

200G-PSM4/DR4 Broad Market Potential

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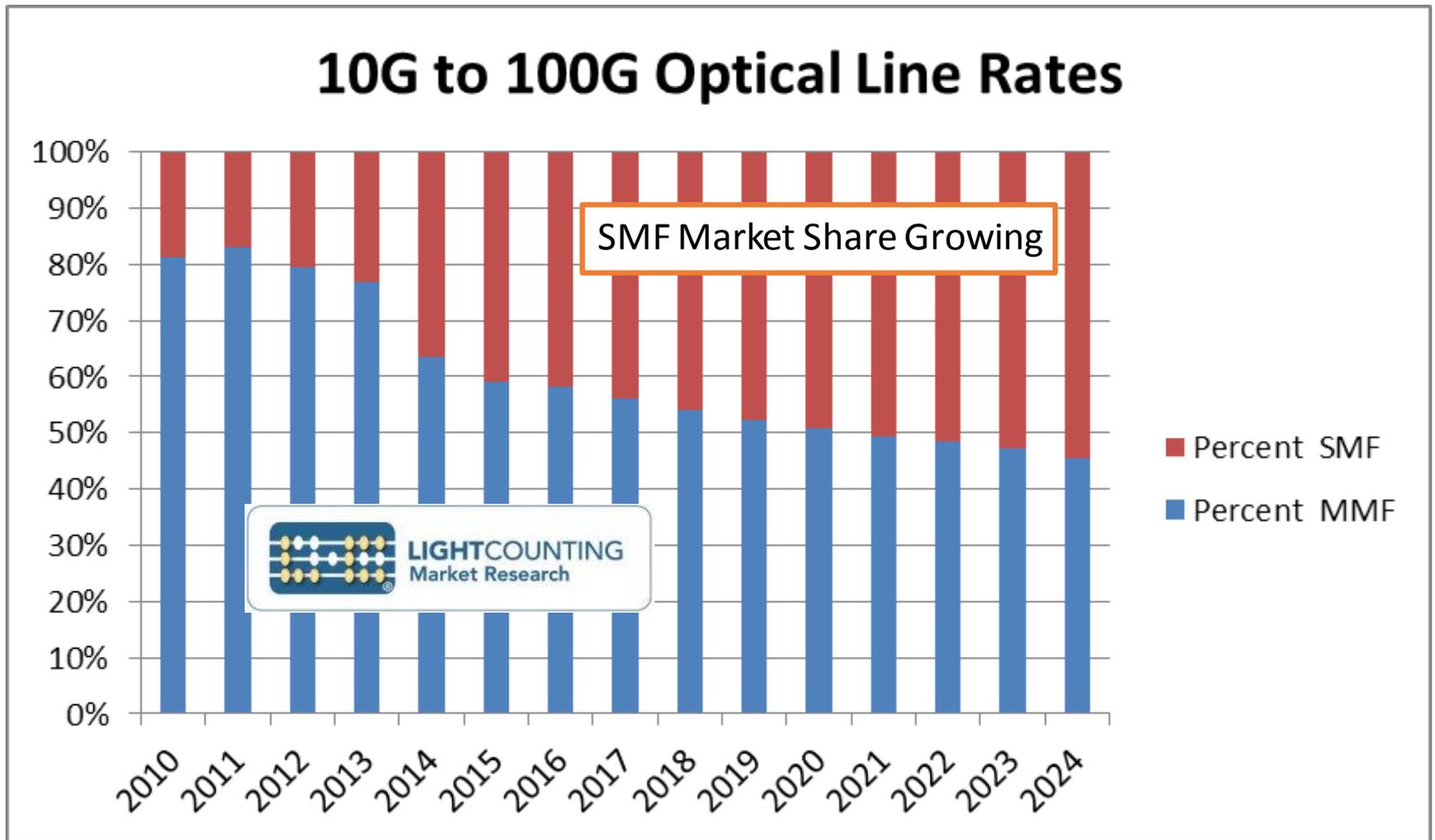
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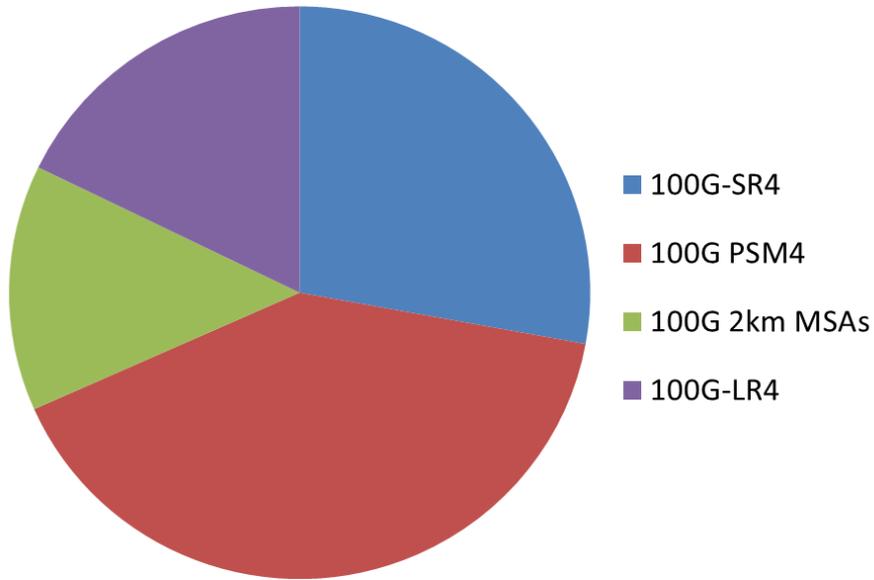
- Share of SMF is growing vs. MMF
- 100G-PSM4 Interconnects are a considerable volume compared to other 100G Ethernet reaches
- 200G-PSM4/DR4 fits well in a 40G-100G-400G evolution of PSM4 interconnects
- 200G-PSM4/DR4 may extend the lifespan of the QSFP from factor

