



Distributing scientific data from the world scale eScience experiments for processing and analysis requires the use of 40 and 100 Gbit/s connectivity with constant and lowest possible latency on cross border dark fiber spanning large distances.

In this demonstration and experiment the goals are to gain experience in setting up such very long haul photonic connections passing through several different domains containing various vendors DWDM equipment and monitor and measure different properties of the traffic, in particular latency and throughput as function of different tuning parameters and architecture choices including solid state drives at the sending and/or receiving end.

Network Setup

The Mellanox ConnectX-2 EN 40GbE is the first network interface that allows single stream ethernet transport far exceeding the common 10Gbps boundary limit. The achieved throughput is 26Gbps from CPU to CPU which is the practical limit of the PCI-E interface.

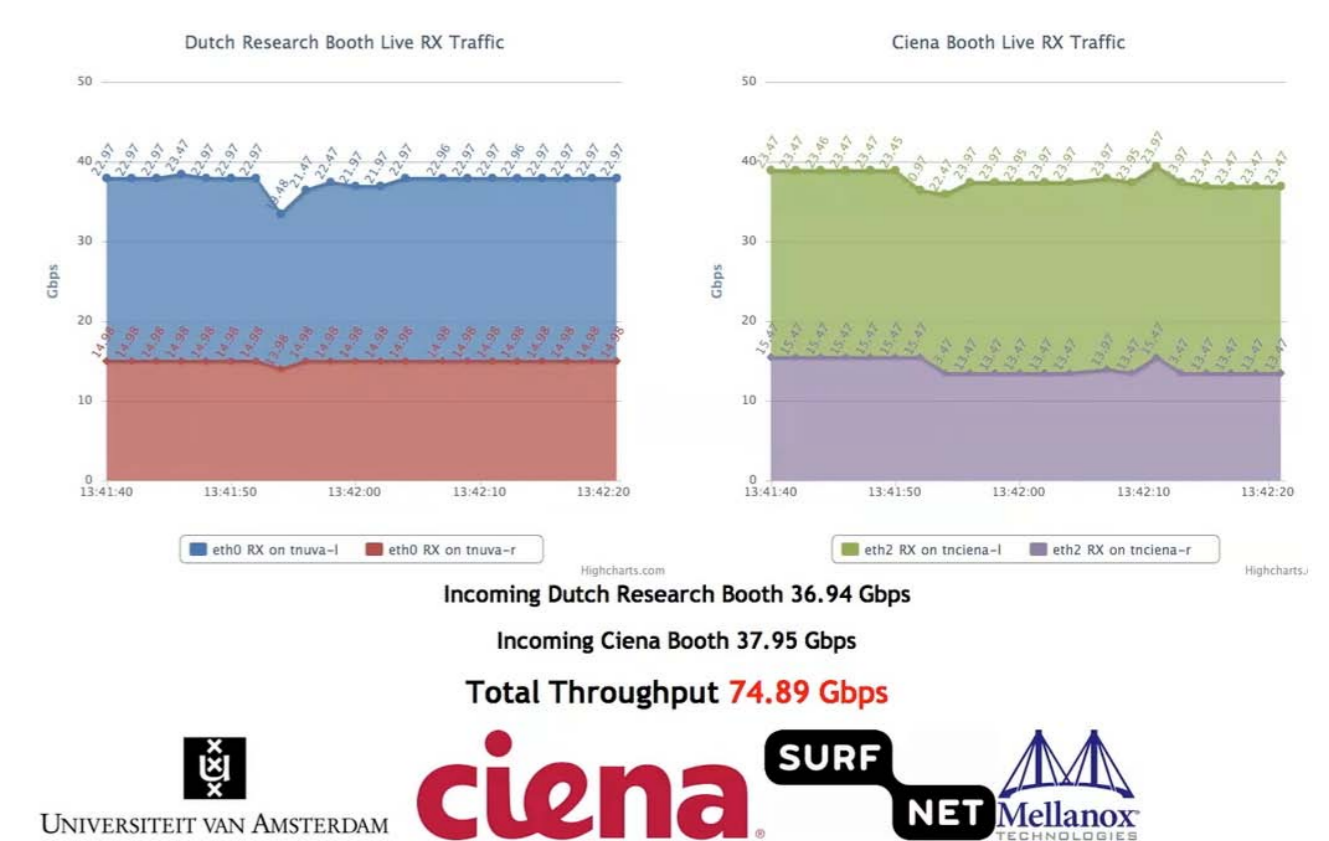
The network infrastructure is based on Ciena's Activeflex (OME) 6500 equipped with 40 GigaBit Ethernet and the new 40G Ultra Long-Haul interface cards, which connect endpoints in both Amsterdam and Copenhagen using a 4400 km 40G long haul link through Geneva.

