

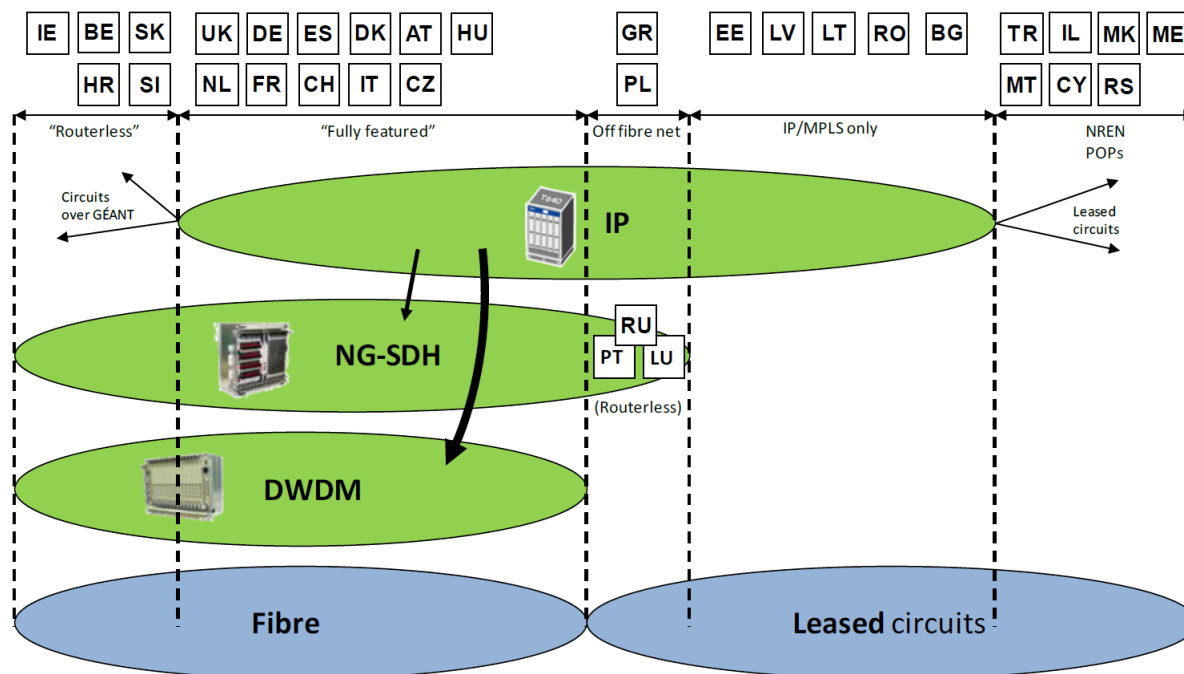
GÉANT IP and GEANT Plus Network Convergence

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Prague

- Pre-Procurement Architecture
- Post-Procurement/Deployment Architecture
- Convergence Motivation & Goals
- Convergence Advantages & Challenges
- Post Convergence Architecture

- Three main services on three different platforms
 - GÉANT IP – Juniper T-Series
 - GÉANT+ - Alcatel MCC
 - GÉANT Lambda – Alcatel LM 1626



