PRODUCT INFORMATION

Ascend Multiband MAX

Multimedia Access ▾ Videoconferencing ▾ Backup/Overflow

Increasing network demands require a bandwidth controller that goes the distance. The Multiband MAX offers a scalable platform with future growth in mind.

The Multiband MAX™ family of bandwidth-on-demand controllers provides high-speed access for multimedia applications and offers the scalability needed to meet future networking application requirements. They support dial-up bandwidth on demand at speeds ranging from 56 Kbps to 4 Mbps over ISDN, T1, FT1, E1 and G.703 lines. Each of the models (Multiband MAX 1800, Multiband MAX 2000 and Multiband MAX 4002 & 4004) supports a dynamic mix of dial-up services and inverse multiplexing protocols.

Through Ascend's patented Dynamic Bandwidth Allocation™, the Multiband MAX automatically adjusts line usage as needed and reduces the cost of monthly network services. All of the models are ideally suited for network applications such as videoconferencing, multimedia, telemedicine, distance learning, disaster recovery, private network backup and network overflow. By adding the remote networking upgrade, network managers can turn their Multiband MAX into a full-featured WAN access switch capable of supporting from 16 to 96 dial-up users. The Multiband MAX is certified for use in more than 30 countries and gives companies a global connectivity solution that also acts as a platform for future network growth.

ASCEND

Networking Solutions for High Bandwidth Network Requirements

Scalable design provides a migration path to more advanced functionality

Your company's incremental growth can be handled by adding Multiband MAX ports and access modules, which provide an easy and economical upgrade path. Users determine the functionality they require, select the proper modules and configure their system to meet demand for voice, video or data.

- Upgrade from two-port to six-port Ascend's Inverse Multiplexer (AIM) access modules
- ISDN BRI 56 Kbps, 64 Kbps, ISDN PRI 56 Kbps, 64 Kbps, Switched 384, ISDN Multirate and Switched 1536.
- T1, FT1, E1 (G.703) up to 4 Mbps
- BRI to network access
- Software addition enables 2 T1 interfaces for 4002
- Drop-and-Insert capabilities (4002 and 4004 only)
- PRI to T1 conversion
- Port-to-port local switching
- Remote access upgrade

Bandwidth on demand maximizes performance and decreases costs

Dial-up connections are automatically established and terminated transparently during on-going connections through Dynamic Bandwidth Allocation. Charges apply only for the time the higher bandwidth is used.

- 56 Kbps to 4 Mbps selectable bandwidth per connection
- Bandwidth is controlled manually, automatically or by time-of-day profiles
- Supports Bandwidth ON Demand INteroperability Group (BONDING), inverse multiplexing protocols that work with products from third party providers and AIM, for superior performance
- Dynamic Bandwidth Allocation reconfigures bandwidth transparently during on-going connections

Extensive management capabilities ensure maximum network utilization

Manage all functions of your Multiband MAX through your choice of interface. An Ethernet interface supports management access using Telnet. In-band management allows users to control their system from a central site.

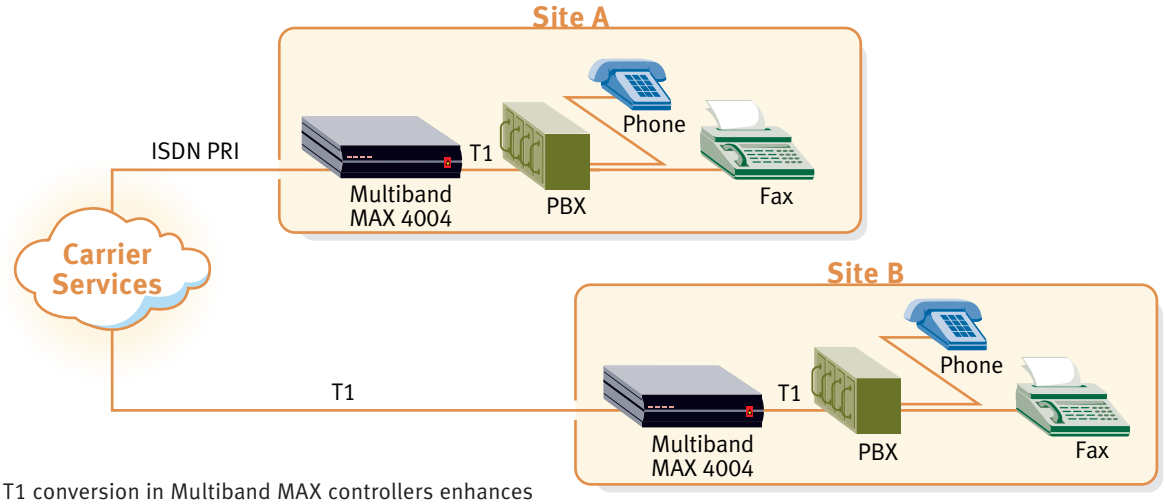
- Telnet/SNMP via Ethernet
- Dial-in from a Multiband multiplexer to create in-band management through the Multiband MAX
- Use serial DB9 (RS232) interface
- Local management via VT-100 terminal
- Flash memory for easy software download

