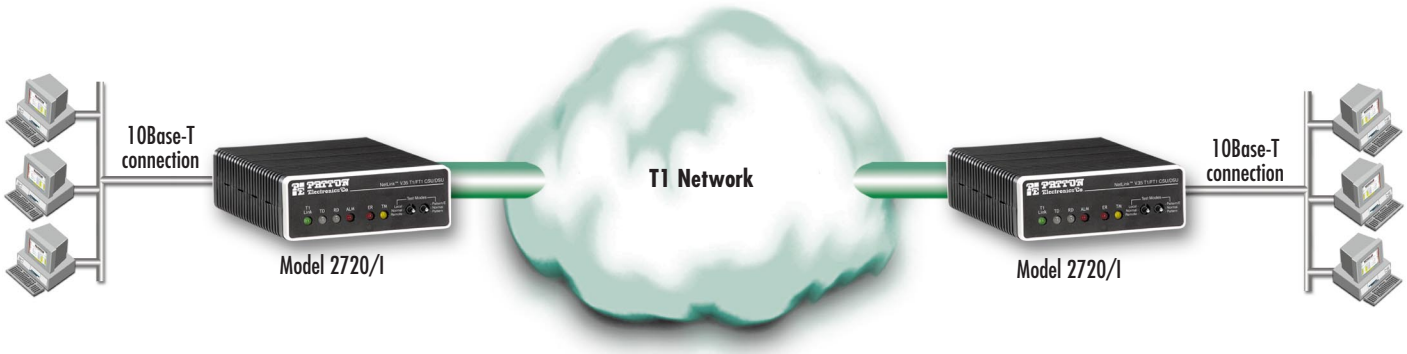
SPECIFICATIONS

WAN Speed: 1.544 Mbps
WAN Connection: RJ-48C
Nominal Impedance: 100 Ohms
DTE Interface: EIA-530, V.35, Ethernet
Line Coding: AMI/B8ZS
Line Framing: D4/ESF/Unframed
Clock Options: Internal, or network
Diagnostics: Responds to CO-initiated D4 loop-up and loop-down codes, ESF line loop and payload loop FDL messages, and Universal Loopback de-activate messages
Transmit LBO: Selectable - 0, 7.5, 15, or 22.5 dB, plus DSX-1
Standards: AT&T TR62411, TR54016, and ANSI T1.403
Dimensions: 0.78H x 2.1W x 3.5D in. (2.0H x 5.3W x 8.9D cm)
Test Modes: Initiates and responds to V.54 and CSU remote loops; local loop
Pattern Generator/Detector: User selectable 511, 2047, or QRSS
Power: Universal Input (100–240VAC), or -48VDC

ORDERING INFORMATION

2720/I/48: T1/FT1 with Ethernet Interface; 48VDC
2720/I/UI: T1/FT1 with Ethernet Interface; 120–220VAC
2710/RC: T1 Card, 10Base-T Interface

Remote Router Porting with Patton's Ethernet-over-T1 Bridge



Sync. Serial WAN Routers

IPLink 2621 & 2635

These WAN Gateway Routers are complete all-in-one network access devices that easily connect your IP/LAN to any X.21 or V.35 network interface with routed or bridged connections

The Models 2621 and 2635 Gateway Routers are the ideal solution for connecting any small to medium-sized enterprise or remote office to an IP/Internet network using standard telco and WAN interfaces.

Combining ease-of-use with a full suite of LAN/WAN routing features, the IPLink routers provide selectable bridging or routing functionality along with advanced IP features such as NAT/NAPT, Firewall, and DHCP. A complete set of configurable FR/PPP/IP WAN protocols allow a wide range of choices when connecting branches via common WAN services. The IPLink Routers boast easy installation offering Console/VT-100, Telnet, and HTTP/SNMP management options.

All IPLink routers come with an auto-sensing full-duplex 10/100Base-T Ethernet port, cross-over switch, and internal power supply. The Model 2621 has an X.21 interface, and the Model 2635 comes with a V.35 interface.

Patton's new series of high-speed routers offer the versatility and reliability demanded for business-class applications at the most affordable price.

Why use our IPLink Routers?

IPLink Gateway routers deliver all the advanced features for secure, reliable, and high speed Internet data connections. They combine ease-of-use with powerful data routing to make shared Internet connectivity simple and easy.

With NAT support, the IPLink routers offer convenient and economical operation by using a single IP address while the integrated DHCP server automates IP address assignment for connected LAN computers. Security is standard with built-in firewall and violation alerting features that protect the network from would-be intruders.

Available with such standard WAN sync-serial interfaces as V.35 and X.21, the IPLink series gives you the right interface needed for your WAN service.

Patton stands behind our products-we are the only company in the industry offering free configuration support, free technical services, and a minimum one-year warranty on all our products.

ORDERING INFORMATION

2621/48: X.21 Router; External 48-VDC Power Supply (PS)
2621/E: X.21 WAN Router, No PS
2621/EUI: X.21 Router; External 120–220 VAC PS
2621/UI: X.21 Router, Internal 120–220 VAC PS

2635/48: V.35 Router, 48 VDC PS
2635/E: V.35 Router; No PS
2635/EUI: V.35 Router; External 120–220 VAC PS
2635/UI: V.35 Router; Internal 120–220 VAC PS

FEATURES & BENEFITS

V.35 or X.21 WAN interfaces—Get the WAN interface you need in industry-standard connectors

PPP and Frame Relay—Versatile WAN options enable deployment into any network. Use routed IP or Bridged Ethernet for transparent networking. Bridge passes VLAN tagged frames (no VLAN tagging within the 2635/2621)

NAT/NAPT, Firewall, DHCP—Powerful routing features make shared Internet connectivity simple and secure.

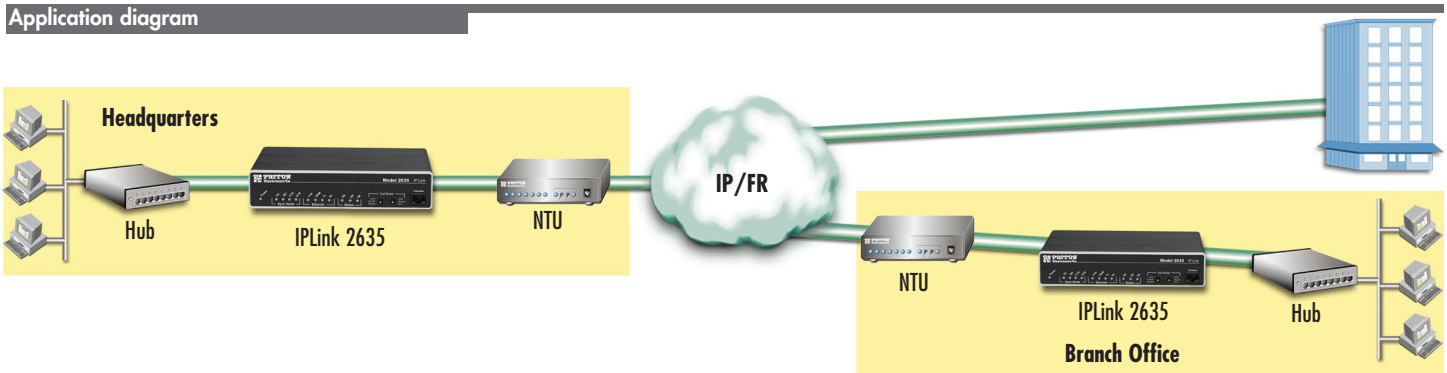
10/100 Ethernet with MDI-X—Easily connect to any computer or LAN—the built-in communication crossover switch eliminates messy configuration cables.

