



# Introducing the EuroHPC Hyperconnectivity Service

CONNECTIVITY - CAPABILITY - COLLABORATION

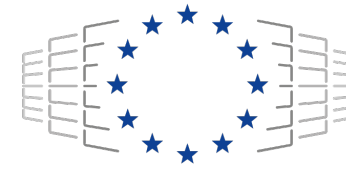


Co-funded by  
the European Union

## Disclaimer:

The EuroHPC HyperConnectivity project and the related services presented herein are delivered by GÉANT under Framework Contract (FWC) No. FW-00180125, concluded with the European High Performance Computing Joint Undertaking (EuroHPC JU). The views expressed and content provided reflect the service delivery of GÉANT as contractor under the FWC and do not represent the official position of the EuroHPC JU as contracting authority.

# What is the EuroHPC Joint Undertaking ?



**EuroHPC**  
Joint Undertaking



- European Union
- European Countries
- Private Partners



Coordinating and pooling resources to make Europe a world leader in supercomputing

# What is the EuroHPC Hyperconnectivity Service?

Ultra-high bandwidth, secure, pan-European, interconnect service for the EuroHPC supercomputing infrastructure.

Expands upon the GÉANT network, leveraging the reach and expertise of European NRENs.



Terabits-per-second  
networking

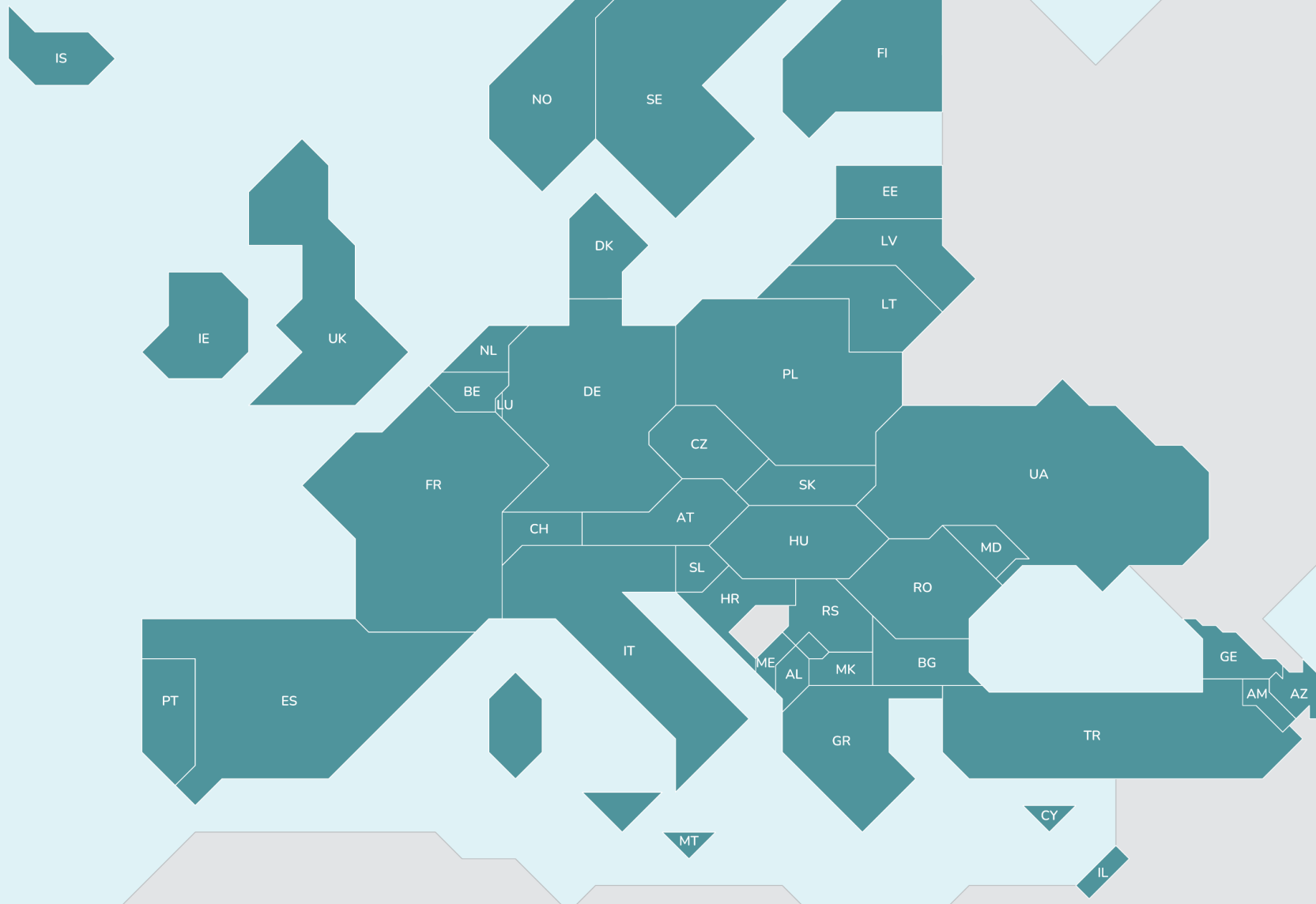
Trusted & Secure  
architecture

Federated  
connectivity

Flexible ecosystem  
future-proof  
technology

# Who is delivering the service?

## GÉANT: a European Membership Organisation



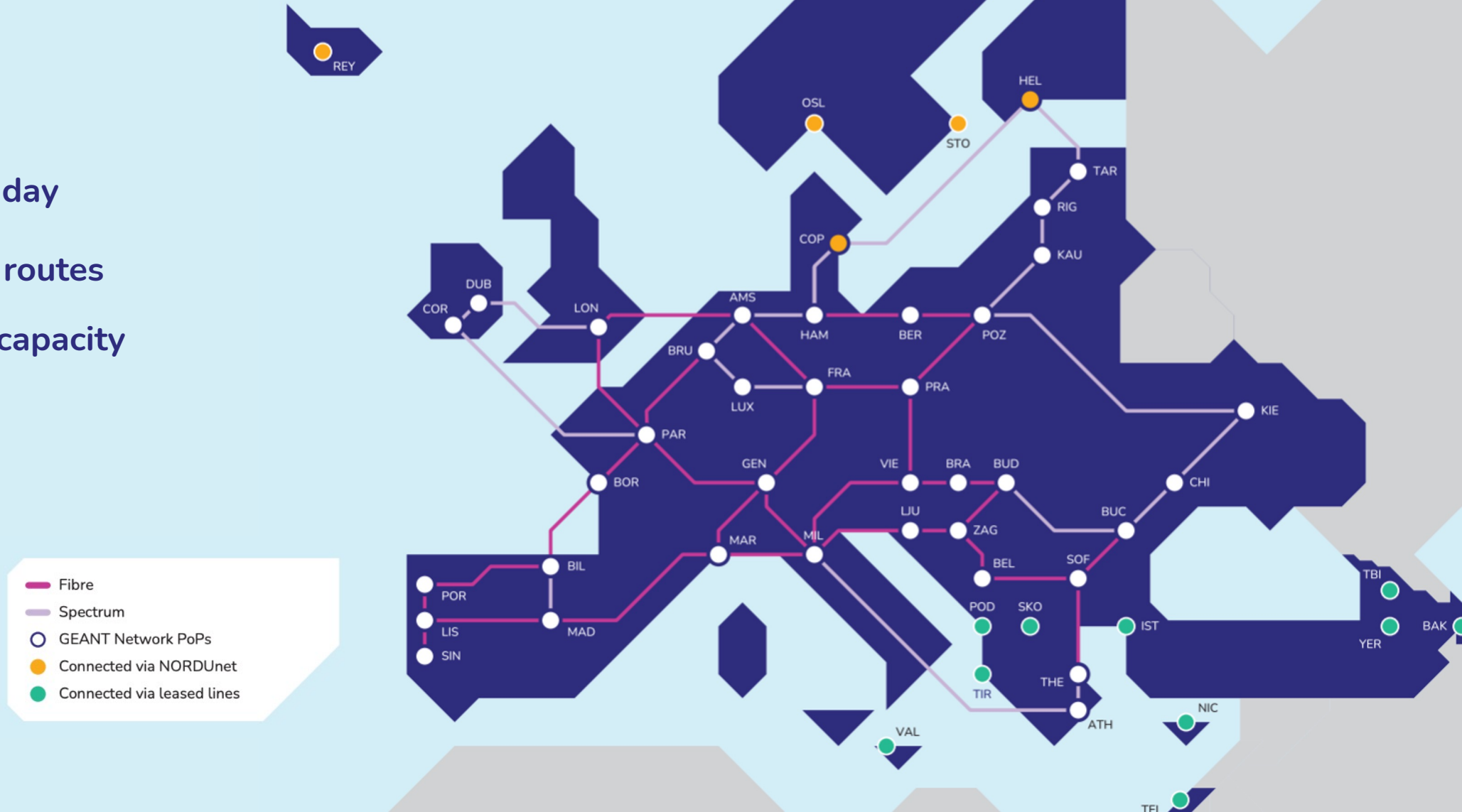
# HyperConnectivity: Over the GÉANT Network

