Ascend

OVERVIEW SUMMARY

Multiband MAX Product Family

Release 1.0

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Product Overview

The Multiband MAX™ is a cost-effective solution for applications requiring inverse multiplexing capabilities and gives companies an easy growth path to more robust remote networking applications. By adding remote access options, the Multiband MAX becomes a full-feature MAX™ WAN access switch. As such, it offers an excellent entry-level product for companies who are considering telecommuting applications but are not be ready to implement a remote networking program.

A major difference in the offering of the Multiband MAX product family versus the standard MAX family is the prebundling of software designed for the Multimedia Product Group environment and enhanced management features supporting Telnet, SNMP and NavisAccess™.

The Multiband MAX family is a group of specially configured, cost-effective MAX products with inverse multiplexing and WAN network features optimized for videoconferencing and backup/overflow. It gives the customer unparalleled price/performance with platforms structured for flexible growth. The Multiband MAX family enhances and extends current corporate backbone switched and leased networks by providing and managing bandwidth on demand for multiple applications. If the customer's eventual needs include telecommuting, the Multiband MAX can be software upgraded to enable remote access functions and become a fully-featured MAX product.

The Multiband MAX family consists of the Multiband MAX 1800, Multiband MAX 2000, Multiband MAX 4002, Multiband MAX 4004, and Multiband MAX 6000. The Multiband MAX family will support serial synchronous inverse multiplexing modules, BRI network module, and BRI desktop module. The Multiband MAX 4002, Multiband MAX 4004, and Multiband MAX 6000 with the MAXDAX™ intelligent cross-connection function which gives the customer flexible and efficient use and management of the WAN environment.

Product Positioning

The Multiband MAX family is positioned between the Multiband Plus and the fully-featured MAX family of products. The product structure was purposely designed for customer scalability with a competitive pricing model for the base unit.

The Multiband MAX should be positioned for a basic application requiring the use of the inverse multiplexing function. The price per inverse multiplexing port on a fully populated unit is cost competitive. As further applications are explored for maximum switch network utilization, the benefit of scalability of the Multiband MAX family becomes self-evident. The Multiband MAX products can then be positioned for growth to handle higher capacity for inverse multiplexing,BRI switching, and with the addition of MAXDAX feature, the ability to fully utilize a private to public network combination.

Or, the Multiband MAX products can be upgraded for remote LAN access functions. In either scenario, the key to the product position is the safety of investing in a Multiband MAX product. No other product on the market today can provide this migration capability in a single box.