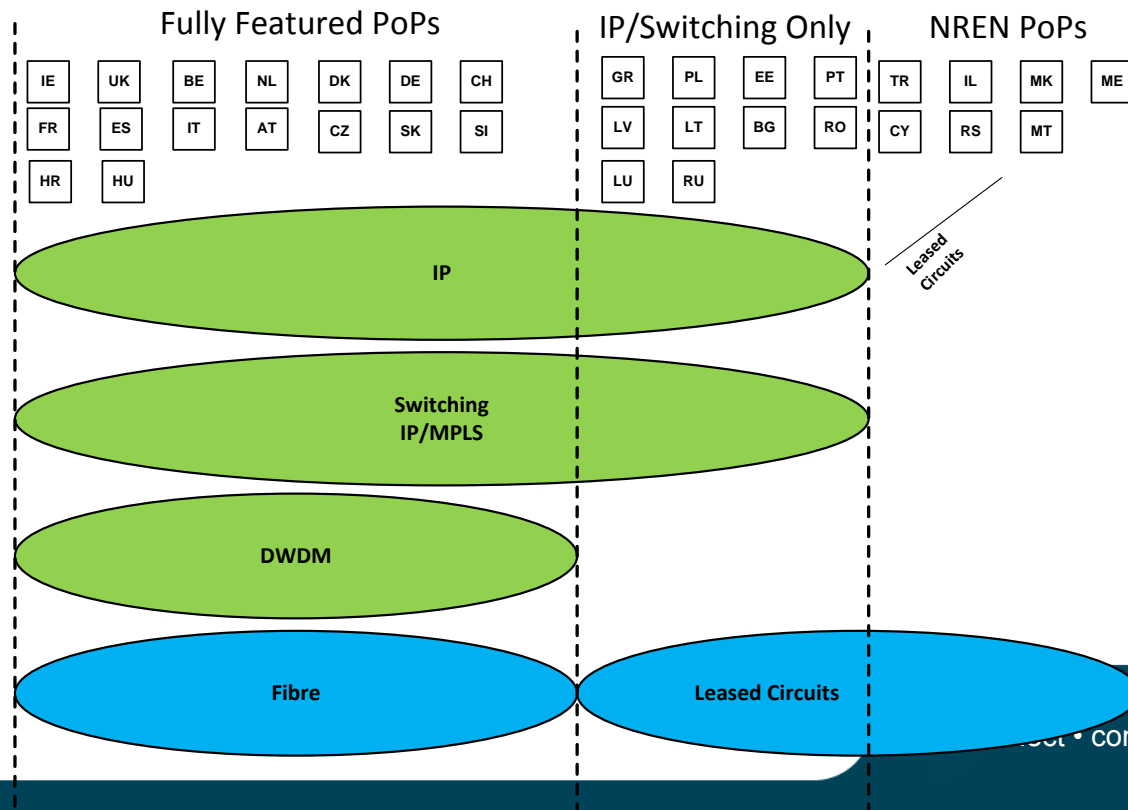
GÉANT



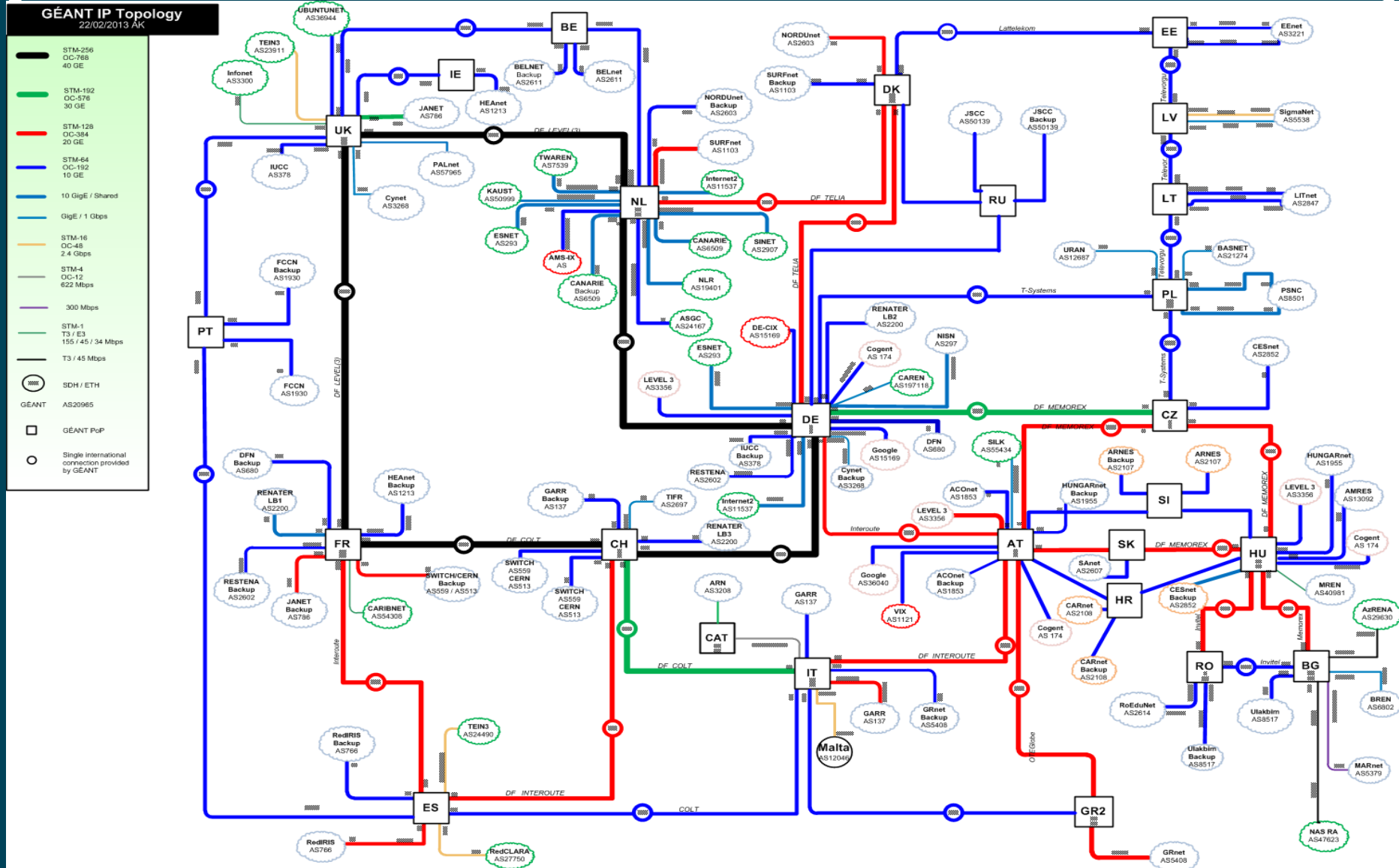
Post-Procurement Architecture



- Three services on three different platforms
 - GÉANT IP – Juniper T-Series and MX
 - GÉANT+ - Juniper MX