WWW/SNMP Manageable—Built-in VT-100 console port makes setup a *snap*, and you can use the embedded HTTP/SNMP agent to manage the IPLink routers from anywhere in the world.

SPECIFICATIONS

WAN Interface: 2635: V.35 (M/34F) • 2621: X.21 (DB-15F)
Ethernet Connection: Single-port 10/100Base-T switch • auto-sensing • full/half-duplex operation • built-in MDI-X
Management: EIA-561 RJ-45 RS-232, VT-100 CLI, TELNET, Embedded WEB/HTTP, SNMP, Logging events: POST, POST errors, line/DSL, PPP/DHCP.
Protocol: IP (RFC 741), TCP (RFC 793), UDP (RFC 768), ICMP (RFC 950), ARP (RFC 826), BCP (RFC 1638) • IP Router with RIP (RFC 1058), RIPv2 (RFC 2453), Integrated DHCP Server (RFC 2131) • Selectable IP leases and MAC/IP pairings • DHCP relay agent (RFC 2132/RFC 1542) with 8 address pools • DNS Relay • IGMP v1 and v2 • Ethernet Bridging • NAT/NAPT with integrated application support, MultiNat with 1:1 mapping, Many:1, Many:Many mapping, NAT Port/IP redirection and mapping
Security: DoS Detection/protection • Intrusion detection, Logging of session, blocking and intrusion events and Real-Time alerts, Password protected system management with a username/password for console and virtual terminal, Packet filtering firewall for controlled access to and from LAN/WAN • Support for 255 rules in 32 filter sets • 16 individual connection profiles • Access list determining up to 5 hosts/networks which are allowed to access management system SNMP/HTTP/TELNET
Indicators: 12 LEDs: Power, Link, Loss, Loop, Back-Up WAN signals; Link, TX, RX LAN signals
Power: Internal universal 90–260 VAC input or 48 VDC input.
Compliance: FCC Part 15A, CE Mark, EMC Directive 89/336/EEC, Low-Voltage Directive 73/23/EEC, EN60950, EN55022 (CISPR 22) • FCC part 68.
Environment: Temp.: 32–122°F (0–50°C) • Humidity: 5–90%, non-condensing
Dimensions: 7.3 x 6.6 x 1.62 inch (185 x 168 x 41 mm)

Application diagram



Ethernet MicroBridges (X.21, RS-232, RS-530, & V.35)

Models 2121, 2124, 2130, 2135, & 2135C

Patton's MicroBridge products are the cost-effective solution for expanding your LAN—without using a router!

The Patton Ethernet MicroBridge provides a cost-effective solution for connecting multiple local or remote network segments. The Patton MicroBridges feature a wide variety of serial interfaces to make your WAN connections easy. All models are equipped with an 802.3 10Base-T Ethernet RJ-45 jack, which allows a direct connection to your network equipment.

The Ethernet MicroBridge works on the MAC-layer addresses and operates independent of higher layer protocols. This functionality enables Patton Ethernet Microbridges to pass higher-layer broadcast, multicast, unicast, and data frames over the WAN with minimal to no configuration by the end-user. The MicroBridges are PPP ready supporting standards based layer-2 protocol interfacing. The MicroBridges are fully compatible with each other as well as Patton's full line of bridging products. Using PPP, the MicroBridges have the flexibility to be used in conjunction with all other third-party PPP compliant equipment.

Whether you are looking to add additional LANs, increase the efficiency of your WAN connection, or extending your router's interface, Patton's Ethernet MicroBridge is the most simple and cost-effective solution around!

FEATURES & BENEFITS

PPP Bridging Control Protocol (RFC 1638) with auto detection for compatibility with existing Patton Bridge Products and standard third-party equipment

Transparent LAN bridging enables the MicroBridge to pass such higher layer protocols

Industry standard, shielded RJ-45 10Base-T connection

802.3 Ethernet supported by transparent LAN bridging

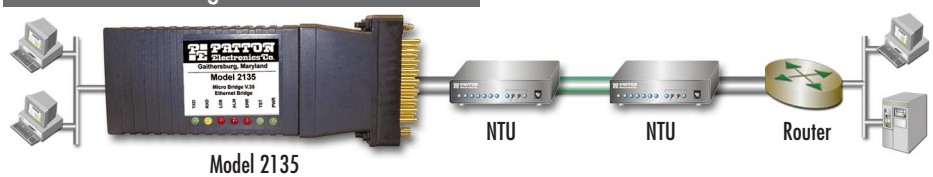
1 Mbyte RAM; 128 kbyte FLASH

Automatic learning and aging with support for up to 4,096 MAC addresses

Nine LEDs monitor power, LAN link, and DTE interface signals

Variety of WAN interfaces available (X.21, RS-232, RS-530, and V.35)

Remote Router Porting



Model 2135

Patton's Ethernet MicroBridge Series are compliant with the RFC 1661 standard for PPP half-bridging, so you can connect our bridge to a router (instead of another bridge) *which saves you money!*

SPECIFICATIONS

DTE Interface: X.21, V.35, RS-232, or RS-530

Network Interface: IEEE 802.3 10Base-T (RJ-45)

Transmission: Synchronous up to 10 Mbps

Protocol: PPP (RFC 1661) with Bridging Control Protocol (RFC 1638)

Memory: 1MB RAM, 128KB FLASH memory

MAC Address Table Size: 4096 entries

MAC Address Aging: MAC addresses deleted after eight minutes inactivity

LEDs LAN Side: (1) yellow, general status; (1) green, link integrity

LEDs DTE Side: TXD, RXD and Power, (green); DTR, DCD, CTS and CLK, (yellow)

Power Supply Input: 100–240 VAC, 50–60 Hz, 0.4A; or optional -48 VDC

Power: 500mA at 5 VDC

Temperature: 32–122°F (0–50°C)

Office C

Altitude: 0–15,000 ft (0–4,572 m)

Humidity: Up to 90% R.H., non-condensing

Dimensions: 3.5 L X 2.1 W X 0.78 H inch (9.0 L X 5.3 W X 2.0 H cm)

Weight: 0.72 lbs (0.32 kg)

Compliance: FCC Part 15A; CE Mark per EEC Directive: 89/336/EEC; Low Voltage Directive: 73/23/EEC

ORDERING INFORMATION

2121/DM-X/UI: Ethernet MicroBridge, X.21 DTE with DB-15 Male, Serial Cable, 100–240 VAC

2121/DM-X/48: Ethernet MicroBridge, X.21 DTE with DB-15 Male, Serial Cable, -48 VDC