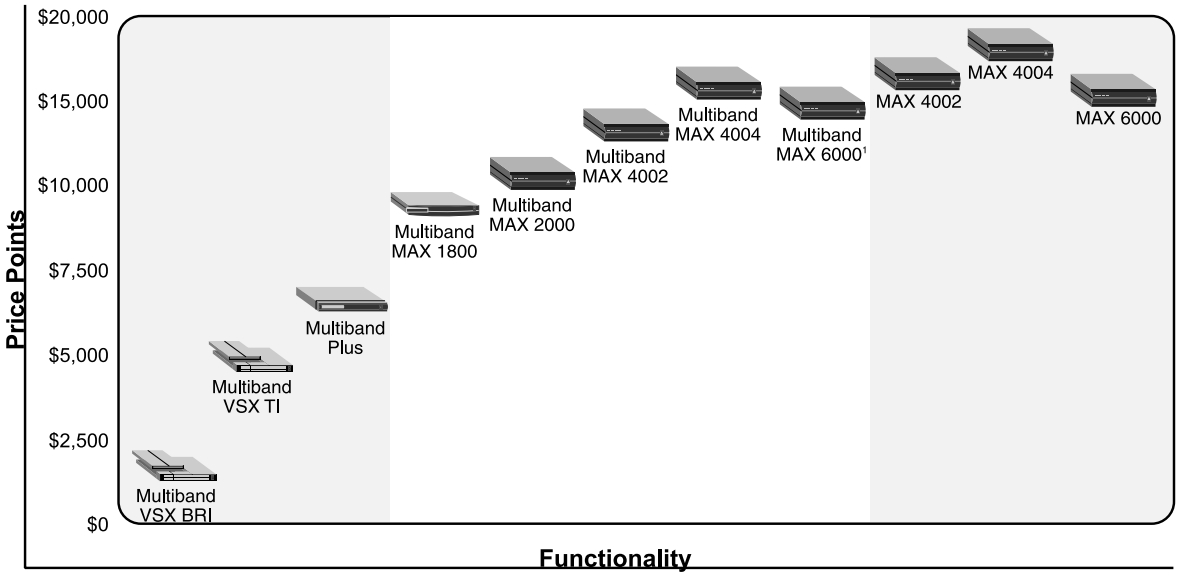


Diagram 1 – Multiband family and MAX family comparison

[1] Price does not include remote access upgrade

Target Applications

Videoconferencing

The Multiband MAX product family is ideal to function as a video access server. One characteristic common to many Multipoint conference units is that a multiparty conference must operate at the same data rate. In Diagram 2, accommodation of the 2 x 56 Kbps TA type calls require that all conferences must participate at 112K.

When Multipoint conferencing at higher rates which require inverse multiplexing, Multiband MAX products can operate between n x 64K and n x 56K channels as shown in Diagram 2. Multiband MAX products can communicate at 336K in a standard imux mode, or operate with Ascend Inverse Multiplexer (AIM) Delta mode at 384K to fully utilize the bandwidth on 64K channels for higher video quality.

