100G-DR Use Cases & End User Perspective

Tom Issenhuth

Brad Booth

Supporters

- Yuval Bachar - Linkedin

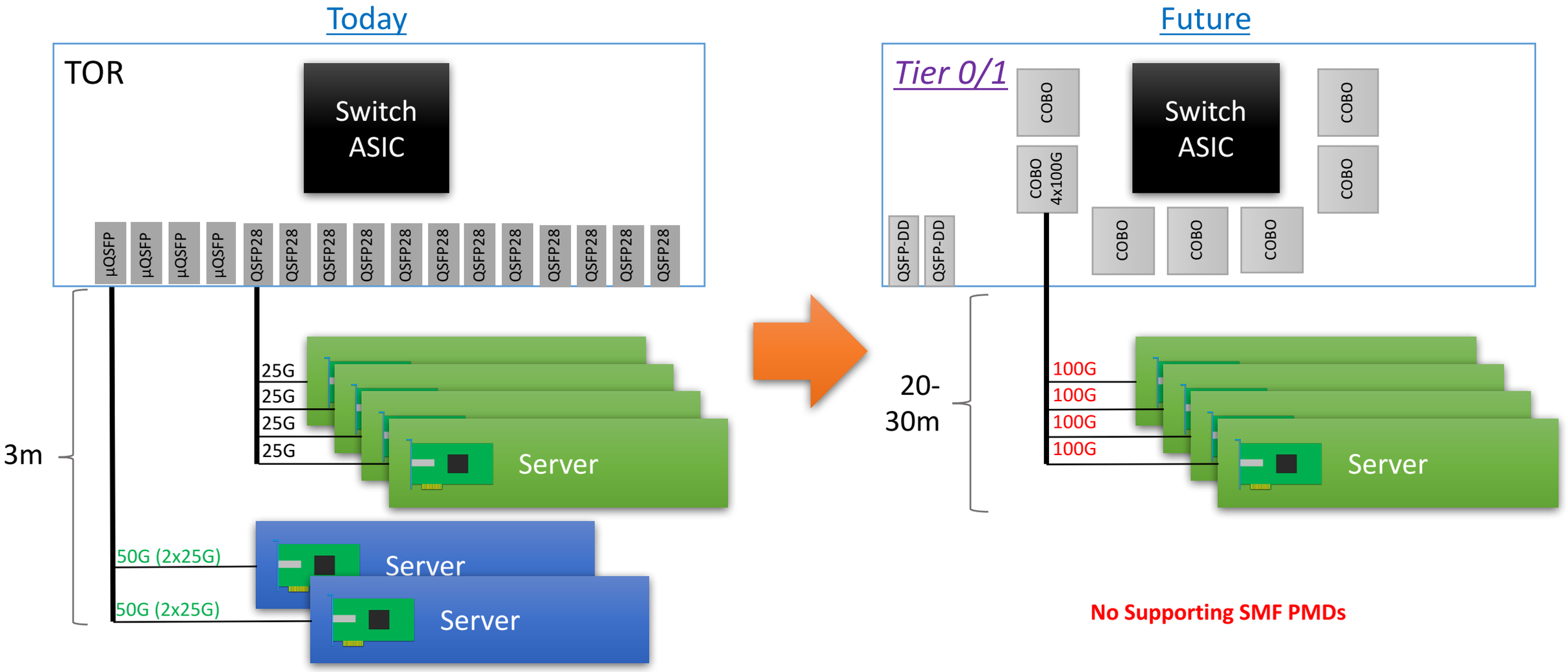
Terminology

- <n>G Ethernet refers to MAC-to-MAC data rate
  - 10G Ethernet implies that the MACs at each end of the link are operating at 10 Gb/s
- <n>G module refers to the maximum bandwidth capability of a module
  - 40G module may support 40G Ethernet and 4x10G Ethernet

