product information

Ascend RADSL

Break the bandwidth bottleneck with Ascend's RADSL—the high-density solution designed to outpace your growing application needs.

Multimedia Access ▾ Internet/Intranet Access ▾ Remote Access

Ascend's Rate Adaptive Asymmetric Digital Subscriber Line (RADSL) products provide carriers, corporations and service providers both the Central Office Equipment (COE) and the Customer Premises Equipment (CPE) required for immediately implementing multiple DSL technologies. This offering utilizes the existing single pair copper to combine data, voice and video traffic over a RADSL line at speeds up to 7 Mbps. By consolidating access lines and minimizing changes to the existing infrastructure, Ascend's RADSL solution reduces the overall cost of ownership.

Implementing RADSL can be as easy as installing a high-density MAX TNT™ multiservice platform along with RADSL line card modules. As requirements change, use the same platform to support MultiDSL™ technologies such as IDSL, single pair HDSL as well as analog, ISDN or Frame Relay. End users can take advantage of high-speed RADSL services using a DSLPipe™. This powerful router lets users access multiple destinations simultaneously to download high-resolution graphics, participate in Web hosting or to support intra-building applications. Ascend's RADSL products offer a complete, turnkey xDSL solution for satisfying high-bandwidth applications.

ASCEND

Integrated, High-Speed Central Office Solutions

High-bandwidth RADSL solutions

Rate Adaptive Asymmetric Digital Subscriber Line (RADSL) is part of Ascend's broad range of MultiDSL offerings and is designed to give carriers, service providers and corporations a cost-effective way to immediately enter the DSL market. RADSL works by adapting transmission speed based on the length and signal quality of the local loop. This ensures that subscribers will have a higher quality transmission, especially when there is noise on the line.

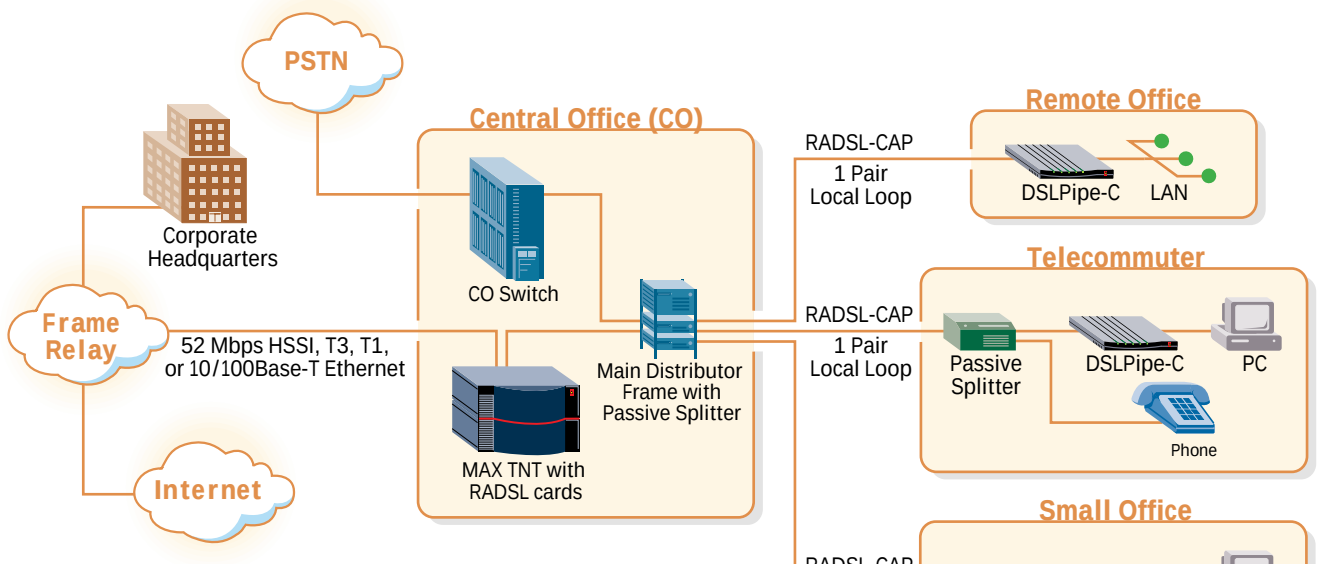
It is the fastest of the DSL technologies that operates on a copper wire and supports up to 17,000 feet distance on a copper pair. For distances of 10,00o feet, the data rate on the downstream portion of the circuit (CO to the subscriber) is 7 Mbps while the data rate on the upstream portion (subscriber to the CO) is 1 Mbps. At 12,000 feet, the data rate is 2.5 Mbps on the downstream and 1 Mbps on the upstream. At 17,000 feet, the data rate is 640 Kbps on the downstream and 544 Kbps on the upstream. Implementing asymmetric rates is desirable in situations where higher bandwidth is needed on the downstream path from a central site or Internet.

