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Private Ethernet is the New T1

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- Not all Ethernet is equal: the different types
- Possible Ethernet configurations
- The business case for and against
- When is Ethernet the smart choice?
- Q&A

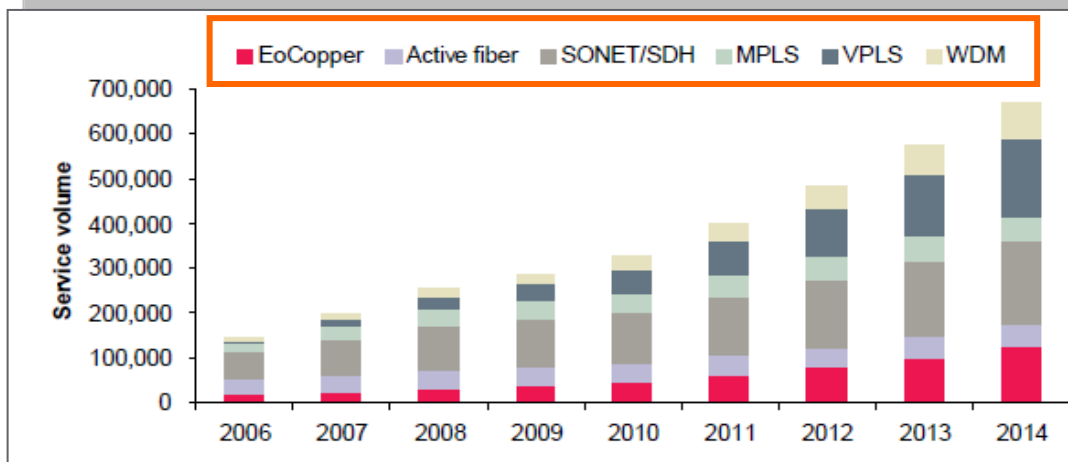
# Not All Ethernet is Created Equal



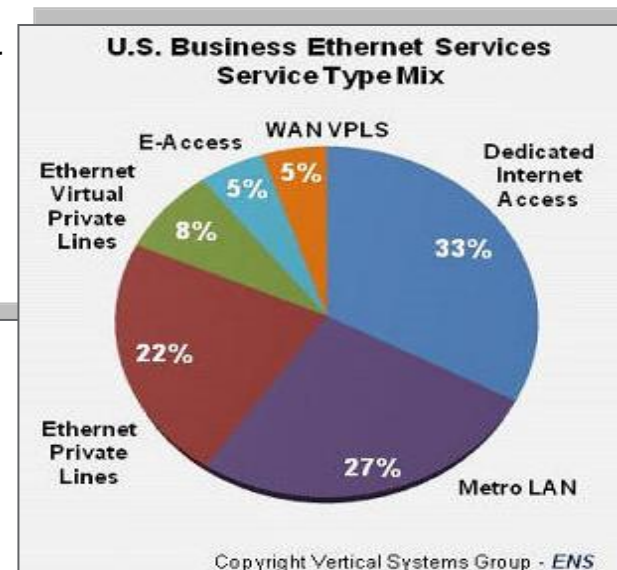
## The Many Shapes, Sizes and Flavors of Ethernet and Not All Are Created Equal

### Ethernet Service Mix

- Dedicated Internet Access, Extended Metro LANs and Point to Point applications dominate
- Ethernet Access growing due to needed connectivity to higher layer applications and services
- “Transport” based solutions currently out-weigh “Packet” based deployments



Source: Ovum



# The Different Types of Ethernet

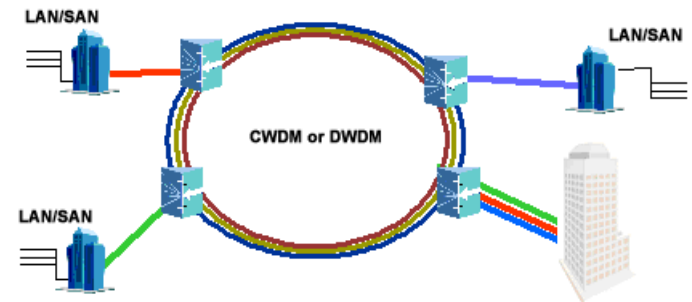
## Ethernet over SONET / SDH

- Transparently delivers Ethernet packets using GFP over existing SONET network architecture
- Inherently protected when provisioned on a “ring architecture”
- Typically more expensive than other flavors of Ethernet



