Infinera Sets Two Industry-First Milestones for Optical Transport Technologies

Sunnyvale, Calif., – October 19, 2017, 1:30 p.m. PDT – Infinera, the leading provider of Intelligent Transport Networks, achieved two industry-first milestones for advanced coherent technologies that increase the capacity and reach of optical transport networks to the next level. The first milestone drives optical transmission technologies to 100 gigabaud (GBaud), and the second milestone enhances modulation technology to 1024QAM (quadrature amplitude modulation). These new technologies are designed to deliver the highest possible capacity on a single wavelength for varied distances, helping operators extract the best performance from their optical transport networks.

“Infinera uniquely uses vertical optical integration to extract maximum performance from the optical transport network,” said Andrew Schmitt, Lead Analyst at Cignal AI. “The new levels of performance in baud rate and modulation schemes for terabit wavelengths exhibited at ECOC are a good example of how this approach can eventually result in production solutions with greater capacity and reach.”

Optical transport networks are a critical component of the global communications infrastructure, enabling cloud-based services to reach users around the world, and rely on three axes for increasing transmission performance:

- **Baud rate**: The rate at which modulation symbols are sent. The typical deployed baud rate is 32 GBaud with the quadrature phase shift keying modulation carrying 4 bits per baud, resulting in 100 gigabits per second of transmission. While industry opto-electronics are moving to 66 GBaud development demonstrations, Infinera is the first to showcase 100 GBaud using 32QAM to achieve a single-wavelength 1 terabit per second (Tb/s) data rate using multi-channel indium phosphide-based photonic integrated circuits (PICs) integrated with electronic driver and amplifier application-specific integrated circuits. This result was presented at the 2017 European Conference on Optical Communications (ECOC).
- **Modulation scheme**: Converts the bits to symbols. At ECOC, Infinera showcased the higher-order modulation scheme of 1024QAM using advanced constellation shaping algorithms and Nyquist subcarriers, allowing wavelengths to be spaced close to each other to maximize the data rate for a certain reach. The Infinera test bed used 66 GBaud at 1024QAM to reach 1.32 Tb/s, yielding spectral efficiency of 9.35 bits per second per hertz over 400 kilometers (km), an industry first.
- **Channel count**: Implements multiple parallel wavelengths on a single module to create a coherent super-channel. As baud rates increase, placing optical components closer together on an integrated chip reduces component size and power while increasing reliability.

Baud rate and modulation scheme have been addressed by the industry for some time, with Infinera now setting new milestones for each. Infinera’s PIC technology uniquely enables high-channel-count coherent super-channels. These innovative technologies indicate the next level of capacity and reach achievable in the years to come.

“Infinera is delivering optical engines at a faster cadence to help operators achieve exceptional capacity and reach performance on their transport network infrastructures,” said Dr. Dave Welch, Infinera Co-Founder and President. “As 5G wireless and cable video services take off, Infinera offers significant value to transport network operators by designing industry-first solutions.”

Additional Resources

- Blog: Infinera Makes (Terabit) Waves at ECOC 2017
- Technical paper: Multi-channel InP-based Coherent PICs with Hybrid Integrated SiGe Electronics Operating up to 100 GBd, 32QAM
- Technical paper: Constellation Shaped 66 GBd DP-1024QAM Transceiver with 400 km Transmission over Standard SMF

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About Infinera

Infinera (NASDAQ: INFN) provides Intelligent Transport Networks, enabling carriers, cloud operators, governments and enterprises to scale network bandwidth, accelerate service innovation and automate optical network operations. Infinera’s end-to-end packet-optical portfolio is designed for long-haul, subsea, data center interconnect and metro applications. Infinera’s unique large scale photonic integrated circuits enable innovative optical networking solutions for the most demanding networks. To learn more about Infinera visit www.infinera.com, follow us on Twitter @Infinera and read our latest blog posts at www.infinera.com/blog.

This press release contains forward-looking statements including, but not limited to the features and functionality of Infinera’s advanced coherent technologies as well as the economic and operational benefits such technologies may provide. These statements are not guarantees of results and should not be considered as an indication of future activity or future performance. Actual results may vary materially from these expectations as a result of various risks and uncertainties. Information about these risks and uncertainties, and other risks and uncertainties that affect Infinera’s business, is contained in the risk factors section and other sections of Infinera’s Quarterly Report on Form 10-Q for the quarter ended July 1, 2017 as filed with the SEC on August 8, 2017, as well subsequent reports filed with or furnished to the SEC. These reports are available on Infinera’s website at www.infinera.com and the SEC’s website at www.sec.gov. Infinera assumes no obligation to, and does not currently intend to, update any such forward-looking statements.

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