

The Missing Objectives

Brad Booth

Azure Networking, Microsoft

Supporters

- Tom Issenhuth, Microsoft
- Derek Cassidy, BT
- Rob Stone, Broadcom
- Eric Baden, Broadcom
- Qing Xu, Belden
- Scott Kipp, Brocade

Objectives and Lane Rates

Application	50G	100G	200G	400G
Backplane	Y	Y (4x25,2x50)	Y (4x50)	N
Twinax	Y	Y (4x25,2x50)	Y (4x50)	N
100m MMF	Y	Y (10x10,4x25,2x50)	Y (4x50)	Y (16x25)
500m PSM	N	N	Y (4x50)	Y (4x100)
2km SMF	Y	N	Y (4x50)	Y (8x50)
10km SMF	Y	Y (4x25)	Y (4x50)	Y (8x50)

P802.3cd adds
50G variants

P802.3bs

No IEEE Standards
Or Objectives!!!

Topologies

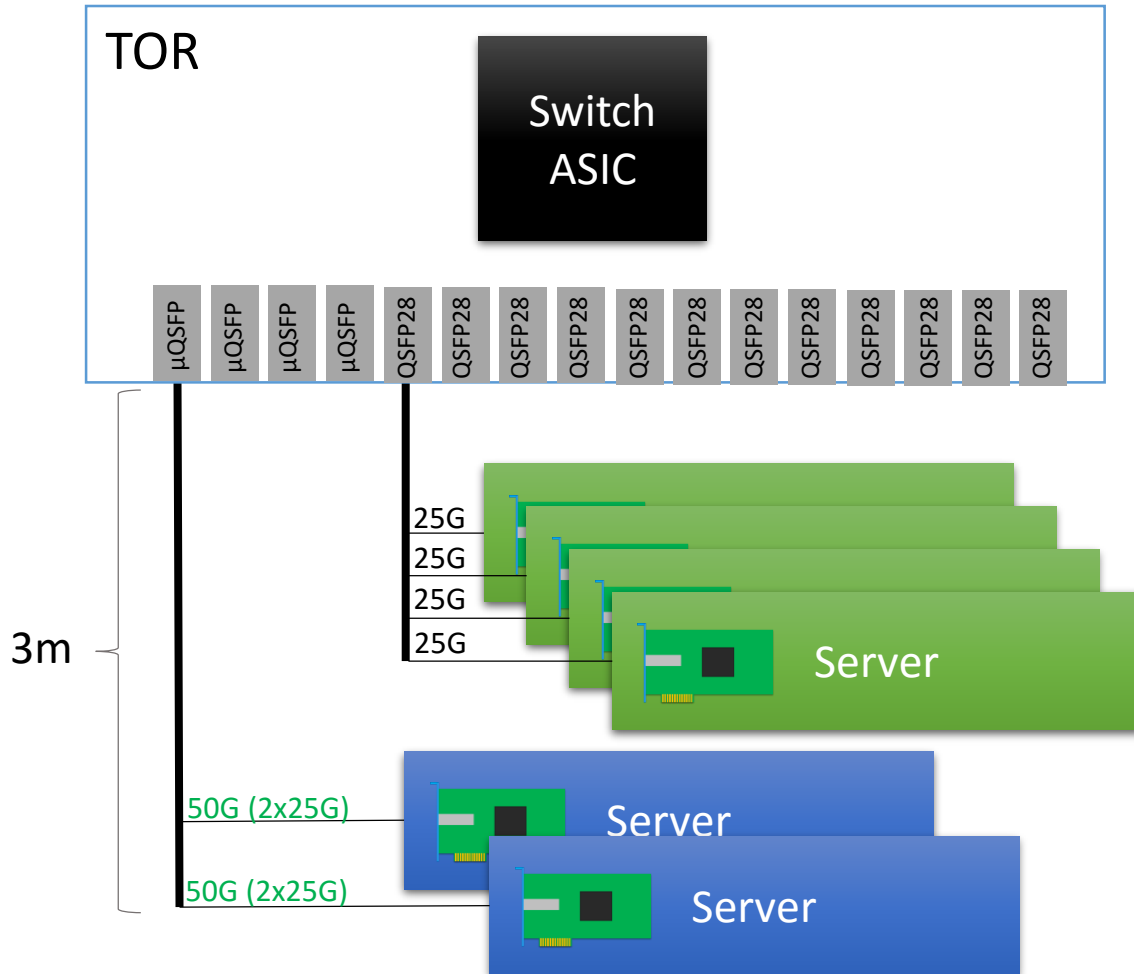
- Broad range of topologies in data centers
- 25G technology today provides the capability for 25G, 50G and 100G within the network
 - Server links can operate at 10G, 25G or 50G
 - Core and fabric can operate at 50G or 100G
- 50G technology of the future
 - Enterprise (brownfield) likely to require support for 25G & 50G coexistence
 - Server links can growth to be 25G, 50G or 100G
 - Core and fabric move to be 100G or 400G

