

Ovum assesses methods to wring last drops of capacity from fiber networks

For immediate release

Melbourne, 4 March, 2014 - Ovum has released a new report “Technologies for Terabit Transport”. The analyst firm reports that the vendor and carrier trial activity in 400G and 1 Terabit systems jumped up in the second half of 2013, even as the commercial market for 100G ramps. But 400G+ capabilities on the market today heavily leverage 100G technology, bundling 100G or 200G channels into “superchannels.” Ovum warns of significant risk that transport costs will rise beyond these speeds due to unprecedented uncertainty about the technical roadmap.

- The continuous capacity scaling of the past two decades is coming to an end, with no guarantee of continued plentiful and cheap bandwidth. High-speed optical transmission is approaching a hard physics-imposed barrier called the nonlinear Shannon limit. As it becomes harder--and finally impossible--to increase the capacity per fiber, more fibers must be lit at great cost.
- The effects of physics are already being felt in long-haul as systems at 400G and beyond must trade off reach for channel capacity.
- Ovum notes that metro is likely to become a greater pain point in future. Metro traffic rates are growing at roughly double the rate of long-haul and are likely to hit the nonlinear Shannon limit first.
- Researchers scrambling for a new technology curve that will provide another 100x increase in system capacity just as DWDM did in the early 1990s. Many vendors are exploring a direction called “spatial division multiplexing” or SDM that can increase the fiber capacity by using multiple cores, multiple modes, or both. Network operators are skeptical, concerned that the cost of SDM will be too high.
- The debate exposes how immature the technology is considering the urgent need. Coriant recently announced the first field experiment of SDM. Commercial systems could hit nonlinear Shannon wall in the 2018–21 time frame.
- In the meantime, Ovum expects to see a number of one-time measures brought to bear in an effort to extend the deadline a few years. These will provide interesting technology opportunities for vendors but do not address the long-term outlook.

Karen Liu, Principal Analyst Components Telecoms at Ovum, said: “Expect to hear more and more exotic-sounding jargon as technologists are forced to throw everything they have at squeezing the last bits of capacity out of a single fiber. We have been spoiled by two decades of continuous scaling in optical network capacity. Don't expect it to continue for free.”

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NOTES TO EDITORS

* Technologies for Terabit Transport: Scaling with superchannels and spatial division multiplexing

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ABOUT OVUM

Ovum provides clients with independent and objective analysis that enables them to make better business and technology decisions. Its research draws upon over 400,000 interviews each year with business and technology, telecoms and sourcing decision-makers, giving Ovum and its clients unparalleled insight, not only into business requirements but also the technology that organizations must support. Ovum is an Informa business.