 - GÉANT Lambda – Infinera DTNx



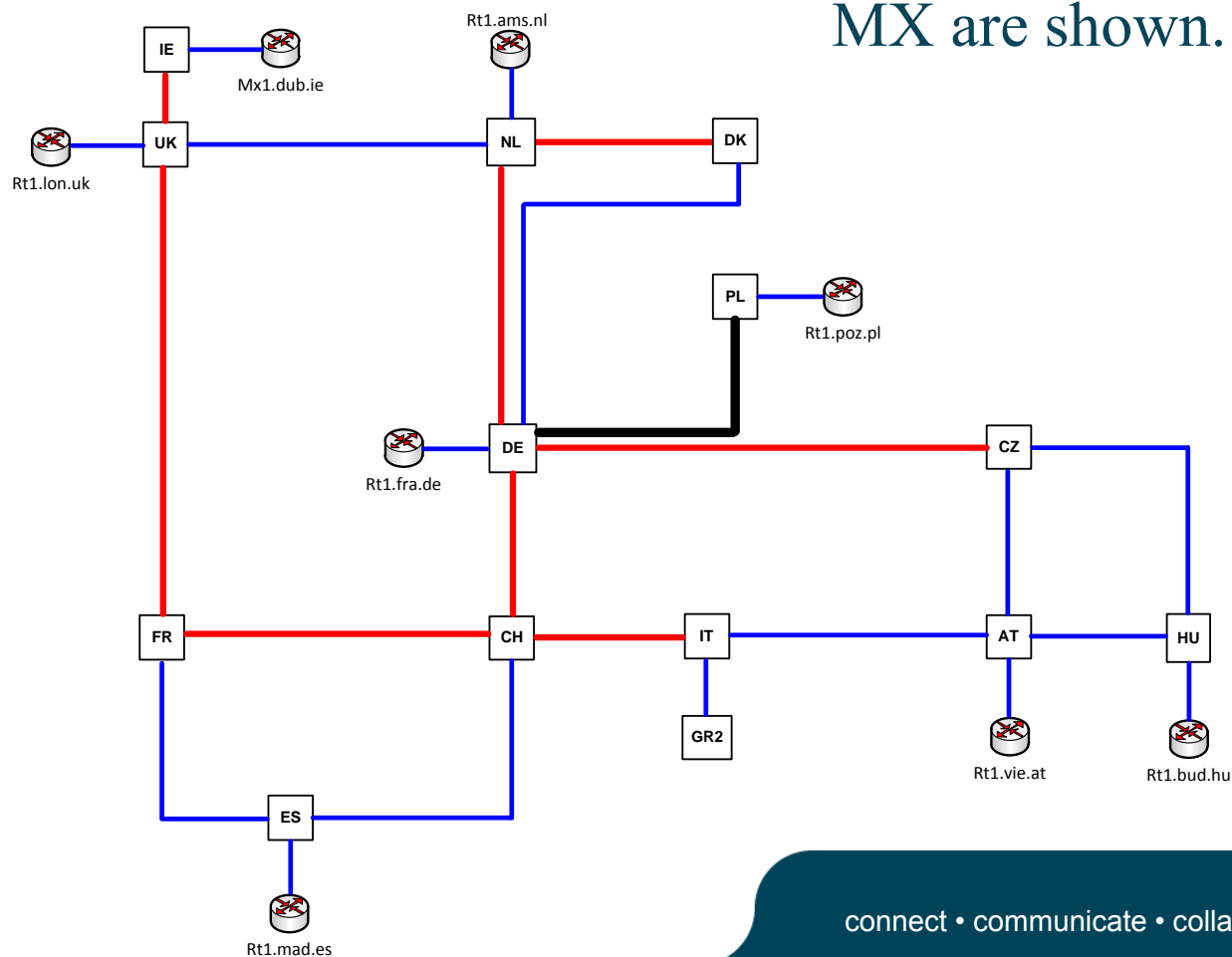
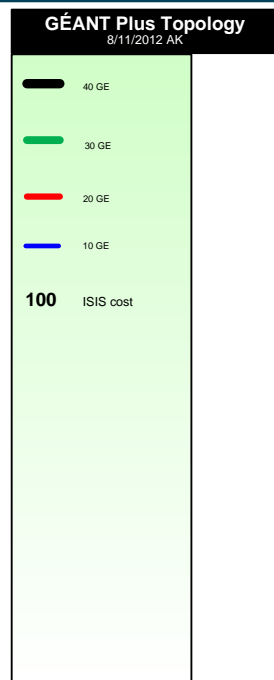
Originally two separate networks GÉANT IP network



Originally two separate networks GÉANTPlus network



Only GÉANTPlus
MX are shown.



