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Ascend Communications, Inc. (NASDAQ: ASND) products use global bandwidth on demand to enhance and extend corporate backbone networks for remote LAN access, Internet access, telecommuting, video access, and leased-line backup and overflow.

Ascend markets the Multiband, Pipeline and MAX families of products. Ascend products are available in more than 26 countries worldwide.

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I.S./ISO 9001/EN 29001

ASCEND

Product Information

ASCEND

Product Information

MAX 4000

REMOTE LAN ACCESS

TELECOMMUTING

INTERNET ACCESS

The Ascend Max 4000 is a high-performance wide area network access switch designed for central site remote access applications such as telecommuting and Internet access. The MAX 4000 uses high-speed digital access lines to connect to the WAN, replacing separate analog access lines, modem racks, routers and terminal servers with an integrated, secure and manageable bandwidth-on-demand



solution.
The MAX 4000 is a high-performance wide area network access switch that lets corporations extend their corporate backbone networks out to remote offices, telecommuters, and other corporations.

The MAX 4000 is also used by Internet and network service providers to provide access to their services for users via ISDN, Frame Relay, and leased lines. The MAX also provides access for modem-based remote users, who can connect to digital-based MAX systems equipped with integrated digital modems.

By eliminating separate access lines, terminal servers and modem racks, the MAX 4000 saves equipment and transmission costs and provides a single entity for management and security. The MAX 4000 uses a single set of digital access lines to provide 96 simultaneous dial-up connections, 48 of which can originate from analog modem users.

Digital WAN Access

The MAX 4000 supports a wide range of digital access lines for connection to WAN services.

- ISDN PRI
- ISDN BRI
- T1 and E1
- Fractional T1
- Frame Relay

Digital Modems

Integrated high-speed digital modems provide full access to analog callers. Digital modems allow modem-based users with analog phone lines to dial into the MAX 4000 over channelized T1/PRI access lines.

- V.34 or V.32 bis digital modems
- MNP and V.42 bis
- Software upgradeable

Full Routing, Bridging, and Terminal Server Functions

Sophisticated support for standard protocols ensures efficient connectivity for remote users to corporate LANs and the Internet.

- Routes TCP/IP and IPX
- Bridges all protocols (BCP standard bridging)
- PPP and SLIP/Terminal Service
- Dynamic IP address assignment
- V.120 asynchronous rate adaption

Bandwidth on Demand

Dial-up connections are automatically established and removed for transparent client-server computing across the WAN. Inverse multiplexing aggregates multiple calls for greater bandwidth.

- Dial-on-demand bandwidth based on packet address
- Increase or decrease bandwidth during connection
- 56 kbit/s to 4 Mbit/s selectable bandwidth per call
- Bandwidth controlled manually, automatically, or by time-of-day profile
- Inverse Multiplexing Protocols: MP (MultiLink PPP), MPP (Multichannel PPP), BONDING, AIM (Ascend Inverse Multiplexing)
- Hardware-based industry-standard STAC header and data compression increases performance

ASCEND

Security
Support for standard user-authentication systems fits into your current network security architecture. Networked server-based authentication makes it easy to manage large-scale remote access installations.

- PAP and CHAP
- RADIUS and TACACS
- Support for token-based security systems, including SecurID and Enigma
- Callback (digital connections)
- Calling Line ID (CLID)
- Password protected terminal server access
- Transmit and receive packet filtering

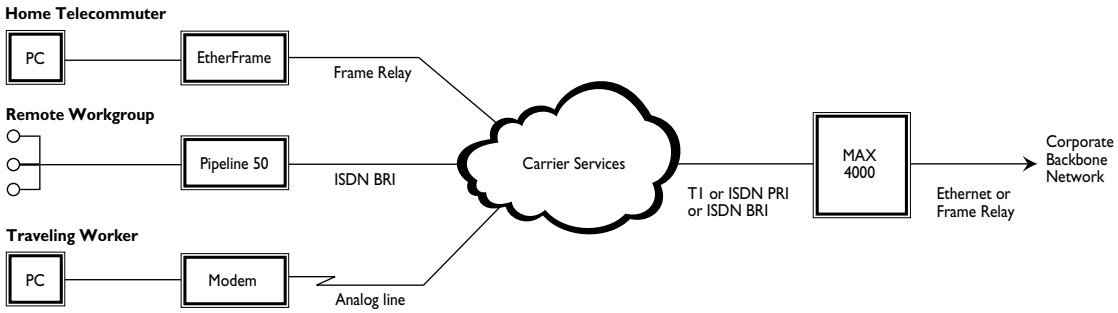
Management and Control
Manage all functions of the MAX 4000 through your choice of interface, either locally or remotely.

- SNMP MIBs: MIB 2, DS1/E1, RS-232, Ascend Enterprise MIB
- Password protected Telnet remote management
- Local management via VT-100 terminal
- PPP LQM (Link Quality Monitoring)
- Annex D Frame Relay link monitoring
- FLASH memory for easy upgrades
- Remote software upgrades
- ISDN event log and syslog support

Frame Relay Wide Area Access Switch
Optional EtherFrame software concentrates incoming frame relay traffic from Ascend's Pipeline EtherFrame and other frame relay access devices along with analog and digital dial-in traffic. High-speed synchronous V.35 port connects directly to a frame relay switch at 8 Mbit/s.

