Engage Communication

IPExpress•QT1

## • IP WAN Router with Four Integrated T1 DSU/CSUs •

IP•Express•QT1 is a high performance, bandwidth scalable, IP WAN router with 4 T1 ports offering a standards-based inverse multiplexing (N x T1) capability. The 4 T1 ports are able to connect to 4 remote locations or to be N x T1 inverse packet multiplexed to remote locations from 3 Mbps to 6 Mbps. Standards based WAN protocols, PPP, Multilink PPP, and Frame Relay, ensure interoperability.

The **IP•Express•QT1** is a very reliable, high performance and cost effective IP WAN Router for interconnecting remote LANs and addresses the large market for connectivity in the multi-megabit bandwidth range such as high performance MPEG Video delivery. The Integration of the T1 CSUs provides for a complete solution with a straight forward configuration. It is great for**:**

• MPEG Video Distribution
• Branch Office Connections
• Education District Networking
• Multimegabyte File Transfers

Inverse Packet Multiplexing

Inverse **P**acket **M**ultiplexing is a feature of the **IPExpress•QT1•IPM**. **IPM** delivers 3 to 6 Megabits of interconnectivity over 2,3,4 Dedicated T1 WANs. IETF approved RFC1990 Multilink PPP protocol bonds multiple T1s into a high-speed virtual link that has built-in redundancy. T1 line fault detection provides resilient connectivity for Mission Critical Interconnects.

**Four T1s Inverse Packet Multiplexed
6 Mega Bits Per Second**

IPExpress•QT1•IPM   **IPExpress•QT1•IPM**
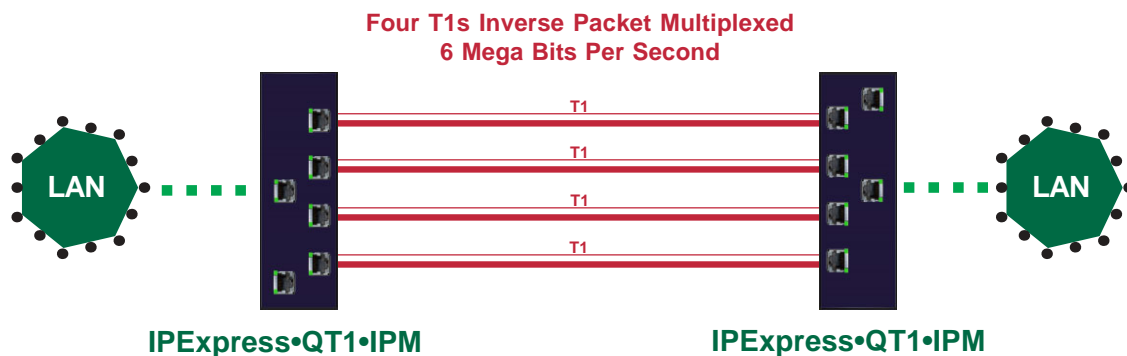
• High Performance Fault Tolerant Internet Access

Internet Service Providers deploy the **IP•Express•QT1** as a customer premise solution for customers that require Fault Tolerant NXT1 multimegabit access to the Internet. Industry Standard Multilink Point to Point Protocol ensures interoperability with the Internet Service Providers Point of Presence solution.
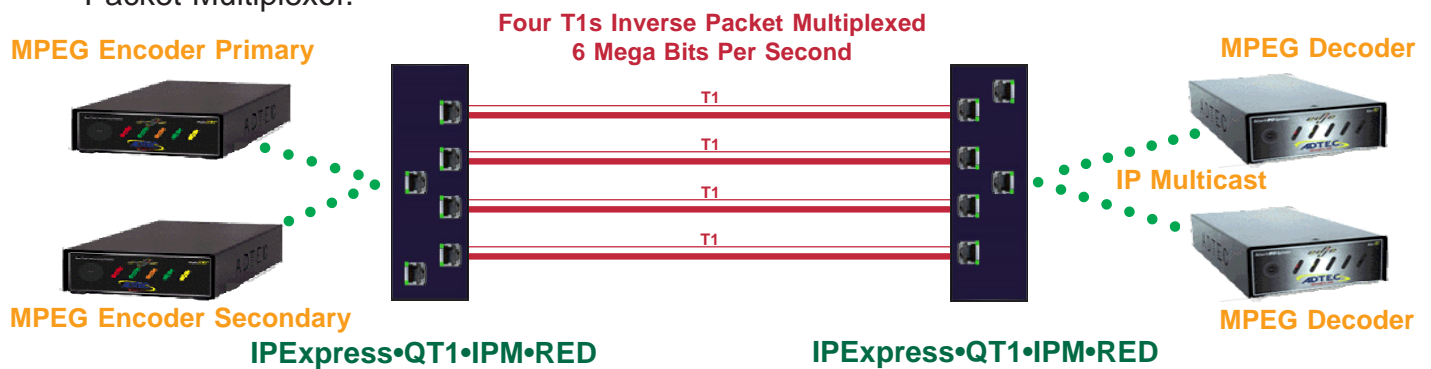
IPExpress•QT1

