IEEE 802.3 Opening Report
Call-for-Interest
Next-gen 200G & 400G PHYs for MMF

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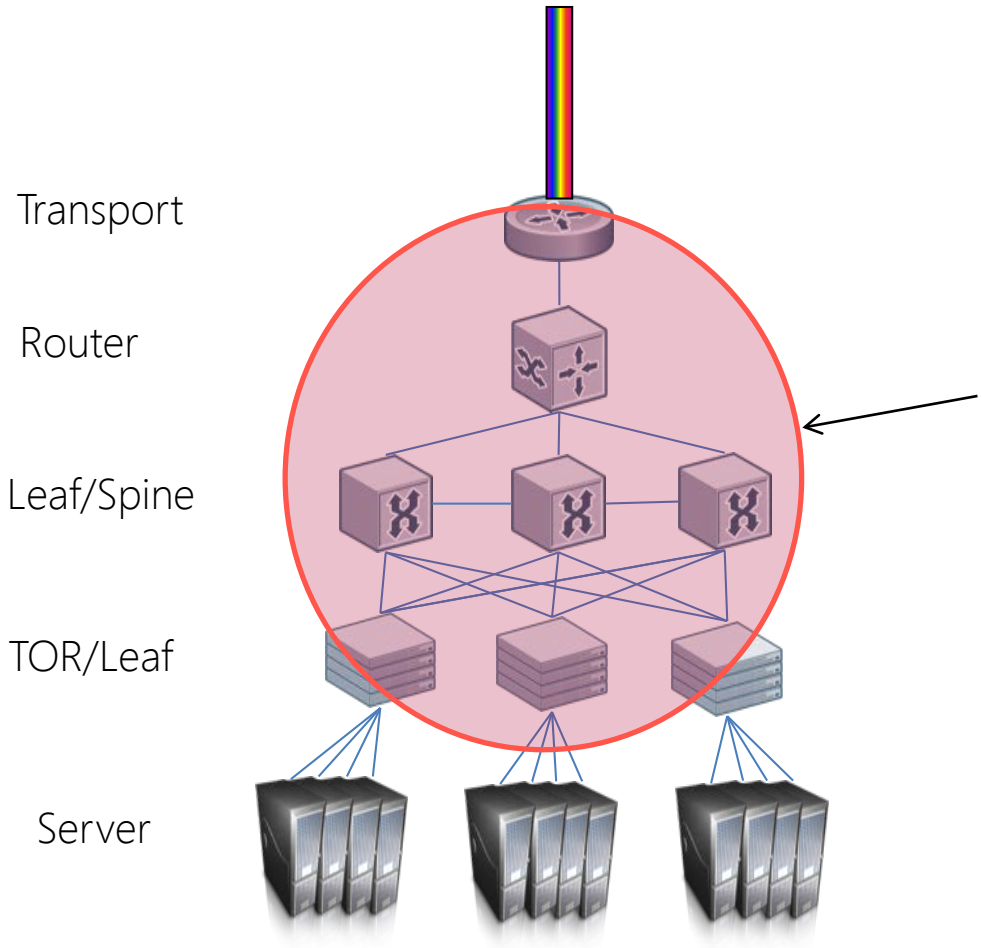
What are we talking about?