2124/AM-X/UI: Ethernet MicroBridge, V.24 DTE with DB-25 Male, Serial Cable, 100–240 VAC

2124/AM-X/48: Ethernet MicroBridge, V.24 DTE with DB-25 Male, Serial Cable, -48 VDC

2130/BM-X/UI: Ethernet MicroBridge, EIA-530 DTE with DB-25 Male, Serial Cable, 100–240 VAC

2130/BM-X/48: Ethernet MicroBridge, EIA-530 DTE with DB-25 Male, Serial Cable, -48 VDC

2135C/CM-X/UI: Ethernet MicroBridge, V.35 DTE with M/34 Male, Serial Cable, 100–40 VAC

2135C/CM-X/48: Ethernet MicroBridge, V.35 DTE with M/34 Male, Serial Cable, -48 VDC

2135/CM/UI: Ethernet MicroBridge, V.35 DTE with M/34 Male (No Serial Cable), 100–240 VAC

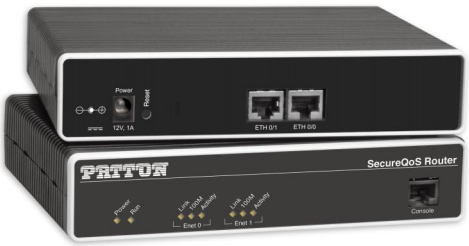
2135/CM/48: Ethernet MicroBridge, V.35 DTE with M/34 Male (No Serial Cable), -48 VDC

Note: *X* = "L" 6-foot (182.88cm) Serial Cable or "S" 6-inch (15.24cm) Serial Cable. **Example:** 2121/DM-S/UI Ethernet MicroBridge, X.21 DTE w/DB-15 Male, 6" (15.24cm) Serial Cable, UI

Ethernet Managed VPN WAN Router

IPLink™ 2802 & 2805

IPLink Managed VPN Routers promote business/dual use of broadband access networks by applying VPN encryption AND QoS/CoS traffic management to traffic flows.



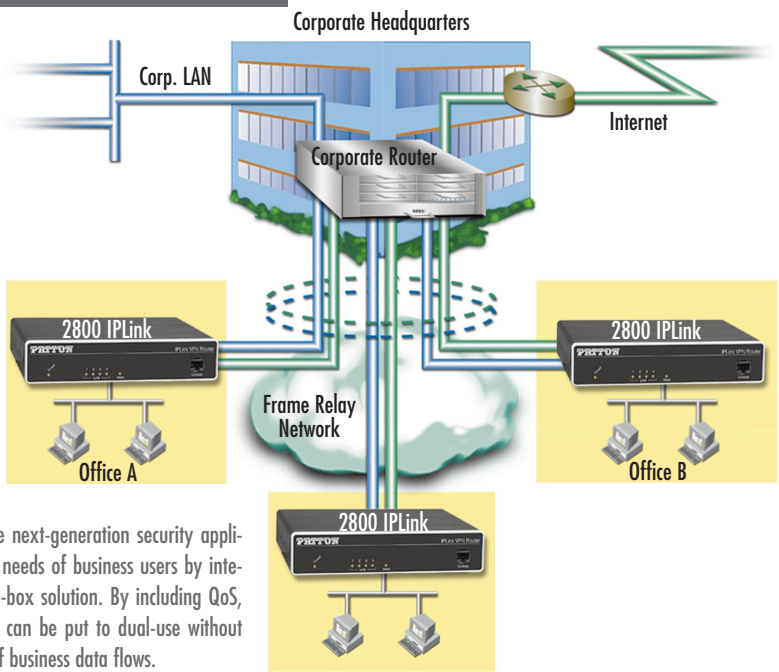
The IPLink Managed VPN Routers are a family of next generation appliances that address both the security and the traffic prioritization needs of enterprises. VPN routers enable the secure communication of remote offices, home offices, and mobile users across insecure IP networks such as the Internet. IPLink VPN Routers take it one step further and integrate quality of service (QoS) to optimize business traffic flows, allowing dual use (business and leisure) of broadband connections without impacting the quality of business communications.

IPLink VPN Routers implement a comprehensive security environment. It all starts with IPSec. By supporting ESP as well as AH, IPLink VPN Routers provide data integrity, authentication, anti-replay and data confidentiality to any traffic flow. DES, 3DES, and AES provide standard encryption up to 256 bits. Firewall capabilities of the IPLink VPN Routers include Access Control Lists (ACLs), IP address and port filtering, and protection against Denial of Service (DoS) attacks. Likewise, PPPoE protocols include support for PAP and CHAP authentication.

QoS features include ToS/DiffServ marking and the configuration of eight service class tags per IEEE 802.1p/Q. With traffic scheduling and shaping, create dedicated bandwidth guarantees, configurable burst tolerance, and policing to include excess traffic discard. IP fragmentation is configurable to help minimize jitter in traffic flows.

Advanced IP features include RIPv1 & RIPv2 routing and static route configuration. Static and dynamic NAT, NAPT, DNS resolver and relay, dynamic DNS, and DHCP server further add to the capabilities of the IPLink VPN Router. All IPLink VPN routers can be managed via a web browser (HTTP), command line interface (Telnet), or an SNMP management platform.

Typical application



IPLink VPN Routers are next-generation security appliances that address the needs of business users by integrating QoS into a one-box solution. By including QoS, broadband connections can be put to dual-use without impacting the quality of business data flows.

FEATURES & BENEFITS

VPN Tunnels—Standard IPSec with AH and ESP ensures maximum protection when traversing unsecured networks.

Strong Encryption—DES, 3DES, and AES offer standards based encryption algorithms from 56 to 256 bits.

QoS/CoS Profiles—Configurable burst tolerance, bandwidth guarantees plus reduce per flow traffic jitter as required by the application.

Configurable Security Profiles—Built-in IP address and IP port filtering, ACLs and DoS attack detection creates a comprehensive security environment.

Enhanced IP Services—DNS resolver and relay, NAT/NAPT, dynamic DNS, and DHCP server, eases integration.

10/100 Ethernet—Dual 10/100 Ethernet and 5 port Ethernet switch.

SNMP/HTTP Management—Easily manage the IPLink VPN Routers via a simple web browser interface.

ORDERING INFORMATION

2802/EUI: IPLink VPN Router; Dual Ethernet Port; External 110–220 VAC power

2802/UI: IPLink VPN Router; Dual Ethernet Port; Internal 110–220 VAC power

2805/EUI: IPLink VPN Router; 5 Port Ethernet; External 110–220 VAC power

SPECIFICATIONS

WAN Ethernet port: 2802 & 2805—10/100Base-T (RJ-45 connector); auto-negotiating; half/full duplex operation with automatic MDI/MDI-X

LAN Ethernet Ports: 2802—10/100Base-T (RJ-45 connector); auto-negotiating; half or full duplex operation with automatic MDI/MDI-X
2805—4 port 10/100Base-T switch (RJ-45 connector); auto-negotiating; half/full duplex operation with automatic MDI/MDI-X

Management: CLI via Telnet; TFTP for software upgrade and configuration upload; SNMPv1; HTTP/web browser

Protocols: IP (RFC 741), TCP (RFC 793), UDP (RFC 768), ICMP & ICMP Redirect (RFC 792), ARP (RFC 826). IP Router with RIPv1 (RFC 1058), RIPv2 (RFC 2453), programmable static routes. Integrated DHCP Server (RFC 2131), DNS Relay (RFC 1631), IEEE 802.1p VLAN Tagging, NAT/NAPT (RFC 1631/2391), IGMPv2

Security: IPSec including AH and ESP. DES, 3DES, and AES encryption. Access Control Lists (ACLs). IP port and address filtering both by source and destination. DoS Detection. Password protected system management with a username/password for console and virtual terminal, IKE

Power Supplies: External universal 90–260 VAC input or 48 VDC input. (Optional internal universal 90–260 VAC input.)

