GÉANT2

Connect. Communicate. Collaborate

A different type of Network

Dai Davies, General Manager, DANTE

JGN 2 Symposium

18-20 January 2006, Sendai International Centre

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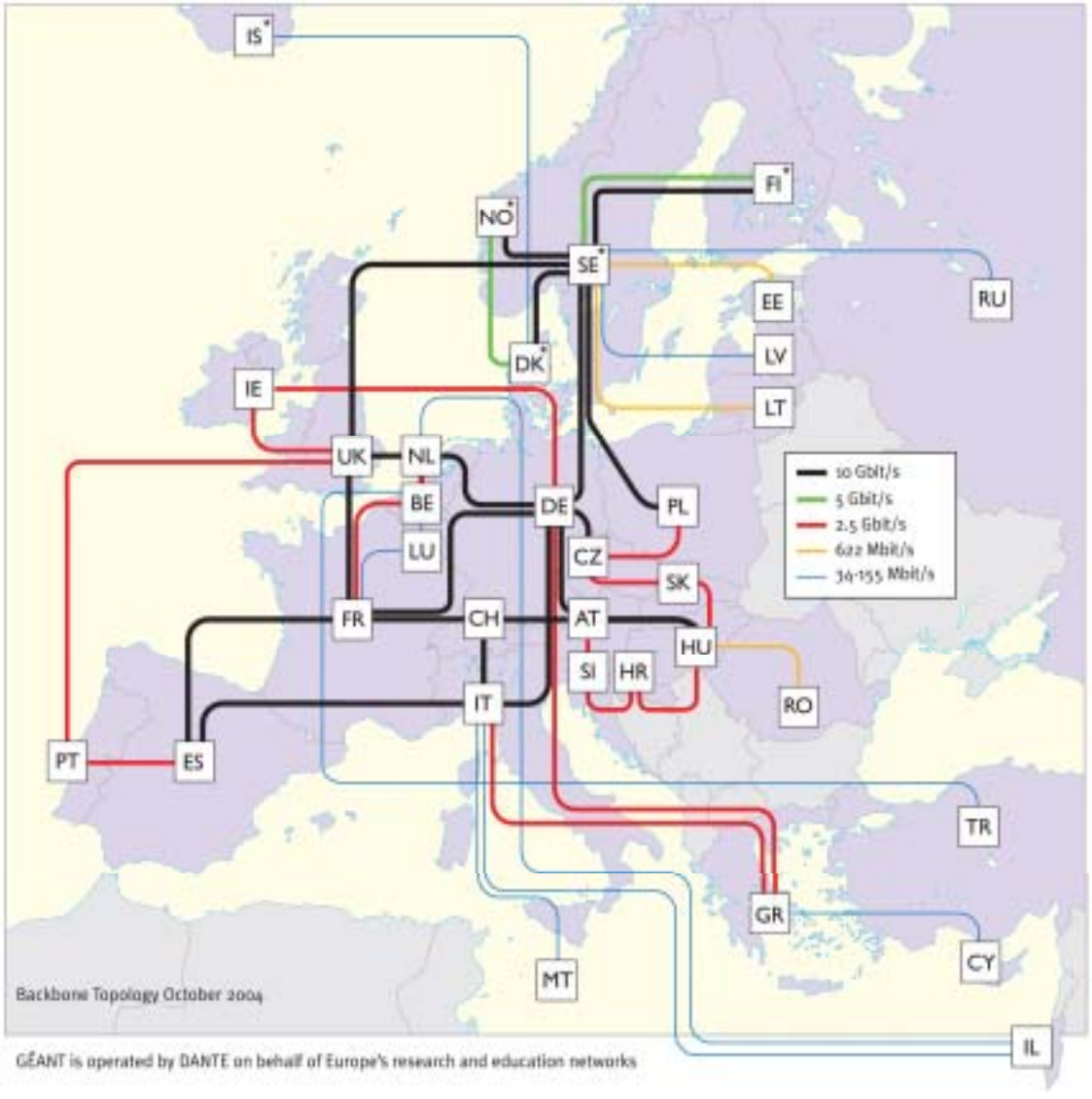