RADSL-Carrierless Amplitude Phase (RADSL-CAP) modulation divides the spectrum into three parts with the lower band designated for voice transmission. The higher band is used for data transmission and optimum speed is determined dynamically.

Ascend's RADSL-CAP products include both the Central Office Equipment (COE) and the Customer Premise Equipment (CPE) required for implementing RADSL-CAP-based services immediately. The COE includes the MAX TNT as well as RADSL line cards. Users can place the MAX TNT in their networks to offer high-speed RADSL services as well as support for IDSL, SDSL (Single pair HDSL), analog, ISDN and Frame Relay.

The CPE consists of DSLPipe products, which are high-speed routers based on Ascend's award-winning Pipeline® product family. Together, these products are part of the most comprehensive DSL product line available on the market today.

Ascend's End-to-End RADSL solution



Ascend's RADSL solutions include both the COE and the CPE required for downloading large files, audio clips and graphics to and from a corporate headquarters or the Internet at data rates up to 7 Mbps.

Ascend's multiservice MAX TNT delivers complete support for a variety of subscriber services

When carriers place a MAX TNT in their network, they get support for more services than any other platform in the industry. The MAX TNT supports everything from analog to RADSL—all in a single high-density solution. By adding a RADSL card into a MAX TNT, carriers also get the added benefit of Ascend's integrated features and capabilities. Options and enhancements let them take advantage of Ascend's broad range of system capabilities—from Frame Relay PVC concentration to comprehensive user and security management.

