The ATLAS™ Series from ADTRAN™.

Why ATLAS?
The ATLAS Series is a family of powerful and versatile Integrated Access Devices (IADs) that have far-reaching application in today's advanced telecommunications networks. This single, versatile platform is capable of both dedicated and switched access—performing the functions found in T1/T3/E1 multiplexers, 1/0 and 3/1/0 digital cross connect switches, channel banks, Frame Relay access devices/concentrators/switches, IP routers, inverse multiplexers, and ISDN switches.

There are several compelling reasons to implement ADTRAN's ATLAS integrated access solutions as part of your network plan.

1. **Consolidation**—You are currently using separate networks for voice, data, video, and Internet. ATLAS allows you to consolidate and converge traffic onto fewer circuits, reducing recurring monthly communications costs.

2. **Network efficiency**—Your network is currently inefficient because bandwidth is dedicated to separate voice and data systems. ATLAS includes circuit switching and packet routing technology that enables you to combine traffic and oversubscribe circuits, extracting greater performance from the same bandwidth.

3. **Conversion**—Current network equipment is configured for T1 (such as PBX/Key Systems), but you wish to take advantage of the additional call features and potentially lower tariffs provided by ISDN PRI. ATLAS converts PRI to T1, PRI to BRI, and

Solutions to empower your wide area network.
The ATLAS Series from ADTRAN is one of the most versatile integrated access platforms available for converging voice, data, and video applications over T1/E1, T3, Frame Relay, ISDN PRI and BRI, and Euro-ISDN circuits. Numerous user and network interfaces, coupled with advanced multiplexing, switching, and routing capabilities, enable cost reductions in areas of your network that you might never have anticipated.
PRI to analog; so, in many situations you can enjoy the benefits of PRI service without expensive upgrades to your existing equipment.

In any case, what is the most powerful, cost-effective integrated access system for today’s varied internetworking applications? The ATLAS Series from ADTRAN.

Is flexibility an important consideration in your network plan?
The ATLAS Series offers many of the features previously found only in larger multiplexing, PBX, or router equipment, at a lower entry cost. Each ATLAS chassis features a high-speed, multi-protocol backplane and numerous expansion slots. The system supports various network interfaces and as many as 25 different hot-swappable application modules. With the right configuration, you can basically plug in any T1/E1, T3, ISDN PRI/BRI, or Frame Relay circuit, then pick-and-choose the voice, data, or video applications you need to deliver. If a special tariff warrants a service change, or a new branch office needs to be added, the modular, flexible ATLAS can accommodate your changing needs.

Is Return on Investment a growing concern for your company?
Lowering network costs is a top priority in most companies today. Which investments are worth the expenditure? ATLAS is a solution that significantly reduces the cost of current applications, and at the same time, positions your network for future growth.

By consolidating telecom traffic onto fewer circuits, ATLAS lowers monthly payouts. By replacing multiple pieces of older, possibly outdated equipment, ATLAS streamlines network operations, reduces IT workload, and conserves space. Further, ATLAS extends the functionality of most TDM integrated access devices to include switching, which serves to optimize each circuit. In most network models, ATLAS generates very acceptable payback period, and delivers a strong ROI.

5 Year Warranty
Backed by a full five-year warranty and unsurpassed technical support from the leading supplier of internetworking solutions, the ATLAS Series is one of the most risk-free decisions you can make for integrated access.

Interchangeable Application Modules
The ATLAS Series is a modular platform that can be configured to meet current networking requirements, while establishing a simple and inexpensive upgrade path. A variety of interchangeable network and user interface modules satisfy technology requirements ranging from voice to data to Internet to videoconferencing.
The simplicity of a single chassis. The functionality of an entire rack of equipment.

An architecture so remarkably advanced, it makes your job easy.

