## Ethernet Bandwidth Assessment Ad hoc-Network Considerations

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### The 2006 HSSG CFI

## The Ethernet Ecosystem

# Consumer Broadband Access

Content Providers



Internet Backbone Networks

Content Networks



Research Networks

Corporate Data Centers and Enterprise

(High Performance

Computing)

Internet eXchange and Interconnection Points

Internet Backbone Networks

> Research, Education and Government Facilities (High Performance Computing)

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# The 2006 HSSG CFI (continued)

#### **Bandwidth and Growth Projections**

Consumer Broadband Access



Comcast: 4x10 GbE LAG today, 3X BW increase in 3 to 5 years

Yahoo!: 4x10 GbE LAG today. BW doubling in <12 months

Broadband

Cox: 10 GbE today. BW growth 50-75% per year for next 3 - 5 years Level 3: 8x10 GbE LAG today, BW growth 15x in 5 years (~70%/year)

Internet Backbone Networks

LLNL: 4x10 GbE LAG and 500x10 GbE ports today, 10x speed requirement in 5 years on deployed ports

Cisco: 10GbE today. 40+ GbE (100 GbE preferred) in 5 years

**Internet Exchanges: Up to** 8x10 GbE LAG today. BW growth 50-75% per year for next 3 – 5 years

Resear

and

ESnet: 10 GbE today. 10 Gbps on 20+ links 5 years from now; 5-10 locations will require more than 40 Gbps

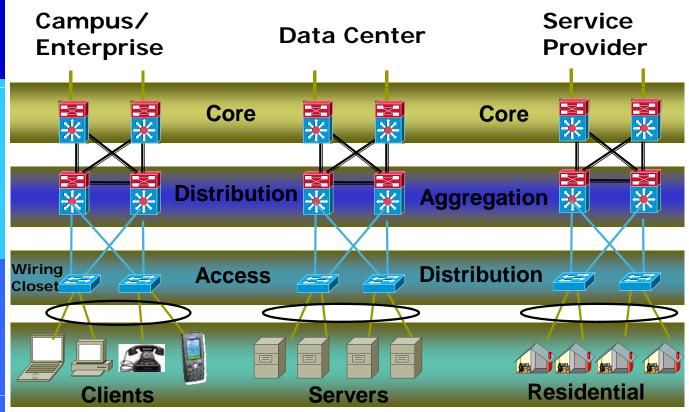
Corporate Data Centers a Enterprise

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#### **Higher Speed Ethernet Penetration**

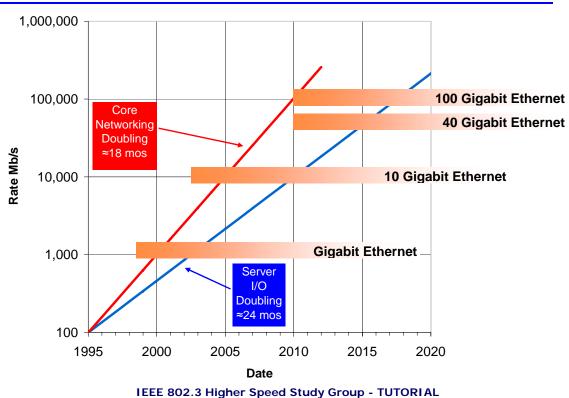


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# Understand the Eco-System Need

# **40GbE and 100GbE:** Computing and Networking



#### Observations

- Examples of Interested Consumers of Bandwidth
  - Data Centers
  - Internet Exchanges
  - Carriers
  - Content Providers
  - Others?
- Network definition
  - General simple architecture defined during HSSG Tutorial 07 update?
  - "Silo Lingo" should not prevent communications!
- Need data that demonstrates bandwidth usage / forecast
  - "Wish list" input should be separated from evaluation of data
- Network Aggregation will be driven by end stations status of computing applications?

- Financial Community
- Research & Development
- HPC
- Government

# Questions to Ask?

- Time frame?
  - How far back historical trends?
  - How far forward?
- Data or wish list?
- Others to contact?

### **Action Plan**

- Determine Ad Hoc output and get WG approval
- Organize calls / meetings as possible, based on application space