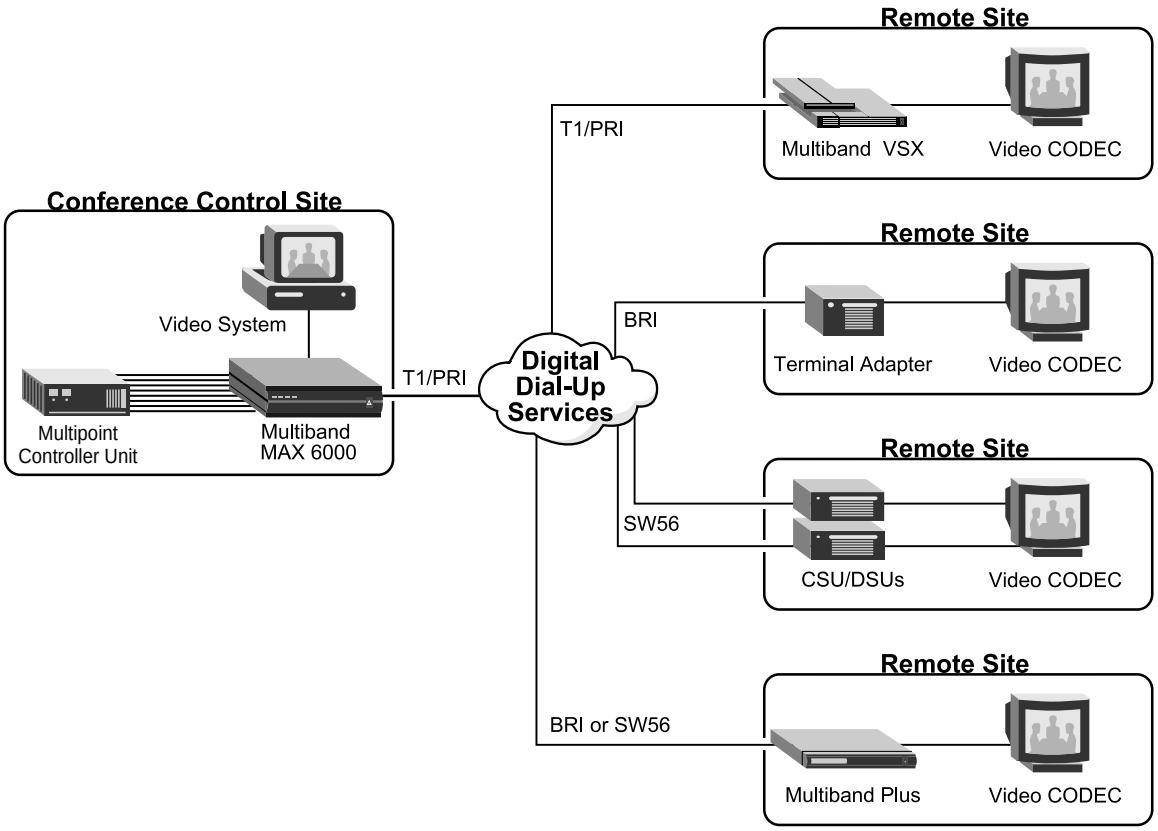


Diagram 2 – Videoconferencing scenario

Software Features

The following features are part of the Multiband MAX software:

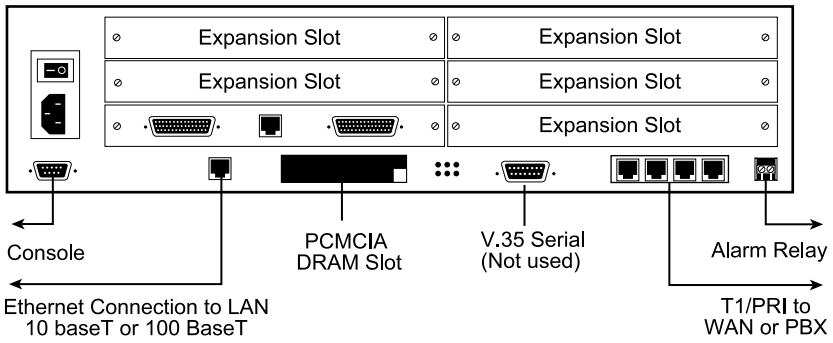
- Speed dialing and stored call profiles
- Port-to-port local switching
- Call routing by port, group or the Dialed Number Identification Service (DNIS)

- AIM and BONDING inverse multiplexing protocols
- Multirate support
- Bandwidth may be changed while call is in progress
- Usage capping
- Status event log
- Machine Interface Format (MIF) language support
- Call detail reporting availability
- Multilevel password security
- Upgradable for remote LAN access and telecommuting
- Dialing protocols of RS-366, V.25 bis, X.21 and control lead initiation

MAXDAX dynamic circuit switch cross connection – standard on Multiband MAX 6000

Hardware Features

Multiband MAX 6000



Dimensions	7.6 cm x 43.2 cm x 30.5 cm [3.5 in x 17 in x 12 in]
Weight	6.8 kg [15 lbs]
LAN Interface	Autosensing Ethernet 10Base-T / Fast Ethernet 100Base-T (RJ-45)
WAN Interface	4 T1/E1 lines (each with an integrated CSU), V.35 serial port
Software Upgrade	Via built-in FLASH RAM or PCMCIA FLASH card; remotely downloadable
Power Requirements	200 watts, 47-63 Hz, 90-240 VAC, 680 BTU/hour
Operating Requirments	Temperature 0-40°C [32-104°F] Altitude 0-4500 meters [0-14,800 feet] Relative Humidity 5-90% (non-condensing)
Safety Certifications	CSA 950, NTRL/UL 1950, TUV EN 60 950
EMI/RF	E55022, EN50082-1, FCC Part 68, FCC Part 15

Frequently Asked Questions

1. What is the Multiband MAX product family?

The Multiband MAX ™ products are the newest members of the Multiband family of bandwidth-on-demand controllers. The Multiband MAX platforms position users for growth by providing remote networking upgrades and can be configured to a full MAX. Multiband MAX 1800, Multiband MAX 2000, Multiband MAX 4002, Multiband MAX 4004 and most recently the Multiband MAX 6000 constitute the product line.

The Multiband MAX 1800 is a chassis with two expansion slots, eight BRI interfaces, a DB9 (RS-232) console port interface and Ethernet interfaces (AUI or UTP). The base model offers a two-port module installed with all DTE features enabled.

