MegaPath®

BUSINESS ETHERNET
CONNECTIVITY OF CHOICE

SUMMARY ◄

This whitepaper describes the advantages of Business Ethernet (EoC, EoDSx) as compared to T1, Bonded T1 and fractional DS3 (T3) services. It also discusses growth in the availability and popularity of this technology and key vertical markets, including case study examples.

TECHNOLOGY OVERVIEW

Originally developed in 1976 by Xerox at their Palo Alto Research Center (PARC), Ethernet is a well-established technology for distributing data around local networks. The term "ether" is used because Ethernet standards can operate over a variety of paths, including coaxial cable, Cat 5, fiber optics and radio waves.

Ethernet Internet connectivity over copper, commonly known as Business Ethernet, applies Ethernet standards to connect a single site to the Internet via the same twisted pair copper facilities used for DSL, T1, and DS3 services. A device is placed on the customer premises to aggregate copper pairs in order to transmit and receive information. For example, five copper pairs may be aggregated to deliver a highly reliable full-duplex 10 Mbps connection. Back on the carrier network, another device interfaces with the device on the customer premises and routes traffic securely to the Internet. Voice traffic, if present, is routed separately.

Ethernet is a highly flexible protocol that utilizes packet-switching, meaning that data is transmitted in small blocks, called packets, and bandwidth can be dynamically allocated to maximize efficiency. This is significantly different from the more rigid standard of time-division multiplexing used by T-carrier services (T1, T3, etc.), in which data is transmitted in a fixed order and pre-allocated to sub-channels of a circuit. Because packet switching moves data across networks more efficiently, Business Ethernet is significantly less expensive to deliver.

The core advantages of Business Ethernet are affordability, ease of install, reliability, and scalability. These advantages are detailed below in a comparison between T-carrier and Business Ethernet services.

COMPARISON TO T1, BONDED T1, AND DS3 (T3) CONNECTIVTIY ◄

T-carrier systems have been the dominant business networking connectivity in the U.S. for decades. The most popular T-carrier circuit options are T1 and T3, also known as vv and DS3. Like Business Ethernet, these solutions deliver business-class full-duplex connectivity with high reliability. A T1 can deliver up to 1.544 Mbps, while a T3 offers up to 44.736 Mbps. Fractional options are also available, and T1s can be bonded together for circuits of 3.0 Mbps or more.

T-carrier has only one significant advantage over Business Ethernet – a larger availability footprint. Although available nationwide, Ethernet over Copper (EoC) has distance limitations from the central office (CO). And, while Ethernet over DS1 (EoDS1) provides the same speeds regardless of distance from CO, the service is not as readily available in all major markets, but is quickly expanding.

THE BETTER CHOICE ◄

Where it is available, Business Ethernet is unquestionably a better choice for symmetrical business-class bandwidth up to 1 Gbps.

More Affordable

A 3 Mbps EoC circuit costs about the same as a 1.5 Mbps T1. On a cost per megabit basis, Business Ethernet speeds are significantly more affordable than a T1 or T3. As described in the Technology Overview section, this is primarily because of the flexibility and efficiency of Ethernet packet-switching protocols.

Comparable or Easier Installation

In the past, T-carrier services were a necessary choice for legacy networks that were unable to support Business Ethernet. This is rarely a problem today. Business Ethernet is as easy to implement as a T1 and far easier than a T3, which can take many months and typically requires costly infrastructure improvements.

Equally Secure and Reliable

There is no difference in the security capabilities of Business Ethernet and T-carrier services, and both come with standard 99.99% SLA-guaranteed uptime.

MegaPath

Scalability

Business Ethernet is highly scalable with speeds from 2 Mbps up to 1 Gbps (higher-speed Ethernet products are available). Equipment does not need to be changed at the customer premises to increase bandwidth. It's simply a matter of aggregating additional copper pairs and adjusting the carrier network equipment. Two 1.5 Mbps T1s can be bonded to produce a 3.0 Mbps circuit, but this requires additional equipment and is more costly. In addition, Business Ethernet uses loop bonding technology, whereas T1 bonding uses link bonding technology. With link bonding, a problem in any one of the lines can impact the whole connection. This is not the case with loop bonding. Also, loop bonding requires less overhead than link bonding, which means more bandwidth is available for applications and less is consumed delivering the data connection.

◂ customer snapshot ▸

Good Shepherd Services, a large non-profit organization serving the youth of New York City, is an excellent example of the advantages of Business Ethernet over T-carrier services. With over 900 employees and 51 locations, Good Shepherd requires bandwidth for Internet access, email, youth programs, VPN between sites, and access to New York's automated child welfare information system. The organization began saving tens of thousands of dollars annually when they cancelled T3 connections at both of their datacenters and restructured their network around a single 10x10 Mbps Business Ethernet connection at their Manhattan datacenter. Their installation process with the T3s took almost a year and required major infrastructure development. The Business Ethernet was installed in about a month with minimal expense. They also enjoy exceptional reliability and effortless management.

NEXT STEPS ◂

Visit www.megapath.com/data/ethernet to learn more, or contact a MegaPath Business Consultant today at 877-611-6342.