Efficient channel routing facilitates variable network topology

The Multiband MAX can act as a hub for directing network channels to multiple end ports. For instance, by using a BRI module inside the Multiband MAX, switched calls can be transferred between a desktop computer and the public network.

- BRI access to the network
- BRI access to the desktop
- PRI to T1 conversion
- Support for PRI Multirate
- 56-64 Kbps B-channels for ISDN

PRI to T1 Conversion/Drop-and-Insert



PRI to T1 conversion in Multiband MAX controllers enhances networking options while assuring maximum use of T1 capability. Excess circuits from the PRI network can be passed to a T1 circuit for use by a PBX for voice.

Ensures compatibility with a broad range of DTE manufacturers

By supporting multiple dialing protocols, the AIM two-port and six-port slot cards give you exceptional flexibility when setting up your videoconferencing applications.

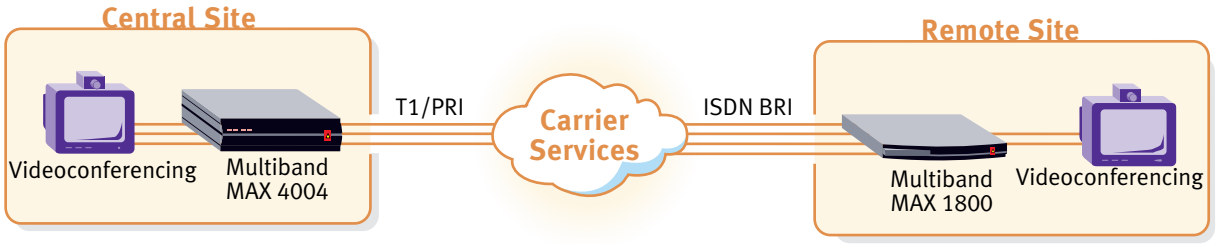
- RS-366 for push-button dialing from videoconferencing systems or host front ends
- V.25 bis for high-speed dialing from LAN bridges, routers and videoconferencing systems
- Control-lead dialing for establishing and clearing calls in response to standard control signals
- X.21 dialing for international applications

Operates with the world's major services for global connectivity

Multiband MAX products are certified in over 30 countries and provide global connectivity with switched services from multiple vendors.

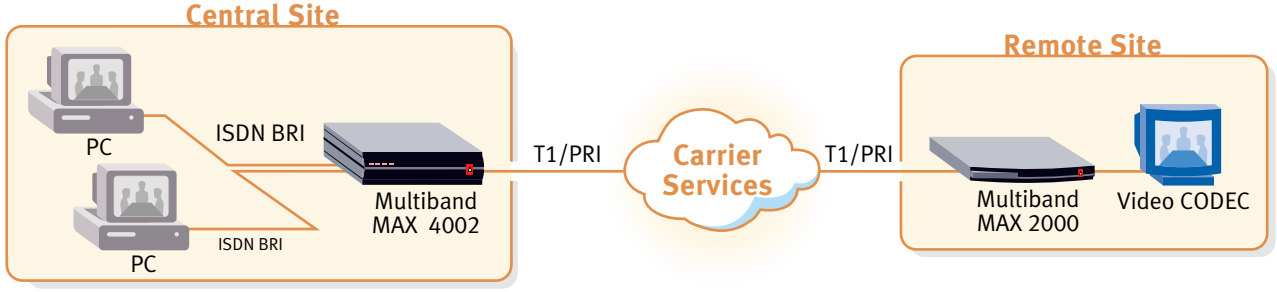
- AT&T ACCUNET Services
- AT&T Switched Digital International
- MCI VPDS 56/64 Kbps
- Sprint VPN 56/64 Kbps
- Local Exchange Carrier 56/64 Kbps
- International PTT 64 Kbps

Point-to-Point Videoconferencing



Multiband MAX users leverage the existing switched network by utilizing bandwidth on demand technology and the Ascend Inverse Multiplexer (AIM) to support cost-effective, bandwidth-intensive videoconferences between two or more sites. Bandwidth sessions can range from 56 Kbps to 4 Mbps.