## A shared investment

>10 Pb of data per day

30,000km physical routes

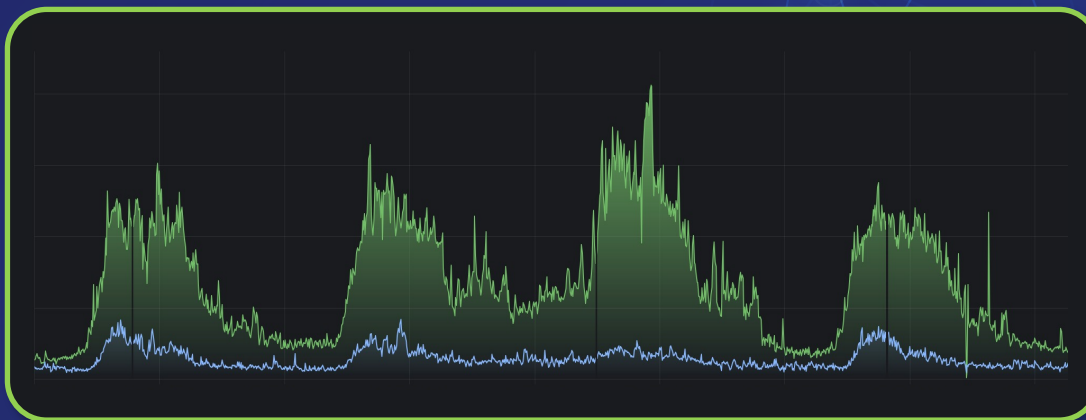
31 Tbps backbone capacity



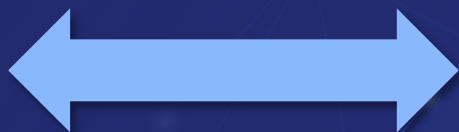
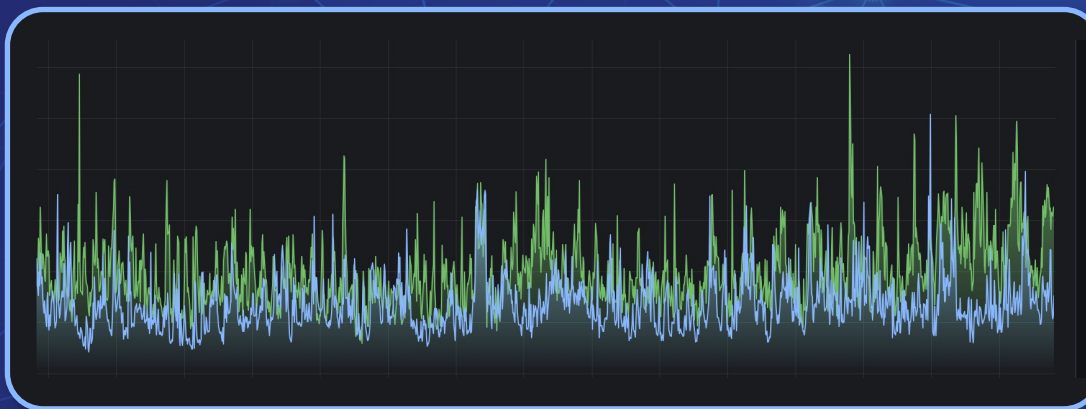
# HyperConnectivity: Why is scalability important?