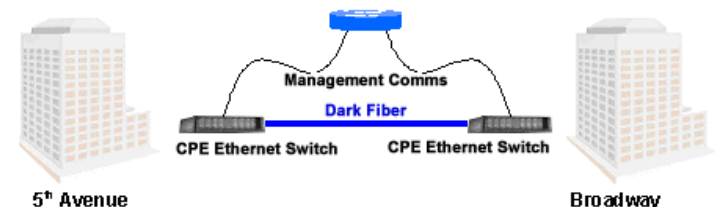
## Ethernet over Wave (CWDM / DWDM)

- Most efficient use of existing network fiber plant
- Limited interface speeds – 1G minimum line rate
- Can multiplex upwards of 40 10Gig Wavelengths



## Ethernet over Dark Fiber

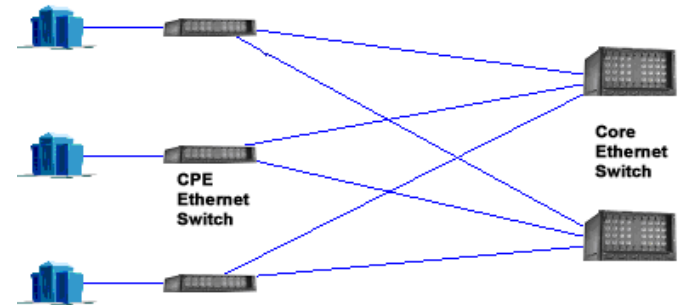
- Extends the internal LAN over metro fiber plant
- Optically delivers Ethernet traffic without using up bits for SONET signaling
- Unprotected point to point configurations are typical unless diverse East and West facing fibers are used



# The Different Types of Ethernet

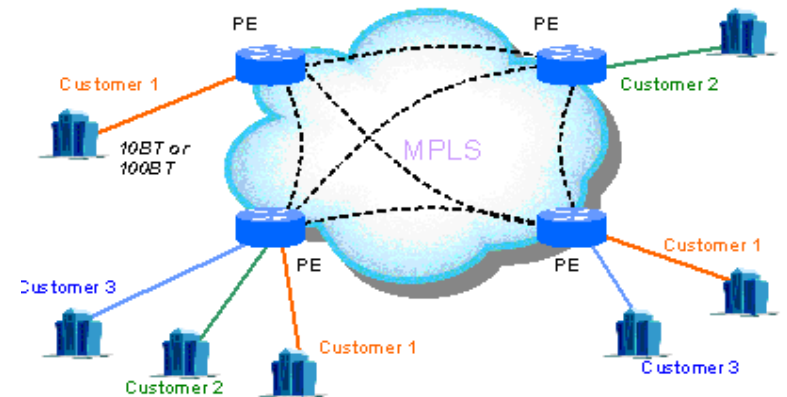
## Ethernet over Ethernet (pure Ethernet)

- Provides fiber connectivity into a fully configured switched Ethernet network
- Accommodates point to point, point to multi-point and multi-point to multi-point configurations
- VLAN tags are used to partition, route and prioritize traffic through the network



## Ethernet over MPLS

- Layer 3 “switching” protocol in effect delivering virtual circuits over packets
- Provides Ethernet transit beyond the metro network and into the WAN
- Typically originates and terminates as Layer 2 and routes through the “cloud” as Layer 3



## Ethernet over Copper

- Typically offered with slower sub 10Mbps interfaces
- Susceptible to outside interference

# Private Ethernet Configurations



Ever increasing bandwidth intensive voice, data and video applications continue to drive exponential growth for Ethernet transport

## Bandwidth Options

10Mbps – 10Gbps

## Available Configurations

- E-LINE (dedicated point to point)
- E-LAN (multi-point to multi-point)
- DIA (single site access)