MPEG IP Multicast Streaming Video Delivery

IPExpress•QT1•IPM models deliver MPEG IP Streaming Video over Inverse Packet Multiplexed T1s. The Inverse Packet Multiplexor provides the bandwidth necessary for the delivery of 2 broadcast quality video feeds or to deliver near Contribution quality for a single MPEG Video. **IP Multicast** is a standard feature of the **IPExpress•QT1** and is utilized to distribute MPEG video simultaneously to multiple decoders.

MPEG IP Video Redundancy Switch

REDundant IP Video configuration automatically switches from the Primary to a Secondary Encoder's IP Video Stream for mission critical broadcasts and is available with the **IPExpress•QT1•IPM•RED.** A one second absence of IP packets from the Primary Encoder results in the switch to the Secondary Encoder. The WAN bandwidth is reserved for a single feed. The Redundancy option is also available with the Inverse Packet Multiplexor.
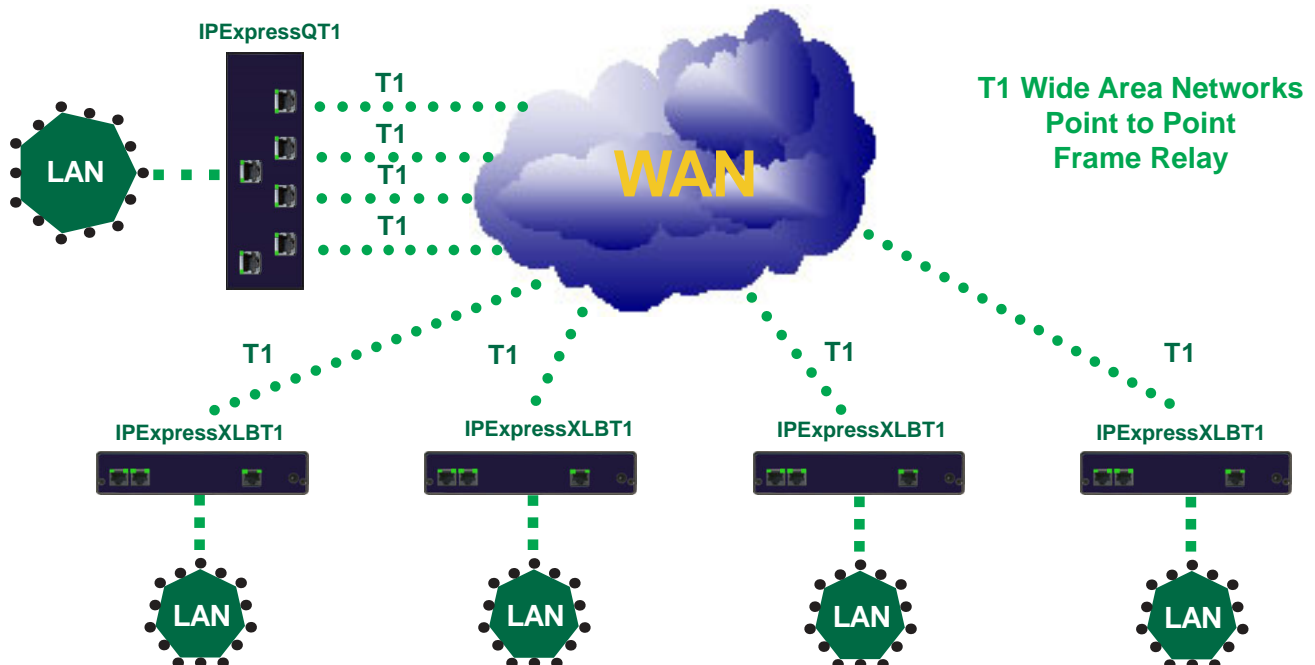
MPEG Encoder Primary

