PRODUCT INFORMATION

# Ascend IDSL


**Ascend's innovations let carriers immediately enter the DSL market. Introducing IDSL—the first integrated DSL solution to use the existing infrastructure for growing a carrier network.**

**Remote Access ▾ Internet/Intranet Access ▾ Telecommuting**

Ascend's ISDN Digital Subscriber Line (IDSL) innovations are part of a broad range of MultiDSL™ offerings that let carriers implement DSL technologies immediately in a carrier network. IDSL provides the Central Office Equipment (COE) and works with existing Customer Premises Equipment (CPE) to support high-bandwidth applications such as remote access, Internet/intranet access and telecommuting. This integrated solution lets carriers use their existing single pair copper wire to transmit full duplex data at 128 Kbps and at distances up to 18,000 feet.

By installing IDSL line card modules into the MAX™ 4002, MAX 4004 or MAX TNT™, carriers can cost-effectively support a wide range of analog, ISDN, Frame Relay and IDSL services on a single, manageable platform. As subscriber requirements change, they can use the same platform to add other MultiDSL technologies such as SDSL and ADSL.

Subscribers can take advantage of these high-speed services to download high-resolution graphics, access multimedia applications or transmit large files. Ascend's IDSL products offer carriers the first scalable DSL implementation for managing all their subscriber's needs.

ASCEND

# Integrated, High-Speed Solutions for Carriers

## ISDN Digital Subscriber Line (IDSL) Overview

IDSL is part of Ascend's broad range of MultiDSL offerings designed to let carriers and service providers enter the DSL market immediately. IDSL lets carriers utilize their existing local loop, a single pair of copper wire, to transmit full duplex data at 128 Kbps and at distances of up to 18,000 feet. IDSL uses a 2B1Q line code for transparent operation through "U" loop repeaters and Digital Loop Carrier Systems.

Ascend's IDSL products provide carriers with a scalable solution that includes both the Central Office Equipment (COE) and the Customer Premises Equipment (CPE) required for implementing IDSL immediately in a carrier network.

By simply plugging an IDSL line card module into a MAX 4002, 4004 or a MAX TNT, carriers can offer subscribers high-speed access to the Internet or corporate headquarters. With IDSL line card modules integrated into the MAX TNT, carriers have the only platform that supports analog, ISDN, Frame Relay and IDSL technologies. IDSL technology is ideal for sending large files, downloading high-resolution graphics or accessing a corporate intranet. Subscribers can continue to use their existing CPE (ISDN BRI terminal adapters, bridges, routers) to make high-speed connections.

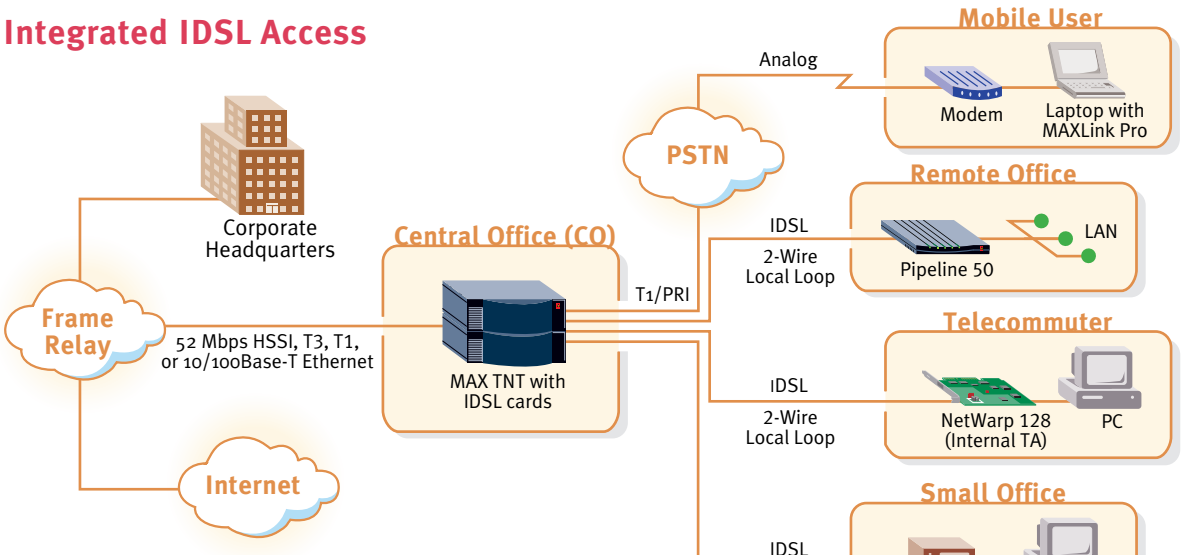
Ascend's COE includes the MAX 4002, 4004 and the MAX TNT WAN access switches, as well as IDSL line card modules. The CPE for IDSL services consists of Ascend's award-winning Pipeline® product family and the NetWarp™ product family. Together, these products form the most inclusive DSL solution available on the market today.