## Contract Terms

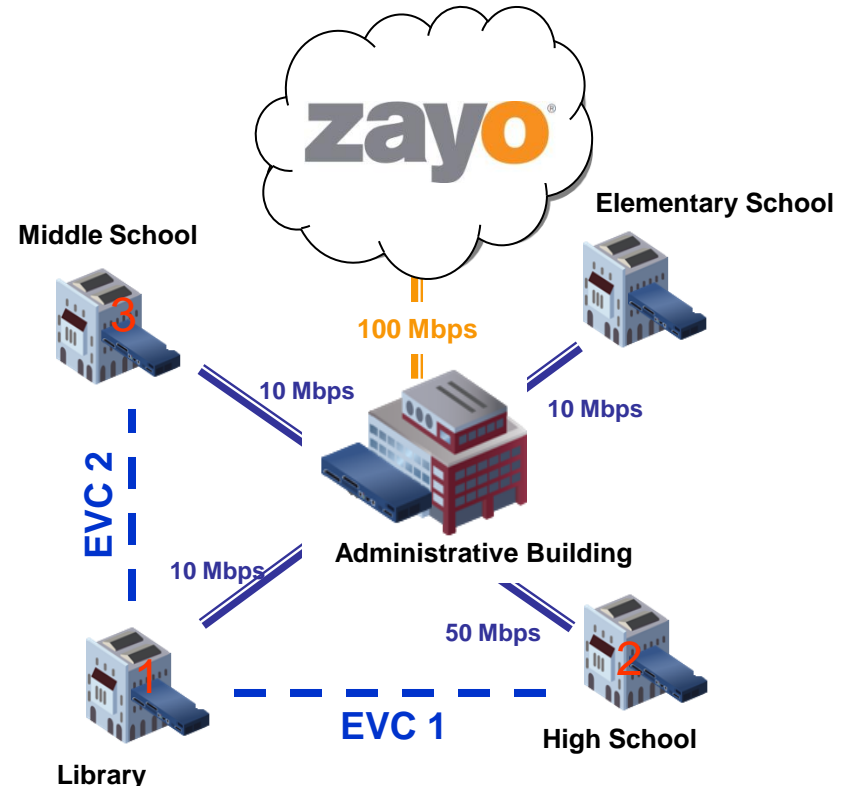
1-5 year lease terms and longer

## Features

- VLAN Tagging, EVCs, Custom QoS
- Private Data Networking (PDN)

## Industry Leading SLA

- SONET like 99.99% network availability
- < 50ms Packet Latency | <.5% Loss | 15ms Jitter



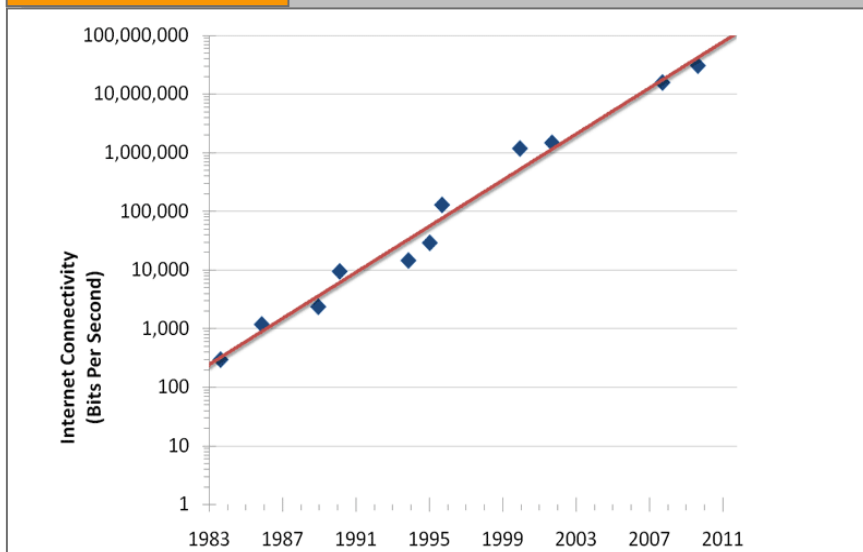
Zayo's desire for organic expansion and ability to fund strategic growth, coupled with unique assets and focus on fiber based bandwidth infrastructure distinguishes us from the competition