The Multiband MAX 2000 is a chassis with two expansion slots, one T1 interface, a DB9 (RS-232) console port interface and Ethernet interfaces (AUI or UTP). The base model offers a two-port module installed with all DTE features enabled.

The Multiband MAX 4002 and Multiband MAX 4004 are chassis with six expansion slots, four T1 interfaces (two T1s are enabled for the 4002), a DB9 (RS-232) console port interface and Ethernet interfaces (AUI or UTP). The base model offers a two-port module installed with all DTE features enabled.

The Multiband MAX 6000 is a chassis with six expansion slots, four T1 interfaces, a DB9 (RS232) console port interface and Ethernet interfaces (UTP, autosensing 10/100 Base-T interface). The base model offers a two-port module installed with all DTE features enabled and MAXDAX.

The base configurations were designed to give the customer a platform to grow or customize his/her network needs.

2. When should a Multiband MAX product be used versus a Multiband VSX or Multiband Plus?

The Multiband Plus and Multiband VSX are products designed for multimedia and videoconferencing applications. The Multiband MAX products have the same capabilities but provide a scalable platform for upgrading to remote access capabilities.

3. What is the difference between a Multiband MAX product and standard MAX products?

Software is bundled in the Multiband MAX products that allows users to perform videoconferencing, backup and overflow management and disaster recovery today at affordable cost. The scalable Multiband MAX platform provides for incremental expansion to the power of a full MAX with the insertion of remote access modules. This provides users with a cost-effective solution for managing their growth needs. MAX products are multiprotocol Wide Area Network (WAN) access switches that allow corporations, carriers and service providers with immediate need for remote access capability to extend their backbone networks to support remote office access, telecommuting and Internet access.

4. What is MAXDAX?

MAXDAX is a software feature available as an option on Ascend's MAX 4000/6000 products which permits the ability to connect DS0 channels based on configured parameters. By carefully constructing a switched network, there effectively are few limitations to prevent full utilization of the purchased network facilities. For example, if you have 3 of 4 T1s on private leased circuits and the fourth circuit is connected to public switched services, you may route calls to and from any of the private circuits to the public service. The routing is a "tandem trunk call" that can be based upon direct mapping or a simple decision process by the MAX using the destination dial numbers and channel service requests. This software feature is prebundled with the Multiband MAX 6000.

5. What does it take to install a Multiband MAX product?

The Multiband MAX has a DB9 serial interface for console port connection with a VT100 monitor. Most customers use a PC which emulates a VT100 to manage the configuration and initial installation of the unit. The installation time can be as short as 10 minutes, depending upon the readiness of the carrier lines and the data terminal equipment. Another method of managing and configuring the Multiband MAX products is through the Ethernet connection via the AUI or 10Base-T connectors using Telnet. However, an initial setting of the Multiband MAX IP address must be registered.

6. How large is the bandwidth on the MAX products provided to an inverse multiplexing port?

The maximum bandwidth varies depending first upon the unit type. Since the Multiband MAX 1800 has a network maximum of 16 DSOs, the maximum bandwidth is 1024 Kbps. The Multiband MAX 2000 has a maximum network bandwidth of one T1 (1544 Kbps). The Multiband MAX 4002 and Multiband MAX 4004 have two T1s and four T1s respectively. The Multiband MAX 6000 has 4 T1s. The next limitations are in the inverse multiplexing modules. The AIM six-port module has 32 DSOs aggregate, while the AIM two-port module has 64 DSOs aggregate. Therefore, an individual port on the six-port module has a maximum throughput of 2048 Kbps. An individual port on the two-port module has two T1s.

