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METRO ETHERNET: FINALLY THE HEADLINER

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Sometimes a garage band really does make it big and find rock star glory. That appears to be what we're witnessing with metro Ethernet (now synonymous with carrier Ethernet) in the U.S. Ever since Ethernet wrapped its Category 5 cables throughout offices worldwide, the IT world has wondered how far they might take the protocol beyond local area networks and into wide area networks.

Ten years ago, employing Ethernet for metro access and wide-area transport was viewed as a bit of a novelty — something impractical. It was like the telecom equivalent of a couple of neighborhood kids cranking their amps in a one-car garage. After all, Ethernet had been designed with the LAN in mind, and metro networks are, comparatively speaking, a jungle compared to controlled, private office environments. Innovators are always looking to build a better mousetrap, however, and years of steady progress have overcome a series of technical obstacles to develop metro Ethernet into a more robust service that can meet the needs of business, enterprise and carrier customers — and support a range of even the most demanding applications.

By the middle of 2006, the sense that the industry was in the middle of a ramp-up period was palpable. Over the past several years, the familiar holding pattern chatter has persisted about carrier-grade Ethernet as an emerging technology — something to break out “12 to 18 months” in the future. But in the true test of technology traction, there has been a sense that the standard rolling timeframe was beginning to shrink. In 2006, the chatter indicated a significantly shortened time to the point that specific product launches were announced, while others said simply, “It's already happening.” What once was just a nice idea became plausible, and what was “possible but risky” is now compared, apples-to-apples, with some of the most robust legacy services.

There is now wide agreement that carrier-grade Ethernet service revenues are snowballing. And because of several key advantages — cost savings, ease of use and optimization for data traffic — the consensus holds that Ethernet will ultimately begin displacing legacy TDM services, including Sonet. History is best written in retrospect, but 2006 and 2007 may be remembered as watershed years for metro Ethernet.

Back in 2001, New Paradigm Resources Group took its first deep look at this emerging access sector and its potential to disrupt the traditional access markets. It was referred to then as GigE/MAN, and the study examined the prospects for deployment of Gigabit Ethernet in freshly built metro fiber networks. At the time, Ethernet service delivery in metro area networks was largely the province of fiber overbuilders, which used neglected network

capacity to fill and extend their operational expenditure budgets, and pure-play Ethernet providers, which were trying to establish a market for Ethernet service beyond office and campuswide networks. A lot has changed since then.

Now, Ethernet is being deployed by the full array of wireline service providers: the Tier 1 carriers, independents, broad-based competitive carriers, cable multisystem operators and Ethernet-centric providers. Some of the fiber builders that spoke confidently of building networks in dozens of cities are no longer around, their assets snatched up by other competitive carriers. Those that are still around have retooled and re-imagined themselves.

Because it is relatively straightforward and cost-effective for network operators to deploy Ethernet gear on their existing fiber, many regional dark fiber providers have begun retailing lit metro Ethernet services in recent years. Doing so opens up new opportunities for mid-market enterprise sales, as well as unique return-on-investment propositions to wholesale customers such as wireless carriers.

Similarly, data centers are now complementing their hosting services with dedicated metro Ethernet connectivity between storage facilities — with some even lighting service to densely served enterprise addresses in business districts. The hosting facility doesn't become a full-fledged service provider, but it adds a capability that it can upsell to customers with rising storage needs and disaster recovery requirements.

Business models run the gamut from single-metro alternative access providers to regional or national service. Every carrier, it seems, has some rationale for incorporating metro Ethernet into its product suite.

Engineers grasp the significance of standards in defining common terminology, setting expectations for design and use and ensuring interoperability. In the telecommunications industry, standard setting is often performed by the IEEE or protocol-specific organizations. For carrier-grade Ethernet in MANs and WANs, the Metro Ethernet Forum (MEF) has acted as a clearinghouse for standards work, and they've added significant momentum to the sector.

The MEF has developed standardized service categories that enable customers and their providers — and providers amongst themselves — to communicate. Ethernet private line (EPL), E-LAN, and virtual private LAN service (VPLS) have become preferred terms throughout the industry, and many carriers have dropped their patchwork naming schema in favor of the MEF terms.

