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Multi-Service Access

Increasing Competitiveness and Promoting Differentiation

Recent changes in the telecoms market have spawned a need for tighter integration of access, multiplexing and routing functions. These changes have also pushed to consolidate or concentrate services and applications on a single platform. There is pressure on service providers to deliver value-added services that meet all of customers' communication needs, yet maintain margins and meet required service levels. Competition is emerging across the long distance, local loop and internet access arenas.

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

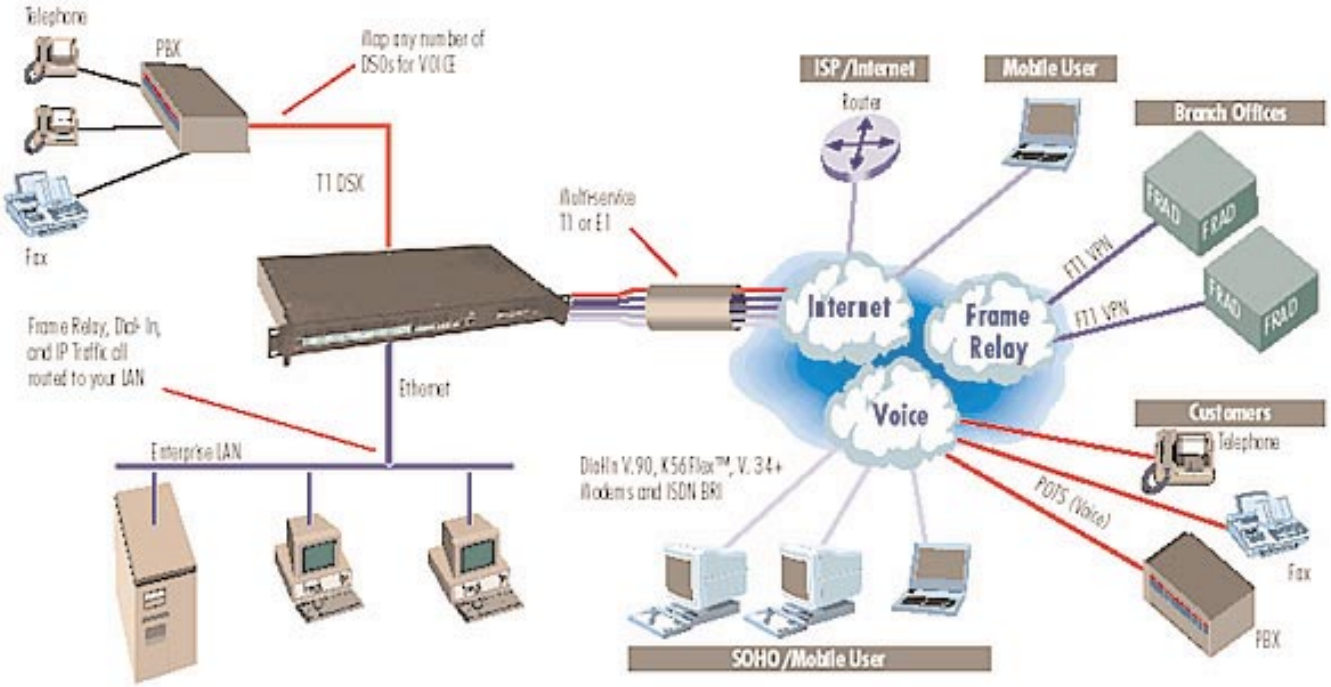

Fig.1: Netlink-NAU delivers multiple services: any number of DS0 channels can be mapped to a PBX (up to 24 or 30) for voice traffic. Frame-relay, dial-up and IP traffic can also be routed to the LAN.

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Internet access services. 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.

