



## The Rise of 100G & Terabit Transport Networks

### EXECUTIVE SUMMARY

The road to 100Gbit/s (100G) transport was a long one that began around 2006, just as the first commercial 40G networks were being deployed. It was also during that year that prominent AT&T Labs Vice President Simon Zelingher (now retired) made a passionate case for the need for 100G transport in his keynote address at *Light Reading's* Optical Expo conference in Dallas: "We will need 100 Gbit/s by the end of the decade," he stated. AT&T (along with Comcast) pioneered commercial 40G transport in 2006, and his comments were greeted with a great deal of skepticism by many. However, Zelingher's prediction proved amazingly accurate. The first commercial 100G cards were shipped at the end of 2009 (for Verizon, not AT&T), and the 100G commercial migration was set in motion in 2010.

In 2011, *Heavy Reading* published a report on the 100G evolution entitled [\*\*100Gbit/s Transport: Forecast & Analysis\*\*](#). At that time, 100G line rates and 100G Ethernet had been fully standardized, and 100G commercial deployments were just beginning, led by Ciena and Alcatel-Lucent. At that time, we concluded that 100G was being positioned as a "mass-market" backbone transport technology to ultimately replace 10G networks.

Also at that time, 40G transport was hitting its stride, with global deployments being led by Alcatel-Lucent, Ciena, Huawei, Cisco, Nokia Siemens Networks, Fujitsu and others. The transition away from 40G and toward 100G was being set up in early 2011, but the storyline had yet to play out. And although there were a couple of "hero" experiments surfacing at optical technical conferences, there had been very little discussion about the next bit rate beyond 100G. To many, such consideration seemed light years away.

Fast forward three years to the present, and progress in the optical industry has been rapid. 100G has risen to prominence in long-haul networks and, in terms of capacity shipped, has already overtaken 10G. 40G transport, which held promise just a couple of years ago, is now on a path of sharp decline as the capacity and cost-per-bit advantages of 100G cannot be matched. And the subject of "beyond 100G" (B100G) speeds, virtually non-existent in early 2011, is a key piece of any supplier/operator interactions on 100G. Operators need to know: How will you migrate to the next bit rate?

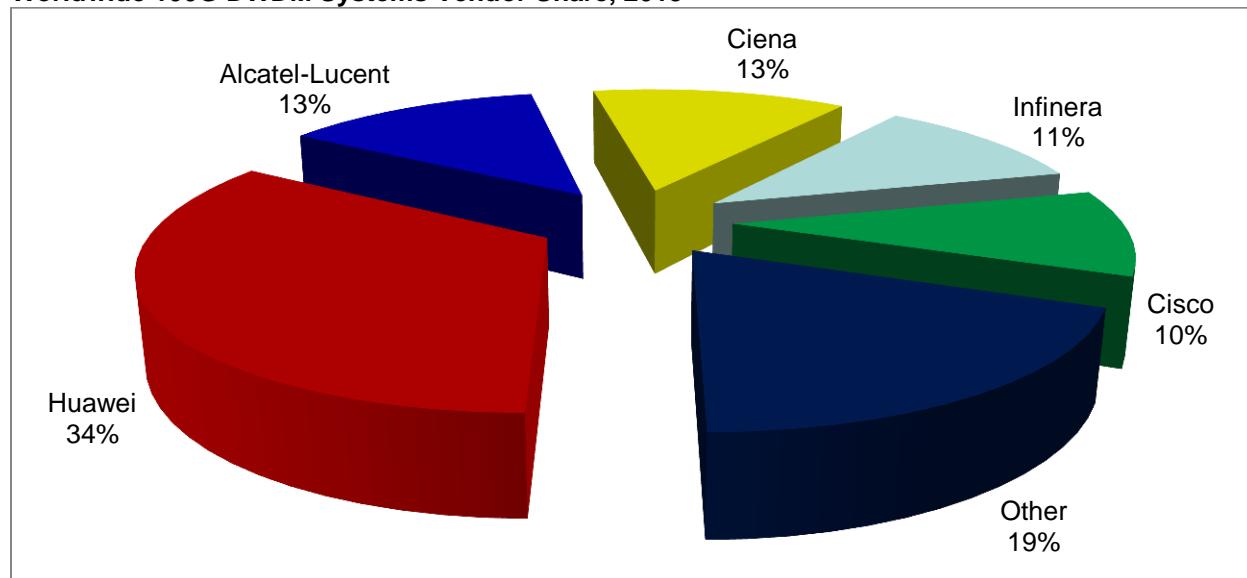
As 100G enters mass commercialization and B100G proceeds to trials, *Heavy Reading* takes a fresh, in-depth look at the near- and medium-term future of 100G transport and B100G. Understanding the trajectory of 100G and B100G is critical for the success of any DWDM systems or components supplier.