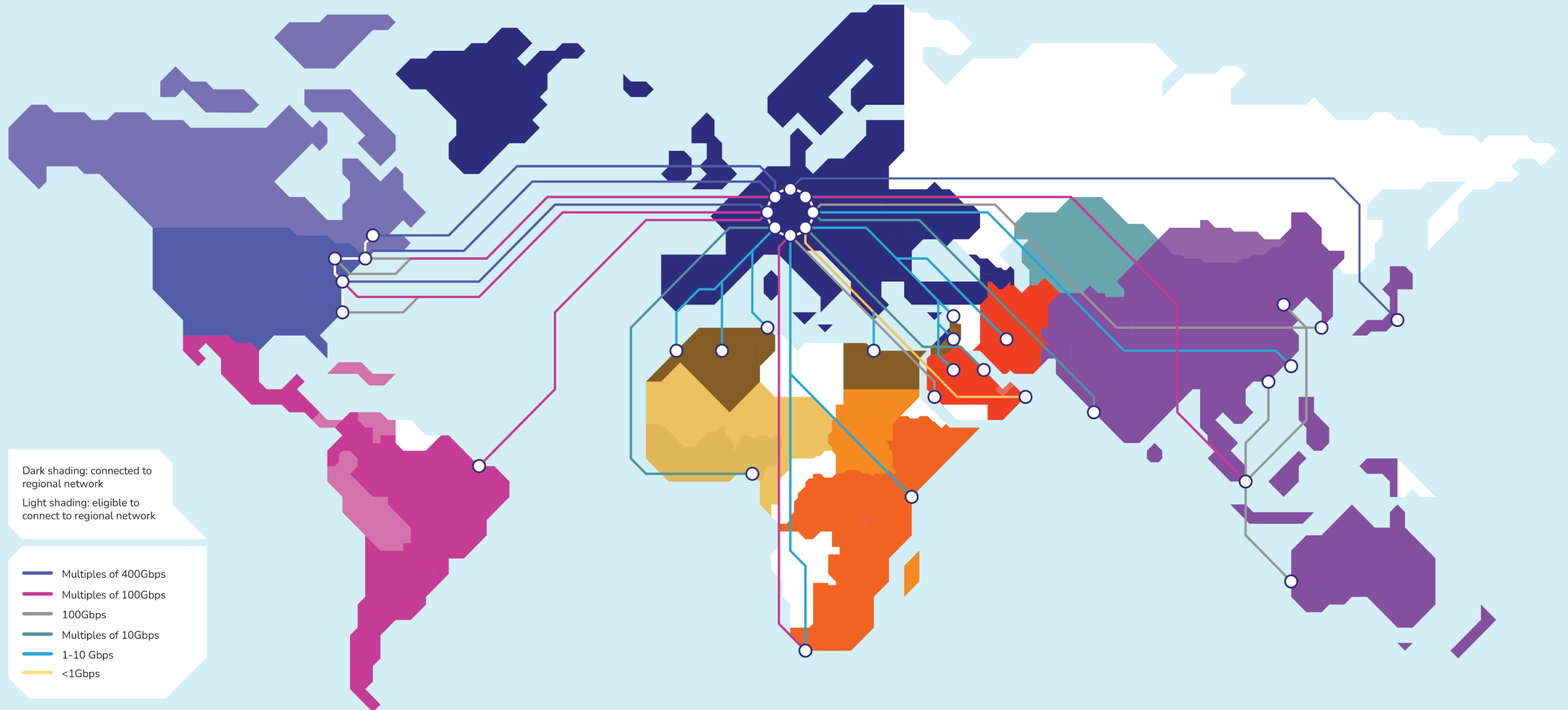
GÉANT Internet access service



GÉANT Backbone link



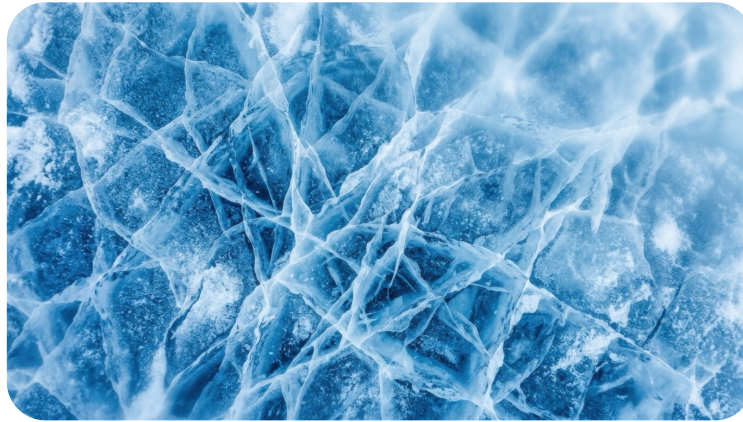
# How is the service reachable from outside of Europe?



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# HyperConnectivity: So, what does the service deliver?