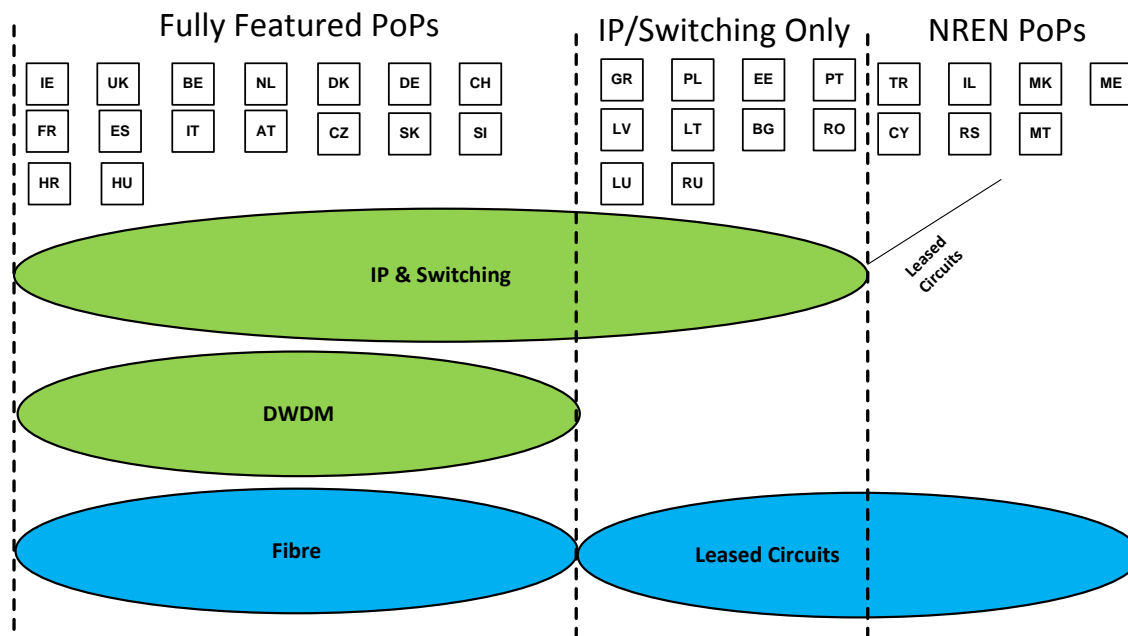
connect • communicate • collaborate

- Enable NRENs to connect at 100GE for GEANT IP access
- Provide multiple services on a single interface as VLANs
- Utilise the 100GE trunks between Juniper MXes for IP traffic
- Avoid upgrading GEANT IP backbone

- Merging of the existing GÉANT IP (T series) and GÉANTPlus (MX) platforms
 - All the devices exist in a common IGP (IS-IS)
 - All the devices are in same Autonomous System
 - All services available everywhere

- Initially keep the GÉANTPlus and GÉANT IP traffic on dedicated trunks
- Start using the 100GE trunks for production GÉANT IP and GÉANTPlus traffic as soon as possible
- Keep both backbone networks operational during the convergence process
 - Minimize or preferably eliminate any site outages
 - Converge both IPv4/IPv6 and avoid partitioning either network or blackholing any traffic
- Avoid buying any extra hardware for Juniper T-series for convergence purposes

Post Convergence Architecture



GÉANT



- Easier to maintain and manage the network
- Same monitoring and provisioning tools
- Easier approach to migrate or upgrade NREN IP connection on MX
- Can support both IP and GEANT+ connection on either platform
- No upgrade of GEANT IP backbone required, no need to buy expensive T-Series hardware

- Majority of the connections migrated from T-Series to MX in all PoPs
- Nine out of 15 T-Series switched off, three M series switched off
- Four PoPs AT, CH, DE and NL running both boxes

- POP with secondary access point (e.g. Milan)
 - 1 MX deployed and backup via transport to adjacent POP
- POP on fiber cloud without SAP
 - 1 MX deployed and backup via transport to adjacent POP
- POP off fiber cloud
 - 2 MX deployed for primary and backup connections
- Large POPs with international connectivity
 - 1 MX and 1 T-series

Questions?



- Questions?