Simplify your network using ATLAS
Today’s Wide Area Network (WAN) typically consists of multiple overlays to handle various traffic types, complicated by the presence of varying service and pricing options between geographic regions. Network complexity is also compounded by business mergers and reorganizations. As networks grow more complex, and the applications needed to support a distributed workforce increase, a solution like ATLAS becomes a necessity.

ATLAS is a multi-function, modular platform that accommodates multiple protocols and interfaces, collapsing parallel networks into a more streamlined and less expensive topology. ATLAS consolidates voice, fax, modem, video, Local Area Network (LAN), and legacy data traffic over a single wide area link, reducing overall telecommunication expenses.

A comprehensive multi-service access platform
An ATLAS IAD merges many internetworking functions into a small, economical, modular platform that can replace a rack of traditional single function devices. An ATLAS IAD typically resides at the edge of the customer premises, and consolidates the functions found in multiport multiplexers, channel banks, 1/0 and 3/1/0 cross connect switches, Frame Relay Access Devices/concentrators/switches, IP routers, inverse multiplexers, and ISDN switches.

Bandwidth sharing
An ATLAS IAD is positioned between the network service provider circuit(s) and end user equipment, enabling many network devices to share WAN access and bandwidth. ATLAS supports multiple network technologies and numerous equipment interfaces. The system’s flexibility makes it easier to satisfy diverse applications in hybrid networks, and to evolve network systems and applications as requirements change.
High-speed, multi-function backplane

ATLAS is a modular and scalable platform. The single piece of access equipment you need to select the most cost-effective options to meet current needs, while accommodating future growth. To take advantage of new service opportunities, or to meet new user requirements, simply add the appropriate option modules.

Numerous interface options

The configuration of an ATLAS system can vary widely depending on a number of factors. What applications are being accommodated? How much capacity do you need for each? How much excess capacity should be allowed for near-term growth? A large offering of network and device interfaces allows you to tailor an ATLAS solution to fit your current needs with the least possible expenditure, and still accommodate change. Pre-configured systems are available for popular applications. Available interface modules include:

- T1/PRI—Configurable as DS1, DSX-1, or PRI; supports Drop/Insert, 1/0 DACS, PRI switching, Frame Relay, and T1 Inverse Multiplexing (with additional card)
- E1/PRA—Supports E1 and Net-5 Euro-ISDN (PRA), Drop/Insert, 1/0 DACS, and Frame Relay
- T3—Channelized T3 connectivity, 3/1/0 DACS, PRI over T3, and T1 Inverse Multiplexing (with additional card)
- T3 with Drop & Insert—Channelized T3 connectivity with Drop/Insert to any other channelized T3 device
- ISDN BRI/U—ANSI T1.601-compliant BRI U-interfaces to emulate or terminate ISDN from common switch types
- ISDN BRI S/T—Multiple BRI S/T interfaces supporting Net-3 Euro-ISDN
- Analog Voice—Options for FXS, FXO, E&M with popular call features; mapped or dynamically switched DS0s
- Voice Compression—4-, 8-, 16-, 24-, and 32-channel G.723.1 compression with a 6:1 ratio on analog calls from channelized T1, RI, or PRI; 32-channel ADPCM available
- Nx56/64 V.35—Multiple synchronous V.35 ports support Nx56/64 Kbps operation up to 2.048 Mbps
- Ethernet Switch (ATLAS 550 only)—Layer 2 switch with eight 10/100BaseT Ethernet interfaces
- USSI—Multiple synchronous Universal Synchronous Serial Interface ports supporting EIA-530, RS-449/V.36, X.21/V.11, or EIA-232; Nx56/64 4 Mbps operation up to 2.048 Mbps
- Legacy Data (ATLAS 550 only)—Multiple EIA-232 or V.35 interfaces for synchronous or asynchronous packet data transport using SNA/SDLC, HDLC, transparent Async, and Transparent Bit-Oriented Protocols (TBOP)
- NxT1 HSSI/V.35—Aggregates from two to eight T1s into a single logical channel in point-to-point applications; Supports multiple T1s or T3
- Nx56/64 Bonding—Two bonding Mode 1 processors with up to 2.048 Mbps capacity; from two to 32 user-configurable B-Channels per processor
- Dual Video—Dual independent video ports simultaneously support different video module cables; includes RS-366 dialing interface and supports DTE rates from 112K to 1.472 Mbps (with additional card)

For assistance configuring your ATLAS system, contact your technology reseller, or call an ADTRAN network engineer at 800 615-1176.

