Copper Cable Terminology

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Terminology

• Goal: Align on the terminology to enable effective communication during foundational discussions in the 3df Task Force

• Full Active = redriver or retimer on Tx/Rx of both ends

• Half Active = redriver or retimer on Rx (to host) of both ends

• Asymmetric Half Active = redriver or retimer on Tx/Rx of one end
Background

• Not all copper cables are passive copper cables
  • Non-passive copper cables contain active elements in the transmit and/or receive path within the cable assembly

• Cartoon pictures of cable plug ends in this presentation are intended to generically represent one of the common form factors: SFP, SFP-DD, DSFP, QSFP, QSFP-DD, OSFP, etc.

• Different types of cables address different industry usage models

• This presentation does not address:
  • Nomenclature for, nor advocate for/against, “Active optical cables” or “AOCs”
  • Cables with “gearbox” inside

• Talk to Kent offline if you have inputs!
Passive Copper Cable
(Direct Attach Copper / DAC)

- Passive
  - Each plug end is passive
- Host interface is a “CR” PMD
Full Active Electrical Cable (AEC)

- Fully Retimed
  - Each plug end contains a CDR device that retimes the incoming and outgoing signal
- Host interface could be an AUI
Half Active Electrical Cable (AEC)

- Half Active Electrical Cable has two approaches
  - Symmetric: Each plug end contains a “half” CDR device that retimes the RX (outgoing to host) signal
    - Incoming (from host) retiming is possible but not common
  - Asymmetric: One plug end contains a full CDR that retimes the incoming and outgoing signal
Non-retimed Active Copper Cable (ACC)

- Non-Retimed
  - Each plug end contains a half linear redriver that equalizes the RX (outgoing to host) signal
  - One plug end contains a linear redriver that equalizes the incoming and outgoing signal
  - Full active linear (that redrive on both TX and RX on each end) are not common
- Host interface could be a “CR”-like PMD
THANKS!
Additional Information