GÉANT is operated by DANTE on behalf of Europe's research and education networks

Connect. Communicate. Collaborate

GÉANT Topology

October 2004

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Pan-European Network History

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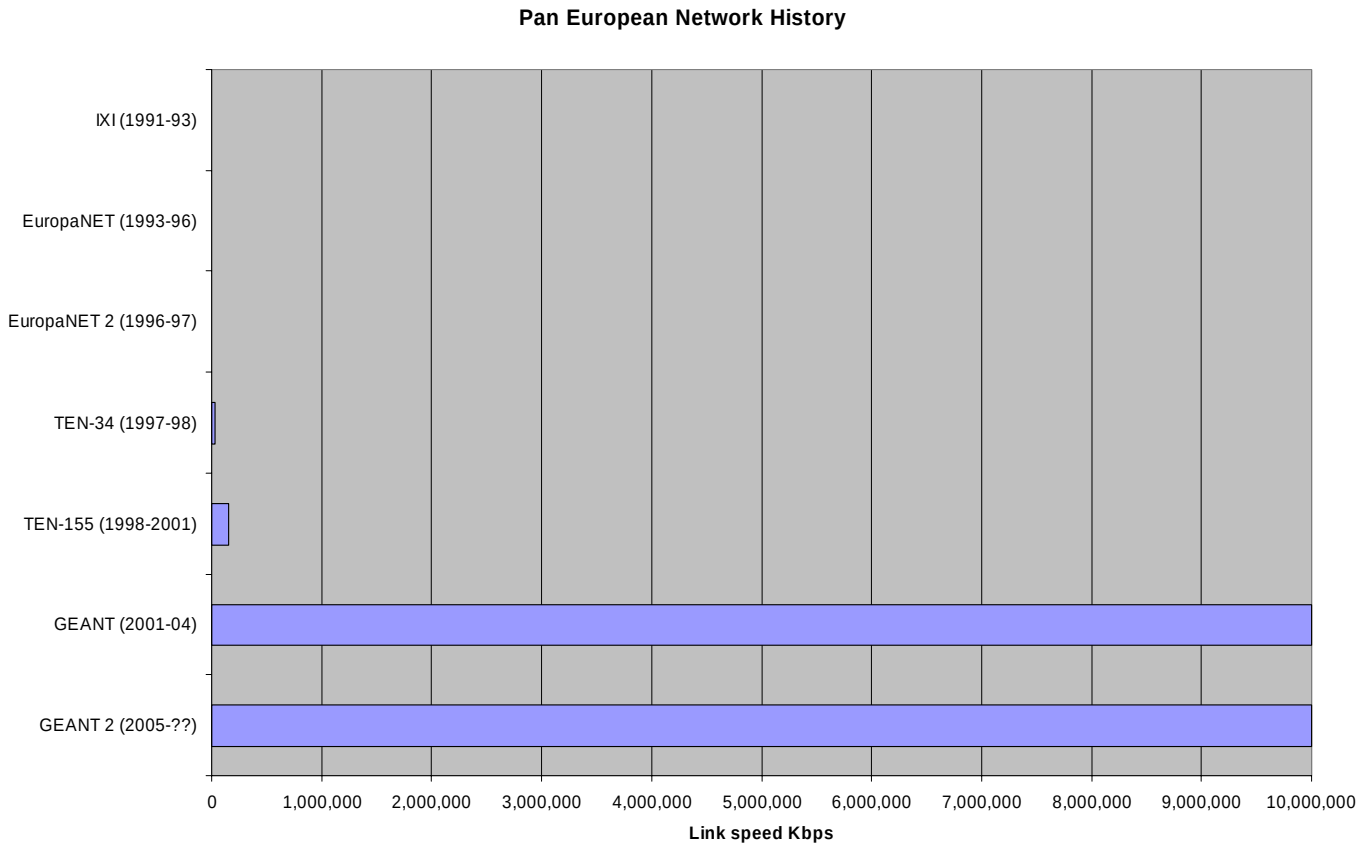

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Pan-European Network History (Log scale)

