Considerations for Scope and Objectives for Active Optics

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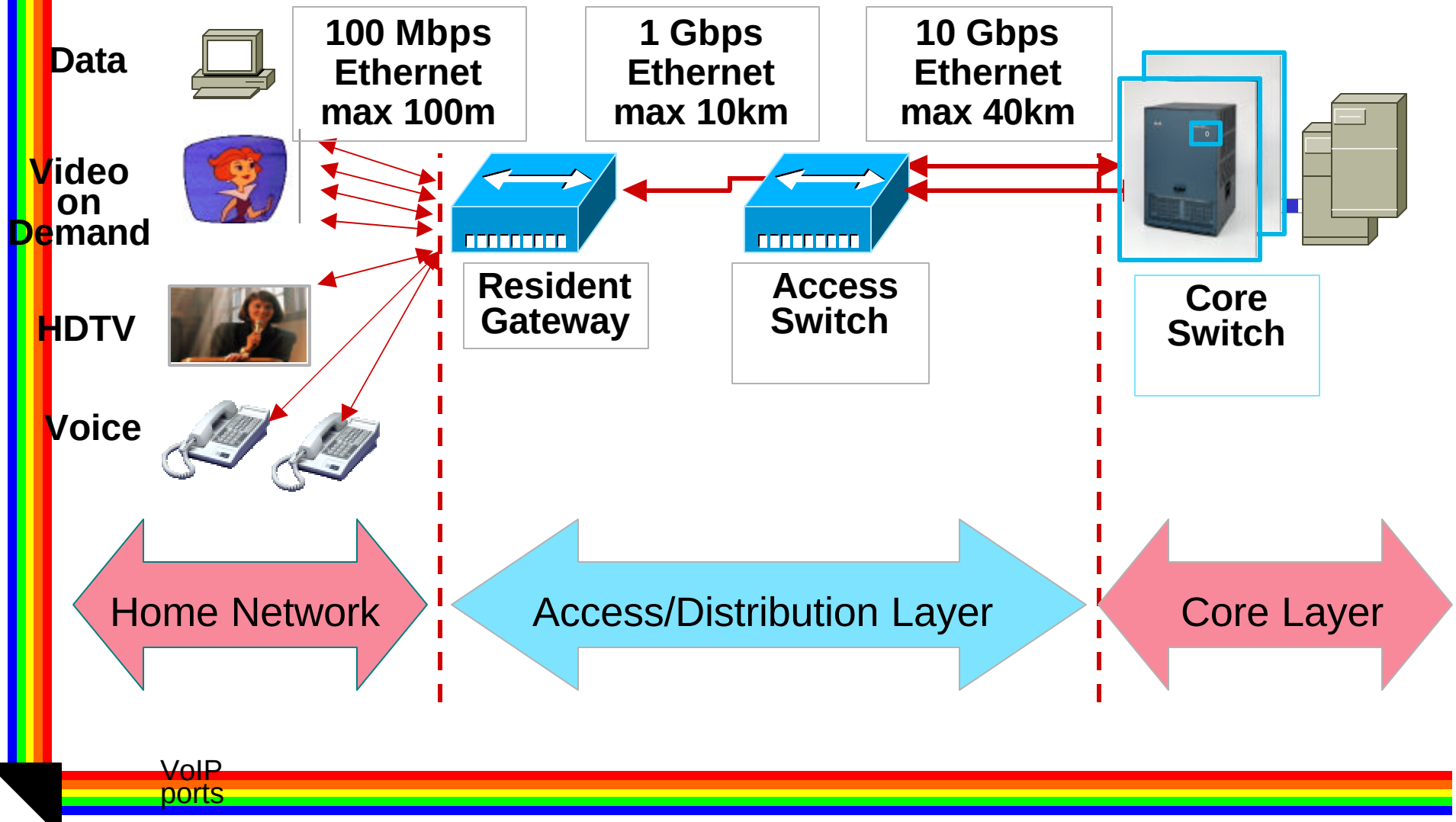
Ethernet to the Home Architecture



Recommendation: Optics

- 1000BASE-LX-like PMD; > 10 km
- Single fiber, full duplex PMD; > 10 km
- Extended temperature range 1000BASE-X optics

10 km, 1000BASE-LX-like PMD

- Standardize what we are all using….
  - Current standard LX specified to 5 km
  - FC solution: 10 km (running at 1.0625 Gb/s)
  - Most shipping: non-standard LX running 10 km
- Need to guarantee interoperability
  - Various companies' specifications similar; not same
- Opportunity to tune this for 1310 nm VCSELs
  - Cost reduction
  - Reduce risk of limited laser supply
- Opportunity to refine specifications according to new link model used in 802.3ae
- Make interoperable with 1000BASE-LX at 5 km

10 km, 1000BASE-LX-like PMD

- Broad Market Potential
  - Yes
- Compatibility with Standard 802.3
  - Yes
- Distinct Identity
  - Yes
- Technical Fasibility
  - Yes
- Economic Feasibility
  - Yes

Single Fiber SM PMD

- Application:
  - To be used as alternative to the LX or 10km dual SMF solution
- Purpose
  - Reduce fiber infrastructure (fiber; connectors; splices)
- Example:
  - 2 wavelength, WWDM at ~1310 nm
  - Disadvantage: different wavelength transceivers required at opposite ends

Single Fiber SM PMD

- Broad Market Potential
  - Needs to be established (should be easy)
- Compatibility with Standard 802.3
  - No issue
- Distinct Identity
  - No issue
- Technical Feasibility
  - Proven
- Economic Feasibility
  - For “First Mile” application, will beat LX

1000-X Extended Temperature Range Optics

- Application:
  - To be used in hardened applications, esp. at residence
- Purpose
  - Increase environmental hardening, lower costs of total solution
- Example:
  - 1000BASE-LX PMD in residential gateway outside the house
  - 2 wavelength 1310 PMD
  - 2 wavelength 1310/1550 PMD
  - Range: -40 Celsius to +85 Celsius

Extended Temperature Range Optics

- Broad Market Potential
  - Every end node at the start of the first mile
  - Absolutely necessary for demarcation
- Compatibility with Standard 802.3
  - No issue
- Distinct Identity
  - No issue
- Technical Feasibility
  - Multiple designs in progress at PMD vendors
  - OC-X parts exist today in MSO applications
- Economic Feasibility
  - No real choice outside the house

SG Objectives

- Provide Physical Layer Specifications for:
  - 1000BASE-X Extended temperature range optics
  - 1000BASE-X, 10 km, 1310 nm duplex over dual SMF
  - 1000BASE-X, 10 km, 1310 nm duplex over single SMF, bidirectional