Intel & Arista lead Formation of 100G CRL4 Alliance to Form Specifications for 2km CWDM optical transceivers.

On April 1st, Intel announced the formation of the 100G CRL4 Alliance to form an open, optical specification for 100Gbs optical transceivers.

Intel created the 100G CLR4 Alliance because several of Intel's customers requested help in developing an industry standard to address several missing and much needed features for optical transceivers designed specifically to meet the product requirements for the next‐generation data centers.

The 100G CLR4 Alliance's mission is to create an open, multi‐vendor specification for a cost‐effective, low power, 100Gbps, CWDM optical transceiver with a reach of up to 2km over duplex single‐mode fiber and duplex LC optical connectors.

RATIONALE

In the past, optical transceivers have traditionally been used and designed for the telecom infrastructure. Now, with the advent of large and hyper‐scale data centers becoming very popular, the combinations of low power‐consumption, high port‐density, long reach, and low‐cost are now extremely important and data center operators want transceivers designed specifically to meet their requirements without any extra features or costs.

With cost, power consumption and space at the forefront in the minds of data center operators, CWDM, or Coarse Wavelength Division Multiplexing, offers the advantages of enabling using only two single‐mode fibers containing multiple wavelengths instead of multiple fibers per channel, and is the lowest cost, longest reach solution. Additionally, the QSFP28 offers the smallest and lowest power consuming 100G form factor at 3.5Watts maximum. These features are highly desired by switching companies as their systems will be built using 32‐36 QSFP ports in a 1RU switch system and as many as 256 QSFP ports in larger switching units.

What is the 100G CLR4 Alliance?
The Alliance will specifically focus on specifying optical transceiver specifications of:

- 4‑channels each running at 25Gbps; 100Gbps aggregate
- Using 1310nm wavelengths (same as 40G LR4)
- With 20nm CWDM wavelength spacing between channels (same as 40G LR4)
- Using single‑mode fibers
- Fiber reach for up to 2Km
- Duplex‑LC optical connectors
- With and without FEC enabled in the switch to support low‑latency applications
- Link budgets that include both traditional enterprise and new cloud data centers

Although, not part of the specification, ideally, data centers want the QSFP28 form factor and <3.5Watts power consumption.

Why is 100G CLR4 Needed?
Andy Bechtolsheim, CTO and Founder of Arista Networks, is very vocal about the situation saying,
"We are announcing our 100G next-generation switch today at Interop in Las Vegas (April 1st, 2014), and there are virtually no 100G QSFP28 optical transceivers available that meet the 3.5 Watt and 100m-to-2km reach requirements. For leaf/spine architectures, popular in big cloud systems, virtually all links are 300m-to-2km in length."
He also said, *"I fear that the current fragmentation of the 100m-2km optical transceiver space and slow development will stall the entire 100G industry forming in 2015 and the industry can not afford to wait any longer".*
The members of the IEEE 802.3.bm standards body were not able to agree on a singular technology standard for 500m 100G single-mode transceivers after 2+ years of review. Since then, several independent groups have formed their own standards effort around specific technologies leaving the market highly fragmented and not addressing the specific needs for the next-generation cloud, HPC enterprise and telecom data centers.

About the 100G CLR4 ALLIANCE
The Alliance is a standard setting effort open to all participants in semiconductors, transceivers, systems and end-users and is designed to create an industry standard around the specific product requirements for the next-generation data centers using 100G optical transceivers at 2km reaches. Unlike traditional Multi-Source Agreement (MSA) efforts, the Alliance formed does not require legal agreements, fees, intellectual property exchange or licensing or other restrictions in order to participate.

Mario Paniccia, Intel Fellow and GM of the Silicon Photonics Solutions Group commented*, "We are pleased to help the industry on developing an Open specification for this optical link. We were surprised at how strong of a response we received. In the span of only 2 weeks, 26 companies announced they would participate in the Alliance. The list continues to grow and includes big cloud system operators, switching system companies, and optical transceiver companies from majors to startups. Several supporters could not lend their public support in time for the announcement. The Alliance is open to all to participate in and is in line with the current "open" trends in the data center industry"*

ALLIANCE SUPPORTERS:
The current list of alliance supporters includes: Altera, Arista, Aurrion, Brocade, Ciena, ColorChip, Dell, Hitachi Metals, HP, Intel, Ebay, Fabrinet, Fujitsu, Huawei, Juniper, Kaiam, Macom, NeoPhotonics, Netronome, Oclaro, Oplink, Oracle, SAE Magnetics, Semtech, Source Photonics, TE Connectivity, VMWare, and 3Ality. New supporter are continually being added to the list.

In May and June, Intel will make available various drafts of the technical specifications, set up a website, email reflector and solicit comments from supporters to arrive at a common specification sometime in the early Summer of 2014.

The Alliance is open to adding more participants. To receive more information on participating in the Alliance, please contact us at: 100G.CLR4.Alliance@Gmail.com or Brad.A.Smith@Intel.com.