

More thoughts on FEC

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FEC Perspectives

- This presentation addresses some guidelines on how to best implement FEC (if required) from a system vendor perspective on a prospective 100GE PMD
 - These thoughts on FEC can be applied to a 40GE PMD as well, however, we do not see any need for FEC on a 40GE PMD at this time
- Introduction of FEC mid-generation creates some implementation challenges
- Our understanding is FEC is being considered to:
 - Support reach requirement
 - Support cost targets
 - Support density requirements

Definition of Terms

- Legacy host means
 - Deployed CFP based systems AND
 - CFP2 systems under development expected to launch prior to completion of project
 - Based upon *only* 802.3ba
 - Legacy host has no FEC on the host

Broad System Consensus

1) Legacy PMDs shall not use FEC

- Legacy PMDs with FEC enabled is not a defined IEEE interface
- Use of FEC with legacy PMDs requires new objective and new PMD(s)
- Proliferation of PMD types is burdensome

2) New PMD(s) should be deployable on legacy platforms

- Affects Broad Market potential...

3) If new PMD(s) employ FEC, preference is that it is mandatory

- Low Latency FEC is preferred
- Proliferation of FEC types is burdensome

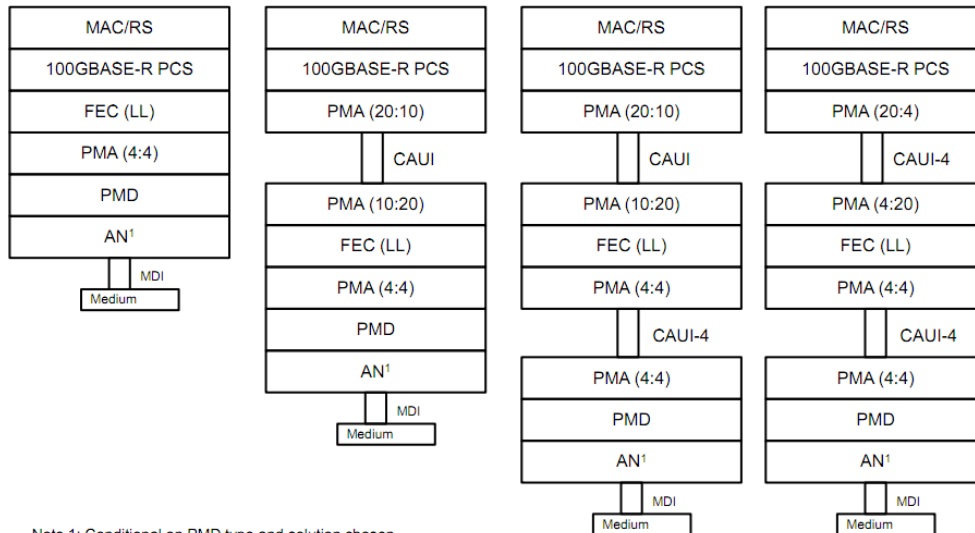
4) End user expectation that BER performance exceeds E-12

- Employing FEC to meet E-12 doesn't meet expectation;
- Employing FEC to exceed E-12 meets expectation

Topology Partitioning of FEC: Implementation Choices

Low Latency FEC Architecture

- The figures below show possible striped (and therefore low latency) FEC architectures