- Every centre & country interconnected at equal excellence
  - High capacity connectivity end to end
  - Access to global research networks
  - High quality, connectivity – IXPs, data source and storage providers
  - Service Assurance: Monitoring, Reporting, Management



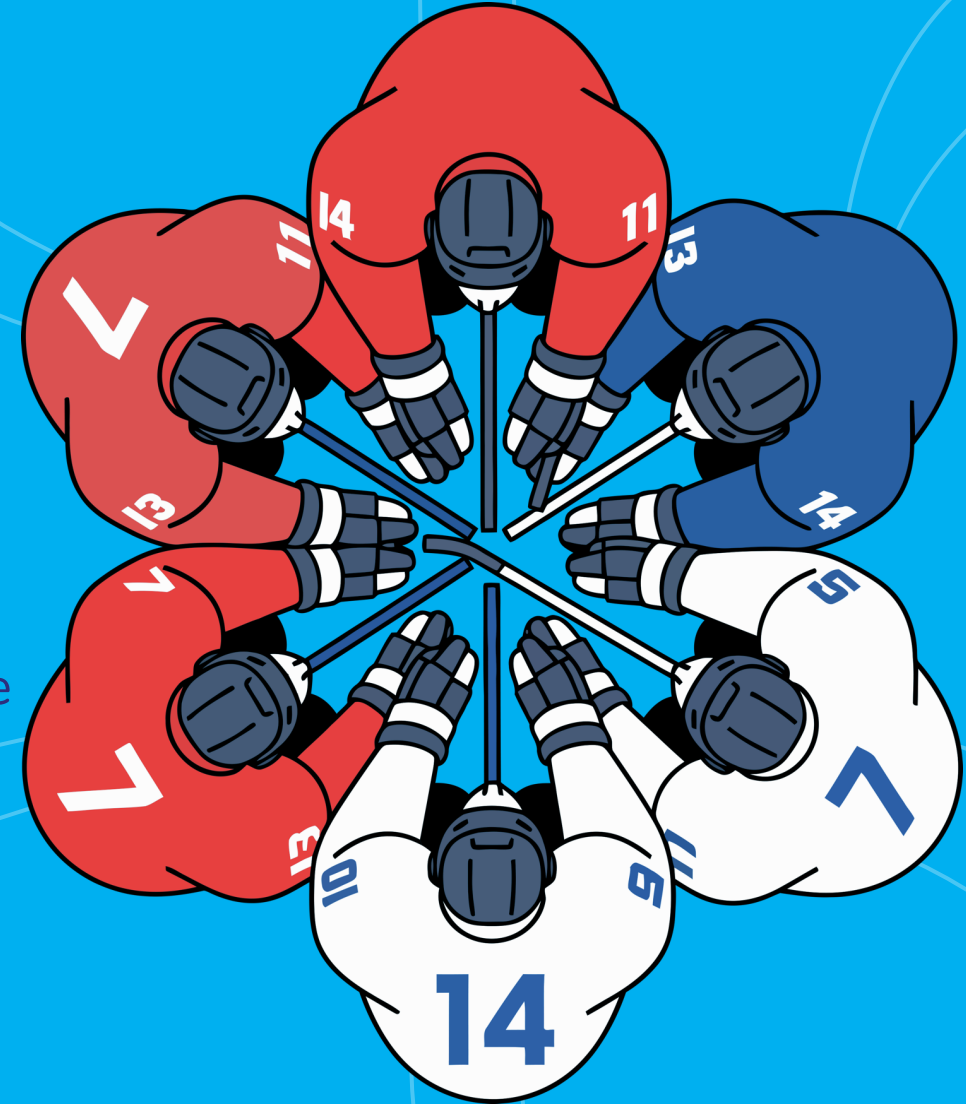
# HyperConnectivity: How is it constructed?