Compliance: CE Mark; Safety: UL60950-1, CSA 22.2 6095001, IEC/EN60950-1. Universal AC units are US NRTL Listed; EMC Emissions: FCC Part 15 Class A; EN55022 Class A; EMC Immunity: EN55024

Environment: Temp.: 0–40°C (32–104°F); Humidity: 5–80% non-condensing

Dimensions: 7.3W x 1.6H x 6.1D in. (18.5H x 4.1W x 15.5D cm)

Weight: 30.5 oz./500g (models with internal power); 24.4 oz./400g (models with external power; no power supply)

T1/E1 Managed VPN WAN Router

IPLink 2803

Multimedia enable any Access TDM network.

The IPLink Managed T1/E1 VPN Router with integrated WAN port is a multimedia router with built-in NTU that manages, monitors and manipulates IP traffic flows to create a service quality control point for IP traffic going over TDM networks. The Model 2803 addresses both the security and the traffic prioritization needs of enterprises and service providers alike through its support for strong encryption of all traffic flows as well as key multimedia features such as prioritization of voice, video and data traffic, IP multicast and IGMP, and embedded VoIP gateway.

VPN routers enable the secure communication of remote offices, home offices, and mobile users across insecure IP networks such as the Internet. IPLink VPN Routers take it one step further and integrate quality of service (QoS) to optimize business traffic flows plus include a NTU to eliminate the need for external converters. IPLink VPN Routers implement a comprehensive security environment and encrypt all flows including VoIP and video flows.

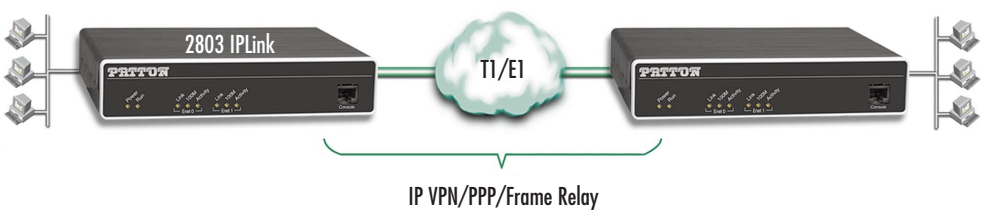
It all starts with IPSec. By supporting ESP as well as AH, IPLink VPN Routers provide data integrity, authentication, anti-replay and data confidentiality to any traffic flow. DES, 3DES, and AES provide standard encryption up to 256 bits. Firewall capabilities of the IPLink VPN Routers include Access Control Lists (ACLs), IP address and port filtering, and protection against Denial of Service (DoS) attacks. Likewise, PPP/PPPoE protocols include support for PAP and CHAP authentication.

QoS features include ToS/DiffServ marking and the configuration of eight service class tags per IEEE 802.1p/Q. With traffic scheduling and shaping, create dedicated bandwidth guarantees, configurable burst tolerance, and policing to include excess traffic discard. IP, PPP, and Frame Relay fragmentation is configurable to help minimize jitter in traffic flows.

Advanced IP features include IGMP and IP multicast support as well as RIPv1 & RIPv2 routing and static route configuration. Static and dynamic NAT, NAPT, DNS resolver and relay, dynamic DNS, and DHCP server further add to the capabilities of the IPLink VPN Router. Frame Relay support is included standard. All IPLink VPN routers can be managed via a web browser (HTTP), command line interface (Telnet or Console), or an SNMP management platform. IKE is included for ease of key management.

Application diagram

IPLink VPN Routers are next generation security appliances that address the needs of business users by integrating QoS and WAN interfaces into a one-box solution. Service Providers can take advantage of the built in QoS to provide both VPN services as well as managed bandwidth services using IPLink VPN Routers.



FEATURES & BENEFITS

- Strong encryption of traffic including VoIP & video flows
- IP multicast and IGMP support
- True multimedia QoS with traffic class prioritization
- VoIP SIP proxy with built-in NAT, DHCP relay and DynDNS
- Embedded T1/E1 NTU with loopback and alarms
- VLAN per IEEE 802.1Q including priority queuing

ORDERING INFORMATION

2803/K/48: IPLink VPN ROUTER, 2-Port Ethernet, 1-port T1/E1 with RJ & BNC, 48 VDC

2803/K/EUI: IPLink VPN ROUTER, 2-Port Ethernet, 1-port T1/E1 with RJ & BNC, External 110–220 VAC

2803/K/UI: IPLink VPN ROUTER, 2-Port Ethernet, 1-port T1/E1 with RJ & BNC, Internal 110–220 VAC

2803/T/48: IPLink VPN ROUTER, 2-Port Ethernet, 1-port T1/E1 RJ only, 48 VDC

2803/T/EUI: IPLink VPN ROUTER, 2-Port Ethernet, 1-port T1/E1 RJ only, External 110–220 VAC

2803/T/UI: IPLink VPN ROUTER, 2-Port Ethernet, 1-port T1/E1 RJ only, Internal 110–220 VAC

SPECIFICATIONS

WAN ports: 2803: One T1/E1. (E1—G.703/G.704 with HDB3 and AMI encoding. T1—ANSI T1.403 & AT&T TR54016 with AMI coding/D4 framing or B8ZS coding/ESF framing. RJ-48C connector and/or dual BNC available. 2835: V.35 DTE on DB-25F Connector 2821: X.21 DTE or DCE on DB-15F Connector

Ethernet ports: Two 10/100Base-T ports (RJ-45 connector); auto-negotiating; half or full duplex operation with built-in MDI-X

Management: CLI via Telnet Ethernet or RS-232 Console Port (EIA-564); TFTP for Software upgrade and configuration upload; SNMPv1; HTTP/web browser

Protocols: IP (RFC 741), TCP (RFC 793), UDP (RFC 768), ICMP & ICMP Redirect (RFC 792), ARP (RFC 826). IP Router with RIPv1 (RFC 1058), RIPv2 (RFC 2453), programmable static routes. Integrated DHCP Server (RFC 2131), DNS Relay (RFC 1631), IEEE 802.1p VLAN Tagging, NAT/NAPT (RFC 1631/2391); IGMPv2

Security: IPSec including AH and ESP. DES, 3DES, and AES encryption. Access Control Lists (ACLs). IP port and address filtering both by source and destination. DoS Detection. Password protected system management with a username/password for console and virtual terminal; IKE

Power: External universal 90–260 VAC input or 48 VDC input. (Optional Internal universal 90–260 VAC input.)