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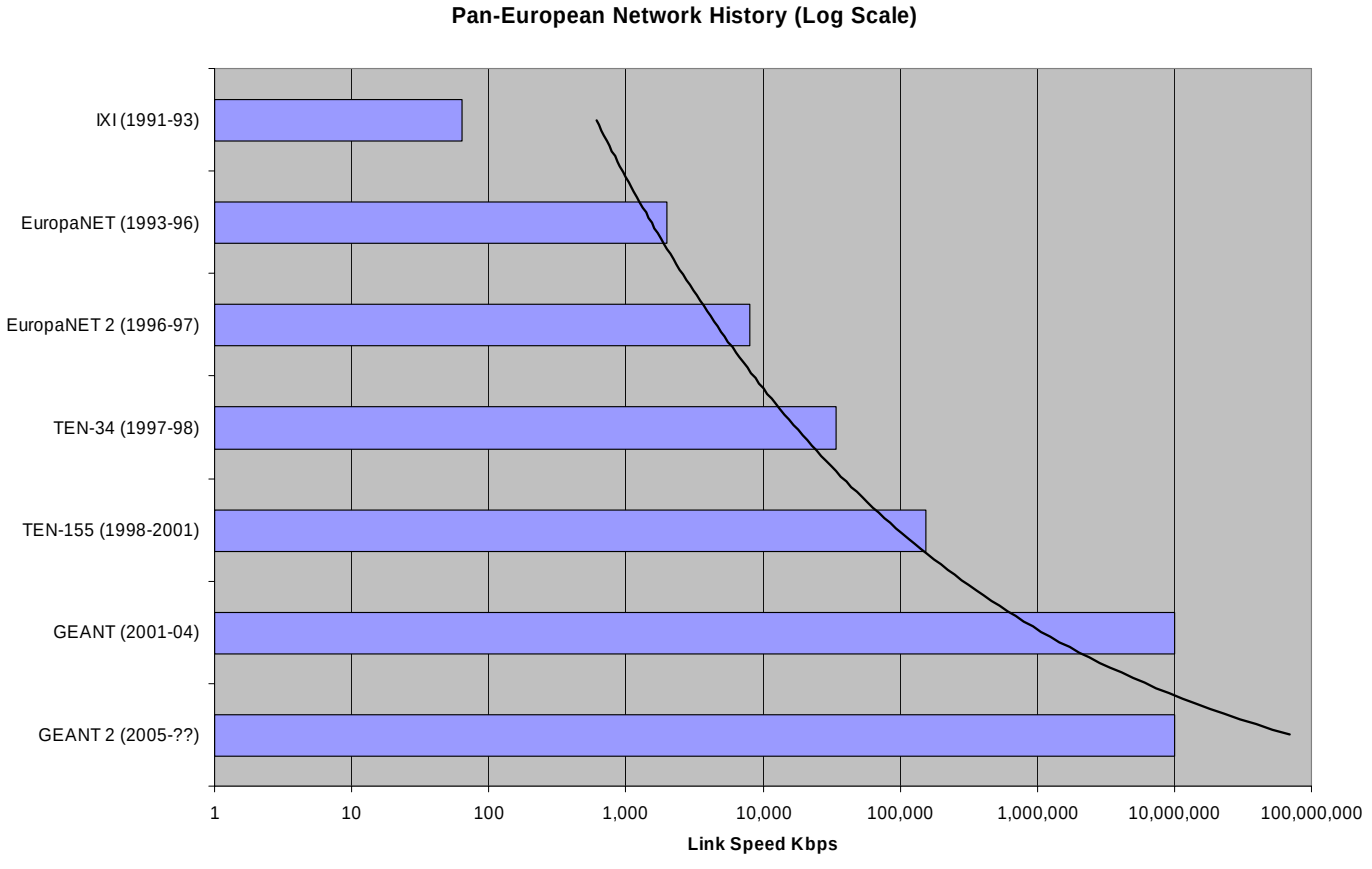
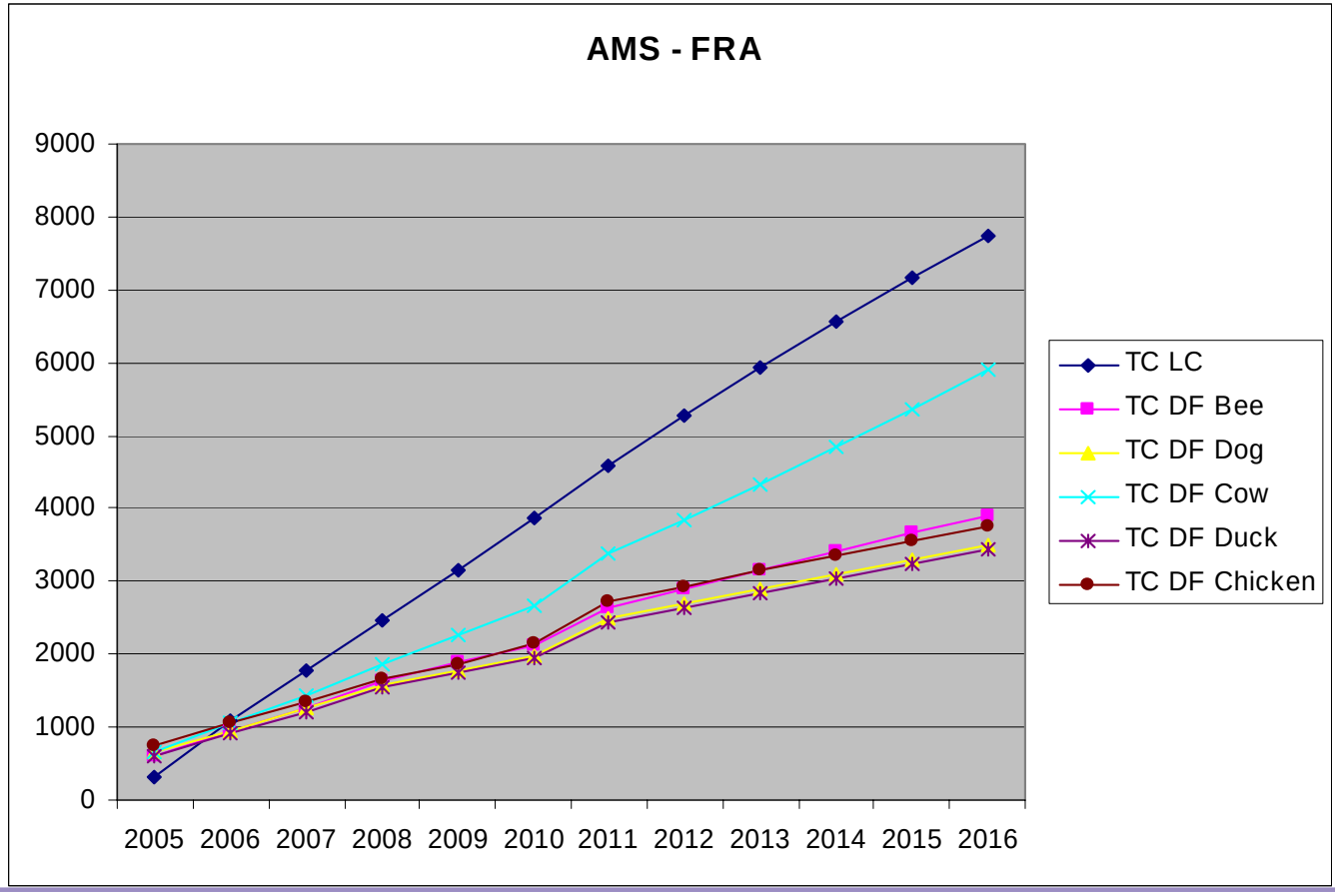



