OIDA releases report on aggregation networks and data centers

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The Optoelectronics Industry Development Association (OIDA) today announced the release of a new report titled "OIDA Workshops on Metrics for Aggregation Networks and Data Centers" – a roadmap for optical communications, based on quantitative, system-level metrics.

The 100-page report is a follow up to a workshop on aggregation networks held in San Jose in October 2011 and a workshop on data centers held in Los Angeles in March 2012. Both workshops were a collaboration between the Optical Society (OSA), OIDA, the Center for Integrated Access Networks (CIAN), and the U.S. National Science Foundation (NSF). The objective of the effort was to formulate metrics that represent best practices for network operation. The report is intended to be used for planning of research requirements, standards-setting, funding decisions, and other industry-wide and government efforts.

"These networks face a huge scaling challenge as demand increases but economics and power consumption constrain the size," said the report's author Tom Hausken, senior engineering and applications advisor at OSA and former market analyst at Strategies Unlimited. "Data center operators, for example, need low power and inexpensive optics for the massive number of interconnections required for 'all-to-all' processing. This requires new solutions beyond what any one set of stakeholders can develop on its own. "

Among other metrics, the report suggests a target of less than one

picojoule per bit for link energy efficiency for board- and rack-level interconnects by 2022, an improvement of as much as 10 times over performance in the field today. While any single metric oversimplifies the complexity of real networks, the report says that this target most closely crystallizes the overall interconnect challenge faced by network operators. It also suggests that the next step could be to formulate and refine metrics by developing reference models for these networks.

Additionally, some of the subject areas covered in the report include the need for an industry-wide effort to address long term requirements such as the potential need for entirely new architectures, the limits economics and other practical constraints place on network costs and power consumption, the capacity scaling challenge—the ability to meet the growth in demand in capacity while maintaining the same cost and energy levels, and how aggregation of data will affect both data centers and networks in the future. The report includes qualitative insights from many leaders in the field and presents quantitative details that represent expected performance levels needed to meet the expanding demands for increased data handling. The report also includes charts and highlights from the presentations and discussions at the workshops.

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