Optical Ethernet in the First Mile

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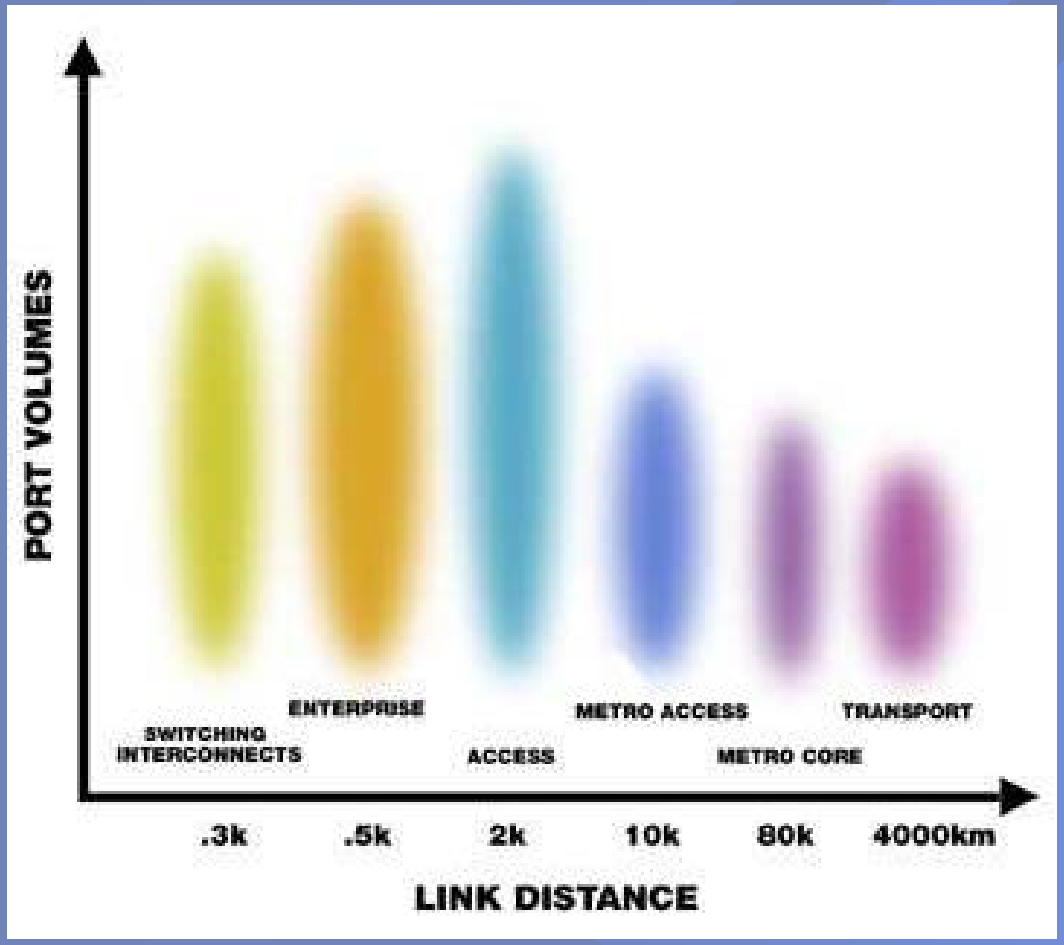
Access market characteristics

Relative Volume vs. Reach Distance (5 year)



- Market exists: Currently served by various non-standard solutions
- Next generation access technology
  - **Optical** can actually go the first mile…
- Access requires **cost-effective**, **high-volume optoelectronic** modules in the 0 - 20km space
  - Expected TAM ≥ $40B by 2005
  - High volume market segments exert economic force, pulling access towards the same solution: Ethernet
  - Ethernet packaging and pricing models prevail
- Transport optics packaging NOT economical for high volume segments.

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Which standard for access?

