



Fact Sheet

Nortel 100G Milestones

Nortel proudly introduces the world's first commercially available 100G solution, already deployed and carrying in-service customer traffic in Verizon's European network.

Nortel's coherent 100G solution, part of Nortel's 40G/100G Adaptive Optical Engine family of products, builds on groundbreaking technologies such as coherent detection, DP QPSK modulation, and advanced digital signal processing techniques, all of which Nortel is the first and only vendor to successfully commercialize to date. Already leveraging these technologies and available since May 2008, Nortel's 40G solution is currently depended upon by over 50 customers globally to deliver their critical traffic.

Operators can now increase the bandwidth of today's typical 10G networks fourfold and tenfold respectively through a simple "plug and play" installation over existing designs with little or no need for network re-engineering. Welcome to the easiest network upgrade from 10G to 40G and 100G!

Leading the Industry in Technology Innovation and High Capacity Transport

March 2008 - Comcast Conducts First Live 100G Network Trial with Nortel Optical Solution

In March 2008, Comcast and Nortel announced the world's first live 100G network trial during the 71st meeting of the Internet Engineering Task Force (IETF) conference hosted in Philadelphia. Nortel's 100G solution ran error-free for the full week of March 9th, and provided the high speed Internet connectivity for the 1,000+ engineers that attended the conference.

The 100G solution ran over Comcast's existing infrastructure which was also supporting a combination of high definition video, Internet and voice customer traffic on coexisting 10G and 40G 50GHz-spaced channels.

October 2008 - Verizon Field Trial with Nortel Equipment Achieves Better Tolerance for Signal Distortion than Standard 10G Transmission

Transporting data over 73km of field fibre in north-eastern Texas, the Verizon Business 100G trial using Nortel equipment demonstrated twice the



tolerance for signal distortion when compared with today's standard 10G systems. Nortel's 100G solution with its integrated advanced digital signal-processing techniques proved that it could maintain sustained signal integrity despite significant polarization mode dispersion (PMD) and operated without error over fibre that had in the past been limited to 2.5Gbps transmission. The trial demonstrated error-free 100G transmission for 107-ps instantaneous DGD in the field. The trial also verified the ability of the Nortel 40G and 100G equipment to monitor and accurately reflect fibre PMD values.

November 2008 - [Nortel 100G Carries Critical Network Traffic for SC08 Conference](#)

Nortel's 100G solution was used to carry critical network traffic for the SC conference, the annual international conference for high-performance computing, networking, storage and analysis that took place in Austin, Texas from November 15 to 21, 2008. Nortel's 100G equipment was utilized as part of SCinet, the high-performance network built to support the annual SC conference and provide wide area connectivity to remote research demonstrations around the globe. Nortel's 100G technology helped support the massive bandwidth that SC08's approximately 350 exhibitors needed to power their conference activities.

December 2008 - [Nortel Demonstrates 100GbE over single 100Gbps Wavelength](#)

In December 2008, in a world's first, Nortel demonstrated the capability to run 100GbE traffic over a single 100Gbps wavelength. For the demonstration, Nortel used a 100GbE client signal meeting the IEEE's proposed 100m physical layer specifications and transported the signal

error-free over 112Gbps over 800km of fibre using its innovative 100G Adaptive Optical Engine solution. [The demonstration is available on Youtube.](#)

March 2009 - [Nortel Shows Off Next Generation Leadership at OFC/NFOEC](#)

At the OFC/NFOEC conference and exposition in San Diego, Nortel demonstrated its 100G solution carrying a full 100G traffic payload (10x10GbE) over a 1,000km span of fibre in a 50GHz-spaced channel. The system consisted of three different types of fibre and was completely uncompensated and unregenerated. At the event, Nortel also demonstrated how coherent technology can be used to simplify operations by enabling a colorless OADM configuration while removing components and simplifying the network.

March 2009 - [Neos Conducts Long](#)

[Distance 100G Trial with Nortel Optical Solution](#)

In March 2009, Neos Networks, the telecoms business of Scottish and Southern Energy plc, trialed Nortel's 100G Adaptive Optical Engine solution over its existing optical backbone. Neos tested the solution in a live network trial on a North/South route between Manchester and London (via Cambridge) in the UK over a fibre distance of 705km without signal regeneration. No reengineering of the existing network was required.