For a complete description of available option modules, visit www.adtran.com/atlas
Consolidation and dynamic switching
Is your network subscribing to more bandwidth than necessary? Do you need to make better use of the bandwidth that you already have? Would you like to convert from the circuit types you currently have to another type without changing out your communications equipment? If so, ADTRAN’s ATLAS IAD is the ideal choice.

One of the distinguishing characteristics of the ATLAS Series of IADs is the ability to perform dynamic circuit switching and packet routing. You no longer have to dedicate channels within your circuits. Unlike traditional termination equipment, that requires static or dedicated channel assignments, ATLAS can dynamically switch traffic on a call-by-call basis.

**Consolidation**—With dynamic switching, ATLAS enables users to consolidate many circuits and combine voice, data, video, and Internet traffic on the same circuit.

**Oversubscription**—ATLAS enables users to oversubscribe the circuit so that more users and devices can be connected. In many scenarios, not every user or device requires simultaneous access to the WAN. Less bandwidth can be deployed, which reduces costs, and ATLAS will dynamically switch calls to the available bandwidth.

**Least cost routing**—The integral switchboard and dial plan equips ATLAS with switching features similar to a PBX (without the voice mail and advanced call features). For example, ATLAS can dynamically switch local calls to the local service provider while long distance calls are switched to the interexchange or long distance carrier.

**DACS and groom**
ATLAS IADs also provide DACS and grooming functions, which are ideal for optimizing T1 and T3 circuits. Using the DACSing functions within ATLAS, users can perform timeslot interchange. Any DS0 from any T1 or T3 can be crossconnected or reassigned to any other DS0 on any other T1 or T3. The ATLAS grooming functionality allows users to combine partially filled T1s into fully filled T1s. On many enterprise networks, users can combine voice DS0s coming into the central site from individual T1s into fewer DSX-1 interfaces for the PBX. Grooming can increase efficiency and reduce the number of DSX-1 interfaces required.

ATLAS 830/890 platforms support 3/1/0 DACS- ing. The ATLAS 550 supports 1/0 DACS- ing. ATLAS is the ideal choice for users who need DACS- ing and grooming in a small economical system.

**Frame Relay switch**
As a central site frame switch, ATLAS can help you create a fully unified Frame Relay voice/data WAN infrastructure that significantly reduces long distance costs, while maintaining the quality and integrity of voice communications.

In a Voice over Frame Relay (VoFR) application, the ATLAS IAD receives voice traffic from an existing voice switch or PBX, and packetizes and optionally compresses it for transmission over the Frame Relay connection, delivering near toll-grade voice calls.

**Conversion**
The ATLAS Series includes conversion and switching technology that transparently links two different line technologies. Because ATLAS supports a large number of line technologies (T3, T1, ISDN PRI/BRI, and Euro-ISDN), several cost-saving opportunities exist. For example, the system can convert PRI-to-T1 or PRI to multiple BRLs, allowing you to take advantage of the low- est possible tariff in a certain location, or to reduce the number of circuits required in a particular application, without changing your existing voice and data equipment.
Convert PRI to T1 to avoid costly PBX/Key System upgrades—The ATLAS IAD, functioning as a PRI-to-T1 converter, enables you to obtain call features available only through ISDN PRI, or to take advantage of the low PRI rates available in some locations, without a PBX/Key System upgrade. The ATLAS IAD supports PRI connection to the public ISDN network and T1 connection to the PBX, and performs the switching and conversion necessary to transparently link the two technologies. ATLAS converts ISDN Calling/Called Party Number to a Feature Group D ANI/DNIS format. ATLAS is available at a fraction of the cost of a PBX upgrade, and used in this application, results in a very short payback period.