Two main **connectivity** components:

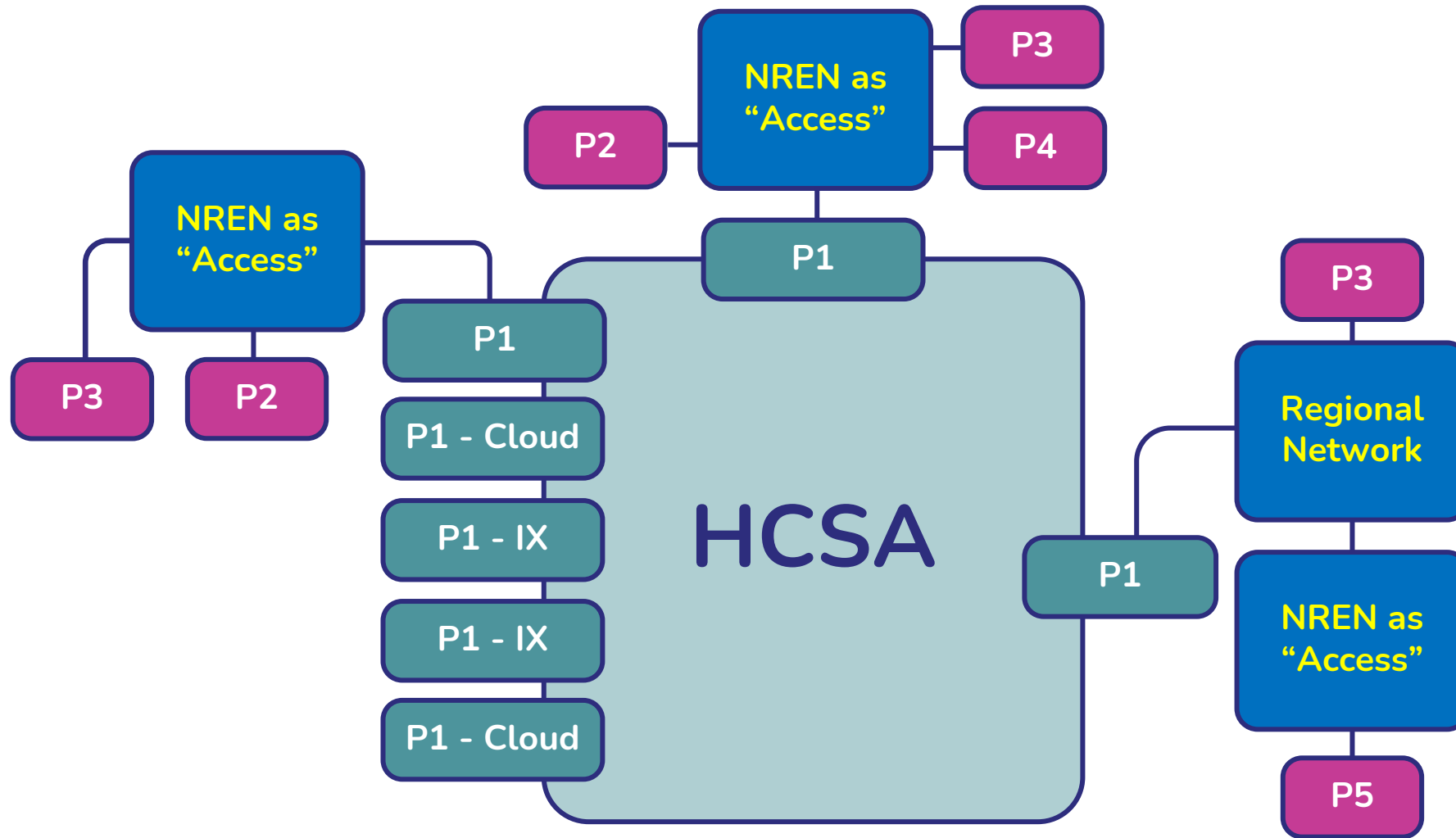
- The Hyper-Connectivity Service Area (HCSA)
  - “Network As A Service” area - **high-capacity connectivity** to “Priority 1” Sites