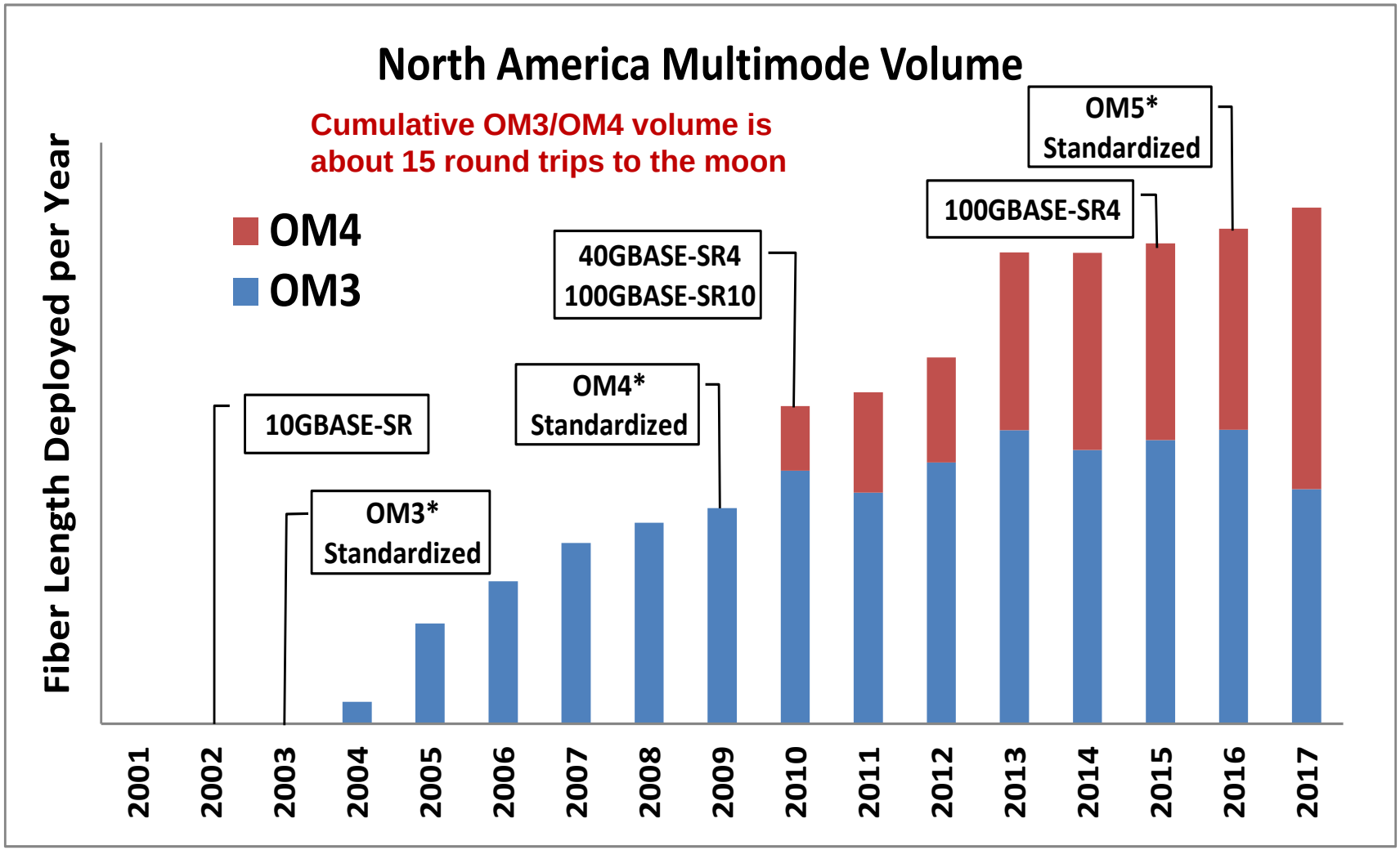


Applications for early adoption of next-generation MMF PMDs include connectivity in web2.0 and *largest* enterprise data centers for

- **switch-to-switch**
- switch-to-router
- router-to-transport

Other applications may arise later when the broad enterprise market needs higher speeds

There is a large installed base of both OM3 & OM4 MMF in parallel & duplex cable in datacenters, and MMF cable continues to be deployed at a healthy pace