Eliminate multiple BRI circuits to the PSTN—ATLAS IADs also perform PRI to BRI signal conversion, accommodating up to 100 BRI interfaces in a single chassis. The ATLAS IAD interfaces to the PSTN using one or more PRIs, then transparently converts between PRI and BRI, distributing BRIs as needed to support multiple videoconference systems or routers using BRI for dial backup.

Consolidate analog phones onto a single PRI—Functioning as a “PRI Channel Bank,” an ATLAS IAD performs the ISDN-to-analog conversions necessary to support many analog phones over a single PRI circuit. ATLAS converts ISDN Calling/Called Party information from the PRI to Caller ID on the FXS interface using FSK signalling. ATLAS also provides dynamic call-by-call routing based on the phone number dialed. Overbooking supports more phones and faxes using equal or lesser bandwidth, increasing circuit utilization and reducing costs.

Increasing network reliability
In a converged network, where more equipment and users are consolidated into less equipment, protecting communications against downtime becomes even more critical than before. ATLAS offers optional redundancy and dial backup hardware to protect against unforeseen disasters.

Converged networks can benefit from the fully-redundant ATLAS 890, featuring duplicate system controllers and power supplies. Fault detection circuitry automatically detects errors and switches over to a hot standby controller. All processing, control, and management functions continue uninterrupted. The controller modules are hot-swappable, so the ATLAS system remains operational, even as the other controller is removed for repair or replacement. Dual power supplies perform load sharing.

A well-planned, well-executed disaster recovery system could save thousands, or even millions of dollars in lost revenue. ADTRAN offers comprehensive dial backup solutions to protect mission-critical communications on both Frame Relay and point-to-point T1 networks. ADTRAN’s dial-around-the-cloud solution for Frame Relay features Safe-T-Net, a technology which detects a link or PVC failure and automatically initiates a secondary route for voice and data traffic. For point-to-point T1 networks, ATLAS offers optional hardware solutions to protect mission-critical data services to remote sites.

Managing network resources
The ATLAS Series is a fully managed WAN access and switching solution. Management options include ADTRAN’s graphical, web-based N-Form network management suite, as well as local or remote management using front and rear VT100 craft interfaces (terminal or dial-in access) and a 10/100 Ethernet connection for SNMP and Telnet access. Front-panel LEDs reveal complete operational status.
In point-to-point applications, an ATLAS IAD at the host site can consolidate traffic and free up rackspace, which will simplifying overall network operation and management. Here, an ATLAS 830 supports up to T3 bandwidth between the headquarters and the remote sites. Serving as a circuit switch, ATLAS 830 performs DACSing and grooming from the remote sites. Voice is groomed and transported to the PBX, reducing the number of PBX interfaces required. Data may be transported directly to the LAN (integral 10/100BaseT port and internal IP routing software) or to an external router or other serial device (V.35, EIA-232, EIA-530, RS-449, X.21, and V.36). The ATLAS 550 offers similar functionality for up to four T1s.

In addition to its dynamic switching functionality, the ATLAS Series includes a signal conversion technology that transparently links two different line technologies. The system converts between line types, such as PRI-to-T1, PRI-to-BRI, and PRI-to-analog. This flexibility allows you to take advantage of the lowest possible tariff in a certain location, and make use of helpful calling features, without changing your existing voice and data equipment. In this example, PRI tariffs are less expensive each month than T1, and Calling/Called Party information is required. Instead of upgrading the existing T1-based PBX, ATLAS is used to perform PRI-to-T1 (DSX-1) conversion, and to deliver Feature Group D ANIS/DNIS from the ISDN Calling/Called Party information. Signal conversion is standard on all ATLAS models.
Frame Relay services continue to grow by offering enterprises a cost-effective WAN solution for interconnecting multiple sites together. The ATLAS Frame Relay switching, Express Frame Relay access devices, NetVanta 3000 Series of routers, and IQ 710™ traffic monitoring/shaping products combine to provide an invaluable solution for seven layer Frame Relay performance monitoring, problem detection, and rapid dial backup. In this application, ATLAS serves as a central site frame switch. Data can be concentrated to an external router or routed directly to the LAN via the ATLAS integral IP/PPP router. Voice is packetized with optional compression to provide near toll-quality communication between sites.