AMS - FRA
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
TC LC
TC DF Bee
TC DF Dog
TC DF Cow
TC DF Duck
TC DF Chicken

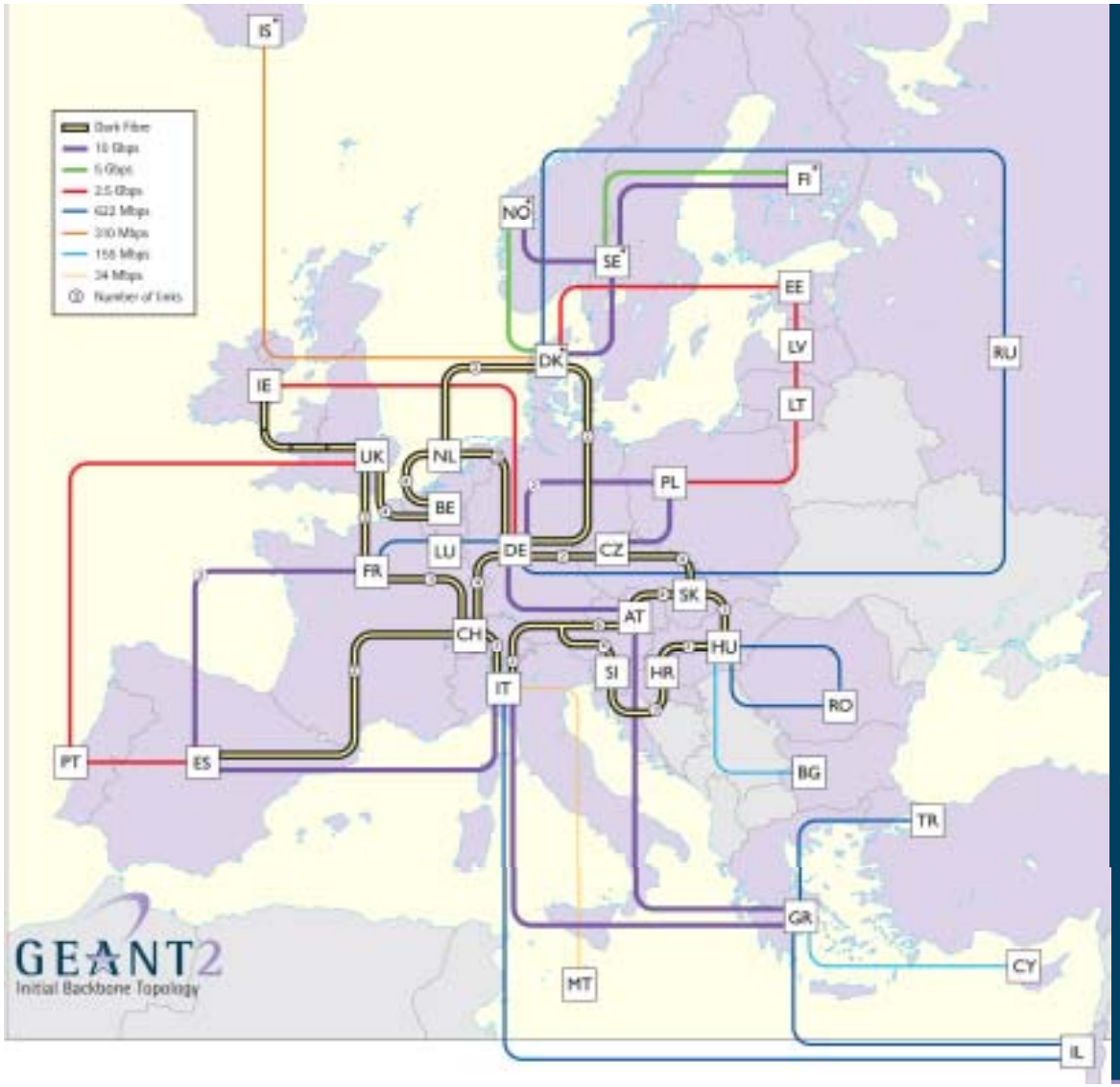
Connect. Communicate. Collaborate

Hybrid Networks

- Cost Effective
- Fits emerging traffic flows

BUT

- Control issue is a challenge
- Performance issue is a challenge



Connect. Communicate. Collaborate

GÉANT2 Topology

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GÉANT2 Focus

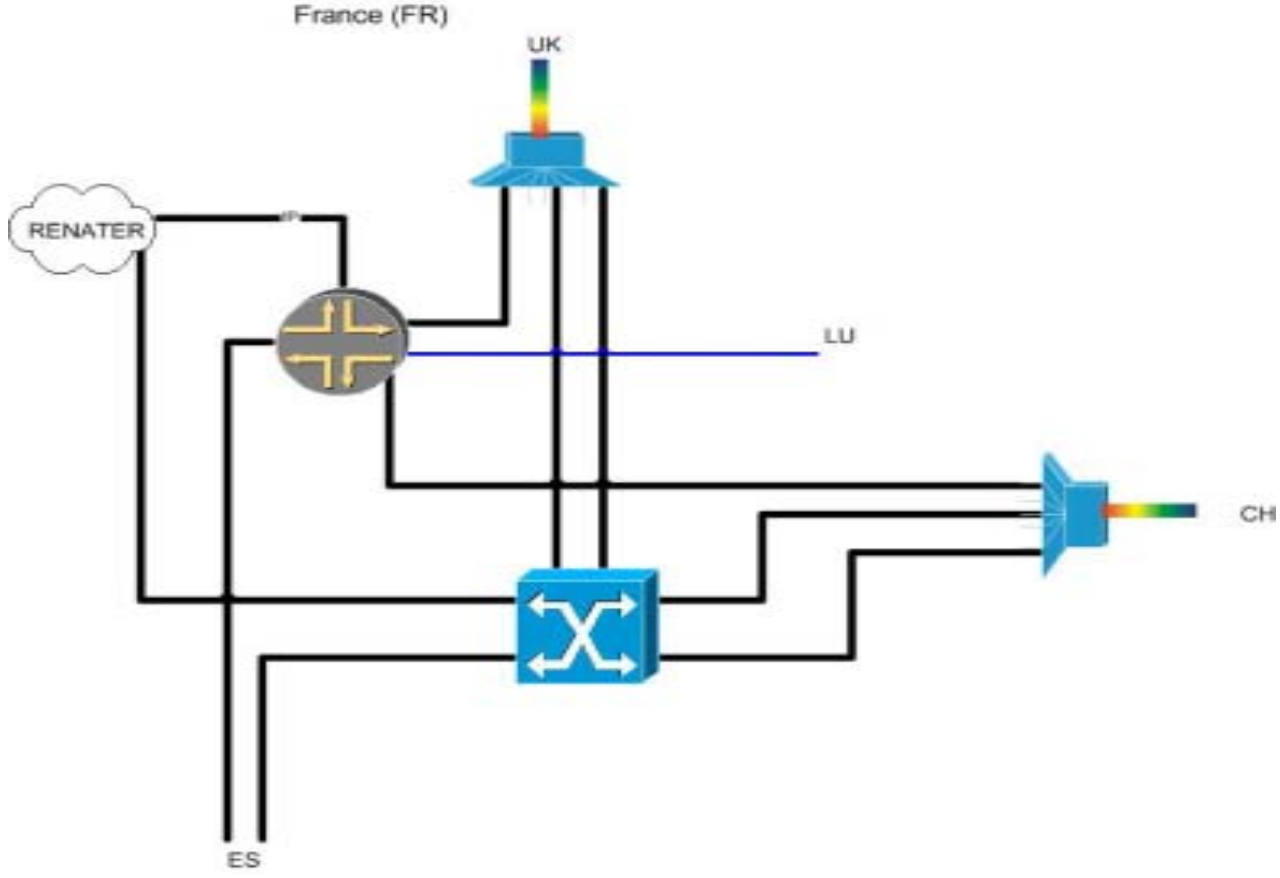
- Make large amounts of capacity accessible (technically, economically) to users
- Taking network services a step further:
  - Ethernet (GE and 10GE), as service and as access technology
  - Performance (monitoring and enhancement)
  - BW provision
  - Security
  - Mobility

The importance of Ethernet

- As end to end service and access technology
- Its cheap and fast but how do we guarantee quality end to end across Europe?
- Challenge to GÉANT2, NRENs and equipment vendors