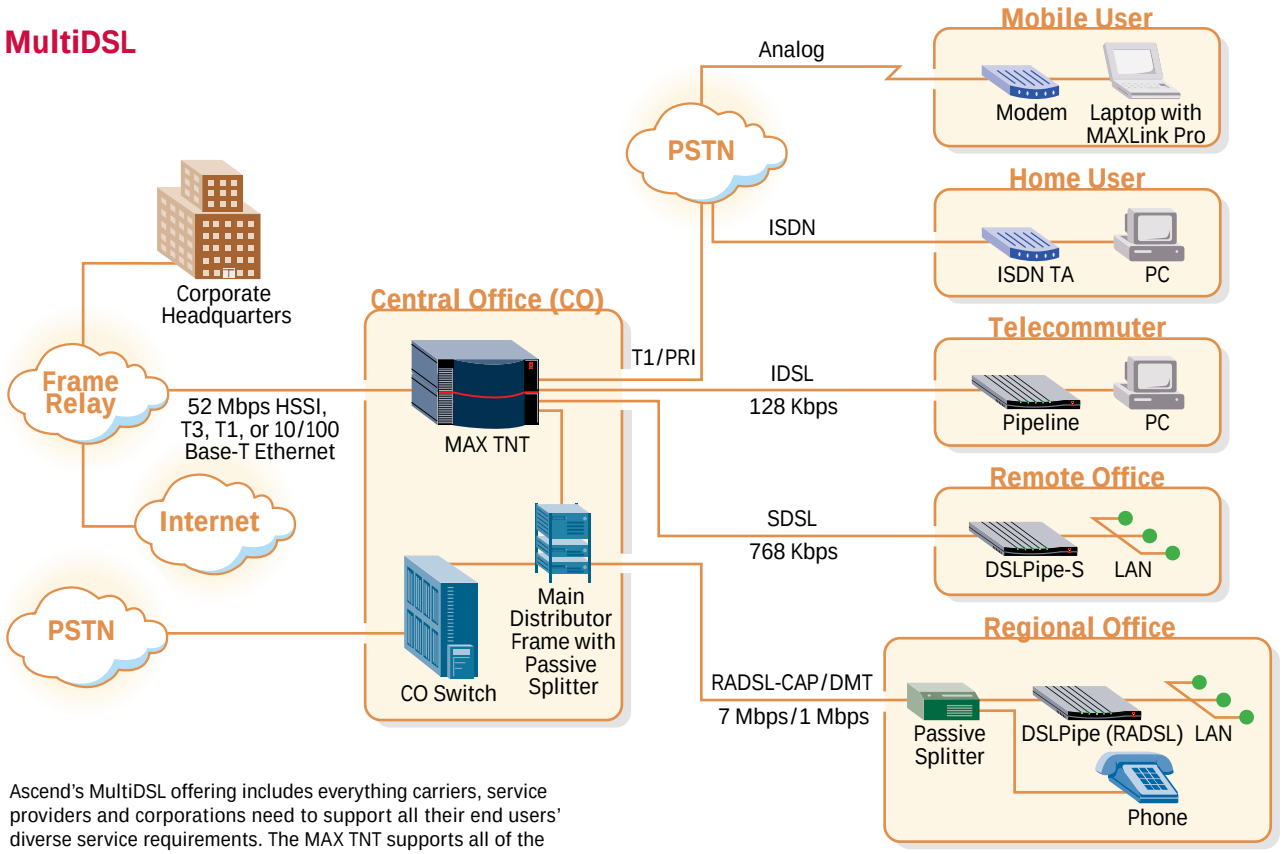
- Concurrent support for RADSL, SDSL (Single pair HDSL) and IDSL as well as analog, ISDN, T1 and Frame Relay services
- Highest port density with 90 RADSL ports for a single shelf and up to 450 ports (five shelves) in an eight foot rack
- T1/E1 services, WAN, remote and server access, Internet/intranet access, video on demand, simplex video and interactive multimedia
- Extensive accounting detail in minutes or octets
- Multiprotocol support for IP, IPX, PPP, MP, MP+ and Frame Relay
- Compatibility with existing authentication servers such as RADIUS, TACACS, TACACS+ and Ascend Access Control™
- Support for integrated dynamic firewall security with Secure Access™ Firewall
- Client software including MAXLink Pro™ and MAXDial™
- Extensive network management with Ascend's NetClarity™
- Virtual Private Network features (Frame Relay Direct, IP Direct, ATMP, L2TP and PPTP)

Network administrators can provision and manage RADSL lines directly from the central office

Ascend's RADSL technology lets network administrators manage the RADSL lines directly from the central office, allowing them to reduce on-site maintenance costs. In addition, Ascend's NetClarity network management software gives network managers customized information about the MAX for in-depth, end-to-end network control.

- Real Time Signal Quality measures signal strength and line quality, allowing network managers to pinpoint any copper-related problems

MultiDSL



Ascend's MultiDSL offering includes everything carriers, service providers and corporations need to support all their end users' diverse service requirements. The MAX TNT supports all of the common access types—whether dialing in over analog or RADSL.