The ATLAS platform provides a cost-effective method of integrating ISDN PRI service into analog devices such as phone, fax, or Key Systems that do not have PRI capability. In this application, the ATLAS system is used as a PRI channel bank, consolidating multiple analog circuits into a PRI trunk. The ATLAS system handles the conversion of ISDN signals to analog signals, as well as the conversion of ISDN Calling Party information to FSK tones (in order to provide Caller ID information to analog FXS interfaces). With the ATLAS 550 IAD, overbooking of the 23 B-Channels on the PRI accommodates up to 32 analog interfaces. The system performs dynamic, call-by-call routing and switching based upon the phone number dialed.
ADTRAN’s ATLAS™ 830/890 Video Switch offers enterprise customers a solution for sharing bandwidth between multiple videoconferencing systems or to share bandwidth between videoconferencing and other WAN applications. Video switching and bandwidth sharing can result in significant cost savings through a reduction of dedicated WAN access circuits. The ATLAS Video Switch provides a diverse set of common, industry standard interfaces for connecting video equipment to the WAN, such as ISDN PRI/BRI, V.35, EIA-530, RS-449, and RS-366 dialing. The availability of these interfaces makes the ATLAS Video Switch interoperable with all leading videoconferencing equipment including H.320 and H.323 gateway devices. The system supports video transmissions from 112 Kbps up to a full PRI rate (1.472 Kbps) using the ATLAS Nx56/64 Bonding Module.

An ATLAS IAD equipped with an NxT1 HSSI/V.35 module provides high-speed, point-to-point connectivity between two HSSI or V.35-equipped external routers. ATLAS combines up to eight T1 circuits into a single logical data stream to an integral High Speed Serial Interface (HSSI) port or V.35 port (requires optional cable). Using an ADTRAN-developed T1 inverse multiplexing protocol, the ATLAS system automatically adjusts the data rate to the HSSI/V.35 port upon loss of one or more T1 circuits. In addition to the HSSI port, four T1 ports are included on the NxT1 HSSI/V.35 Module. Additional T1 capacity is possible by installing ATLAS T1 modules. This functionality is available for the ATLAS 830, ATLAS 890, and ATLAS 550.
The ATLAS 550 and ATLAS 800 Series make it possible to affordably simulate Frame Relay, ISDN, Euro-ISDN, and analog POTS service, without the expense of live circuits. In this application, the ATLAS 550 emulates a central office switch or WAN for staging what-if scenarios, or testing new equipment and technologies off-net, with no network costs. Frame Relay functionality includes support for external routers or direct LAN connections. ISDN functionality emulates Lucent 5ESS, Nortel DMS 100, and National ISDN. Net-3 Euro-ISDN functionality includes E1/PRA, BRI S/T, and BRI-U. Analog emulation supports FXS, FXO, and E&M interfaces.

Using an internal switchboard and dial plan, the ATLAS Series dynamically routes three- to 10-digit voice calls to the preferred service provider based on the phone number dialed. This least-cost routing functionality directs local calls to one service provider and long distance calls to another. Number substitution is included. Circuit consolidation offers additional cost savings. In this example, a LAN, PBX, analog phones, and videoconference equipment are physically connected to the ATLAS IAD. ATLAS combines the traffic and eliminates separate circuits for each application, significantly reducing telecom costs.