

White Paper

**Multi-Service Access:
Bundling Solutions that Increase Competitiveness
and Promote Differentiation**

Patton NetLink™ Network Access Unit (NAU) – Model 2784

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Abstract

The changes and upheaval in the telecommunications resulting from the Telecommunications Act of 1996 have spawned a need for tighter integration of access, multiplexing and routing functions. These changes have also generated a push to consolidate or concentrate services and applications on a single platform. Private enterprise networks, incumbent local exchange carriers and competitive local exchange carriers (CLEC's) have all discovered the same thing: In order to compete effectively, they must offer products and services to their customers in an integrated fashion.

There is tremendous pressure on service providers to deliver value-added services in a way that meets all of their customer's communications needs, yet maintains proper margins and meets required customer service levels. The Strategis Group, a consultancy dedicated to the research and analysis of the industry, states, "the branding and bundling of communications services are emerging as premier service strategies for telecommunications carriers of all stripes." Detailed information regarding this phenomena can be found in the Strategis Group's study, [Business Branding and Bundling Telecommunications Services: 1998](#).

Competition is emerging in an integrated manner across the long distance, local loop, and Internet access arenas. Service providers are being forced, as a matter of survival, to expand their service offerings to meet these requirements.

Evolutionary Patterns

When this integrated services phenomena first started, the customer base was comprised mainly of large businesses (Fortune 500). Today, the evolution has made its way to the medium and smaller businesses. For example, the demand for data communications has increased to the point where 78% of small businesses use the Internet to conduct business and, T1/DS1 lines, once the domain of the largest businesses, are currently used by 14% of the small business sector (Strategis, 1998). Because of this exponential growth, those carriers offering a wide selection of bundled service offerings are well positioned to dominate the emerging multi-service access market.

The Strategis Group also found that a full 85% of mid-size businesses are interested in purchasing bundled tele/data communications services from a single provider. Additionally, 47% of these businesses want an integrated communications solution-meaning that they want a full array of local, long distance, wireless, Internet, and enhanced services in a complete package. What was the primary reason for switching to a single-point-of-contact service provider? 47% of business communications users said that an integrated solution meant *better service*. (Strategis, 1998).

Integrated Solutions Selling

Carriers and other services providers (i.e., ISP's) have begun to seriously deploy integrated, or bundled, service offerings. Such carriers as AT&T, Sprint, and WorldCom, Inc. have deployed bundled

offerings to their customers that include voice, data, and Internet access services. The RBOCs and enhanced service providers like Intermedia Communications also offer such services.

The challenge for carriers is to procure technology that will allow them to propagate integrated client communications services-without driving up OAM&P (operations, administration, maintenance, and provisioning) costs.

The Business Problem – Reducing Management Costs

At the same time, carriers must make it easy for their customers to do business with them. By providing an integrated business solution, carriers give their customers an opportunity to leverage that same technology to further their own business objectives. Service provider customers are more concerned about driving their core businesses than focusing on their corporate network. Integrated solutions allow them to do just that.

Bundled services create an effective barrier to exit, or churn, by locking carrier customers into a multi-solution arrangement with the carrier. By reducing the number of service and sales calls, carriers can reduce operations and administrative costs. Additionally, carrier customers gain an effective single point of contact for all of their service and support calls. Information technology managers gain control of their network costs through the ability to focus on the core business as opposed to worrying about logistics: multiple equipment, service provisioning, and equipment maintenance contracts. A single service provider promotes freedom and flexibility for the customer.

The Patton Solution

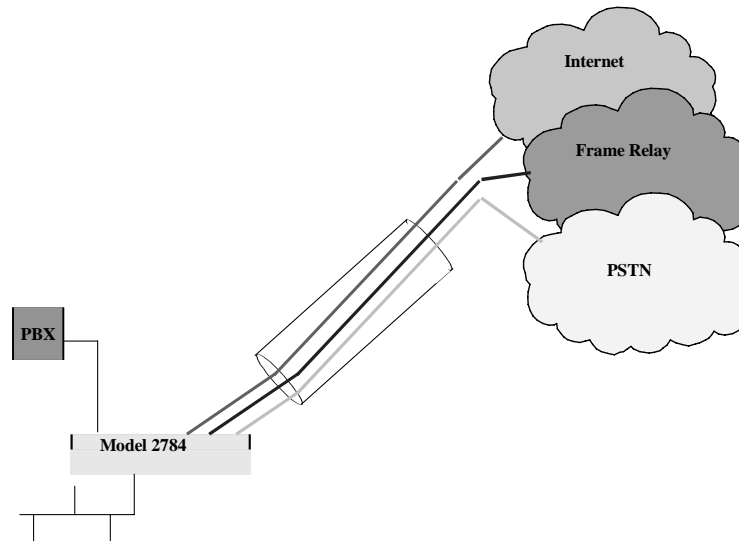
Patton Electronics now offers a product that will deliver on all of the requirements of a small/medium size customer:

- Service concentration (voice, fax, internet)
- Access concentration efficiency (across a single T1/FT1 or E1/FE1)
- Integrated, multi-function hardware (CSU/DSU, router, FRAD, etc.)
- Elimination of hardware upgrades (completely software driven)
- Lowers capital and overhead expenses
- Easily managed via web browser
- Fully standardized and supported

The *Netlink™-NAU Model 2784* addresses these market requirements in a seamless and cost effective manner. Combining all of the capabilities of a CSU/DSU, FRAD, PABX interface, multiplexer, and LAN interface, the Model 2784 gives enterprise customers the flexibility they need for all of their voice and data requirements-without the additional cost of routers, multiplexers and other devices.

The Model 2784 allows for the integration and consolidation of multiple services, insuring an effective hedge against skyrocketing equipment and service costs. The diagram below illustrates how the Netlink-NAU delivers multiple services:

Model 2784 Integration and Service Consolidation



The Business Case

Most medium and large businesses have multiple sites that must communicate with one another when conducting business. They have to use multiple public carrier networks—including the PSTN, frame relay, ATM, and X.25 networks—to gain access to such mediums as the Internet. Such devices as PBX systems, routers, FRADs and CSU/DSUs are required to allow access to the various communications networks.

The cost of deploying and maintaining these devices can grow rapidly if the business has many sites in its corporate network. The cost of deploying three or four devices at each site can easily top \$10,000 per site, not to mention the costs associated with monitoring and managing multiple points of failure and devices at each site.

The Model 2784 eliminates the need for all of these devices by:

- Providing voice consolidation.
- Consolidating the customer's dial-up (i.e., modems) for communication with small office/home office users.
- Transporting data for Internet access and communication.
- Transporting data for Virtual Private Networks for branch communication with other FRADs.
- Eliminating multiple maintenance contracts.
- Reducing management resource allocations (personnel, software, hardware).

Think of all the things you could be doing for your business if you didn't have to invest in:

- Branch Routers
- Modems and Racks (for maintaining modem pools)
- Multiplexer specialists
- Ongoing training for specialized staff
- Multiple management platforms (agents) and associated software licensing

The table below clarifies the capital expenditure impact of deploying the Patton solution:

Customer Requirement	Conventional Solution	Cost	Patton Solution	Cost
Router Services	Cisco 2503	\$2,500	Routing provided in 2784	Included
Multiplexer Services	Nortel Passport 4740; Ascend Max TNT	\$10,000	Multiplexing provided in 2784	Included
Voice (dial-up/Modem)	Livingston Terminal Server; USR Modems	\$10,000	Provided in 2784	Included
Total Cost		\$22,500		\$5,000

If you calculate an average annual cost for the items listed above, and then compare the total to the Patton solution, you are likely to conclude that the Patton 2784 makes your business case look great!

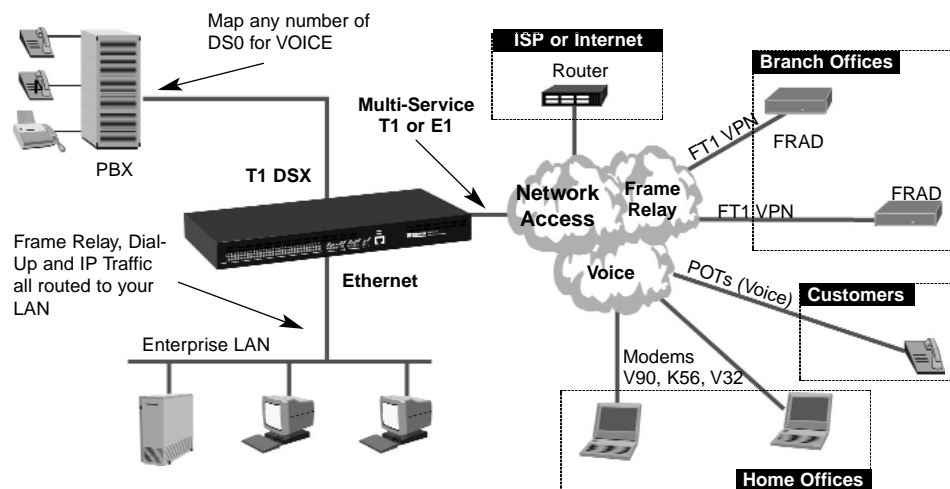
- Annual salaries (including benefits and compensation) for each specialist would be approximately \$75,000.
- Ongoing technical and software training would be approximately \$5,000 per person annually.
- Network management software for each piece of equipment averages \$5,000 per license.
- Annual non-hardware expenses could total \$255,000!
- ...or the Model 2784, requiring minimal training, and bundled with management software that is inclusive: list price, \$5,000.