April 2009 - [Banverket ICT and Nortel Trial 40G/100G on Live Fibre Network](#)

In April 2009, Banverket successfully completed a live 100G field trial on its existing fibre network between Sundsvall and Stockholm, using Nortel's optical equipment. The system spanned a total fibre distance of 810km.



The live 100G trial tested a mix of 10G, 40G and 100G wavelengths over an existing 10G engineered link of five spans without regenerators or external fibre compensators. The tests showed successful 100G operation under fibre stress conditions that would occur under normal operations, without the requirement of external optical compensators, and proved that Banverket can scale their network simply and cost effectively from 10G to 40G and 100G.

May 2009 - [JANET: UK Research and Education Network Pushes Boundaries for Teaching and Learning and Research with 100Gbps Network Trial](#)

In April 2009, JANET conducted a successful 100G trial using Nortel's 100G solution over a 103km section of fibre between core network points of presence in London and Reading. The trial consisted of a combination of existing 10Gbps and 40Gbps test traffic with wavelengths set on either side of the 100Gbps traffic within a 50GHz grid. External polarization dispersion was added and exercised and demonstrated the extra performance that the coherent optical receiver in the Adaptive Optical Engine enables. Greater than 25ps mean DGD of dispersion was added, which resulted in error-free performance over the link.

June 2009 - [SURFnet Lights Live 100G International Path with Nortel and Telindus](#)

In June 2009, SURFnet, a global leader in advanced network research, announced that it had completed a 100G trial on its live 10G international broadband network between Amsterdam, The Netherlands and Hamburg, Germany using Nortel optical technology and integration services provided by Telindus. The live network successfully tested two 40G

and one 100G optical wavelengths over SURFnet's DWDM network connecting Amsterdam and Hamburg across a distance of 1,244km of fibre without using electrical regeneration equipment. Scientists working on distributed supercomputer research also used the trial network to interact with their DAS-3 (Distributed ASCII Supercomputer) grid to assess the live performance of the network connection. The 100G link executed tests successfully over a seven-day period from May 20 to May 27, 2009.

August 2009 - [Nortel Completes World's Longest 100G Trials with Telstra](#)

In July 2009, Telstra, Australia's largest telecommunications carrier, successfully completed the first 100Gbps trial over an unprecedented 2,038km stretch of its existing fibre optic network using Nortel's 100G Adaptive Optical Engine solution. The trial also successfully tested 40Gbps transport over 3,370km of fibre between the Australian cities of Sydney and Adelaide. Both 40G and 100G trials are the longest unregenerated distances ever successfully attempted using the technologies, and demonstrate Nortel's capacity to deliver one of the most cost-effective high-speed broadband transport solutions available today.

An uncompensated Common Photonic Layer network was installed between Sydney and Adelaide where the tests were performed. Tests included performance testing of Nortel's 40G DP QPSK, full payload soak testing of Nortel's 100G solution and via a loopback performance testing of a prototype 40G Ultra Long Haul DP BPSK solution over 3370km. The 100G wavelength carrying 10 x 10G Ethernet channels for a full 100G payload was run for 68 hours with no errors seen on the link.

October 2009 - Nortel and European PTT Successfully Trial 100G Solution Over 3rd Party Compensated System

Nortel successfully completed a 930km field trial of its 100G solution over a European telecommunications provider's existing infrastructure. Conducted in September, the six-week long trial was unique in that it tested Nortel's 100G technology over a competitive vendor's existing dispersion compensated and unregenerated 10G optical system. Results showed that the Nortel solution, which operates optimally over Nortel's electronic dispersion compensated systems, is also well suited to operate over other vendors' traditional dispersion compensated lines.

Proven, Reliable 40G/100G Solutions

Nortel's 40G/100G Adaptive Optical Engine is a plug, play and evolve technology that is deployable over any fiber. It allows operators to reduce engineering, eliminate equipment and upgrade quickly and cost-effectively from 10G to both 40G and 100G.

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