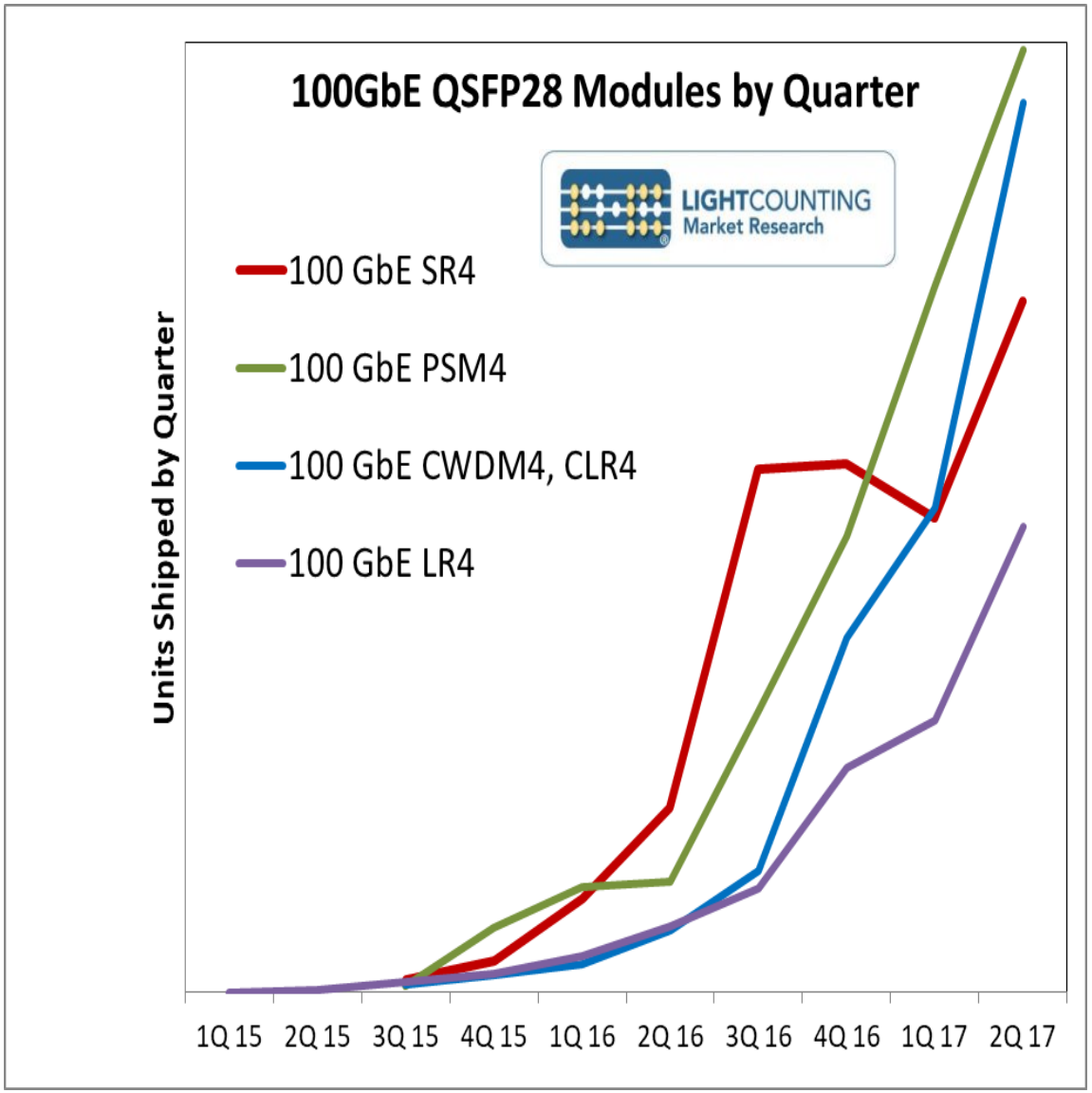


* Dates are ANSI/TIA standardization dates, not ISO/IEC

2017 estimated by annualizing 1H17 volume

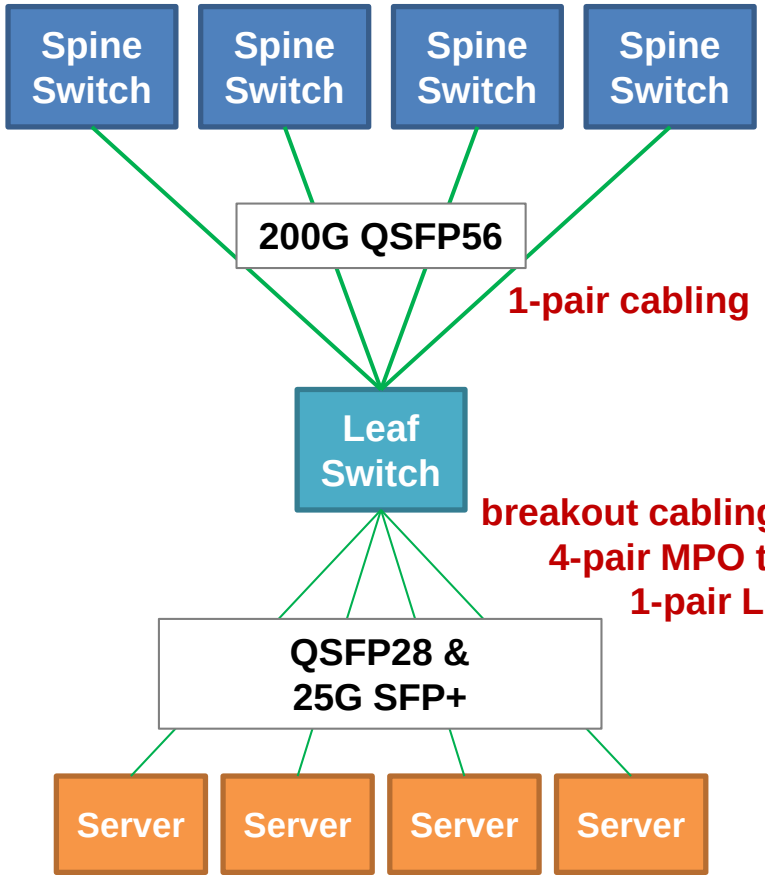
Used with permission: Matthew Burroughs North America Multimode Reports

100GBASE-SR4 in QSFP28 was required by web2.0 and largest enterprise data centers as soon as 100G switches entered the market



- Modules for MMF cabling had largest share of units shipped in 2016
- LightCounting predicts strong growth for all four module types.
- MMF is not dead!
- Deployment of 4-pair 100G links today suggests need for an upgrade path to 400G

There is a need to support multiple generations of uplink rates on duplex MMF cabling, driven by server & uplink speed evolution in large enterprise datacenters



Generation 3 Example

Generation	Server Rate	Uplink Rate
1 → 2	10G	40G → 100G
3	25G	200G
4	50G	400G

The same MMF cabling infrastructure can serve multiple generations using primarily duplex connectivity

"The ability to support 100, 200 and 400G over a duplex multi-mode optical fiber path at data center useful distances would be of considerable value."

Large Enterprise DC Architect

Call-for-Interest: Next-gen 200G & 400G PHYs for MMF

- Links comprising multimode fiber cable and VCSEL-based transceivers have played a key role in implementing 40 Gb/s and 100 Gb/s Ethernet in data centers for short reach. The continual growth of bandwidth demand has driven evolution of higher Ethernet speeds, most recently with 200 Gb/s and 400 Gb/s Ethernet, as demonstrated by related IEEE 802.3 projects over the past 4 years. To better support the installed base of MMF cables and to reduce the relative cost of short reach links, we request a call for interest to assess support for a Study Group to develop the PAR and CSD for next-generation 200 Gb/s and 400 Gb/s PHYs over fewer MMF pairs than in existing Ethernet projects and standards.