

A Dual FEC Option for 100GBASE-KR1/CR1

IEEE P802.3ck

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100GBASE-CR1/KR1 FEC Support

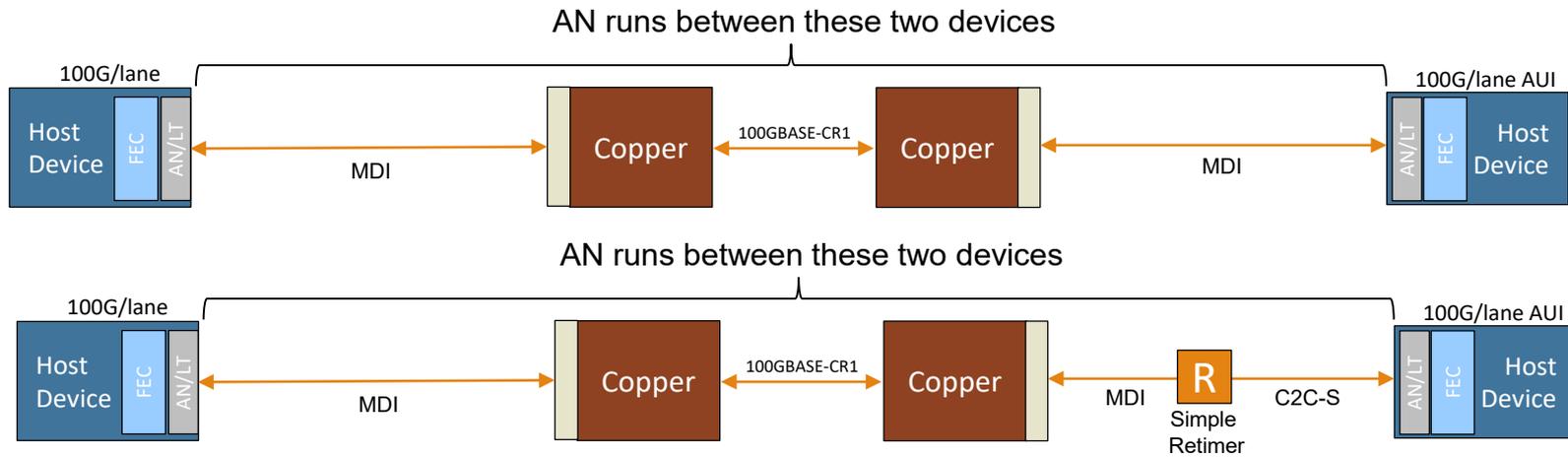
- One option is to support both RS 544 FEC mechanisms:
 - Non-Interleaved RS FEC using 4:1 bit muxing (Clause 91)
 - Interleaved RS FEC based on nicholl_3ck_01b_0519
- Operation would be as follows:
 - All implementations implement both FECs for TX and RX
 - AN is used to negotiate which FEC is used for a given link
 - The chosen FEC is used in both directions on that link
 - Default FEC is TBD
- Best of both worlds
 - Lowest latency with non-interleaved FEC for those links that don't have burst error concerns
 - More robust interleaved FEC for those links that want it
 - Minimal impact to designs

AN High Level Operation

- Technology Ability bit A22 is made into FEC request (F4) bit for 100G CR1/KR1
 - Leaves A19,A20,A21 unused in BasePage
- F4 is then used negotiate between two operating modes
 - FEC mode default is currently TBD
 - F4 is a request to use the non-default operating mode
 - If non-Interleaved is default then (easier to make link more robust)
 - If either sides request the non-default mode, use non-default
 - If Interleaved is default then (harder to enable lower latency)
 - If both sides request the non-default mode, use non-default

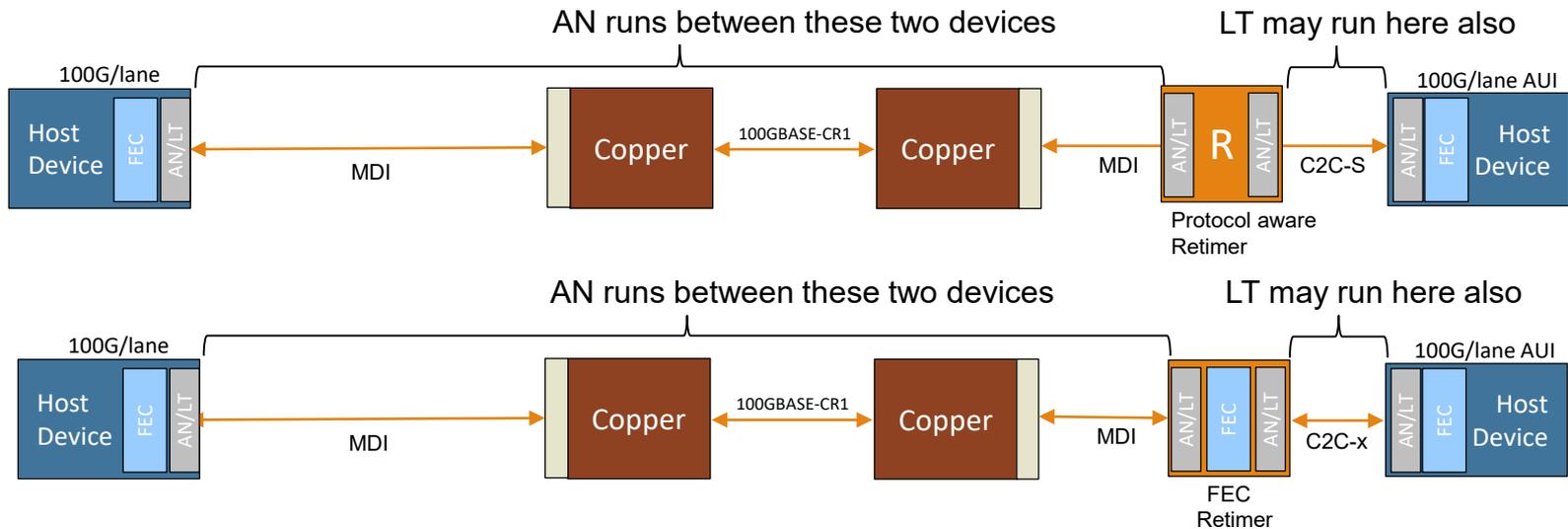
100GbE Example Use Cases – With AN

- First two cases are straight forward
 - AN is run from Host to Host
 - Link Train is Host to Host (simple retimer just passes Eq through)



100GbE Example Use Cases – With AN

- Second two cases AN is run outside Host device
 - Host management given interrupt when AN completes.
 - Result read and Host device reconfigured to negotiated rate
 - Retimer SerDes driving MDI run LT process
 - Optionally Host to Retimer SerDes run a LT process
 - FEC retimer may convert and/or terminate C2C FEC data stream



Thanks!