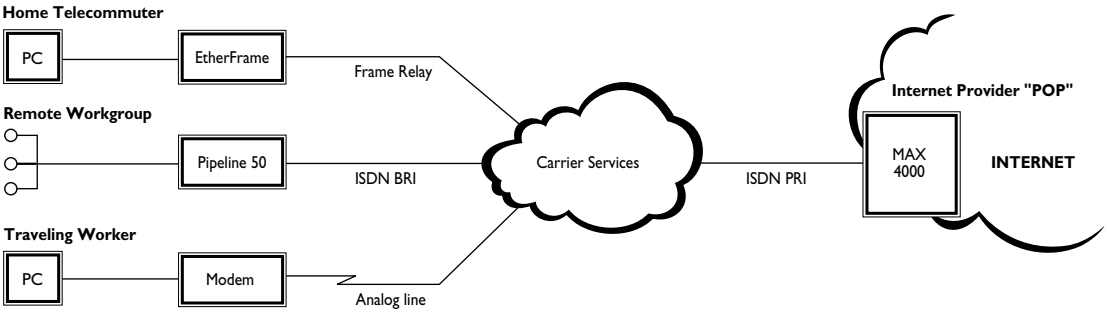
- Route to multiple frame relay PVCs over single or multiple interfaces
- Supports up to 4000 PVCs with RADIUS
- Dial-in PPP-to-frame relay gateway function with PVC selected on a per-user basis
- RFC 1490 encapsulation

Remote and Telecommuter Access to the Backbone Network



Ascend MAX 4000 allows up to 96 simultaneous calls from ISDN BRI, Frame Relay or modem users to the corporate backbone network over ISDN PRI, channelized T1, or ISDN BRI lines. Up to 48 of the 96 calls can be from modem users.

Internet Information Provider and Carriers: POP in a Box



Internet service providers use the Ascend MAX 4000 to provide Internet access to their ISDN BRI, Frame Relay, and modem-based customers. A MAX 4000 connects to the WAN with up to 4 ISDN PRI lines.

Ascend Family of Products for Remote Access and Telecommuting
The family of remote access systems offers a complete range of remote access solutions.

MAX Series
Expandable central site or Internet WAN access switches

MAX 200
Supports multiple analog/digital dial-in users over eight analog or ISDN BRI lines

MAX Classic
Designed for multimedia applications, including videoconferencing, leased line backup and overflow, and remote access. Supports a combination of 96 analog and digital dial-in users over channelized T1/E1, ISDN PRI or ISDN BRI.

MAX 4000
Designed specifically for remote access server applications. Supports four ISDN PRI ports and Ethernet on the base unit. Allows up to 96 simultaneous calls from ISDN BRI, Frame Relay or modem users over ISDN PRI, channelized T1/E1, or ISDN BRI lines.

Pipeline Series
Remote access for remote sites, small offices, and telecommuters

Pipeline 25
Ethernet to ISDN BRI, with two analog phone ports for voice, fax and modem as well as workstation data connections

Pipeline 50 ISDN
Ethernet to ISDN BRI

Pipeline 50 LS56
Ethernet to Switched 56 or Leased 56

Pipeline EtherFrame
Ethernet to 56k or 64k Frame Relay

Pipeline 400
Remote switch with multiple built-in digital interfaces with 12-port Ethernet hub option

Hardware Specifications

Dimensions	3" x 17" x 12"
Weight	15 lbs, 30 lbs fully loaded
External Interfaces	
LAN Interface	10 Mbit/s Ethernet (AUI, 10Base-T)
WAN Interfaces	4 T1 Lines via 4 RJ48 USOC Jacks
High-Speed Serial Interface	8 Mbit/s DB-44 Port for V.35 DTE HDLC Connection
Local Management Interface Alarm	DB-9 Interface for VT-100 Console Screw Terminal for Alarm Indication
Power Requirements	80–200 Watts, 47-63 Hz, 90-240 VAC
Operating Requirements	32–104° Fahrenheit 0–14,800 ft. Altitude Relative Humidity 0-90%
Safety Certifications	CSA 950, NTRL/UL 1950 TUV EN 60 950
EMI/RF	FCC Part 68 FCC Part 15

Base Hardware Configuration

- Four T1/PRI or E1/PRI Interfaces
- 10 Mbit/s Ethernet (AUI/10B-T)
- Intel 80960CF RISC Processor
- 64 Channel HDLC Controller
- High-speed (8 Mbit/s) V.35 DTE Synch Port
- STAC Hardware Compression Coprocessor
- DB-9 VT-100 Management Port
- Alarm Relay
- Integrated T1/E1 CSU Models

Available Expansion Modules

- 8 V.34 Digital Modems
- 8 V.32 bis Digital Modems
- 8 BRI Terminal Ports
- 8 BRI Network Ports
- 8 Channel V.110 Adapter
- 2 RS-232 Inverse Multiplexing Ports
- 6 V.35/RS449 or X.21 Inverse Multiplexing Ports
- 32 Channel HDLC Controller

Bundled Software Functionality

- Routing and Bridging
- Packet Filtering
- Terminal Server, PPP Server
- Integrated SNMP & Telnet-based Management
- Full User and Device Authentication
- Ascend RADIUS Support Extension

Available Software Options

- Frame Relay
- ISDN Signaling
- Multirate ISDN
- PRI-to-T1 Conversion
- Dynamic Bandwidth Allocation
- Ascend Inverse Multiplexing & BONDING
- RS-366 Dialing
- V.25 bis Dialing
- V.120 Rate Adaption

Ascend MAX 4000 Back Panel

MAX 4000
configured as a Remote LAN Access Bandwidth Server