ISDN BRI to the Desktop



ISDN signaling supports ISDN connections straight to the desktop for digital services dial-in traffic that utilizes multimedia applications requiring voice, video and data.

Multimedia Applications

Videoconferencing and Multimedia

Multiband MAX users can leverage the existing switched network by utilizing bandwidth-on-demand technology and the Ascend Inverse Multiplexer (AIM) to support videoconferences between two or more sites. Bandwidth sessions range from 56 Kbps to 4 Mbps. Dynamic Bandwidth Allocation permits adding or removing lines during on-going sessions, so users pay only for bandwidth used, reducing costs. Multiband MAX supports conference scheduling software developed by third parties.

Back-up and overflow

The Multiband MAX automatically detects inadequate line bandwidth and adds to it by dialing-up more channels, thereby averting problems that can affect system performance. This function operates independently or can be controlled by Data Terminal Equipment (DTE) using control-lead dialing or V.25bis dialing. Disaster recovery capabilities are handled in the same manner, immediately dialing up substitute bandwidth when a line fails. The extra bandwidth is removed when leased lines are restored.

Distance learning and telemedicine

By setting up a point-to-point connection, medical professionals can perform real-time consultation and analysis. A doctor in one city can operate on a patient while a consultant in a different city can view and discuss the procedure concurrently. Likewise, colleges can conduct point-to-multipoint learning by sharing a classroom session with students located at disparate campuses. Students at any location can view the presentation and have a direct dialogue with the instructor.

Drop-and-Insert

When there is excess capacity on a T1 line, Multiband's drop-and-insert feature passes a portion of the T1 line to a PBX with a T1 interface which can access both dedicated and switched circuits for voice services. Using this feature, a single T1 access connection carries both voice and data, providing significant savings over separate access lines.

Remote Networking Upgrade

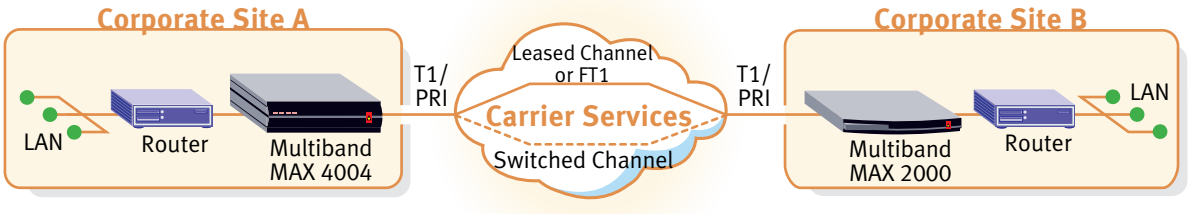
The Multiband MAX platform can be upgraded to a full-featured MAX™ WAN access switch capable of supporting remote access, telecommuting and Internet access. Through a simple software upgrade and the addition of network modules, your company can support as many as 96 analog and digital dial-up users.

The upgrade allows your Multiband MAX to establish seamless connections to backbone network services over a variety of interfaces such as Ethernet, Frame Relay over V.35 and T1/PRI. It also offers robust support for multiprotocol routing and bridging (RIP2 and OSPF, TCP/IP and IPX, PPP). Ascend's digital modem technology provides a scalable solution for adding callers to your company's remote network. Dial-up sessions are automatically added and dropped for transparent client-server computing across the network, and Ascend's patented Dynamic Bandwidth Allocation (MP, MP+) aggregates lines and lowers network service fees.

All Multiband MAX and MAX products support comprehensive security for iron-clad remote networking, including an integrated firewall and the industry's most full-featured user-authentication systems (RADIUS, PAP, CHAP, TACACs, TACACS+ and token card security).

