FlexEthernet – A Systems View

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System Drivers for FlexEthernet…

- Satisfy requirements of modern transport

- Carry previous generations over modern interfaces

- Provide continuity between generations

Satisfy requirements of modern transport

- Modern metro and long-haul optical transport is complicated
  - It may not track Ethernet rates
  - It may trade off rate for reach
  - It may use multiple carriers to build a link
  - It is expensive, so reuse of previous generation technology is desirable
  - It may be integrated into the router

- It would be useful to have an router port that helps cater to this
  - Rate of router port would match the rate of the transport link
  - Router port could bind together multiple carriers
  - Router port could use multiple older links to make a single faster link

Carry previous generations over modern interfaces

- MLG allows 10GE and 40GE to be carried over a CAUI4 link
  - Enables modules with breakout for previous generation speeds
  - Enables reduction in ASIC SERDES count when supporting older PMDs
  - Uses 802.3ba virtual lanes as a channelization unit
  - Requires edits to the PCS layer

- Adapting MLG to 802.3bj/bm is requiring additional work due to FEC
  - Looking forward – each new Ethernet PCS/PMD may need MLG work

- A more modular approach to MLG would be ideal
  - Would not require changes when we build new PMD types
  - Would easily support future rates

Provide continuity between generations

- Ethernet has had 4x to 10x bandwidth increases between generations
- Significant time gap between these generations
- Customers use LAG to build faster links to bridge the gap
  - Until new rate both exists and is cost effective
- LAG is assumed to be roughly 80% efficient
  - Has traffic dependent behavior

- Industry would benefit from something that does link bonding well
  - Binds together N of previous generation PMDs
  - No traffic dependent performance issues

Extend Ethernet

- Our primary markets are Ethernet driven
  - Density demands everything be integrated
  - ASIC reuse across markets
  - 1GE, 10GE (LAN&WAN?), 25GE, 40GE, 50GE, 100GE, 400GE, etc, etc
  - All media supported
    - If we provide a module slot- customers expect to be able to plug in anything that fits

- Extending Ethernet is the most efficient way of providing desired features

- FlexEthernet can provide a good toolkit for solving system-level problems

Thank You