10 Gigabit Ethernet
WAN PHY and MAC

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What is a WAN PHY?

• **WAN PHY provides access to WAN facilities**
  – Dark Fiber
  – Dark Wavelengths
  – SONET TDM Networks

• **WAN PHY leverages 10 Gig SONET infrastructure**

• **WAN PHY provides low cost optics**
  – Very short reaches
  – Store and forward network design (no regenerators)
  – No optical amplifiers

• **WAN PHY uses the same MAC as the LAN PHY**

• **WAN PHY operates at a rate that is compatible with the payload rate of OC-192c/VC-4-64c**
• **WAN PHY** provides access to facilities with dark fiber, dark wavelength, and SONET TDM
MAC Pacing for WAN PHY

- Use a clock rate of 10.000 Gbps on the MAC/PLS interface
- MAC pacing mechanism reduces data rate to fit in OC-192c/VC-4-64c payload
  - Payload Rate: 9.584640 Gbps
  - Word-by-word HOLD over XGMII
  - IPG stretch system
- Allows LAN PHY and WAN PHY to share the same MAC
Encoding Alternatives for WAN PHY

- 2 Polynomial Scrambler System
- 1 Polynomial Scrambler System
- MB810 Block Code System
- 8b/10b Block Code System
• The distances between switching equipment using the WAN PHY and the DWDM facility is commonly less than 2 Km
Summary

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  – Dark Wavelengths
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