Compliance: CE Mark; Safety: UL60950-1, CSA 22.2 6095001, IEC/EN60950-1. Universal AC units are US NRTL Listed; EMC Emissions: FCC Part 15 Class A; EN55022 Class A; EMC Immunity: EN55024

Environment: Temp.: 0–40°C (32–104°F) • Humidity: 5-80% non-condensing

Dimensions: 7.3W x 1.6H x 6.1D in. (18.5H x 4.1W x 15.5D cm)

Weight: 30.5 oz./500g (models with internal power); 24.4 oz./400g (models with external power; no power supply)

Sync. Serial Managed VPN WAN Router

IPLink™ 2821 & 2835

IPLink Managed VPN Routers with integrated WAN ports optimize and secure information flows applying VPN encryption and QoS/CoS traffic management.

The IPLink Managed VPN Routers with integrated serial ports are a family of next generation appliances that address both the security and the traffic prioritization needs of enterprises. VPN routers enable the secure communication of remote offices, home offices, and mobile users across insecure IP networks such as the Internet. IPLink VPN Routers take it one step further and integrate quality of service (QoS) to optimize business traffic flows plus include a serial port to eliminate the need for external converters.

\IPLink VPN Routers implement a comprehensive security environment. It all starts with IPSec. By supporting ESP as well as AH, IPLink VPN Routers provide data integrity, authentication, anti-replay and data confidentiality to any traffic flow. DES, 3DES, and AES provide standard encryption up to 256 bits. Firewall capabilities of the IPLink VPN Routers include Access Control Lists (ACLs), IP address and port filtering, and protection against Denial of Service (DoS) attacks. Likewise, PPP/PPPoE protocols include support for PAP and CHAP authentication.

QoS features include ToS/DiffServ marking and the configuration of eight service class tags per IEEE 802.1p/Q. With traffic scheduling and shaping, create dedicated bandwidth guarantees, configurable burst tolerance, and policing to include excess traffic discard. IP, PPP, and Frame Relay fragmentation is configurable to help minimize jitter in traffic flows.

Advanced IP features include RIPv1 & RIPv2 routing and static route configuration. Static and dynamic NAT, NAPT, DNS resolver and relay, dynamic DNS, and DHCP server further add to the capabilities of the IPLink VPN Router. Frame Relay support is included standard. All IPLink VPN routers can be managed via a web browser (HTTP), command line interface (Telnet or Console), or an SNMP management platform.

FEATURES & BENEFITS

V.35 and X.21—Get the integrated serial port you need.

VPN Tunnels—Standard IPSec with AH and ESP ensures maximum protection when traversing unsecured networks.

Strong Encryption—DES, 3DES, and AES offer standards based encryption algorithms from 56 to 256 bits.

QoS/CoS Profiles—Configurable burst tolerance, bandwidth guarantees plus reduce per flow traffic jitter as required by the application.

Configurable Security Profiles—Built-in IP address and IP port filtering, ACLs and DoS attack detection creates a comprehensive security environment.

Enhanced IP Services—DNS resolver and relay, NAT/NAPT, dynamic DNS, and DHCP server, eases integration.

SNMP/HTTP Management—Easily manage the IPLink VPN Routers via a simple web browser interface.

ORDERING INFORMATION

2821/K/48: IPLink VPN ROUTER, 2 Port ETH, 1 port X.21 with DB15 connector, 48 VDC

2821/EUI: IPLink VPN ROUTER, 2 Port ETH, 1 port X.21 with DB15 connector, External 110–220 VAC

2821/UI: IPLink VPN ROUTER, 2 Port ETH, 1 port X.21 with DB15 connector, Internal 110–220 VAC

2835/48: IPLink VPN ROUTER, 2 Port ETH, 1 port V.35 with M34 connector, 48 VDC

2835/EUI: IPLink VPN ROUTER, 2 Port ETH, 1 port V.35 with M34 connector, External 110–220 VAC

2835/UI: IPLink VPN ROUTER, 2 Port ETH, 1 port V.35 with M34 connector, Internal 110–220 VAC

SPECIFICATIONS

WAN ports: 2835—V.35 DTE on DB-25F connector • 2821—X.21 DTE or DCE on DB-15F connector

Ethernet ports: Two 10/100Base-T ports (RJ-45 connector); auto-negotiating; half or full duplex operation with built-in MDI-X

Management: CLI via Telnet Ethernet or RS-232 Console Port (EIA-564); TFTP for Software upgrade and configuration upload; SNMPv1; HTTP/web browser

Protocols: IP (RFC 741), TCP (RFC 793), UDP (RFC 768), ICMP & ICMP Redirect (RFC 792), ARP (RFC 826). IP Router with RIPv1 (RFC 1058), RIPv2 (RFC 2453), programmable static routes. Integrated DHCP Server (RFC 2131), DNS Relay (RFC 1631), IEEE 802.1p VLAN Tagging, NAT/NAPT (RFC 1631/2391); IGMPv2

Security: IPSec including AH and ESP. DES, 3DES, and AES encryption. Access Control Lists (ACLs). IP port and address filtering both by source and destination. DoS Detection. Password protected system management with a username/password for console and virtual terminal; IKE

Power supplies: External universal 90–260 VAC input or 48 VDC input. (Optional internal universal 90–260 VAC input.)

Compliance: CE Mark; Safety: UL60950-1, CSA 22.2 6095001, IEC/EN60950-1. Universal AC units are US NRTL Listed; EMC Emissions: FCC Part 15 Class A; EN55022 Class A; EMC Immunity: EN55024

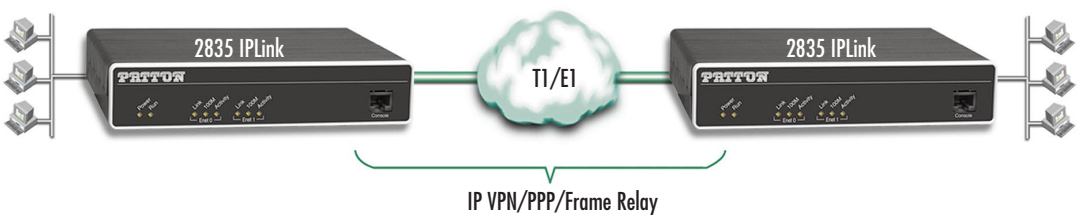
Environment: Temp.: 0–40°C (32–104°F); Humidity: 5–80% non-condensing

Dimensions: 7.3W x 1.6H x 6.1D in. (18.5H x 4.1W x 15.5D cm)

Weight: 30.5 oz./500g (models with internal power); 24.4 oz./400g (models with external power; no power supply)

Application diagram

IPLink VPN Routers are next generation security appliances that address the needs of business users by integrating QoS and WAN interfaces into a one-box solution. Service Providers can take advantage of the built in QoS to provide both VPN services as well as managed bandwidth services using IPLink VPN Routers.