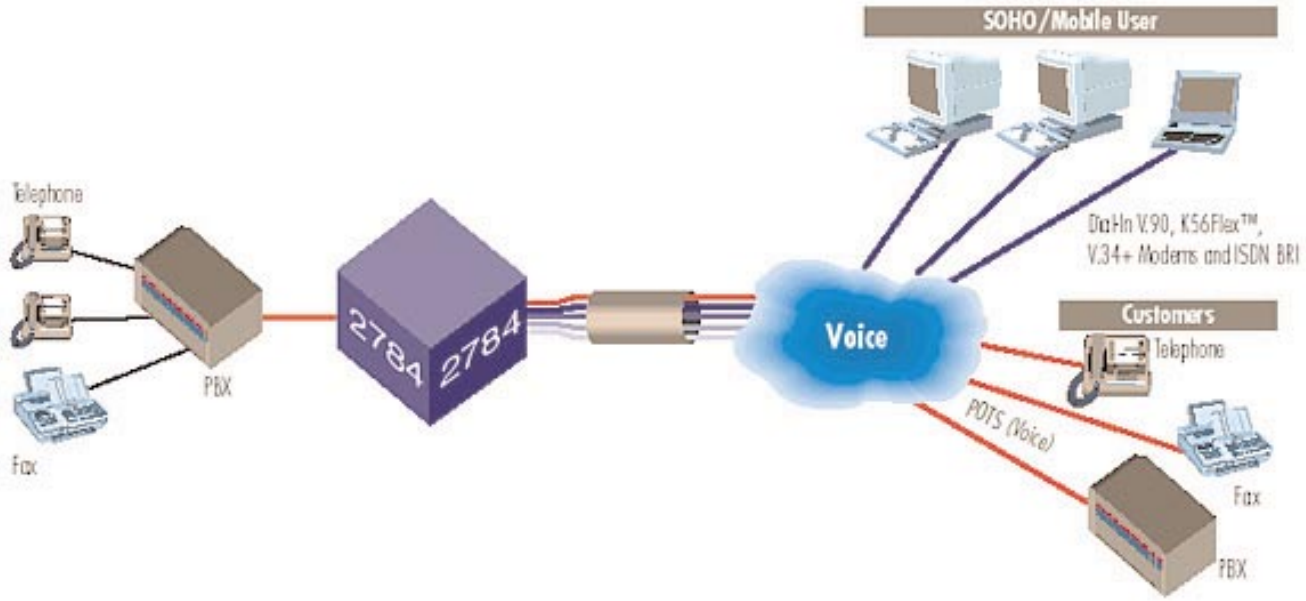

Fig.2: Corporate Voice Integration

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. 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. A single service provider promotes freedom and flexibility for the customer.

The 2784: Integration and Service Consolidation

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

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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 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.

Most medium and large businesses have multiple sites that must communicate with each other. They have to use multiple public carrier networks—including PSTN, frame relay, ATM, and X.25 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 networks. The Model 2784 eliminates the need for these devices by:

- Providing voice consolidation
- Consolidating the customer's dial-up modems for communication with SOHO users
- Transporting data for internet communication
- Transporting data for VPNs for communication with other FRADs
- Eliminating multiple maintenance contracts
- Reducing management resource allocations

Product Overview

In Figures 1 and 2 (above), all of the voice and data traffic can be delivered across a multiservice T1/E1 to the public carrier network, providing connectivity to an ISP router, VPN traffic to other branch offices, POTs voice to customers, or modem calls to employees working from home offices.

In Figure 3 (below), a large enterprise customer has purchased a VPN arrangement from a CLEC. Using the CLEC's colocated fibre, the enterprise customer can conduct

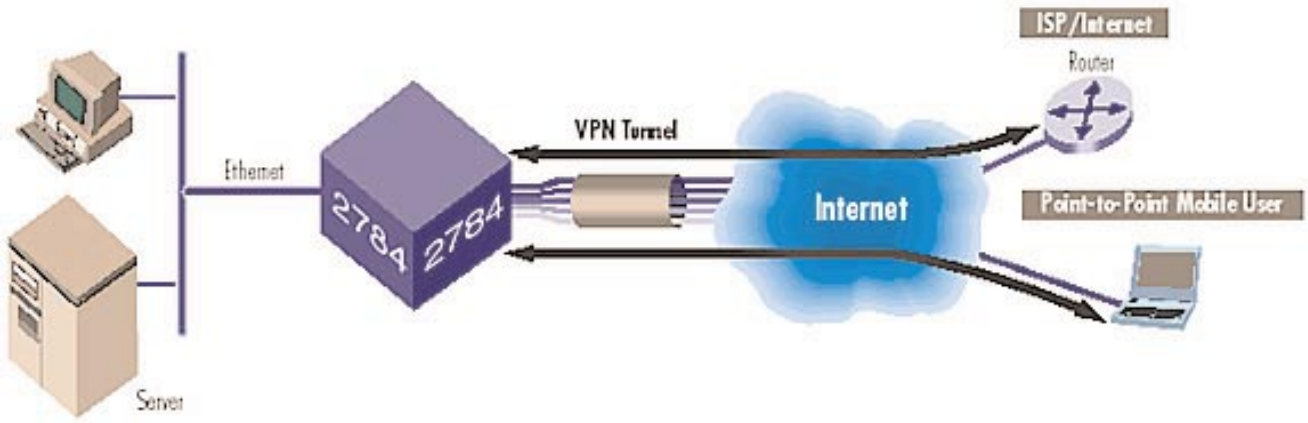

Fig.3: Virtual Private Networking

business across several different telephone exchanges without the high toll costs. The Model 2784's options, allowing for the consolidation of multiple services across a single access facility, include: a T1/E1 port with integrated CSU/DSU function for direct

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network access; a drop and insert (DSX-1) port for PABX connectivity; an integrated router supporting DHCP, DNS, RIP, PPP, SLIP, PAP/CHAP, and RADIUS services; an integrated FRAD; an integrated Remote Access Server for V.90, K56Flex™ and V.34 modem calls; and a V.35 serial port that allows a customer to connect external routers and legacy equipment.

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