What's The Fate Of Frame?

Joanie Wexler

Growth diminishes in a saturated market.

The U.S. frame relay market is becoming saturated. After more than a decade of record-breaking double-digit annual growth, new deployments are waning.

But while you might expect the much-ballyhooed IP-VPN to be gorging on frame relay's lunch, this WAN heir-apparent is actually struggling to find a firm following. Meantime, frame's installed base endures, with more than 1 million revenue-generating service ports in use in the U.S. (Figure 1). And some new installations are still expected, at fractional T1 speeds and up, at least through 2008.
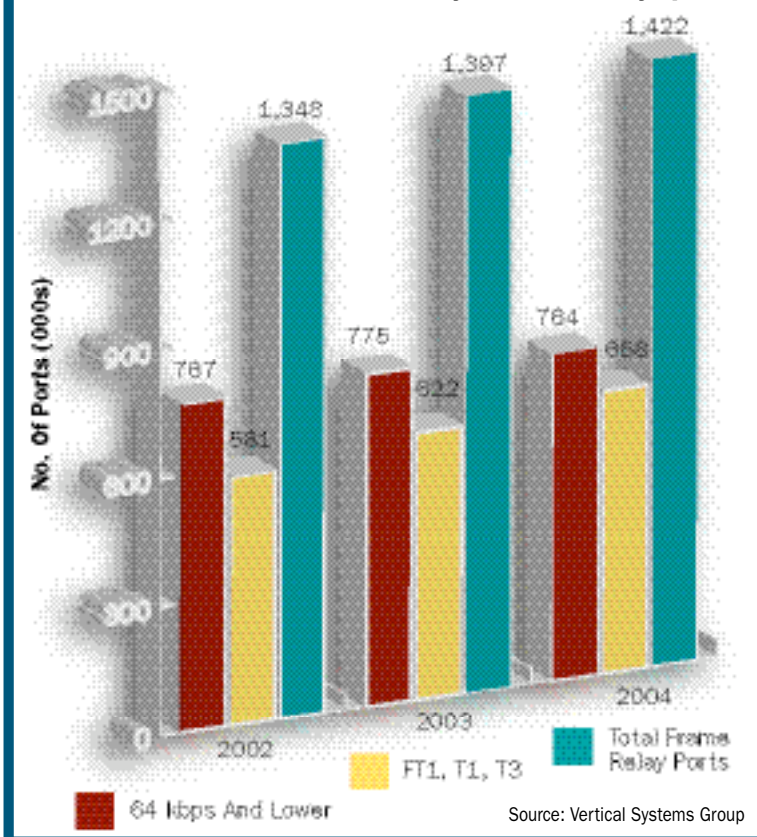
The reason? Frame relay continues to meet the majority of enterprise data networking requirements with high levels of reliability that businesses know and trust. "I don't know if I would have the same comfort level with other technologies," said Jim Lux, vice president of information technology at Bertucci's Corp.

The Northborough, MA-based chain of pizzerias operates a 64-kbps AT&T frame relay network connecting 90 locations in 12 states. The only plans for change at the moment are to potentially increase its service speeds.

The company has also layered voice over IP (VOIP) onto the network for intra-office calling, poking a hole in the carrier marketing argument that you require an IP-VPN to support VOIP adequately. Lux said VOIP over frame saves the company about $10,000 per month.

Slow Migration

There's no doubt that some enterprises are retiring their frame networks and installing some flavor of IP-VPN (and there are many!). But a lack of clear-cut financial benefits has kept IP-VPNs from the kind of success that frame relay enjoyed in the early '90s (see *BCR*, June 2004, pp. 18–22).

"Frame relay almost immediately saw hockey-stick growth rates," said Rick Malone, principal of research firm Vertical Systems Group. "IP-VPNs are nothing like this." (Figure 2).

"There is a subtlety to IP-VPN benefits that is not clearly defined by [carrier] marketing people," Malone explained. "Often, VPNs offer just a sliver of cost savings."