- **Connectivity between sites and the HCSA**  
Sites are integrated into the HyperConnectivity Service
  - Capacity upgrades
  - Performance Management Probes
  - Network statistics



# HyperConnectivity: How do these components come together?



Candidates Sites  
Integrated by **Priority**

Hosting Entities  
'Priority 2' s

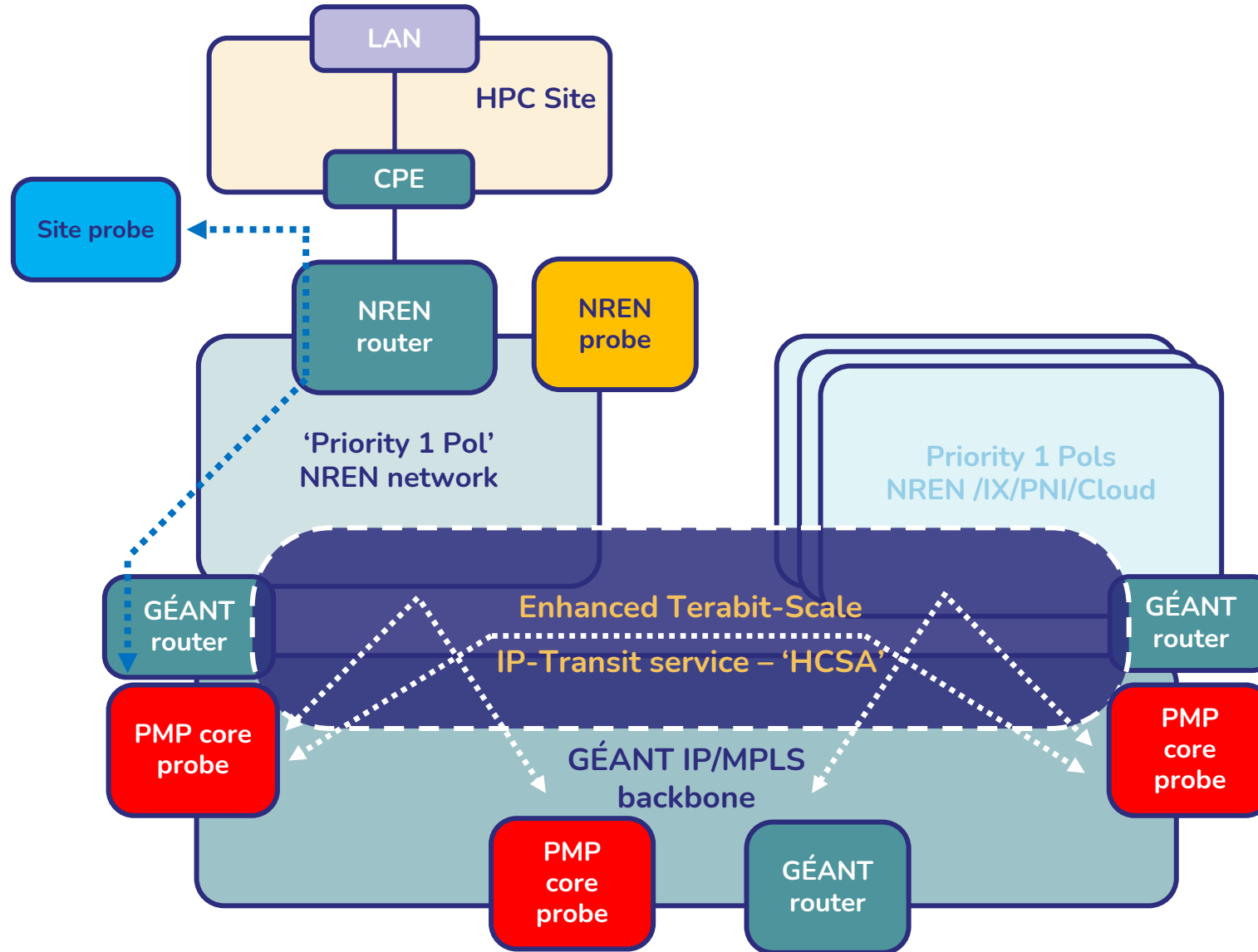
Priority 3 - 6 sites

**25 Sites across the  
Nordic region:**

Finland (8); Denmark (7);  
Sweden (10)

2 x Hosting Entities  