Some Tier 1 service providers have adopted the standardized terminology. Verizon Business is one example of the effect these standards have had in the past few years. Prior to Verizon's acquisition of MCI, each company used its own internally developed Ethernet branding. Following the merger and a thorough internal review of its infrastructure and products, Verizon Business merged the best of both product families and re-branded them using standard MEF terminology: E-LAN, EPL, etc.

The emergence of standards has also provided impetus to another class of carrier. A slew of service providers that previously delivered Ethernet service on a more opportunistic basis have now productized these services and incorporated them into their core product portfolio. CenturyTel and US LEC previously installed Ethernet on a limited basis but then greatly standardized their provisioning in 2006 and added Ethernet to their product lines. In a similar way, Level 3 Communications, which did not offer metro-area Ethernet before its acquisition of WilTel in late 2005, greatly enhanced its capabilities via acquisition in 2006.

In even more dramatic fashion, and perhaps foreshadowing Ethernet's emergence as an alternative to TDM access, network operators are choosing Ethernet as the platform for their entire voice and data portfolio. Optimum Lightpath, the business telecom arm of New York-based Cablevision, quit TDM-based service cold turkey in 2005 in favor of metro Ethernet. Its revenues from Ethernet services have grown at triple-digit annualized growth rates in the past two years, and the company expects them to double again in 2007.

Optimum Lightpath's success is no accident. Many providers, suppliers and customers believe that the cable companies are poised to excel in Ethernet delivery because their internal networks have used Ethernet for transport and backhaul for years.

In talking with service providers, one of the final hurdles for Ethernet as a standard carrier service rivaling legacy services like TDM, frame relay and ATM may be the introduction and popularization of nationwide VPLS. Offered by providers like Masergy, Time Warner Telecom and Yipes, VPLS enables enterprises to run a WAN that stretches seamlessly from the desktop to other networks spread nationwide — and, ultimately, worldwide. Because they run networks that are wholly or predominantly Ethernet-centric, and because they've often had unused capacity, competitive carriers have had a leg up in offering intercity VPLS thus far.

But Verizon recently announced availability of its VPLS product, E-VPLS, and AT&T has stated that it plans to introduce nationwide VPLS service in 2007 as well. Both carriers and enterprise customers expect these Tier 1 rollouts will further enhance the viability of Ethernet as a “do everything” carrier-class protocol. It's like the T-shirts from our neighborhood garage band are now cool.

By almost every measure — port counts, customers, ports per customer and service revenues — metro Ethernet growth is strong, and sustained growth since the telecom bubble has led to a metro Ethernet market that is now substantial. NPRG estimates the domestic Ethernet services market totaled more than $1.7 billion in 2006 and will more than double over the next two years.

Growth rates were high across the board in recent years but were highest among smaller players, as general success of Ethernet makes their offerings more attractive, or more recent entrants, who are beginning to convert customers from legacy services to Ethernet. Revenues for the 10 largest providers of Ethernet services will continue to grow, albeit at a slightly moderated pace because of their larger installed base.

For the rest of the market, there will be a relative uptick in revenue growth as additional cablecos enter the market and as end users turn to new providers for diversity options in the wake of Tier 1 and Tier 2 consolidation.

For several years, Ethernet teetered on the brink of a breakout. The few holdups — including the telecom bubble and bust of some key metro fiber players, a lack of standards, concerns about service levels and resiliency — have largely been overcome. And whatever drawbacks there were have now been superseded in importance by end users' insatiable thirst for bandwidth and wide-area interoperability.

Ethernet is a technology that has reached critical mass in several key respects. Ethernet interfaces are already built into most computers and related equipment. A wide spectrum of providers now offer metro Ethernet services, and the largest providers are on the verge of introducing nationwide any-to-any service. Key industry verticals that account for the largest bandwidth blocks and drive innovation are adopting Ethernet, and many thousands of locations are already using the technology. Now that Ethernet revenues are more than a blip on the income statements of even the largest carriers, Ethernet has truly arrived and is receiving the attention we've long awaited.

You'll be glad you hung onto that garage band's bootleg EP, after all.

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