Four T1s Inverse Packet Multiplexed
6 Mega Bits Per Second

T1
T1
T1
T1

MPEG Decoder

IP Multicast

MPEG Encoder Secondary

MPEG Decoder

IPExpress•QT1•IPM•RED   **IPExpress•QT1•IPM•RED**

Enterprise Branch Office

Enterprises connect branch offices to their corporate headquarters.

Education District Networking

School Districts interconnect networks into a high performance intranet.

IPExpressQT1

T1
T1
T1
T1

LAN

WAN

T1 Wide Area Networks
Point to Point
Frame Relay

T1   T1   T1   T1

IPExpressXLBT1   **IPExpressXLBT1**   **IPExpressXLBT1**   **IPExpressXLBT1**

LAN   **LAN**   **LAN**   **LAN**

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IPExpress•QT1

IP•Express•QT1 models packs 4 T1 WAN connectivity into 1/3 of a 19" wide rack

Management

Management of the **IP•Express•QT1** is accomplished with a Command Line Interface that is accessed through a Console or Telnet connection. Templates of the most common configuration provide for an Edit and Paste configuration. SNMP MIB I and II support is a standard feature.

Network Security

Network Security is established with Full On Source, Destination Address; Port and Flag IP Packet filtering. Interconnectivity is able to be selectively controlled at the interface, network, device and application layers.

Diagnostics

IPExpress•QT1's integrated diagnostic capabilities provide for expeditious fault isolation. The T1 interfaces of the have Bit Error Rate Testors. The **BERT** capability in combination with the diagnostic test loops provides for T1 physical layer qualification. Packet level diagnostics are accomplished with IP Ping packets that can be sent continuously.

Performance Upgrades

IPExpress•QT1 software upgrades that enhance the performance are available for free by contacting Engage Communication support department. The performance upgrades are loaded by TFTP into the upgrade portion of the FLASH ROMs and the unit is operation during the upgrade.

IPExpress•QT1

Technical Specifications

LAN Network Interface:
- 10/100 BaseT Ethernet Port
- Autonegotiate or Configured Speed/Duplex

LAN Network Protocols Supported:
- IP, TCP, UDP, RIP, ICMP
- IP Multicast support
- IP Video Stream Redundancy (Optional)

WAN Network Interfaces:
- Four T1/FracT1 CSU/DSU ports
- Inverse Packet Multiplexing (Optional)

WAN Network Protocols Supported:
- PPP (RFC 1548, RFC 1332, RFC 1334, PAP)
- Multilink PPP (RFC 1990)
- Frame Relay (ANSI ANNEX D, LMI, RFC 1420)

Routing Protocols Supported:
- RIPv1, Static

T1/Fractional T1 Specifications:
- Framing - ESF or D4
- Coding - B8ZS or AMI
- Supports DS0 assignments from 1 to 24
  (64Kbps to 1.536Mbps)

T1 Diagnostic:
- Loopback Test
  Network, Internal, Framer, Payload
- Bert Tests
  2E07,2E11,2E15,QRSS

TFTP Online Upgrade Capable (FLASH ROMs)
- IPExpressQT1 is fully operational during upgrade

Network Security:
- Full On Source, Destination Address;
  Port and Flag IP Packet filtering
- Network, Device and Application Layers.

Management:
- Telnet support with Edit and Paste Template Files
- Console Port for Out of Band Management
- SNMP support (MIB I, MIB II)
- Remote configuration, monitoring, & reset

Regulatory:
- Safety -IEC60950
- EMC - CFR 47 Part 15 Sub Part B:2002
    EN55022:1994+A1&A2
    EN55024, ICES-003 1997
    CISPR 22 Level A
- Telecom - Part68
- CE

Power:
- 12-24 VAC/VDC 1.0A International Adapters Available
- Optional -48V 0.25 Amp
- Hot Standby with 2nd Power Module

Dimensions:
- 14" (L) x 5.5" (W) x 2.50" (H)

Back Panel

Rear Panel shown for Hot Standby Negative 48 Model