Assumptions

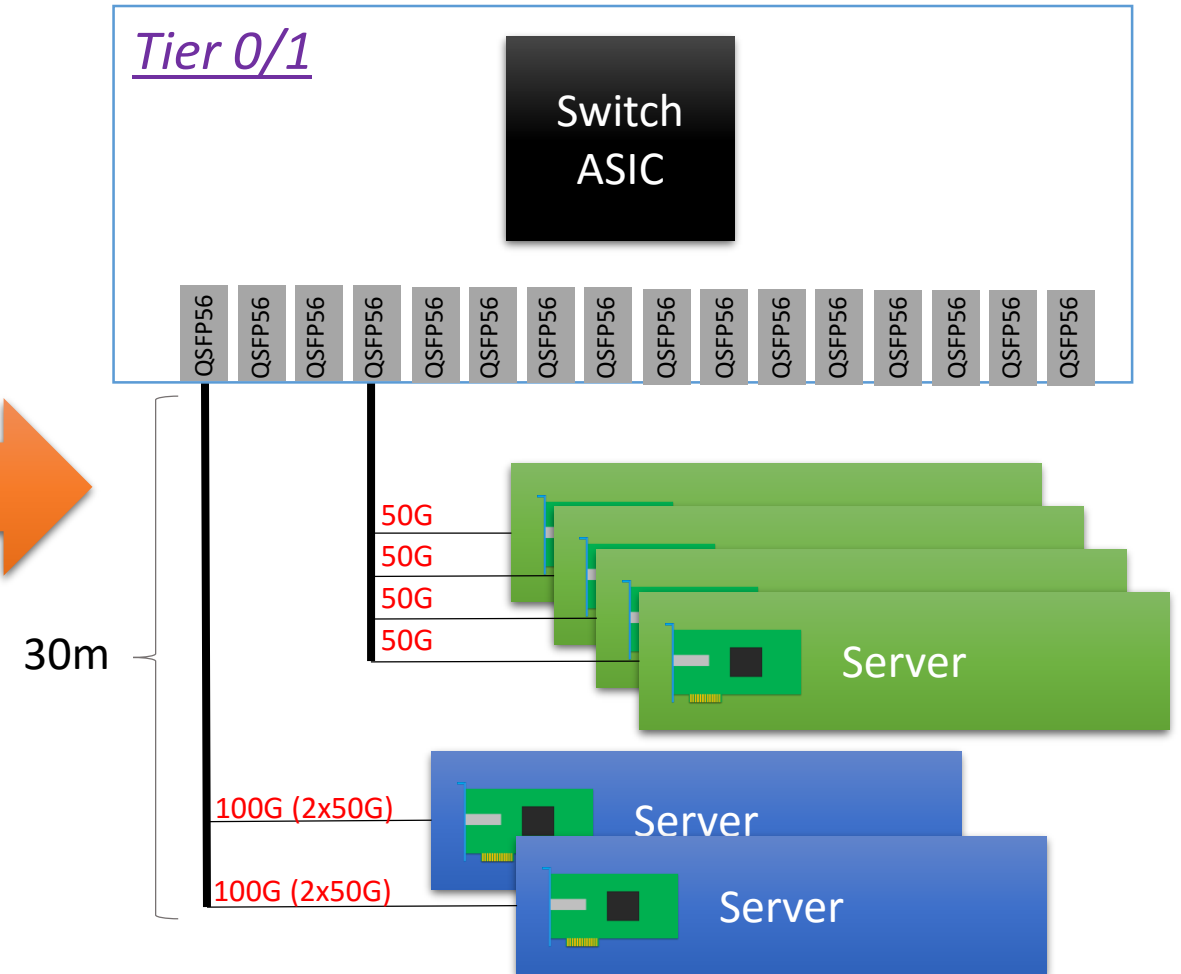
- DAC
 - Strong assumption in .3 DAC only exist between server and TOR (Tier 0)
 - Module form factors permit multiple implementation scenarios
 - Avoid assuming server-TOR links only use DAC
- Break-out
 - Strong assumption in .3 that break-out is only used to the server
 - End users are using break-out for the core/fabric portion of their network
- Decoupling
 - Many end users see 200G module as supplying two links of 100GbE
 - MAC and PHY/PMD rates are often decoupled