Market Share by Medium

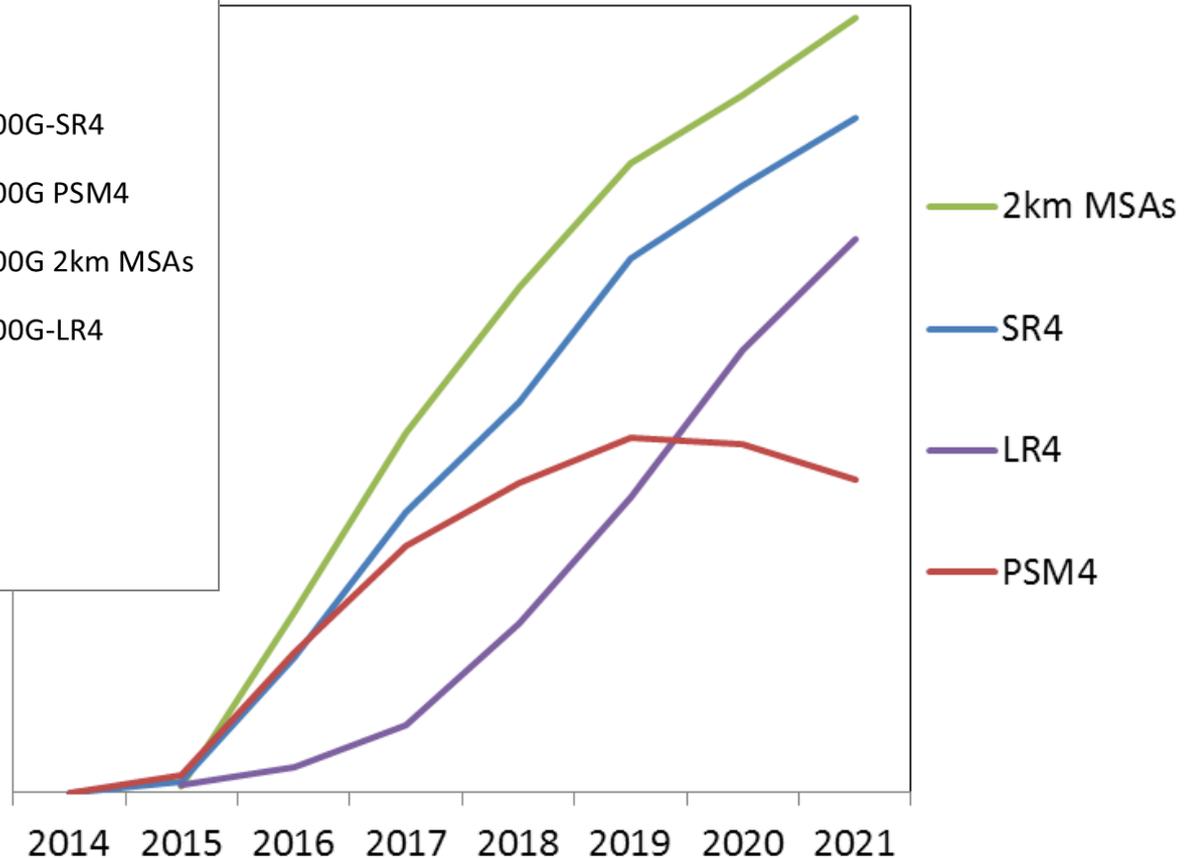


100G Market Share by Type

2015 Unit Shipments for 100GbE

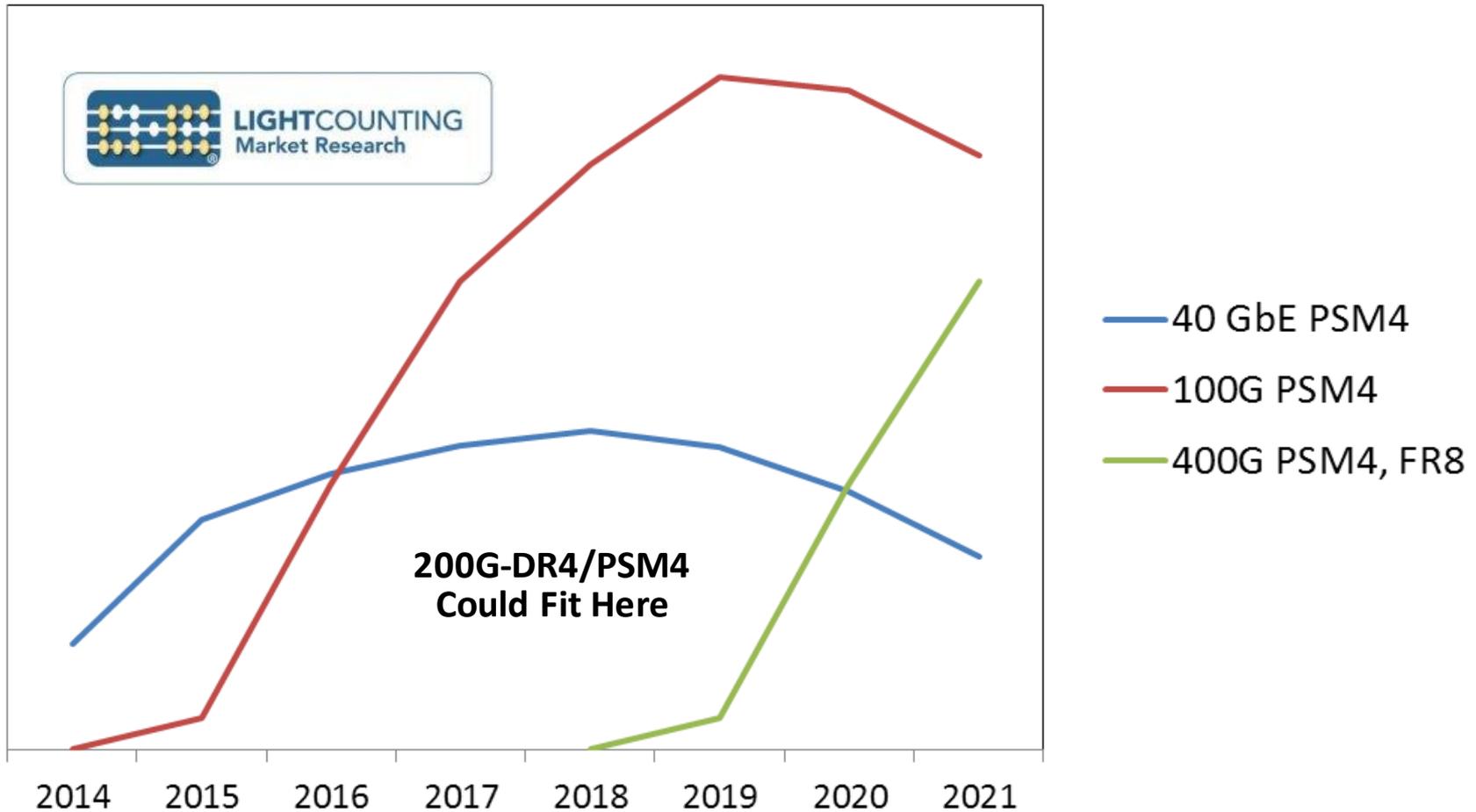


100GbE QSFP28 Unit Shipments by Reach



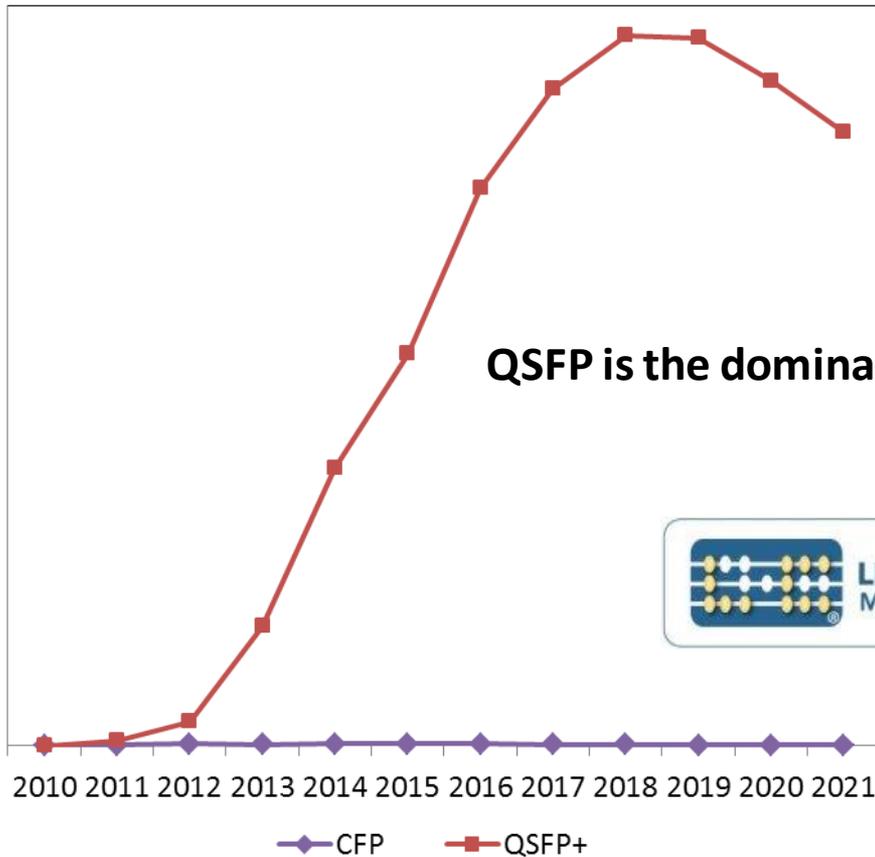
PSM4 Market Share by Rate

PSM4 Shipments by Rate

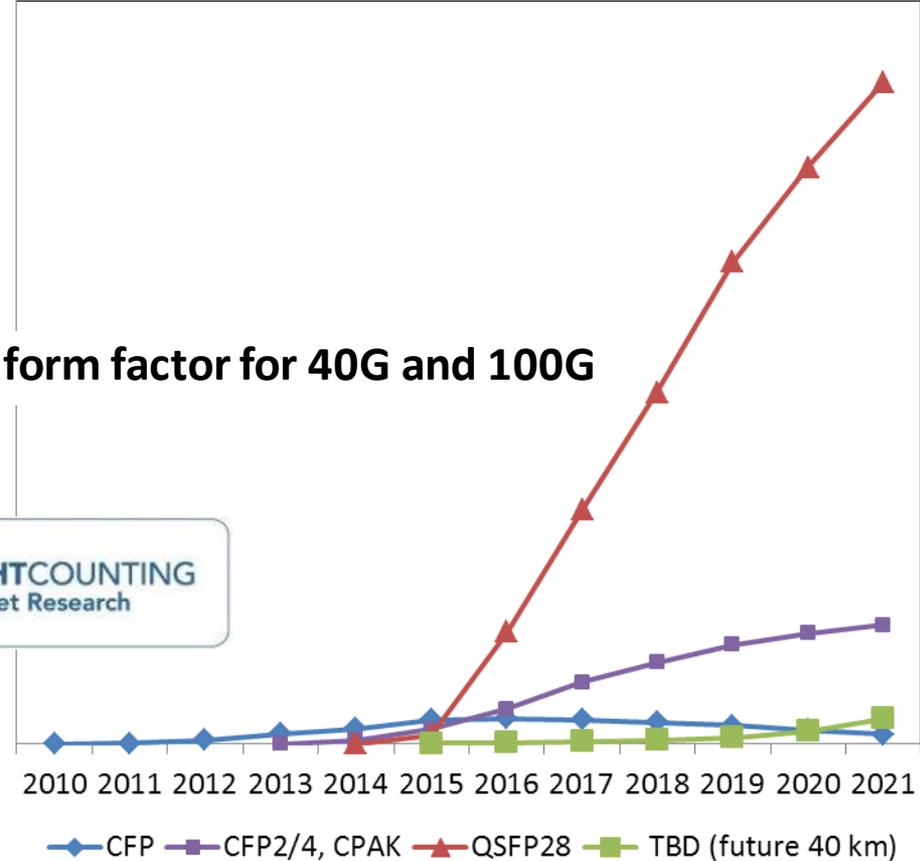


Market Share by Form Factor

40GE



100GE



QSFP is the dominant form factor for 40G and 100G



Observations

- SMF share of optical interconnects accounts for > 50% of the market
 - Expected to cross 60% by 2019
 - Supported by the move to “all SMF DC” seen by many hyperscale DC operators
 - Supports the need for more targeted SMF standards
- 100G-PSM4 market share is considerable when compared to other 100G Ethernet reaches
 - Comparable volumes in early deployment
 - Approximately 60-70% the annual volume of 2km and 100m reaches after three years
- Deployment of 200G-PSM4/DR4 could fit well between 100G and 400G
 - Approximately 2 year cadence from 40G to 100G
 - Current market projections show a 3-4 year cadence from 100G to 400G
- 200G-PSM4/DR4 could extend the lifespan of QSFP
 - And enable a common port type with a prospective 200G-SR4 solution

Additional Considerations

- 200G-PSM4/DR4 could leverage work done for 50G-FR
 - This is easier (more likely) with a standard than a 200G-PSM4 MSA
- 200G-PSM4/DR4 product could see additional volumes with 4x50G modes of operation
 - Expanded link budget (4x50G-FR) for breakout over long reach
 - Reduced link budget for breakout over short reach
 - Ie, Intra-row server to switch interconnects
- 200G-PSM4/DR4 product could be backward compatible with a 100G-PSM4 mode of operation
 - Operating in PAM2/NRZ mode