- NetClarity provides discovery and mapping, configuration management, performance measurement and fault monitoring
- Out of service command lets network administrator take a line out of service for diagnostic purposes
- Loopback test command lets service providers place a line in loopback model

Integrated voice and data capabilities provide flexibility over a single pair

Ascend's RADSL-CAP solution lets service providers split a single-pair local loop to offer subscribers high-speed data links as well as regular telephone service over a single line. In the past, both analog and digital calls were first processed through the CO switch before arriving at the data network. Because RADSL data calls are routed directly to the data network, the CO switch is free to handle voice calls without bottlenecks or delays. By using a splitter, subscribers can use a single line to make calls, send e-mail and surf the Internet.

- Data and voice over a single pair
- Direct connection to the data network
- Lifeline POTS with splitters

Splitter Modules

Ascend's splitters separate the POTS line from the RADSL line by distributing the signal, allowing subscribers to use a single RADSL line to send both data and voice. These splitters are available in two versions—the high-density, rackmountable version for the CO and the stand-alone version for the customer premises. The splitter lets users integrate voice and RADSL data over a single pair of wire while directing voice traffic to the CO switch at the PSTN and data traffic to the MAX TNT that is located on the edge of the data network.

RADSL Applications

Expanding your service offerings

RADSL lets carriers and service providers expand their current service offerings without a large capital outlay. They can partner to co-locate a MAX TNT in a local Central Office (CO) and utilize the twisted pair to offer high-speed services to corporate customers and end users alike.

Once implemented in the network, Ascend's RADSL solution requires little maintenance or support. And because it is so affordable, service providers can now competitively offer their subscribers the bandwidth needed to support today's Internet applications and on-line services.

Cost-effective intra-building solutions

RADSL-CAP is a secure and inexpensive intra-building solution for corporations, property management firms and network service providers. With a MAX TNT and RADSL-CAP line cards, network managers can cost-effectively offer analog, data and video services to subscribers who work or live in a high-rise building, apartment complex or campus environment. A MAX TNT can be installed in the wiring closet and connected to all groups or businesses in the building/campus using the existing telephone wire. Each group has a unique connection, protecting the data from unauthorized access. With Ascend's RADSL-CAP solution, network managers have minimal wiring requirements and simplified management while subscribers have the throughput needed for the most bandwidth-intensive applications.

24-hour multimedia applications

RADSL-CAP not only provides subscribers with text and basic phone service, it also gives them access to bandwidth-intensive applications on a demand basis. RADSL lines are "always on," allowing subscribers to connect once and access on-line events, interactive news or games and home shopping 24 hours a day. This makes it ideal for an Internet-type of environment where services have to be readily available to customers. With Ascend's RADSL solution, subscribers can set up Internet services directly from their PC. These services could include hosting Web sites, file archives or any number of similar services.

High-speed Customer Premises Equipment

DSLPipe-C offers remote users access to high-speed DSL services

The DSLPipe offers end users a high-speed router/bridge for obtaining information from a corporate site, the Internet or another remote site at speeds up to 7 Mbps over the local loop. Users can connect to as many as eight different locations simultaneously to send files, browse the Web, upload graphics or to simply read e-mail. Integrated functionality such as the Network Address Translation feature allows users to make easy and cost-effective Internet access.

Concurrent routing and bridging ensures efficient connectivity to all LANs and the Internet

Concurrent routing and bridging eliminates the need for two separate devices by providing one configurable solution for accessing any LAN and the Internet.

- IP and IPX routing
- BCP standard multiprotocol bridging
- Frame Relay and PPP

Comprehensive security for iron-clad remote networking

Support for user authentication makes it easy to manage the security of large-scale remote access applications.

- Authentication profiles such as PAP and CHAP
- Token-based security including support for multiple vendors' products
- Transmit and receive packet filtering
- Ascend Secure Access Firewall option provides complete network protection
- Telnet password

Network Address Translation capabilities ensures cost-effective Internet access

With Ascend's Network Address Translation capability, end users can utilize unregistered network IP addresses to access the Internet. This eliminates the cost and complexity involved with obtaining and owning dedicated IP addresses exclusively.

