A Call for Interest to develop a Standard for a Less Complex 1 Gb/s physical layer specification that will operate over 100 meters of Category 6 cabling.

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Objectives

- Take advantage of a new generation of cabling.
- Develop a simple solution for a 1 Gb/s phy.
- Independent transmit and receive pairs.
Cat 5 and Cat 6 Performance

Frequency (MHz)

dB

C6 atten
C6 pr-pr NEXT
C5 atten
C5 pr-pr NEXT

0 50 100 150 200

0 10 20 30 40 50 60 70
A new generation of cabling

- ISO/IEC requirements for Cat 6 are well established.
- One distributor has installed over a quarter billion feet of Cat 6.
- Most customers who have installed Cat 6 expect to run data rates in excess of 100 Mb/s.
1Gb/s on Cat 6

Diagram showing connections between two sets of terminals labeled 'T' and 'R'.
A simple solution for a 1Gb/s phy

• An example of one solution will be illustrated that:
  – Does not require Echo/NEXT/FEXT cancellation, Master-Slave clock synchronization, or any start-up procedure.
  – Allows for a simple "100BASE-TX-like" analog receiver implementation.
  – Low cost, low power, low pin number package, and allows for multi-port (dual/quad) devices.
  – Uses generic CMOS technology and easily supported by many vendors.
Return Loss

![Picture 3](image1.png)
![Picture 4](image2.png)

- Cat 5E RL Basic Link Limit
- Max Envelope of RL (Con+Cable - No Patch)
- Max RL Envelope Patch 2_Picture 3
- Max RL Envelope Patch 2_Picture 4

Frequency (MHz)

RL (dB)

Courtesey of Microtest
Independent Transmit and Receive Pairs

- Echo or Return Loss must be canceled to use the same pair for transmit and receive.
  - Return Loss can be very unpredictable.
- With the improved performance of Cat 6 use independent transmit and receive pairs.
- Greatly simplifies the design.
Conclusion

- Customers will not be confused by a gigabit standard over Category 6.
- Cat 6 installations are growing.
- History has usually resulted in:
  - One Cabling Category and One Speed.
- A simple 1 gigabit solution over Cat 6 is reasonable.