



# Ethernet over the backplane system requirements

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# Overview

- System requirements need to include
  - Relative Cost
  - Power dissipation
  - Area
  - Performance
  - BER
  - Trace and connector density

# Cost requirements

- Traditional Ethernet is 10x performance at 4x cost.
  - How to we compare with XAUI?
    - 4x performance at 1.6x cost would be the correct metric
  - Need to include total cost
    - materials
    - Semiconductors
    - Connectors



# Cost requirements response

- 1.6X XAUI looks achievable
- From backplane presentation
  - Backplane/connector costs increase 1.25-1.50x
- Semiconductor costs = 1.-1.5x

# Power

- 4x bandwidth of XAUI at ?x power
- What is power ceiling?
- What is power/inch of backplane trace?
- What is power/Gbit of data?

# Power response

- 10Gbps backplane SERDES power dissipation should be ?x XAUI SERDES

# Area

- Package size/Board Area of discrete SERDES
- Die area of integrated SERDES
  - Compare against XAUI SERDES?

# Area response

- Package size of discrete SERDES should be the same
- Die area of 10Gbps SERDES vs XAUI should be ?.



# Performance

- Need to hit 10G single lane objective
- Channel models still open issue

# Performance response

- 10Gbps single lane 40 in. FR4 objective link is achievable within cost/power/area constraints

# BER

- Need better definition of system requirements
  - How to verify?
  - Do we assume error correction?
  - Do channel models support required BER?
- Objective is  $10 \times 10^{-12}$ 
  - Do we handle  $10 \times 10^{-15}$  in an appendix?

# BER response

- BER objective is achievable within other constraints

# Trace and connector density

- Same density as XAUI/ATCA chassis
  - 4x throughput for same trace/connector density

# Trace and connector density response

- ATCA chassis trace/connector density is achievable at 10Gbps .

# Next steps

- Solicit detailed presentations responding to system requirements
- Generate channel model
  - End specification should be a channel model, not a distance/material specification
  - Use OIF as a starting point?