Application Setup at TNC2011

Following the succes of the GLIF 2010 and SC10 the setup demonstrates four high performance servers utilizing a 40Gbps clear channel WAN link between the University of Amsterdam and NORDUnet.

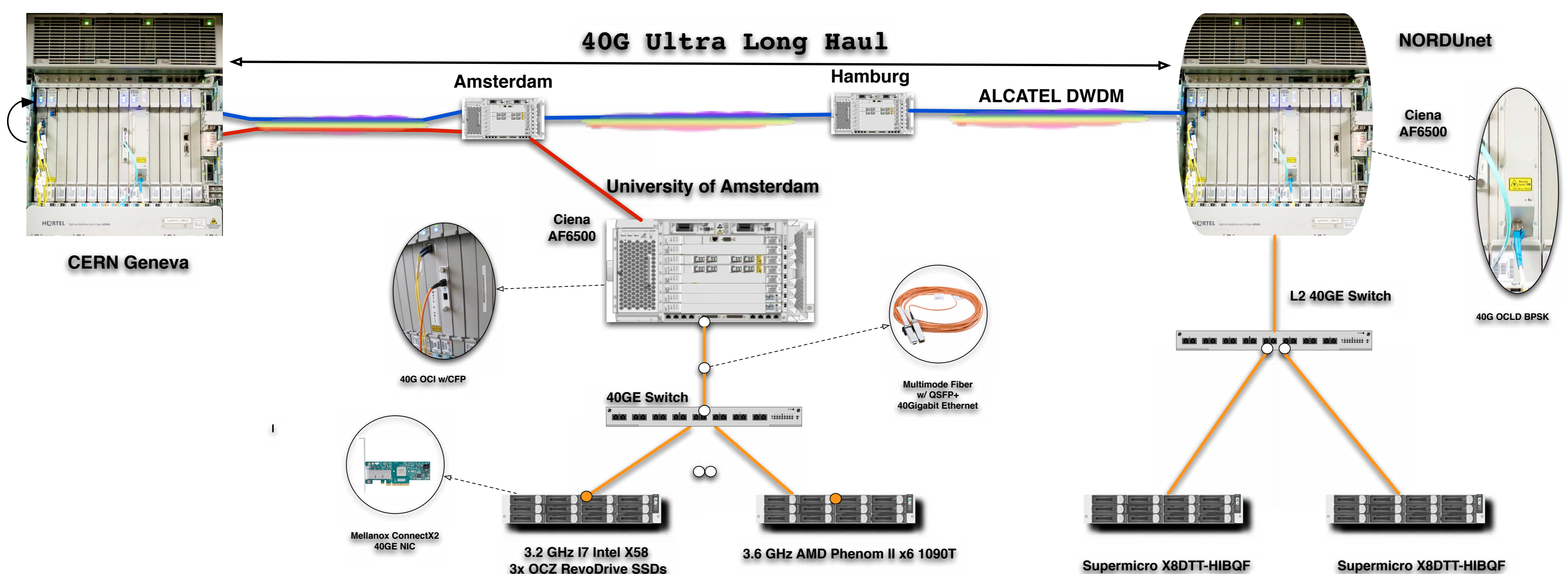
One of the two servers in Amsterdam contains an array of Solid State Disks which can read up to 2GB/s or 18 Gbps. This opens the possibility to send data from disk to network at speeds over 10Gbps.

- University of Amsterdam**
- Cees de Laat
- Ralph Koning
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- SURFnet**
- Gerben van Malenstein
- Roeland Nuijts
- Ciena**
- Rodney Wilson
- Marc Lyonnais
- David Yeung
- Jan Willem Elion
- Harry Peng
- Martin Bluethner
- NORDUnet**
- Lars Lange Bjorn
- Telindus**
- Joost Witlox



SuperComputing 2010

During the SC10 demonstration measurements showed constant throughput between the two remote ends. Using two servers over 70Gbps of aggregated traffic was exchanged in both directions.



System and Network Engineering Research Group, Universiteit van Amsterdam

<http://science.uva.nl/research/sne>