# When is Ethernet a Smart Choice?

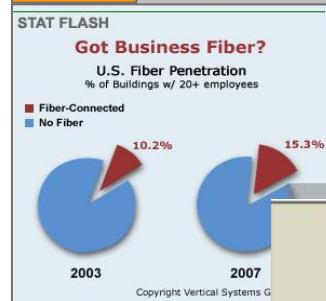


Technological Advances, Bandwidth Intensive Applications and Need for Faster Connection Speeds Drive Demand for a Better Networking Solution

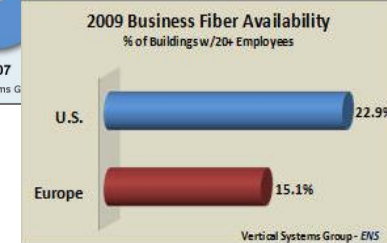
## Nielsen's Law



## Then



## Now



## Connection Speeds Shown to Double Every 21 Months

- Originally predicted in 1998 --- shown accurate and consistent for more than 10 years
- 1Mbps – 10Mbps took 8 years | 10Mbps – 100Mbps only took 2
- Gig-E is the new T1!**

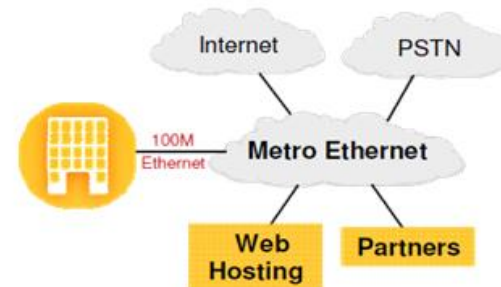
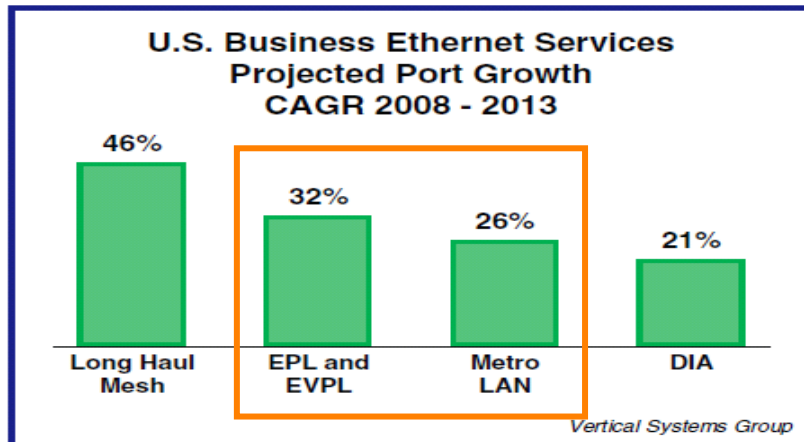
# When is Ethernet a Smart Choice?



## Why Ethernet Transport?

Ethernet is quickly eroding traditional TDM services and becoming the primary method for voice and data delivery

- **Flexibility** – transparently deliver converged voice, video and data traffic over a variety of connectivity options
- **Scalability** – simple bandwidth upgrades and access to higher layer services and applications
- **Compatibility** – seamless integration to existing LAN architectures over time tested internet protocol
- **Stability** – fiber optic transmission with 24x7 network monitoring means superior quality with relatively low total cost of ownership



*"The Internet is no longer a luxury in education -- it's an essential tool for research and learning, and provides the ability for unprecedented communications between faculty, students, and parents."*

*- IT Director, San Jacinto College, Houston TX*

# Drivers & Customers of Bandwidth



## Digital Media Content

- Library / Video Content



## Cloud Connectivity

- Online back office (IT consolidation)
- Email and Collaboration Applications



## Video Conferencing

- Distance Learning / Tutoring



## Centralized Computing Resources

- Voice over IP (VoIP) Networks
- Virtual Desktop



**TEACHERS pay TEACHERS**  
an open marketplace for educators



## Education Customers



## Questions?

- \* For those listening through your computer, please use the chat feature to ask a question.
- \* For those listening over the phone, please un-mute to ask a question live.

# Next Steps

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