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FIGURE 1 Number Of U.S. Frame Relay Service Ports By Speed

Source: Vertical Systems Group

Alan Benway, director of domestic packet services at AT&T, seems to agree. "There are still plenty of applications for which frame relay is best suited. Until customers have applications with peer-to-peer requirements, IP-enablement [in the wide area] isn't as attractive."

Enterprise Goals

In truth, the attractiveness of any of the IP-VPN types depends on the customer's goals, and what the customer is willing to trade off. Smaller companies that can't afford frame relay bandwidth increases, for example, might turn to public Internet-based VPNs.

Consider White-Rodgers, a division of Emerson Climate Technologies, which makes thermostats, gas valves and air cleaners. In May, the St. Louis-based company replaced its seven-site, multi-country, 1,000-user AT&T frame relay WAN with an encrypted, Internet-based VPN.

"We wanted more bandwidth for the same price, or the same bandwidth for a lower price," stated Larry Davitz, network manager.

Davitz got his wish. As an example, in Puerto Rico, White-Rodgers was able to replace a 64-kbps frame relay connection with a 128-kbps Internet VPN link for the same price. Overall, White-Rodgers is saving 90 percent on its monthly data communications bill, down from about $3,000 to $250 per month. The new configuration also includes an encryption card at each site.

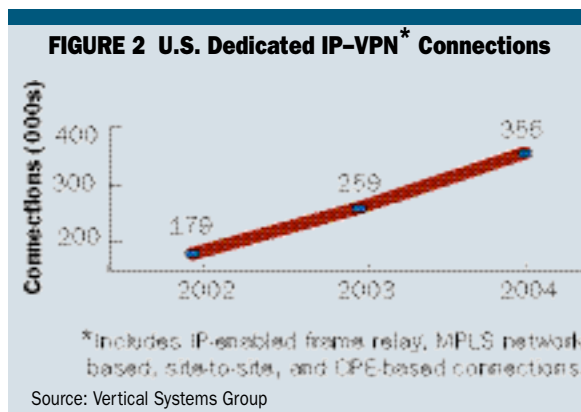"This is the kind of no-brainer that executives like," Davitz said.

On the flip side, he acknowledged that he has no service level agreements (SLAs) from the carrier for the VPN's performance and uses ISDN as a dial backup safeguard. Companies with more stringent reliability requirements than White-Rogers might prefer to pay a bit more for the carriers' managed encrypted services, sometimes called "site-to-site VPNs," which offer SLAs.

Penske Truck Leasing Co., for example, is moving from a low-speed AT&T frame relay service to a site-to-site managed IP-VPN service from GoRemote (formerly GRIC Communications) to support 630 locations requiring access to its corporate network in Reading, PA.

Penske, like White-Rodgers, needed a faster network. The company wanted the same reliability and one-stop nationwide shopping it had enjoyed with frame relay, explained Jerry Hodgen, manager of LAN, WAN and desktop services.

"But frame was much too expensive at the higher speeds," he said.

GoRemote monitors and manages services traversing the public Internet, guaranteeing 99.99 percent network uptime, less than 135 milliseconds roundtrip latency, less than 10 milliseconds jitter, and a 5 percent packet loss rate in the lower

FIGURE 2 U.S. Dedicated IP–VPN* Connections

*Includes IP-enabled frame relay, MPLS network-based, site-to-site, and CPE-based connections.

Source: Vertical Systems Group

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48 states, said Jim Crane, product manager.

According to Jerry Hodgen, Penske is actually experiencing 40 to 80 milliseconds latency and uptime surpassing 99.99 percent. He said Penske has cut its costs by 70 percent, while moving from 64-kbps frame connections to GoRemote Internet connections at 768-kbps upstream/384-kbps downstream in some locations, and 3 Mbps full duplex in others.

Sprint's Multilink Frame Option

Companies wishing to incrementally increase speed but stick with frame relay finally have a multilink frame relay (MFR) option from a primary interexchange carrier (IXC). In January 2004, Sprint rolled out its MFR service, which originally had been due last August (see *BCR*, July 2003, page 44–49).