2784 Product Overview

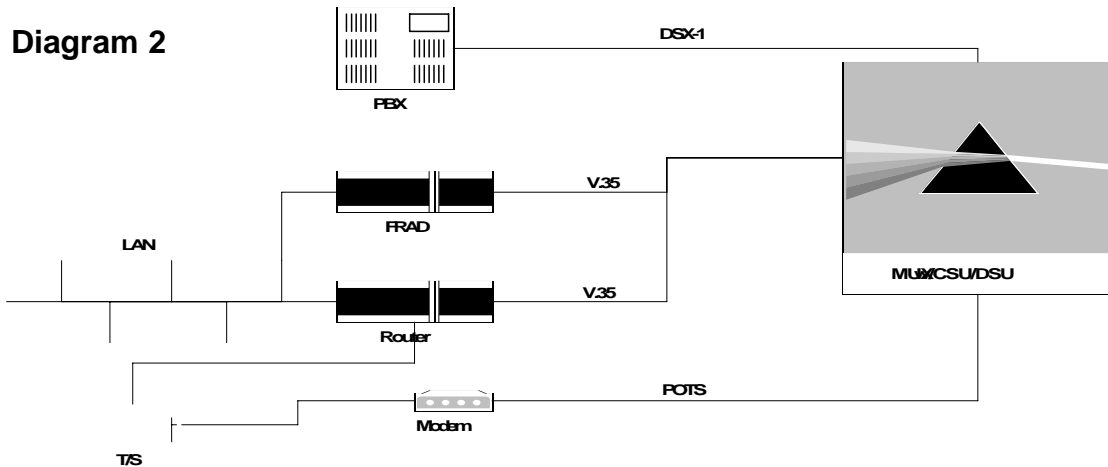
The Model 2784 can be used to meet a number of business application requirements. In a basic example, shown in Diagram 1 (below), any number of DS0 channels can be mapped to a PBX (up to 24 or 30) for voice traffic. In addition, frame relay, dial-up and IP traffic can all be routed to the corporate LAN.

All of the voice and data traffic can then be delivered across a multi-service T1/E1 to the public carrier network, providing connectivity to an ISP router, VPN traffic to other branch offices, POTs voice

Diagram 1



to customers, or modem calls to employees working from home offices. Many enterprise customers employ multiservice multiplexers to meet their voice and data requirements. Below, we see a large multiplexer with an integral CSU/DSU providing connections to a PBX, FRAD (or router), and a modem pool for POTS users. The Model 2784 can eliminate this expensive option, shown in Diagram 2 (below):



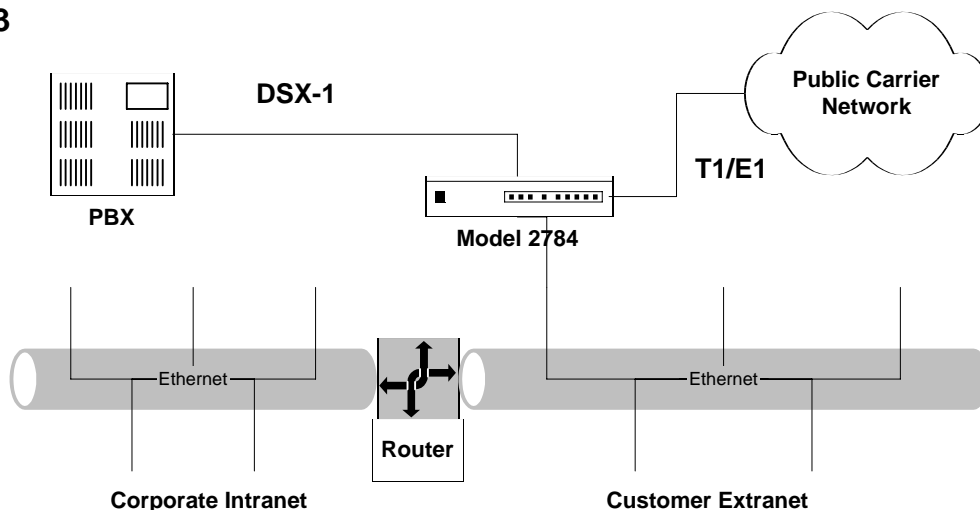
Implementation of the Business Solution – Applications

In addition to the reduction in capital equipment costs, the enterprise customer use a single carrier facility for both voice and data applications-instead of having to procure separate T1/E1s for PBX/voice and leased line/frame relay data. The Model 2784 allows a single T1/E1 to be configured on a per-DS0 or NxDS0 basis, maximizing the use of business network facilities.