## 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 IDSL—all in one, high-density solution. When carriers add an IDSL card into a MAX TNT, they 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 integrated firewall to comprehensive security management.

- Concurrent support for analog, digital, Frame Relay and IDSL services
- T1/E1 services, WAN, remote and server access, Internet/intranet access, video on demand, simplex video and interactive multimedia
- Accounting detail in minutes or octets
- Multiprotocol support for IP, IPX, PPP, MP, MP+, Frame Relay
- Compatibility with existing authentication servers such as RADIUS, TACACS, TACACS+ and Ascend Access Control™
- Secure Access™ Firewall
- Client software including MAXLink Pro and MAXDial
- Network management (AView, SNMP, console port)
- Virtual Private Network features (Frame Relay Direct, IP Direct, ATMP and PPTP)

## Integrated IDSL Access




IDSL lets remote users utilize the local loop to transmit full duplex data at 128 Kbps using their existing ISDN CPE.

## Compatibility with existing telephone company network equipment protects investment in infrastructure

By plugging one of the IDSL line cards into a MAX TNT, carriers have a high-speed, cost-effective solution that requires no change to their current networks. Because they can use their existing copper wiring on the local loop, carriers protect their capital outlay while offering high-speed services to their subscribers.

- Requires no upgrade to CO switch
- Uses existing copper wiring
- Supports both ISDN and analog services
- Avoids building multiple overlay networks
- Works with existing Customer Premise Equipment (CPE)

## Cost-effective solution for offering competitive flat rate services

In the past, carriers were forced to charge subscribers usage rates based on the duration of a call. Because IDSL calls do not require central office switch and voice infrastructure resources, carriers have the option to offer services at a competitive flat rate.

- Costly usage fees are alleviated
- Bandwidth on the network always available for other users and not tied up with any specific subscriber
- Minimal initial investment at the central office

## Network administrators can monitor and trouble-shoot IDSL lines directly from a central office

Ascend's IDSL technology lets network administrators monitor line connection quality directly from the central office. The IDSL cards offer several loopback tests designed to test and verify the integrity of the DSL line.

- Line loopback
- Corrupt CRC test
- Request corrupt CRC test
- Monitoring reporting errors (FEBE, NEBE)

## Data network design facilitates easy system upgrades

IDSL connections bypass the CO switch and connect directly to the carrier service's data network alleviating network congestion. Unlike the voice network, the data network is based on a packet switched technology that is optimized for data transfer. As a result, changes in one end of the network do not require matching changes in other sections such as the full circuit path that is needed in voice networks.

- Direct connection to data network
- Equipment can be added without disrupting service
- Does not require "forklift upgrade"
- Network provisioned for future growth

# IDSL

## Innovative Carrier Solution

IDSL is the cost-effective solution for offering a broad range of services without a large capital outlay. IDSL works with the existing carrier copper local loops, alleviating the need for expensive infrastructure changes. In addition, IDSL lets carriers immediately enter the DSL market.