Example: Server Transition – 50G family

Today

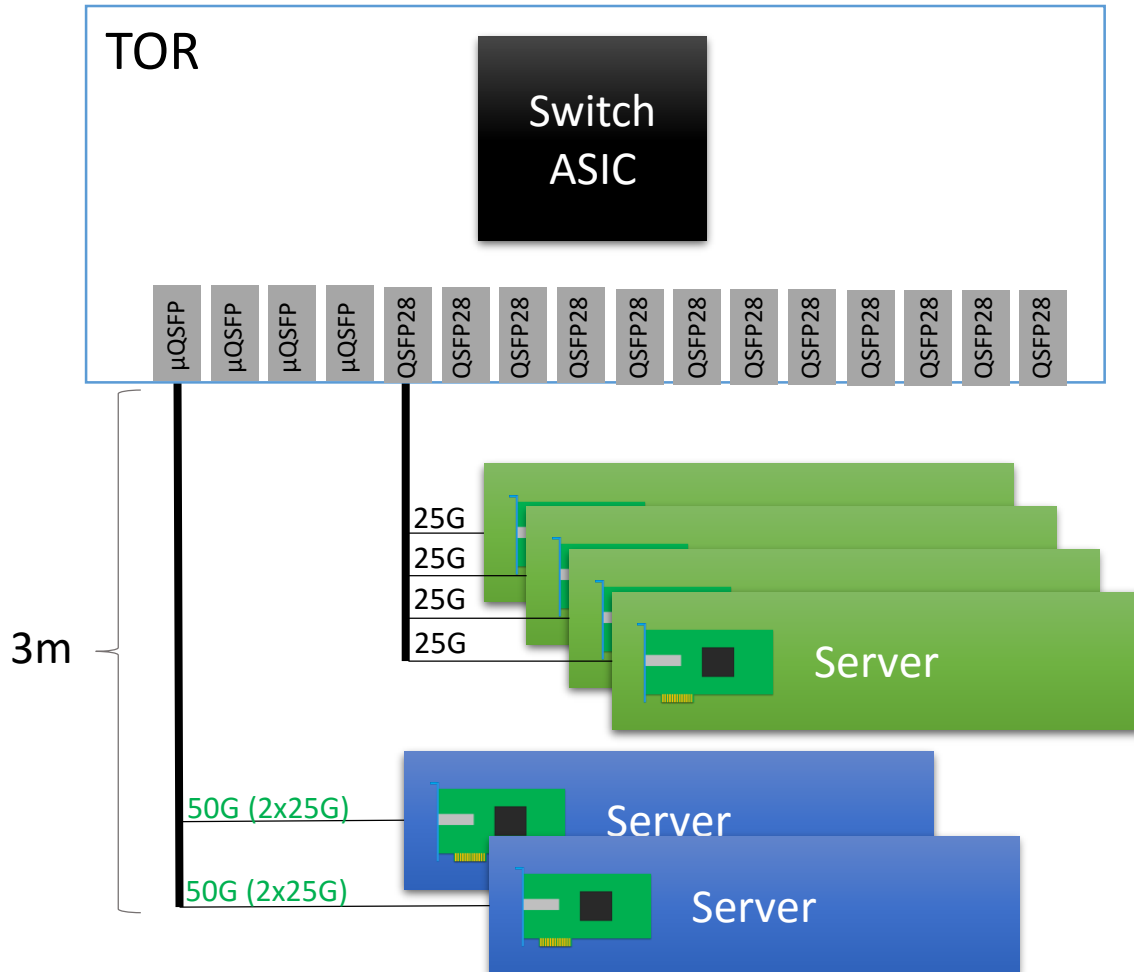


Future