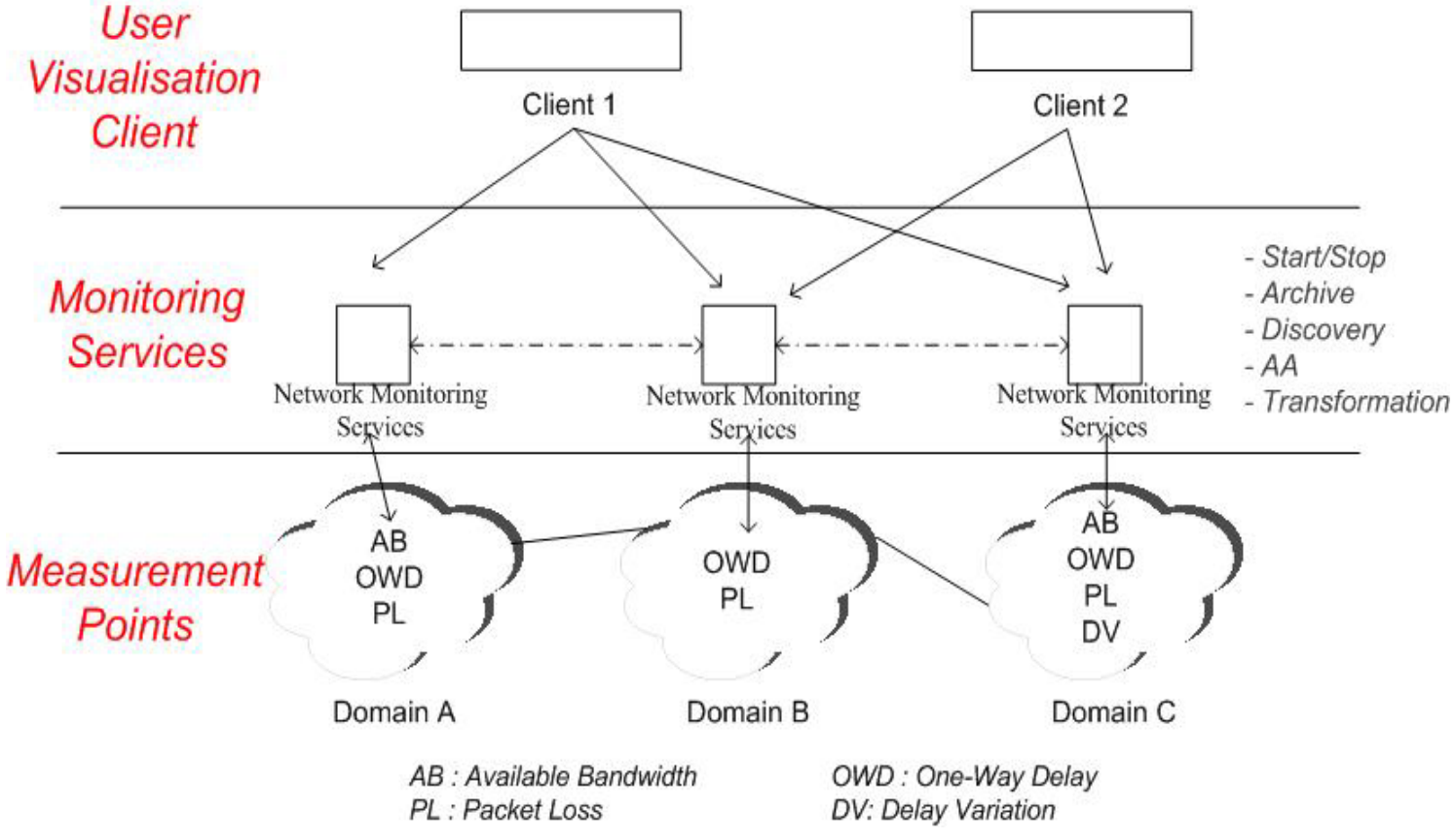
GÉANT2 PoP Example

Connect. Communicate. Collaborate



Development programme

- End to end QoS and Performance
- Security
- BW Provision
- Mobility


User Visualisation Client
Client 1
Client 2
Monitoring Services
Network Monitoring Services
Network Monitoring Services
Network Monitoring Services
- Start/Stop
- Archive
- Discovery
- AA
- Transformation
Measurement Points
AB
OWD
PL
OWD
PL
AB
OWD
PL
DV
Domain A
Domain B
Domain C
AB : Available Bandwidth
PL : Packet Loss
OWD : One-Way Delay
DV: Delay Variation

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Mobility

- AAA
- Roaming
- Single Sign On

Conclusions

- The investment in dark fibre is the enabler for access to and management of large amounts of capacity
- The mixed (routed + switched) network architecture is the enabler for service provision
- The development programme is focused on taking network services a step further