Multi-Port T1/E1 Routers

NetLink™ 2688

This Multi-Port Access Router combines multiple T1/E1 lines with a feature-rich IP router to address the demanding deployment needs of service and enterprise organizations.

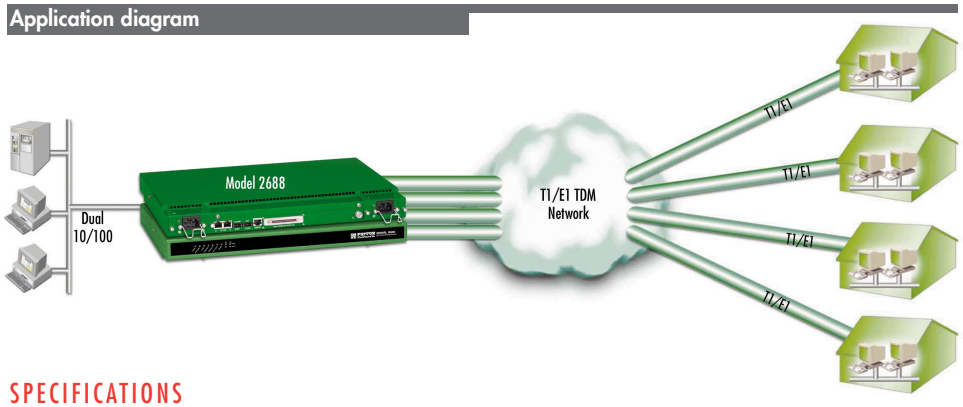
The Model 2688 access router is optimized to process Frame Relay and PPP encapsulated IP traffic from multiple channelized T1/E1 interfaces. The Model 2688 is available in 4, 8, 12 and 16 T1/E1 port configurations with dual 10/100Base-T Ethernet ports. Take advantage of multi-link PPP to grow a link from single to multiple DS0s, all the way to multi-T1/E1 links for the most bandwidth hungry applications and services.

Leverage RADIUS features of the Model 2688 to provide dynamic service authentication to any subscriber. With RADIUS, existing subscriber profiles do not need to change and integration with existing billing systems can be maintained when migrating the user from dial-up to dedicated access.

Easily tailor and manage the level of service to the needs of the subscriber with traffic shaping and policing. Filter by IP address, IP port, or by physical port in ingress or egress directions. The extensive filtering capabilities of the Model 2688 turn the router into a capable edge firewall. NAT is also supported for masquerading applications or for simple address translation. Customize security for each end user or use a standard configuration for all. Use built-in traffic filtering features of the Model 2688 and SSH to secure your management connection.

VPN applications, including access service wholesaling, can be easily deployed with L2TP, IP-within-IP (RFC 2003), or GRE providing standards-based tunneling of IP traffic and easy interconnection with existing VPN networks. Use RIP or OSPF to route traffic between any WAN or LAN port.

Application diagram



SPECIFICATIONS

WAN ports: 4, 8, 12, or 16 software configurable ports. E1—G.703/G.704 with HDB3 and AMI encoding support. T1—ANSI T1.403 & AT&T TR54016 with AMI coding/D4 framing or B8ZS coding/ESF framing.

Ethernet Ports: Dual 10/100Base-T (RJ-45 connector); auto-negotiating; half or full duplex operation

WAN clocking: Internal, Network Receive Recover (from expansion port), External BITS via Form-C Relay contacts.

Front Panel Indicators: LEDs for power, CPU, system, Ethernet, External clock, test mode, and WAN ports

Power Supplies: Hot swap, dual-redundant AC/DC; AC power: 90–264 VAC (50/60 Hz); DC power: -36 to -72 VDC

Management Service: HTTP, SNMP, Telnet Ethernet, RS-232 Console Port, SYSLOG Client, Software upgrade via FTP

Alarm Reporting: Configurable alarms; Remote SNMP Traps; Front Panel LEDs; 3-Contact Relay (3-pin terminal block)

Compliance: Safety: UL/CSA per UL1950 (METS) Canadian cMET and CS-03. EMC Directive 89/336/EEC, Low-Voltage Directive 73/23/EEC (EN60950), FCC Part 15, CE Mark, CTR12, CTR13, FCC Part 68

Environment: Temp.: 0–40°C (32–104°F)
Humidity: 5–90% non-condensing

Dimensions: 48.25 W x 32.00 D x 4.44 H cm
(19.00 W x 12.60 D x 1.75 H in.) – 1U by 19 in. wide

FEATURES & BENEFITS

Dual 10/100 Ethernet—Easily bridge the gap between the LAN and WAN with differentiated service offerings.

Up to 16 T1/E1 WAN Ports—Terminate Frame Relay or PPP encapsulated IP traffic on channelized software-configurable interfaces.

Extensive IP Routing Support—Support for RIP and OSPF allows easy interoperability and integration.

IP Subscriber Management—DNS caching, NAT, NAPT, DHCP, IGMP, DiffServ, & RADIUS make it easy to create and manage any service.

VPNs—Create layer 2 and layer 3 VPNs with L2TP, IP-within-IP and GRE.

SNMP/HTTP Management—SNMP/HTTP manageable from anywhere in the world including attached CPE units.

Firewall—Built in IP address and IP port filtering, makes firewall services a *snap*.

ORDERING INFORMATION

2688/4E/RUI: Dual Ethernet port router with 4 T1/E1 ports; Redundant 110–220 VAC power

2688/8E/RUI: Dual Ethernet port router with 8 T1/E1 ports; Redundant 110–220 VAC power

2688/12E/RUI: Dual Ethernet port router with 12 T1/E1 ports; Redundant 110–220 VAC power

2688/16E/RUI: Dual Ethernet port router with 16 T1/E1 ports; Redundant 110–220 VAC power

2688/4E/R48: Dual Ethernet port router with 4 T1/E1 ports; Redundant 48 VDC power

2688/8E/R48: Dual Ethernet port router with 8 T1/E1 ports; Redundant 48 VDC power

2688/12E/R48: Dual Ethernet port router with 12 T1/E1 ports; Redundant 48 VDC power

2688/16E/R48: Dual Ethernet port router with 16 T1/E1 ports; Redundant 48 VDC power

Modular T1/E1 Routers

ForeFront™ 6400 Series

Patton's ForeFront Edge/Access Router line delivers carrier grade IP networking and WAN based Ethernet VLAN aggregation in a modular, rugged and reliable platform.

The ForeFront 6400 Edge/Access Router Series redefines carrier grade networking with the unparalleled redundancy and upgradeability needed to establish service commitments, foster business nimbleness and optimize capital investment. Flexible, rugged and easily upgradeable, it is a platform for current and future networking needs including next-generation narrowband, broadband, and multimedia requirements.

ForeFront Routers are well equipped to meet the most demanding needs of organizations. Advanced QoS/CoS mechanisms reliably guarantee bandwidth, set burst tolerances for traffic flows, and reduce jitter via forced fragmentation of layer 2 flows. A RADIUS accounting and authentication client facilitates centrally configured user and group profiles as well as the maintenance of billing information. IGMP support fosters efficiency in the handling of multimedia multicast traffic. NAT/NPAT and IP filtering creates a basic firewall capability.