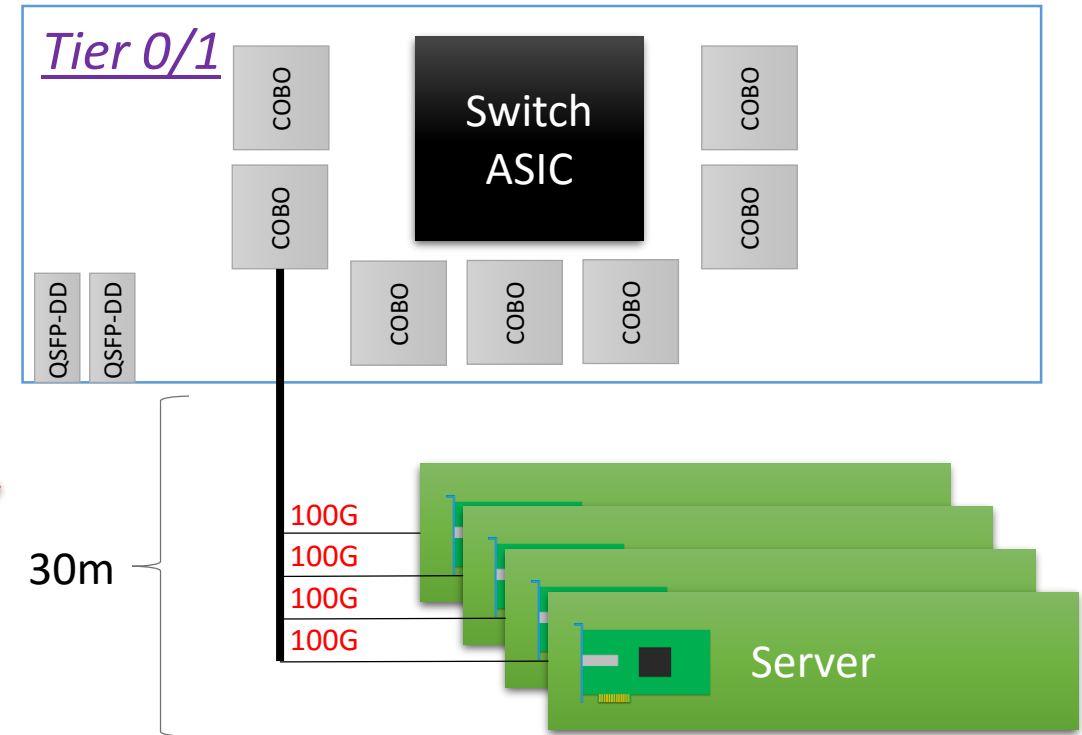


Example: Server Transition – 100G family

Today



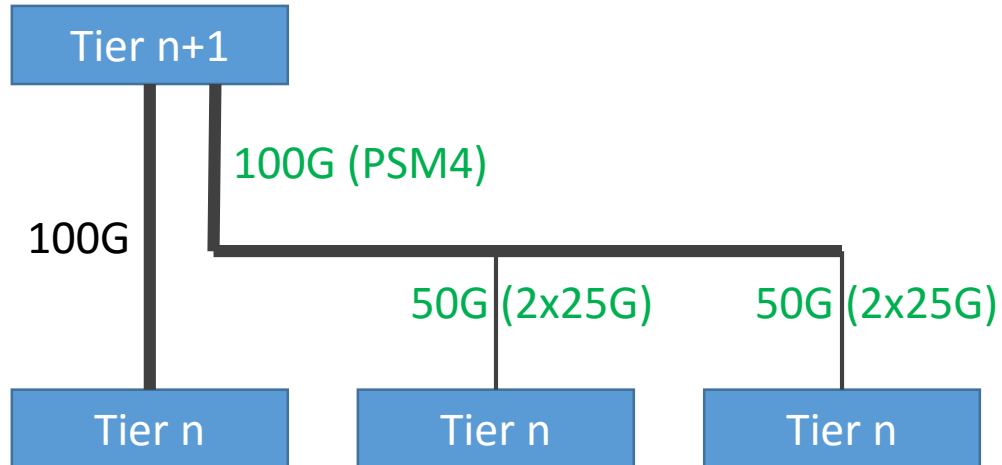