- A network address is transparently assigned to the unit allowing users to utilize an unregistered address for the duration of the session
- IP addresses are released and reassigned to other users
- Cost of owning a dedicated IP address is eliminated

RADSL

Java-based DSLPipe Configurator

The Java-based DSLPipe Configurator is a Graphical User Interface (GUI) that lets DSLPipe users configure, save and restore their DSLPipe configurations from a PC or Macintosh over a LAN connection. It is included free of charge with the DSLPipe CD-ROM and can be run as a stand-alone solution.

The configurator offers a comprehensive QuickStart utility designed to get users up and running in less than 15 minutes. This utility guides users through the application and features complete HTML-based, on-line help.

Secure Access Firewall

Ascend's Secure Access Firewall is a software option on the DSLPipe-C and MAX TNT that uses state-of-the-art firewall technology and delivers a comprehensive, fully integrated security solution for corporate networks. It protects a company's information assets at the corporate LAN, remote offices and telecommuters' home offices. Standard security features that are offered on your Ascend remote networking system are integrated with comprehensive security features such as transparency, dynamic firewall, and monitoring and logging for the most complete security solution available.

Secure Access Firewall provides a cost-effective single-vendor solution for securing your company's remote network against attacks on sensitive data.

Features

DSL Support	RADSL-CAP
Multiservice Support	RADSL-CAP, Single pair HDSL, IDSL, RADSL-DMT and analog, ISDN, Frame Relay
Loopback Testing	Line loopback test, corrupt CRC test, request corrupt CRC test, monitoring
Network Management System	Central Office Equipment (COE): • AView management • Ascend NetClarity (SNMP management) • Console port management Customer Premises Equipment (CPE): • Java-based DSLPipe Configurator • Console port management
Network Interface Specifications	10,000-17,000 feet over a single twisted copper pair
Multiprotocol Functionality	IP/IPX, PPP, Frame Relay
Software Product Function	PPP, Frame Relay, IP/IPX
Authentication	RADIUS, Ascend Access Control (extended RADIUS), TACACS, TACACS+
Security	Secure Access Firewall, PAP, CHAP, Token Card

Specifications

Transfer rate	10,000 feet: 7 Mbps (downstream) 1 Mbps (upstream) 12.000 feet: 2.5 Mbps (downstream) 1 Mbps (upstream) 17,000 feet: 640 Kbps (downstream) 544 Kbps (upstream)
Transmission distance	10,000 - 17,000 feet
Interfaces per card	6 ports per card, up to 15 cards per system for a total of 90 ports for a single-shelf MAX TNT; supports up to 450 ports in an eight foot rack
Physical connectors	1 DB37 connector, includes DB37 to 50-pin Telco converter
Connector requirements	Must meet JIS C 5973 standards
Card dimensions	5.6 in. high x 10. 7 in. long (22 cm x 15.7 cm x 3.2 cm)
Card weight	~2 pounds (0.9 kg)
Operating humidity	0% to 90%, non-condensing
Operating temperature	32 to 104° F (0 to 40° C)

Ascend's RADSL Products

Central Office Equipment	MAX TNT with RADSL-CAP line cards
Customer Premise Equipment	DSLPipe-C (RADSL-CAP)

Ascend's MultiDSL Products

Central Office Equipment	MAX 4000, 4002, 4004 (IDSL Line Cards) MAX TNT (IDSL, SDSL, RADSL-CAP and RADSL-DMT line cards)
Customer Premise Equipment	Pipeline 25-*Px*, 25-*Fx*, -50, -75, -130 DSLPipe-S (SDSL), DSLPipe-C (RADSL-CAP), DSLPipe-D (RADSL-DMT)

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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, MultiDSL, Network Management, Pipeline and Security families of products. Ascend products are available in more than 30 countries worldwide.

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Remote Networking Solutions That Work.™

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