Ethernet VLANs conforming to 802.1p/Q standards can be created, transparently passed, or terminated at the operators discretion allowing for maximum flexibility in the handling of Ethernet traffic. Simple bridging configurations are likewise supported. With L2TP, traffic can be aggregated for port wholesaling applications or VPNs created as a method of transparently tunneling traffic over third-party networks.

ForeFront Routers offers a robust, reliable solution complete with power distribution, thermal management, and a redundant high-speed backplane. Each unit has integrated cooling and boasts 1+1 or N+1 redundancy with AC or DC power supplies and redundant power feeds. Hot-swappable components provide high availability while the router's multi-processor design avoids single points of failure. The ForeFront Routers are available in 4, 8 and 17 slot configurations.

SPECIFICATIONS

Routing: RIPv1 (RFC 1058), RIPv2 (RFC 2453), OSPFv2 (RFC 2328), VLSM (RFC 1878)

T1/E1 Ports: L2TP (RFC 2661 with RFC 2809 & 2888)—LAC & LNS

VPN Services: CLI via Telnet; TFTP for Software upgrade and configuration upload; SNMPv1; HTTP/web browser

IP Services: ARP (RFC0826), Proxy-ARP (RFC1027), ICMP (RFC0950, RFC1256), NTPv3 (RFC1305), IGMP & IGMPv2 (RFC2236), DiffServ (RFC2474), NAT (RFC 1631/2663/2766/2993), PAP (RFC 1332), CHAP (RFC 1334 & 1994)

Ethernet Ports: Three 10/100BaseT (RJ-45 connector); auto-negotiating; half or full duplex operation

Front Panel Indicators: LEDs for power, CPU, system, Ethernet, External clock, and test mode

Management Service: HTTP, SNMP, Telnet Ethernet, RS-232 Console Port, SYSLOG Client, Software upgrade via FTP, SSH, NTP, RADIUS Authentication (RFC 2865 & 2868), Accounting (RFC 2866 & 2867)

Alarm Reporting: Configurable alarms; Remote SNMP Traps; Front Panel LEDs

Compliance: Safety: UL/CSA per UL1950 (METS) Canadian cMET and CS-03. EMC Directive 89/336/EEC, Low-Voltage Directive 73/23/EEC (EN60950), FCC Part 15, CE Mark, CTR12, CTR13, FCC Part 68

Environment: Temp.: 0–40°C (32–104°F); Humidity: 5–90% non-condensing

FEATURES & BENEFITS

Carrier Grade—Integrated cooling, redundant backplane, hot-swappable components, redundant power.

Drop & Insert—Take any TDM channel from any port and perform a Drop & Insert to any other port

VLAN—Use VLAN tags to switch Ethernet traffic and isolate user traffic

VPN—Easily set up L2TP tunnels to facilitate traffic routing or for port wholesaling opportunities.

Firewall—Built-in IP address and IP port filtering, makes firewall services a snap

Subscriber Management—Leverage the power of RADIUS to set and manage subscriber profiles.

ORDERING INFORMATION*

6423/16E/R48: One 2U-high 4-slot chassis with DC power, 16 T1/E1 ports, and router card with 3 10/100 Ethernet ports

6423/32E/R48: One 2U-high 4-slot chassis with DC power, 32 T1/E1 ports, and router card with 3 10/100 Ethernet ports

6423/16E/RUI: One 2U-high 4-slot chassis with AC power, 16 T1/E1 ports, and router card with 3 10/100 Ethernet ports

6423/32E/RUI: One 2U-high 4-slot chassis with AC power, 32 T1/E1 ports, and router card with 3 10/100 Ethernet ports

6443/16E/R48: One 4U-high 8-slot chassis with DC power, 16 T1/E1 ports, and router card with 3 10/100 Ethernet ports

6443/32E/R48: One 4U-high 8-slot chassis with DC power, 32 T1/E1 ports, and router card with 3 10/100 Ethernet ports

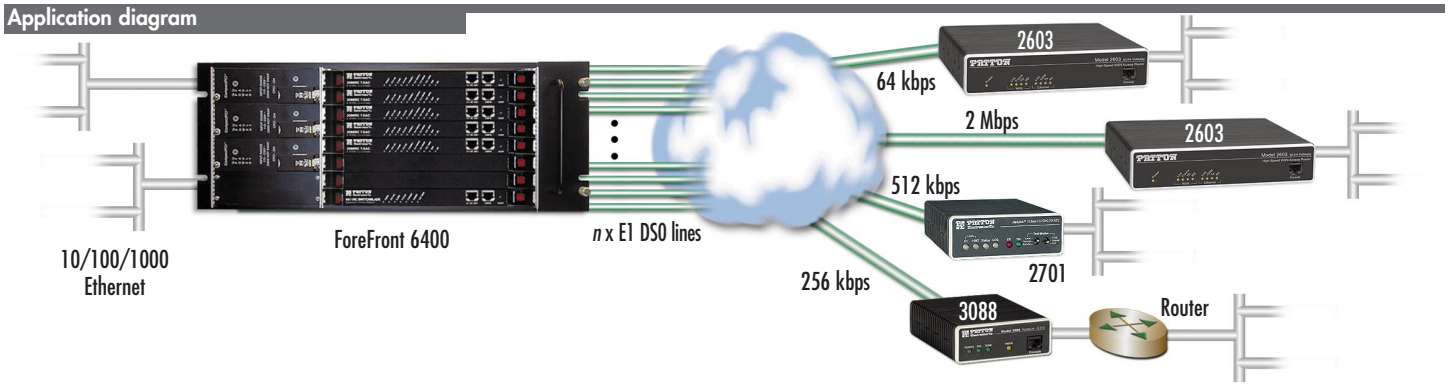
6443/16E/RUI: One 4U-high 8-slot chassis with AC power, 32 T1/E1 ports, and router card with 3 10/100 Ethernet ports

6443/32E/RUI: One 4U-high 8-slot chassis with AC power, 32 T1/E1 ports, and router card with 3 10/100 Ethernet ports

6423/1S/R48: One 4U-high 8-slot chassis with DC power, 32 T1/E1 ports, and router card with 3 10/100 Ethernet ports

*Call for additional model numbers.

Application diagram



Multi-Port VPN Ethernet Switch with POE

Model 2560

Full function, manageable 8 port Ethernet switch offering industry standard Power Over Ethernet (802.3af) on all ports

Patton's 2560 IEEE802.3af complaint Power Over Ethernet enabled switch allows easy implementation of standard Ethernet devices, like IP phones, cameras and security equipment using DC power distribution over widely deployed CAT5 Ethernet cable. Power over Ethernet eliminates the need for a power source where the Ethernet device is deployed. Wireless hubs, IP cameras and other IP devices in difficult to reach places can now be powered and operated up to 100 meters away from a power source using a single Ethernet cable.

Operating as a full function and fully manageable Ethernet switch, the Patton 2560 provides PoE auto-detection for connected 10/100 devices and a GigE uplink. Web, Telnet, console and SNMP interfaces provide easy local and remote management and monitoring of the switch. The 2560 is an excellent choice when upgrading or adding additional Ethernet capacity.