Future



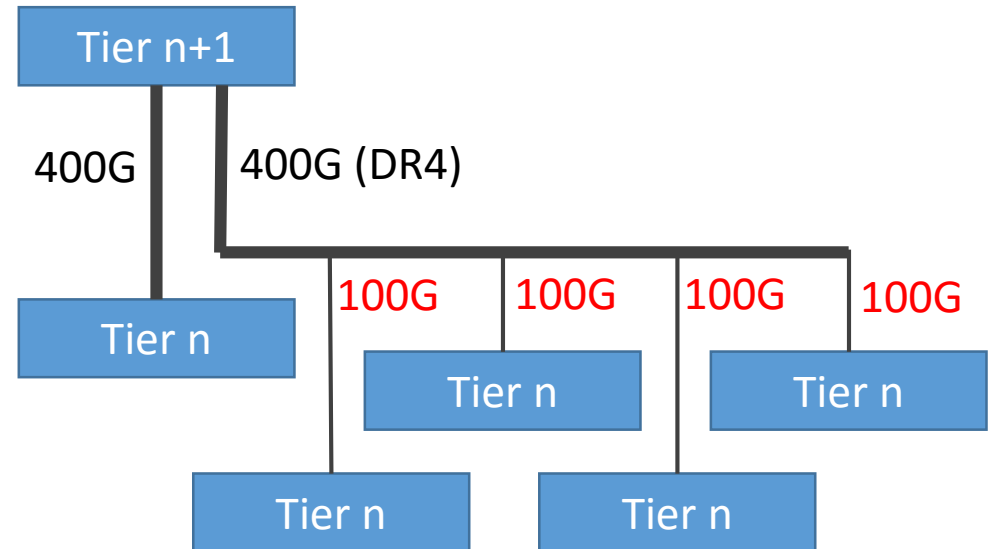
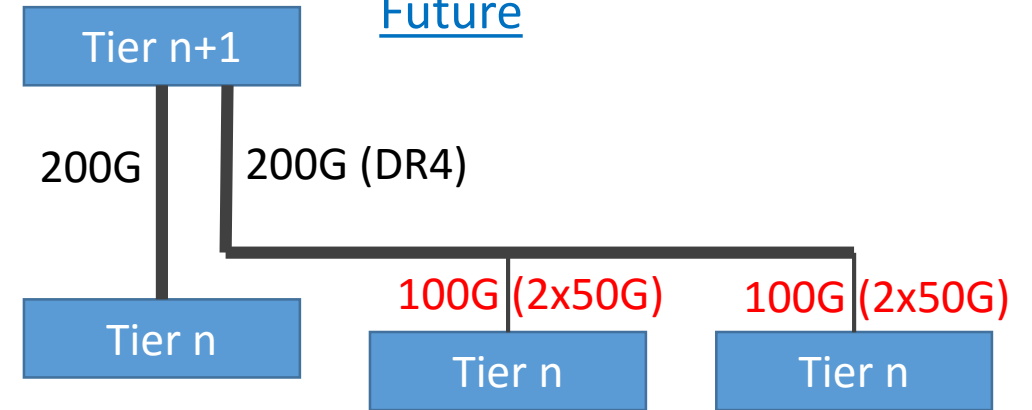
No Supporting SMF PMDs