Note 1: Conditional on PMD type and solution chosen

Note: LL = Low Latency

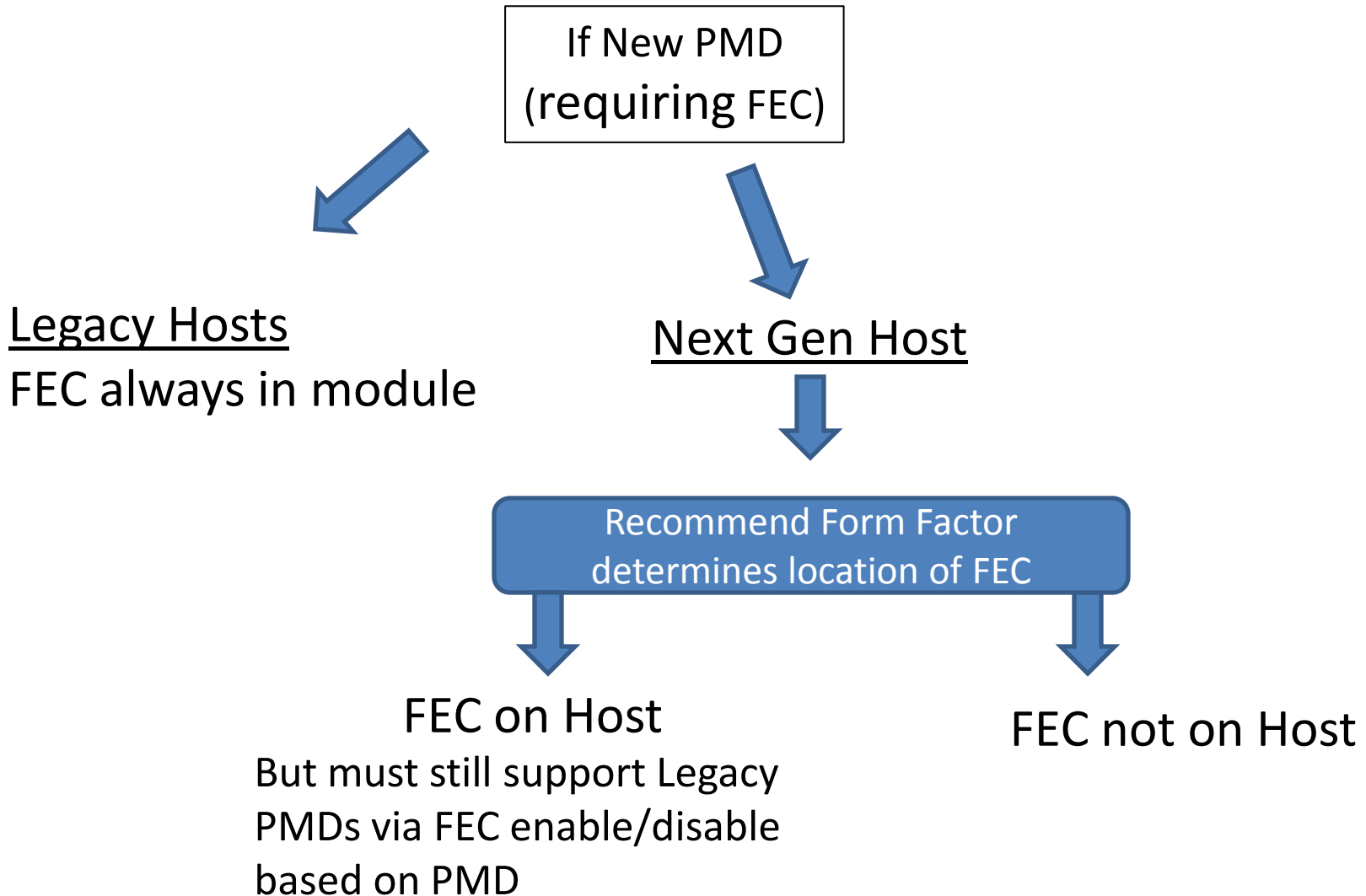
CAUI-4 – assumed new 25G+ interface, might need multiple rates to support FEC

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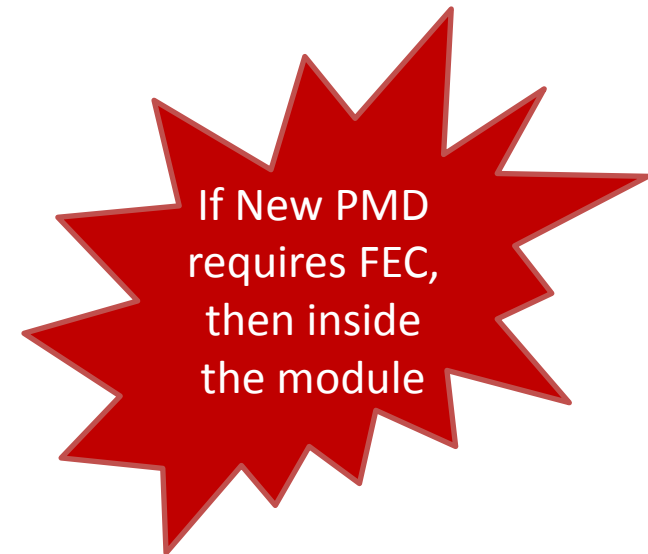
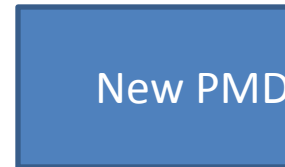
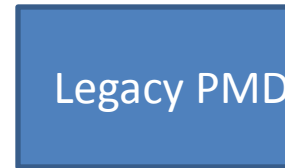
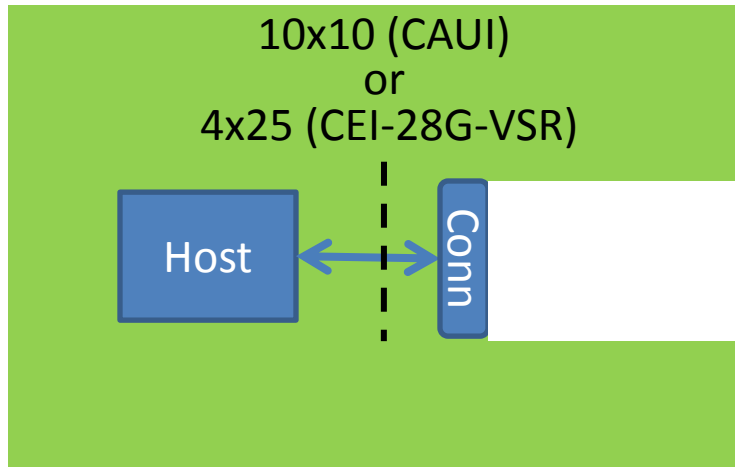
- Low Latency FEC architecture preferred
- Locating FEC block “North” of CAUI/CAUI-4 requires mapping enable/disable of FEC per PMD type
- Mid-Generation shift in 100GE architecture creates disruption
 - “Legacy” 100GE systems do not have FEC built in
 - “Next Gen” 100GE systems designs are in-flight without FEC built-in – likely to launch prior to project completion