When coupled with an under desk UPS battery system these Ethernet switch enables continuous operation of VoIP phones and gateways within a building without the large expense of a full AC power UPS system. Power consumption monitoring and control to efficiently manage or troubleshoot power consumption and/or failures.

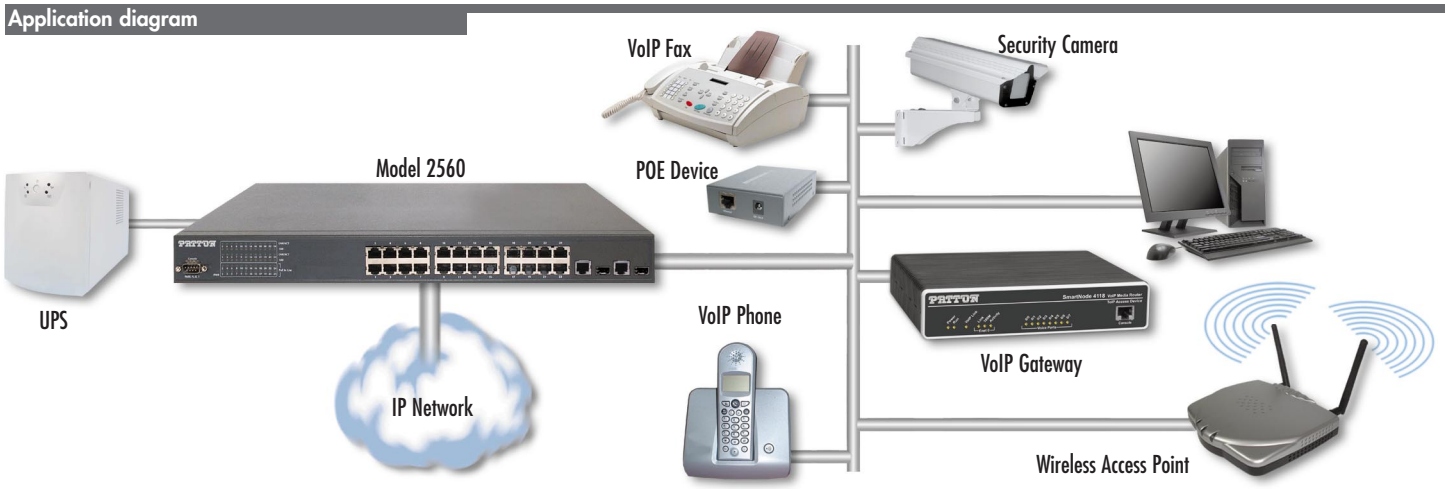
FEATURES & BENEFITS

- Full Function 10/100 Layer 2 Switch with PoE
- Extend Ethernet Where Power Cannot Go
- Centralized Source of Back up Power for all your devices
- Auto-detects PoE and Non-PoE Devices
- Auto-detects required voltage of PoE enabled device or PoE splitter
- 802.3af standard works with any PoE 802.3af compliant device

ORDERING INFORMATION

2560/24/EUI: IpLink 24-Port PoE Switch
2560/8/EUI: IpLink 8-Port PoE Switch

Application diagram



SPECIFICATIONS

Interfaces: 24 RJ-45 ports, 10/100Base-TX • RS-232 DB-9 female connector for switch management • RS-232 DB-9 male connector for UPS management

Ethernet: IEEE802.3 10BASE-T • IEEE802.3u 100BASETX/100BASE-FX • IEEE802.3z Gigabit fiber •IEEE802.3ab 1000BASE-T • IEEE802.3x Flow control and back pressure • IEEE802.3ad Port trunk with LACP • IEEE802.1d spanning tree • IEEE802.1w rapid spanning tree (option) • IEEE802.1p Class of service • IEEE802.1Q VLAN Tagging (2048 groups) • IEEE 802.1x user authentication (RADIUS) • IEEE802.3af PoE

SNMP MIBs: RFC 1213 MIB II, RFC 1643 • Ethernet like MIB, RFC 1493 Bridge MIB, RFC1757 RMON 1 MIB, RFC 2674 VLAN MIB, RFC1628 UPS MIB, RFC3621 Power Ethernet MIB, private MIB, RFC 1157 SNMP, RFC 1215 Trap, RFC 1492 TACACS+ (option), RFC2030 SNTP, RFC2821 SMTP (Option)

Software: Class of Service: System queues FIFO, WRR • IGMP: Supports IGMP snooping for multimedia application and supports 256 groups • Port-based Priorities: 3 settings • Port Security: Ingress and egress MAC filters and static source MAC address lock.• Port Mirror: Up to 24 ports—RX, TX and both • DHCP: DHCP client • Packet filter: Broadcast storm

Available modules: 100FX(Multi /Single Mode) module: SC • Gigabit copper: RJ-45 • Gigabit fiber: SC for SX and LX • GBIC: 3.3v GBIC socket • Mini GBIC: 3.3v Mini GBIC socket

Switch architecture: Back-plane up to 8.8 Gbps

MAC address: Auto-learning function 8K MAC address table

LEDs: System Power • 10/100TX RJ-45 Port: 100Mbps,Link/Active, Full-duplex/Collision • Expansion modules: Gigabit Fiber: Link/ Activity; Gigabit Copper: Link/Activity, Full duplex/collision, 1000Mbps, 100Mbps; 100FX module: Link/Activity, Full duplex

Power over Ethernet: Built-in 24 PoE injectors in 10/100Mbps port. • RJ-45 connector pin assignment: Pin 1,2 (VCC-), Pin 3, 6 (VCC+) • End point insert type and compatible with IEEE802.3af • Per port feeding power: 15.4 W (maximum)

Parametric information: Includes current, voltage, power consumption

System: CPU: ARM-7; Memory: Flash – 1MB, System 8MB (3MB packet buffer)

Physical Characteristics: Power: Embedded 200W AC power supply, Input 100~240VAC 50/60Hz, 2 A (Maximum) • Power consumption: 150W (Maximum) • Dimensions: 440W x 225D x 44H mm • Op. temp.: 0 to 40°C, 10~95%RH

Compliance: EMI: FCC Class A, CE; Safety: UL, cUL, CE/EN60950

Management: Interfaces: Telnet, web, SNMP, terminal console management (CLI) • SNMP MIBs: RFC 1213 MIB II, RFC 1643 Ethernet like MIB, RFC 1493 Bridge MIB, RFC 1757 RMON 1 MIB, RFC 2674 VLAN MIB, RFC 1628 UPS MIB, RFC3621 Power Ethernet MIB, private MIB, RFC 1157 SNMP, RFC 1215 Trap, RFC 1492 TACACS+ (option), RFC2030 SNTP, RFC2821 SMTP (Option) • SNMP Trap: Cold start, warm start, link down, link up, authorization fail, UPS trap, up to 3 trap stations • Software Upgrade: TFTP and Console firmware upgradeable. • Bandwidth Control: Per port supports bandwidth control. Per level 100Kbps. • SNTP: Supports RFC 2030 • System Log: Up to 1,000 entries.

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