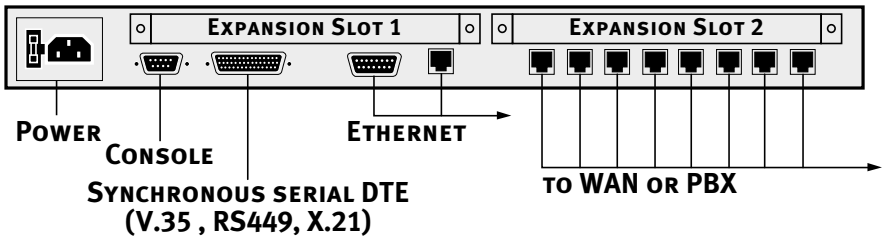
For more information on remote networking capabilities, see the MAX Family datasheets or visit our web site.

Back-up and Overflow

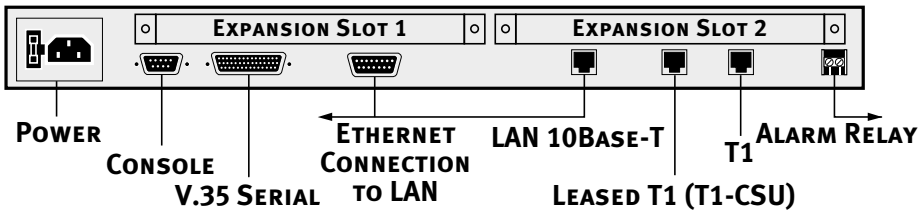


The Multiband MAX automatically detects inadequate line bandwidth and adds lines by transparently aggregating more channels, averting problems that can affect system performance. Extra lines are removed when overflow pressures subside.

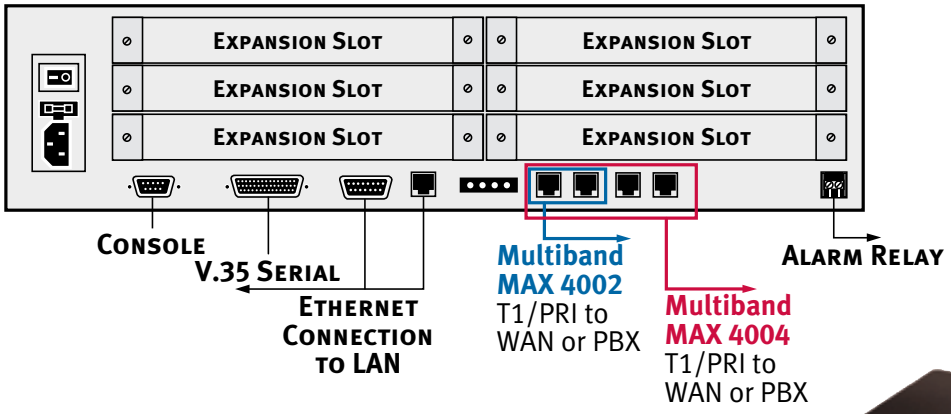
Multiband MAX 1800



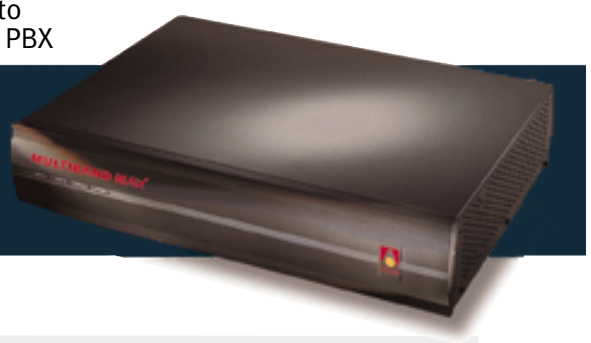
Multiband MAX 2000



Multiband MAX 4002 & 4004



Multiband MAX



Multiband MAX Family At A Glance

Feature	Multiband MAX 1800	Multiband MAX 2000	Multiband MAX 4002	Multiband MAX 4004
T1 with integrated CSU	—	1	2	4
ISDN BRI (S/T)–Network	8	—	Up to 32	Up to 32
ISDN BRI (U)–Network	8	—	—	—
ISDN BRI–T (Desktop)	8	8	Up to 32	Up to 32
Expansion slot	2	2	6	6
Two- and six-port IMUX	2	2	6	6
Remote Access Upgrade				
Hybrid Access	Included	Included	Optional	Optional
Ethernet	1	1	1	1
High-speed serial	1	1	1	1
Digital Modem capacity	16	24	48*	72
Concurrent digital sessions	16	24	48*	96