400G PSM modules in datacenters

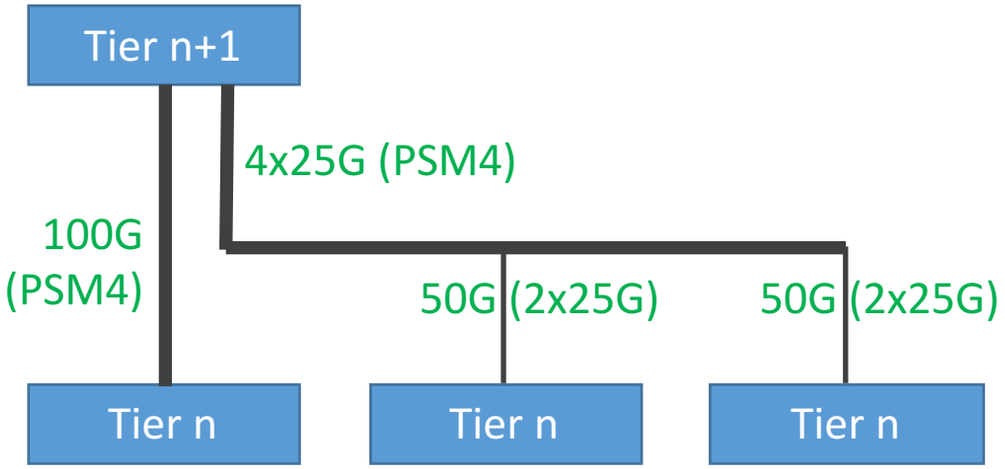
- PSM optical modules satisfy two distinct use cases
  - Trunk: 400G Ethernet to 400G Ethernet
  - Breakout: 4x100G Ethernet to 4x100G Ethernet
- Breakout is a key use case
  - Occurred with 40G modules being used as 4x10G Ethernet
  - While we do not explicitly state breakout in the objectives, Task Force(s) repeatedly “do the right thing”
- At this time we do not have a solution supporting 400G breakout
  - 400G-DR4 will support the trunk use case
  - 100G-DR needs to be developed to support the breakout use case

Breakout Use Case - Servers

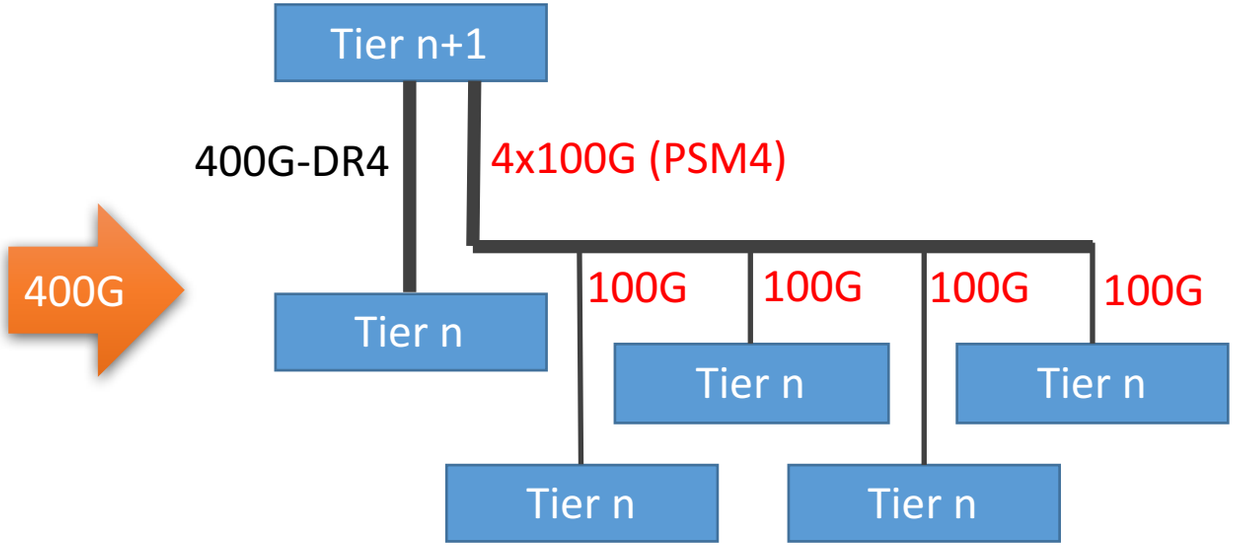


Breakout Use Case – Tier to Tier

Today



Future



Consortium/MSA

No Supporting SMF PMDs

Why 100G serial

- Serial optical links have historical driven to be the lowest cost solution
- 100G-DR provides a next generation solution for 100G point-to-point
- Leverages the 100G serial ecosystem being developed for 400G-DR4 solutions
- Capitalize on work being done in the OIF and the industry on 100G serial technology
- Provides insight to the best path forward for future Ethernet speeds and reaches

Why IEEE 802.3

- 802.3 100G SMF family is very limited
  - 100GBASE-LR4
- MSAs are providing the vast majority of 100G SMF PMDs
  - CWDM4, CLR4, PSM4, etc.
- 802.3 is advancing technology and leading the way with 400G-DR4
- 802.3 should start leading the way again with 100G-DR
  - Provides stepping stone to bring market relevant specifications back into 802.3
  - Expect MSAs will step forward to provide DR solutions if the 802.3 does not adopt a DR objective
  - Expect MSAs to provide intermediate 2-lane variants

Recommendation

- Adopt 100G-DR as an objective for operation over SMF with lengths up to at least 500m
- Remove the two-lane 100Gb/s PHY for operation over SMF with lengths up to at least 500m objective
- Modify the CSD as required to support the new objective