MFR is a Layer 2 inverse multiplexing capability that aggregates the bandwidth of multiple physical-layer links while presenting a single high-speed frame relay logical user-to-network interface (UNI). The UNI supports more bandwidth than is available from a single physical interface. This allows customers to add bandwidth incrementally, in a way likely to be more in line with their actual requirements and budgets than jumping directly from, say, T1 to T3 speeds.

Sprint MFR is available at all the carrier's committed information rates (CIRs), and customers can inverse-multiplex up to eight T1s (to 12 Mbps), said Karen Emery, Sprint's ATM, frame relay and private line product manager. The service works with Cisco, Larscom and QuickEagle customer premises equipment, she said.

Is It Frame Or Is It IP?

Most other IXC frame relay enhancements revolve around extending traditional service into additional countries or merging frame with IP-centric services.

In May, for example, MCI launched Phase 2 of its Secure Interworking Gateway (SIG) initiative, aimed at allowing dissimilar endpoints to intercommunicate. MCI's new VPN Network Gateway service enables a frame relay permanent virtual circuit (PVC) to interconnect with an Inter-

net IPSec tunnel via the MCI converged IP backbone, explained Michael Marcellin, senior director of data product marketing.

MCI and AT&T also offer frame relay access to Multiprotocol Label Switching (MPLS)-based private IP-VPNs. These so-called IP-enabled frame relay services are attractive to some large businesses seeking less expensive meshing than can be obtained by purchasing PVCs between every pair of sites requiring direct connectivity.

Instead, while enterprises retain frame relay interfaces at their sites, they purchase a single PVC from each site to a carrier point of presence. There, the carrier's edge router unwraps the IP packets and routes them across its backbone.

At Cosmopolitan Cosmetics USA, IT director Tim McGilloway encountered a "full meshed mess" of about 200 point-to-point T1s when he joined the New York-based company last year. He found it made sense to move directly to MCI's Private IP (IP-enabled frame) service.

Cosmopolitan has multiple datacenters that the company's distributed sites must access, and it also runs VOIP over the network. The company wanted to avoid buying multiple PVCs to each location, he said.

"It seems to be working well," McGilloway said of the new service. "We're still fully meshed [logically] but now we run with just one T1 out to each location," a change that is saving the company 15 percent on its monthly communications bill.

Similarly, Toshiba America, in Fairfield, NJ is evaluating a migration from frame relay to an MPLS-based VPN to meet meshed networking needs. Its application is disaster recovery among about 50 U.S. sites.

Bob Smith, telecommunications manager, explained: "We have multiple sites running the same applications. Should the primary site go down, connections will automatically be redirected to a backup site."

He anticipates saving 20 to 25 percent in PVC costs with an MPLS VPN.

Conclusion

Although traditional frame relay's salad days are behind us, frame—with about 1.4 million U.S. ports installed—promises to live on as an access technology for at least a decade, according to Kevin Mitchell, a directing analyst at Infonetics Research.

"Most carrier investment is going into IP," he acknowledged. "But frame will continue to be enhanced in terms of the additional kinds of networks it connects to."

And while enterprises will inevitably turn to new network services to support new kinds of applications or to decrease costs, they might find, at least in the short term, that they give something up—be it reliability or security or cost.

Smart buyers of new IP services will presume nothing. It is advisable to ask precisely what value is being brought to the table and how quality of service (QOS) guarantees for bandwidth and high-priority traffic are actually being delivered across the backbone VPN.

If MPLS is the entire answer, be wary. Ask how the carrier's backbone router data plane actually enforces QOS and priority markings.

Ultimately, the Internet is expected to be the nirvana network for all business and consumer communications. But there's a ways to go before it meets everyone's expectations□

Companies Mentioned In This Article

AT&T (www.att.com)

Bertucci's Corp. (www.bertuccis.com)

Cisco (www.cisco.com)

Cosmopolitan Cosmetics USA (www.cosmopolitan-cosmetics.com)

GoRemote (www.goremote.com)

Larscom (www.larscom.com)

MCI (www.mci.com)

Penske Truck Leasing (www.pensketruckleasing.com)

QuickEagle (www.quickeagle.com)

Sprint (www.sprint.com)

Toshiba America (www.toshiba.com/taec)

White-Rodgers (www.white-rodgers.com)