*Up to 72 digital modems and 96 concurrent sessions with upgrade option

Hardware Specifications

Dimensions	1.75 in x 17 in x 12 in [4.5 cm x 43.2 cm x 30.5 cm] for Multiband MAX 1800 and 2000 3 in x 17 in x 12 in [7.6 cm x 43.2 cm x 30.5 cm] for Multiband MAX 4002 and 4004
Weight	10 lbs [4.6 kg] for Multiband MAX 1800 and 2000 15 lbs [6.8 kg] for Multiband MAX 4002 and 4004
LAN Interface	Ethernet 10Base-T via RJ-45 jack, Ethernet AUI via DB-15 Connector
WAN Interfaces	8 BRI with optional NT1s for Multiband MAX 1800 1 T1/PRI line with integrated CSU for Multiband MAX 2000 2/4 T1/PRI with integrated CSUs for Multiband MAX 4002 and 4004
Software Upgrade	Via built-in flash RAM, remote downloadable
Power Requirements	80 Watts, 47-63 Hz, 90-240 VAC, 270 BTU/hour for Multiband MAX 1800 and 2000 200 Watts, 47-63 Hz, 90-240 VAC, 680 BTU/hour for Multiband MAX 4002 and 4004
Operating Requirements	Temperature: 32-104˚F [0-40˚C] Altitude: 0-14,800 feet [0-4,500 meters] Relative Humidity: 5-90% (non-condensing)
Safety Certifications	CSA 950, NTRL/UL 1950, TUV EN 60 950 EM/RF FCC Part 68, FCC Part 15, E55022, EN50082-1
EMI/RF	FCC Part 68, FCC Part 15, E55022, EN50082-1

Software Specifications

Multimedia/ Inverse Multiplexing	BONDING, local port to port switching, 56 or 64 Kbps adaption, AIM, multiplexing, ISDN Multirate
Management	Console management software (runs on Windows 95 and Windows 3.x), Telnet, NASI, SNMPII, PPP LQM, Frame Relay Annex D, Frame Relay ITU Annex A, Frame Relay ANSI Annex D
LAN Protocols Supported	TCP/IP, IPX
Routing Protocols	Appletalk, BCP Bridging, RIP, RIP2, OSPF (IP only), IGMP multicast forwarding
WAN Protocols Supported	PPP, ARAP, SLIP, C-SLIP, Async PPP, Sync PPP, V.110 Async, HDLC, ARA, Async IPX, X.25 PAD, X.25 over B-channel, V.120, D4 framing (T1), G703/732 framing (R1), frame relay PVC, Hybrid Access, PPP-FR gateway, FR NNI
Modem	V.34, MNP 10-EC, MNP, V.42bis, fax modem send up to 14.4 Kbps
Bandwidth Management	MultiLink PPP (MP), MultiLink Protocol Plus (MP+), TCP header compression, data compression (Ascend/Microsoft/STAC V9), Appletalk Remote Access, compatible with ARA 1.0 and 2.0
Security	Secure Access Firewall, Ascend Access Control (RADIUS), TACACS, TACACS+, Password Authentication Protocol (PAP), Challenge Authentication Protocol (CHAP), token card, Calling Line ID (CLID), packet filtering, SNMP, console management (VT-100), PPP callback, user authentication

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Ascend Communications, Inc. is a leading, worldwide provider of remote networking solutions for corporate central sites, Internet Service Providers' points of presence, remote offices, mobile workers, and telecommuters. Ascend develops, manufactures, markets, sells and supports products which utilize bandwidth on demand to extend existing corporate networks for applications such as remote LAN access, Internet access, telecommuting, SOHO connectivity and video-conferencing/multimedia access. Detailed information on Ascend products, news announcements, seminars, service and support is available on Ascend's home page at the World Wide Web site: http://www.ascend.com.

Ascend markets the GRF, MAX, Multiband, Pipeline, NetWarp and Security families of products. Ascend products are available in more than 30 countries worldwide.

Specifications are subject to change without notice.

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Remote Networking Solutions That Work.™

ISO 9001 REGISTERED