- Ethernet model has defined the economics of Enterprise networks
- Ethernet is the most widely deployed networking protocol in the world
- Current access infrastructure does not meet customer demand for bandwidth: new access must leapfrog current bandwidths
- Gigabit Ethernet IS the accepted optical Ethernet

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EFM and Gigabit Ethernet

- Logical next step
  - Build on GigE success and adoption
  - NEW PHYs or PMDs for GigE
- EFM opportunities (NEW PHYs for GigE)
  - Point to point access links (2001-ish: 1x 1000BASE-LX)
    - Higher link budget
  - Bidirectional access links (2001-ish: 1.5x-2.0x 1000BASE-LX)
    - Single fiber; simple, reliable connector
    - 10 km, dual wavelength 1310 nm using high-volume, cost-effective VCSELs, DFBs, FPs
  - Passive optical networks [PONs] (2002-ish: 3x-4x 1000BASE-LX)
    - Single fiber; simple, reliable connector
    - Provides transceiver and cable plant density

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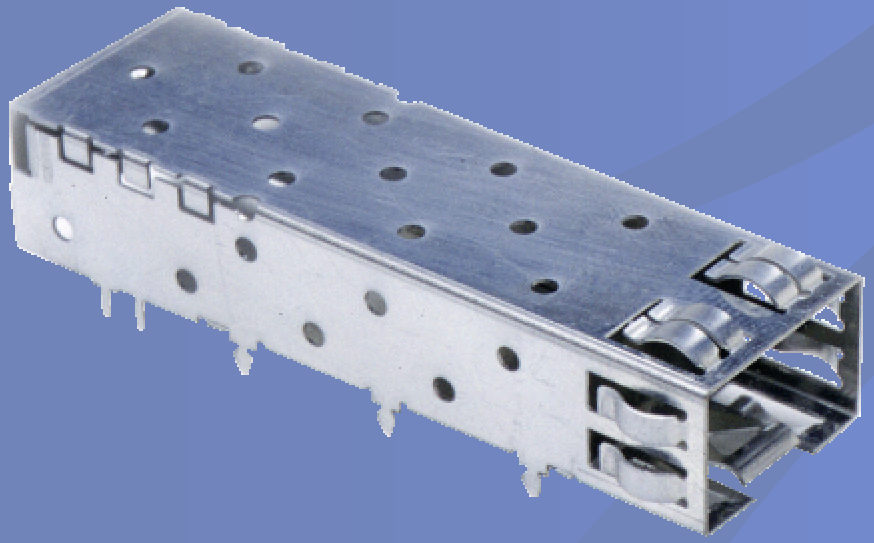
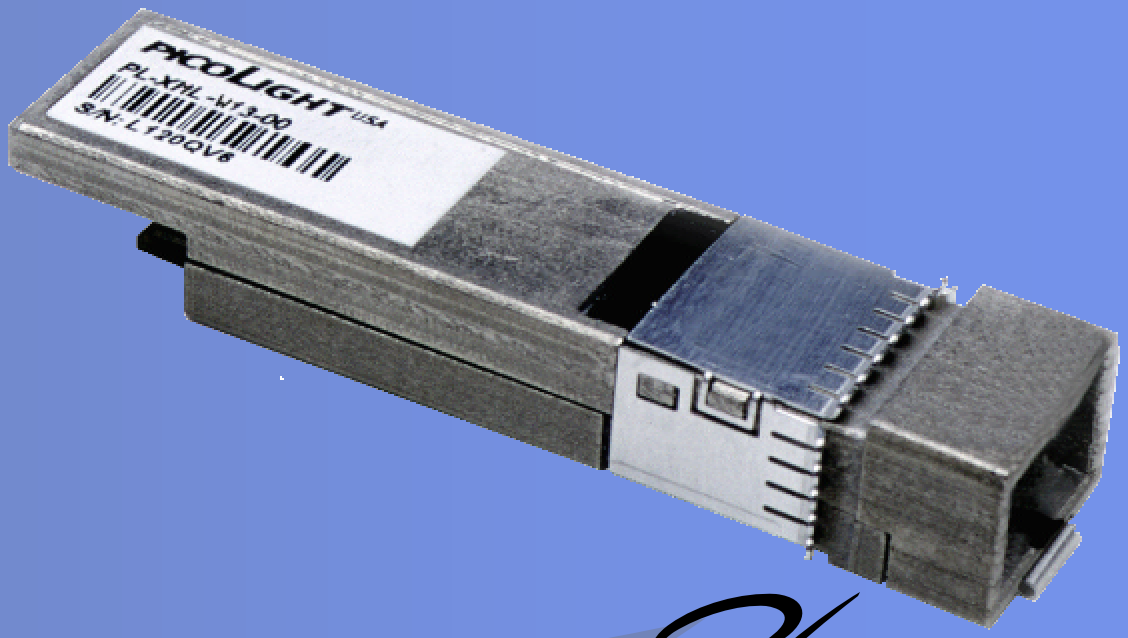
Conceptual 1000BASE-BX transceiver module



- Small size is possible with existing technology
- Leverage existing footprint and technologies



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