Intranet/Extranet Security

In Diagram 3 (below), the enterprise customer wishes to segregate an extranet from a corporate Intranet. Here, an enterprise PBX is connected to a Model 2784 via DSX-1, which is directly linked to the public carrier network via a T1/E1 connection. With this arrangement, the enterprise customer

Diagram 3



can provide extranet access to external clients, and-by connecting the extranet to an adjunct "fire-wall" router-can also deploy a corporate-wide intranet.

Virtual Private Networking

Virtual Private Networks (VPN's) are becoming more and more significant in the enterprise network. Why? Because using a VPN for voice and data can dramatically reduce telecommunications costs. In Diagram 4 (right), a large enterprise customer has purchased a VPN arrangement from a CLEC. Using the CLEC's co-located fiber, the enterprise customer can conduct business across several different telephone exchanges without the high toll costs. A VPN of this type gives the enterprise customer a wide area footprint for a local LAN connection.

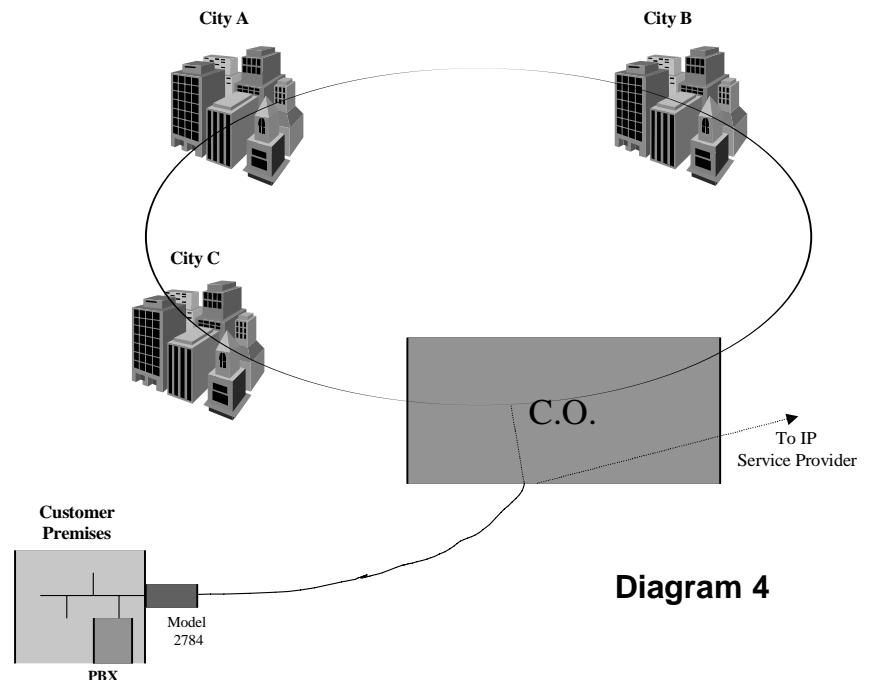


Diagram 4

Network Access Unit Specifications

What makes the Model 2784 so attractive to emerging carriers and enterprise business customers? The Model 2784 is loaded with options that allow for the consolidation of multiple services across a single access facility. Some of the highlights are as follows:

- One T1 or E1 port that has an integrated CSU/DSU function for direct network access, offering full T1/E1 or NxDS0 connectivity.
- One drop and insert (DSX-1) port for PABX connectivity allowing corporate voice access and consolidation across a single unit.
- One 10 Mbps Ethernet port (10Base-T/AUI) that will support the customer's LAN based IP traffic.
- An integrated router loaded with support for DHCP, DNS, RIP, PPP, SLIP, PAP/CHAP, and RADIUS services, eliminating the need for expensive branch routers.
- An integrated FRAD (with RFC-1490) allowing for the creation of IP and Frame Relay data VPNs and access to public or private frame relay networks.
- Integrated Remote Access Server (employing DSP technology) capable of receiving and transmitting V.90, K56flex™, and V.34 modem calls. Great for SOHO and customer interaction!
- An optional V.35 serial port that allows a customer to connect external routers and legacy equipment including: IBM AS400, SNA/SDLC Controllers, X.25 PADs, etc.

- In-band SNMP management through an on board SNMP agent. Management can be accomplished through a customer's existing management platform.
- Integrated HTTP server: through the Patton browser which allows all configuration and control.

Conclusion

The Netlink™-NAU Model 2784 allows the carrier or enterprise client to deploy a single access unit that consolidates multiple services. And it does so without the expense of additional capital equipment, maintenance contracts or management resources.

By deploying the Model 2784 as part of a managed services option, carriers reduce their equipment and maintenance costs dramatically—and satisfy their customers' requirements for consolidated voice and data applications.

Why do business with Patton Electronics? With over 15 years of superior service, Patton offers you consistency, reliability, quality, and integrity. As a Patton customer, you can feel secure in knowing that you are obtaining the most cost-effective business solution for your customers.

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