**The Rise of 100G & Terabit Transport Networks** tackles the challenges and opportunities of high-speed DWDM transport, in both long-haul and metro networks, looking at both 100G and B100G. The report presents comprehensive forecasts for long-haul and metro DWDM transport, with breakouts for units shipped, capacity shipped, revenue contribution by port speed and more. In addition, the report analyzes key enabling technologies for B100G and provides a roundup of significant B100G trial activity over the past year.

The report also profiles [10 leading optical systems vendors](#), detailing their products and strategies for 100G as well as for B100G.

Calculating market share is a difficult exercise, because there is not consistent reporting for 100G among the various suppliers. Still, *Heavy Reading* feels it is important to calculate some market share data to aid in understanding the market dynamics and the market players. Based on our calculations, Huawei was the leading 100G DWDM supplier in 2013 by a wide margin, capturing 34 percent of 100G systems revenue during the year, as shown in the excerpt below.

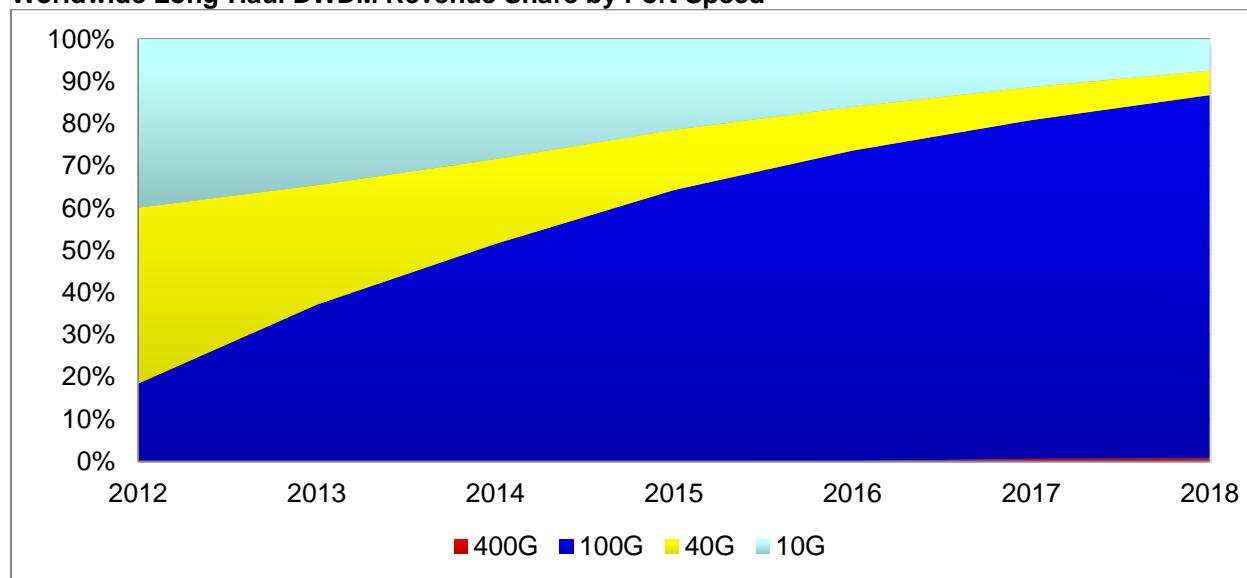
#### Worldwide 100G DWDM Systems Vendor Share, 2013



Source: *Heavy Reading*

*Heavy Reading* forecasts global long-haul DWDM revenue to increase from \$4.2 billion in 2013 to \$5.8 billion in 2018, representing a 6.6 percent CAGR over the forecast period. While overall revenue growth will be modest, there will be major swings in the individual port contributions: 10G and 40G will experience rapid declines, as 100G revenue rapidly rises to backbone dominance. The excerpt below breaks out *Heavy Reading*'s forecast for long-haul DWDM revenue share by port speed through 2018, illustrating the dramatic shift occurring in backbone line rates.

#### Worldwide Long-Haul DWDM Revenue Share by Port Speed



Source: *Heavy Reading*

## Report Scope & Structure

**The Rise of 100G & Terabit Transport Networks** is structured as follows:

**Section I** is an introduction to the report, with complete report key findings.

**Section II** provides a detailed market overview of 100G and B100G, including B100G standards activities and progress, major B100G trial activity to date, and IP traffic growth forecasts and transport network implications.

**Section III** focuses on technology enablers that are setting the stage for the terabit era. Some of these enablers – specifically, photonic integration and flexible OTN – have contributed greatly to the success of 100G as well.

**Section IV** provides a detailed forecast for the long-haul DWDM and metro DWDM market by revenue, line-side port shipments and capacity shipped by line rate. Forecasted line rates include 2.5G, 10G, 40G, 100G and 400G.

**Section V** profiles the major optical systems suppliers, detailing their products and strategies for 100G as well as for B100G.

**The Rise of 100G & Terabit Transport Networks** is published in PDF format.