Carriers can install IDSL today on a MAX 4002, 4004 or a MAX TNT and add other MultiDSL technologies such as SDSL, ADSL-CAP or ADSL-DMT as their service requirements change.

IDSL connections go directly to the data network, enabling carriers to conserve switch resources and avoid network congestion. This allows them to offer competitive flat rate services to their subscribers.

## High-bandwidth technology for subscribers

In the past, subscribers who wanted to access a remote site or Internet using analog modems were forced to deal with low-speed data transmission at rates around 33 Kbps.

Ascend's IDSL technology supplies subscribers with a cost-effective way to take advantage of high-bandwidth technologies. MultiDSL solutions are ideal for telecommuting, Internet/intranet access and remote access. Subscribers can use their current equipment to get high-speed data connections without paying high installation and usage costs.

MultiDSL provides a higher transmission quality, giving users the bandwidth needed to download large files or high resolution graphics. By simply connecting with their existing terminal adapters or remote access devices such as Ascend's NetWarp and Pipeline products, subscribers can make high-speed connections without any setup delays.

## Features

| | |
|---|---|
| DSL Support | IDSL |
| Multiservice Support | Analog, ISDN, Frame Relay, IDSL |
| Loopback Testing | Line loopback test, corrupt CRC test, request corrupt CRC test, monitoring |
| Network Management System | Central Office Equipment (COE):<br>▸ AView management<br>▸ SNMP management<br>▸ Console port management<br>Customer Premises Equipment (CPE):<br>▸ Java-Based Pipeline Configurator<br>▸ Console port management |
| Network Interface Specifications | 18,000 feet over twisted copper pair, AT&T Point-to-Point, 2B1Q signaling compatible, data only at 128 Kbps (symmetric), compatible with most of the commercially available 2B1Q band ISDN BRI terminal adapters, bridges and routers |
| Multiprotocol Functionality | IP/IPX, PPP, MP, MP+, Frame Relay |
| Software Product Function | PPP, Frame Relay, IP/IPX, MP, MP+ |
| Authentication | RADIUS, Access Control, TACACS, TACACS+ |
| Security | Secure Access Firewall, PAP, CHAP, Callback, CLID, token card |

## Specifications

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|---|---|
| Transfer rate | 128 Kbps (symmetric) |
| Transmission distance | 18,000 feet |
| Interfaces per card | 8 ports per card, up to 5 cards per system (MAX 4004)<br>12 ports per card, up to 14 cards per system (MAX TNT) |
| Physical connectors | RJ45 (MAX 4002 and 4004) |
| Connector requirements | Must meet JIS C 5973 standards |
| Card dimensions | 5.6 in high x 10.7 in long (14.2 cm x 27 cm) |
| Card weight | ~2 pounds (0.9 kg) |
| Operating humidity | 0-90%, non-condensing |
| Operating temperature | 32-104˚ F (0-40˚ C) |

## Ascend's IDSL Products

| | |
|---|---|
| Central Office Equipment | MAX 4002, 4004, MAX TNT, IDSL line card |
| Customer Premises Equipment | Pipeline 25-*Px*, 25-*Fx*, -50, -75, -130, NetWarp 128, NetWarp Pro |

## Ascend's MultiDSL Products

| | |
|---|---|
| Central Office Equipment | MAX 4002, 4004, (IDSL line cards)<br>MAX TNT (IDSL, SDSL, ADSL-CAP and ADSL-DMT line cards) |
| Customer Premises Equipment | Pipeline 25-*Px*, 25-*Fx*, -50, -75, -130,<br>DSLPipe-S (SDSL), DSLPipe-C (ADSL-CAP),<br>DSLPipe-D (ADSL-DMT), NetWarp 128, NetWarp Pro |

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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.™