Source = 802.3bj TF; gustlin_01a_1111

What does this mean ...

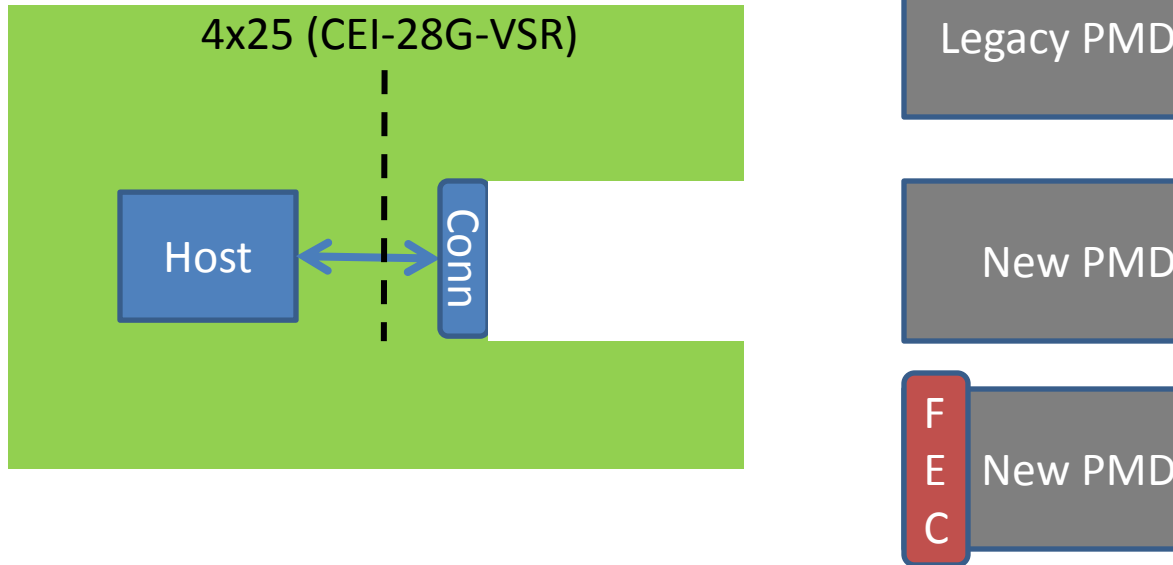


Legacy Host



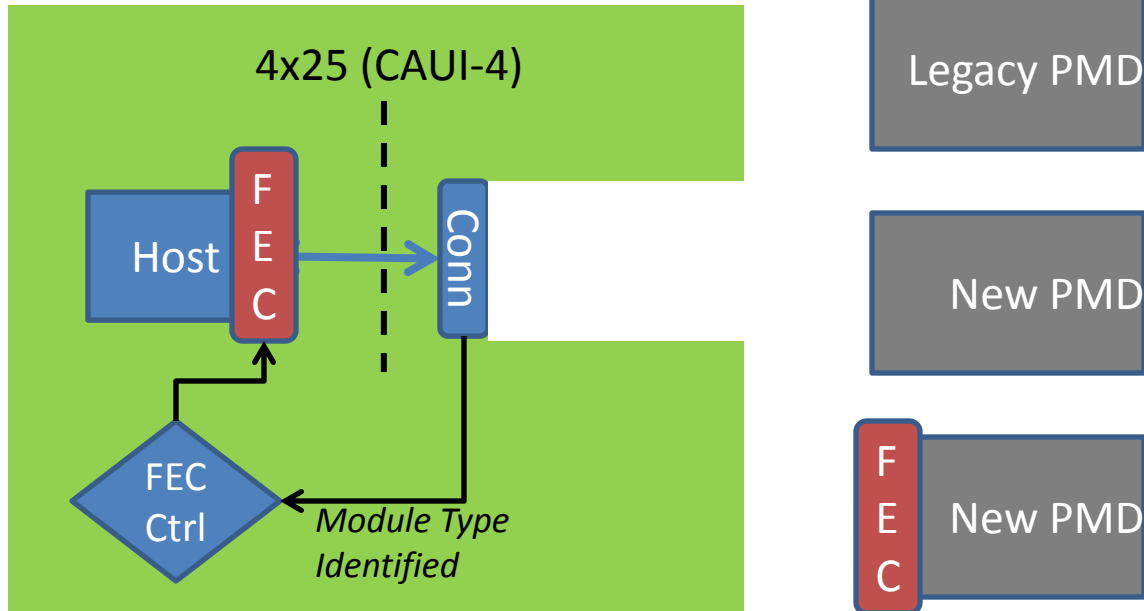
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Next Gen Host: No FEC on Host



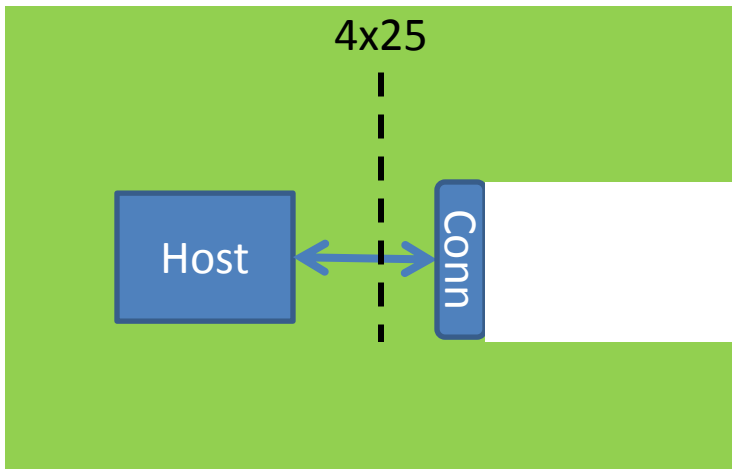
- Next Gen host w/ no FEC means
 - Host platforms that are expected to launch after completion of project
 - Assume higher density form factors and higher throughput host platforms
 - Different electrical interface could be assumed...

Next Gen Host: FEC on Host



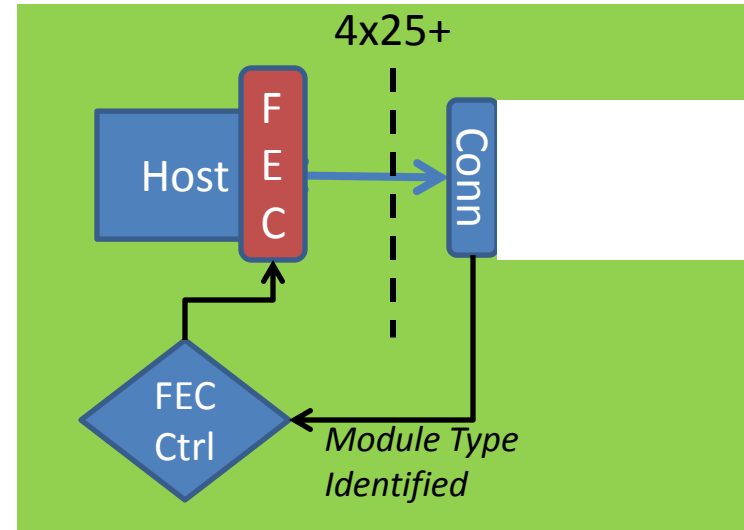
- Next Gen host w/ FEC means
 - Host platforms that are expected to launch after completion of project
 - Assume higher density form factors and higher throughput host platforms
 - Host platform enables/disables FEC based upon module PMD type
 - If New PMD module contains FEC, then there must be a mechanism to insure that only one of the FEC blocks is enabled

Next Gen Host: Where do we put FEC?



FEC in module (if required)

- Only burdened if necessary
- FEC control embedded in module
- Influence power for module w/ FEC
- Single rate electrical i/o
- Cost for module



FEC on host (enabled if required)

- FEC cost/power always embedded
- FEC control complexity
- Influence power for module
- Dual Rate electrical i/o required
- Cost for module

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