Competitive Analysis

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AccessSwitch 60	**Multiband MAX**
The AccessSwitch 60 is positioned as a digital networking switch with six slots offering cards for T1s or BRI Ports for network and local distribution. It offers: • BONDING Inverse multiplexing cards • Four-port multipoint conferencing card • Emulated network switching	The Multiband MAX family focuses expertise for access applications, supporting networks ranging from eight BRIs to four T1s. It offers: • A migration path for proven technology of WAN and data remote access • Prebundled platform for inverse multiplexing support of AIM and BONDING • Intelligent channel connections for basic switching applications
AccessSwitch 60 Weaknesses	**Multiband MAX Family Strengths**
• Doesn't support multirate, only H0 (384K wideband) • No Dynamic Bandwidth Allocation™ based on data usage • Maximum four ports per BRI card • PC/Windows base management must be purchased for easier configuration.	• Supports Nx56/64/384, Multirate wideband • Standard AIM and BONDING with Dynamic Bandwidth Allocation • Eight ports per BRI card • Intelligent DS0 cross connections on T1/PRI facilities • Standard Telnet and SNMP management with NavisAccess™ network management software over TCP/IP

Ordering Information

Model Number	Product Description	U.S. List Price	International List Price
MBX18-8BRIU	Multiband MAX 1800 with eight BRI "U" interfaces with two-port AIM Module in base model. Software features of AIM, BONDING, RS-366, X.21, V25bis, DBA enabled.	$9,900	$9,900
MBX18-8BRIS	Multiband MAX 1800 with eight BRI "S/T" interfaces with two-port AIM Module in base model. Software features of AIM, BONDING, RS-366, X.21, V25bis, DBA enabled.	$9,900	$9,900
MBX20-1T	Multiband MAX 2000 with one T1 interface with integrated CSU. Includes a two-port AIM Module in base model. Software features of AIM, BONDING, RS-366, X.21, V25bis, DBA and ISDN PRI enabled with Multirate.	$11,000	$11,000
MBX-4T1-2	Multiband MAX 4002 with two T1 interfaces with integrated CSUs. Includes a two-port AIM Module in base model. Software features of AIM, BONDING, RS-366, X.21, V25bis, DBA and ISDN PRI enabled with Multirate.		$13,500
MBX-4T1-4	Multiband MAX 4004 with four T1 interfaces with integrated CSUs. Includes a two-port AIM Module in base model. Software features of AIM, BONDING, RS-366, X.21, V25bis, DBA and ISDN PRI enabled with Multirate.	$16,500	$16,500
MBX-6KT1-4	Multiband MAX 6000 with four T1 interfaces with integrated CSUs. Includes a two-port AIM Module in base model. Software features of MAXDAX, AIM, BONDING, RS-366, X.21, V25bis, DBA and ISDN PRI enabled with Multirate.	$14,500	$14,500
MBX-HO-6PM	Base model with six-port module upgrade for Multiband MAX. Replaces two port module on base configuration. Note: Dynamic Bandwidth Allocation not available on six-port modules.	$2,000	$2,000
MBX-HO-8BRIT	Base model with eight BRI "S/T" interfaces terminal module for Multiband MAX. Replaces two port module on base configuration.	$0	$0
MX-SL-2PMHP	Two-port AIM module supporting V.35/RS449/X.21 application ports with Palmtop interface. Supports FT1-Backup/Overflow.	$4,000	$4,000
MX-SL-6PMHP	Six-port AIM module supporting V.35/RS449/X.21 application. Includes adapter cables terminating in six (6) DB44 connectors. Note: FT1-Backup/Overflow DBA not supported with this module.	$6,500	$6,500
MX-SL-8BRIN	Network module for eight BRI "S/T" interfaces for connection to ISDN BRI network services.	$4,500	$4,500
MX-SL-8BRIT	Terminal module for eight BRI "S/T" interfaces for connection to ISDN BRI network services.	$4,000	$4,000
MBX-SO-DAX	MAXDAX DS0 cross connection software option	$3,000	$3,000
MBX-SU-4T1	Two T1 upgrade on Multiband MAX 4002. Unless base model has had ISDN enabled, ISDN PRI service requires MX-SO-ISDN option.	$3,500	$3,500

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