Example: Core/Fabric Transition – PSM

Today

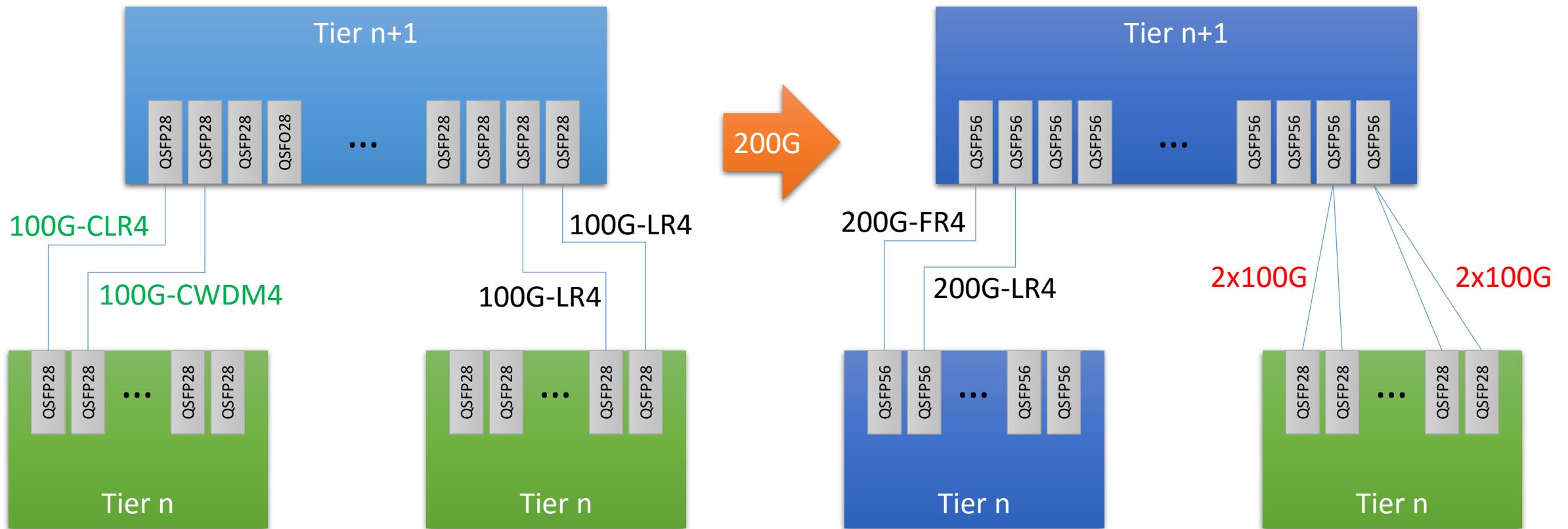


Future



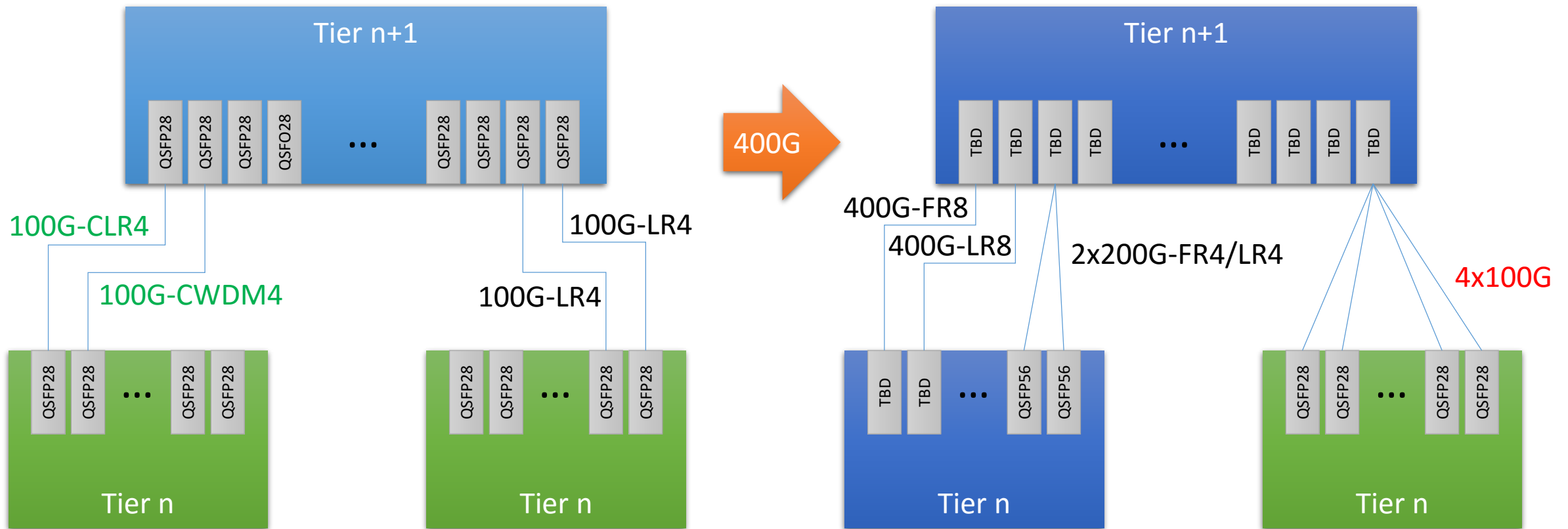
Consortium/MSA
No Supporting SMF PMDs

Example: Core/Fabric Transition – WDM



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End Users are expecting these PMDs for their datacenters

Compatibility and interoperability are critical!!

Recommendation

- Additional PMDs would fill the gap with an Ethernet standard
 - A 500m 50G PMD would provide the ability to do the following:
 - Consider optimization of the three reaches/applications spaces
 - Ensure cost-effective break-out with the PSM variant (200G-DR4)
 - SMF 100G PMDs provide server and fabric break-out capabilities
 - 100G infrastructure is being built out based upon MSAs
 - 2x50G and 1x100G are important to provide standardized break-out capabilities
 - Enable compliance for Enterprise (brownfield) 25G to 50G mapping
- Standards provide compliance and interoperability test points
 - Maximize implementations through standards
 - End users really don't like multiple MSAs – slows market adoption

Recommended Objectives

- Provide physical layer specifications which provide support for 100 Gb/s operation over:
 - At least 500 meters on two-lanes of SMF
 - At least 500 meters on one-lane of SMF
 - At least 2 kilometers of SMF
- Provide physical layer specifications which provide support for 50 Gb/s operation over at least 500 meters of SMF

Thank You