16 x 'Priority 3' sites  
7 x 'Priorities 4-6' sites

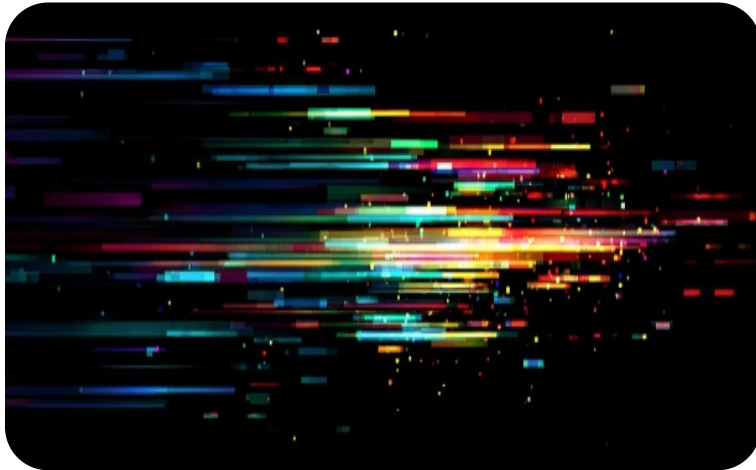
# HyperConnectivity: What about the service layer?



# HyperConnectivity: How will the service be assured?

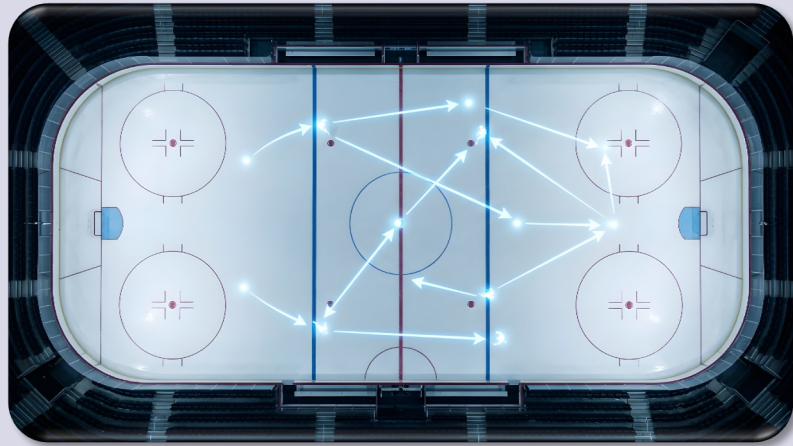
One service – provided by GÉANT but federated - standard NREN & GÉANT processes

- Incident and problem follow-up
- Performance Management Platform
- Data sharing & reporting
- Optimised Networking across borders
- Strategic investment decisions
- Capacity upgrades

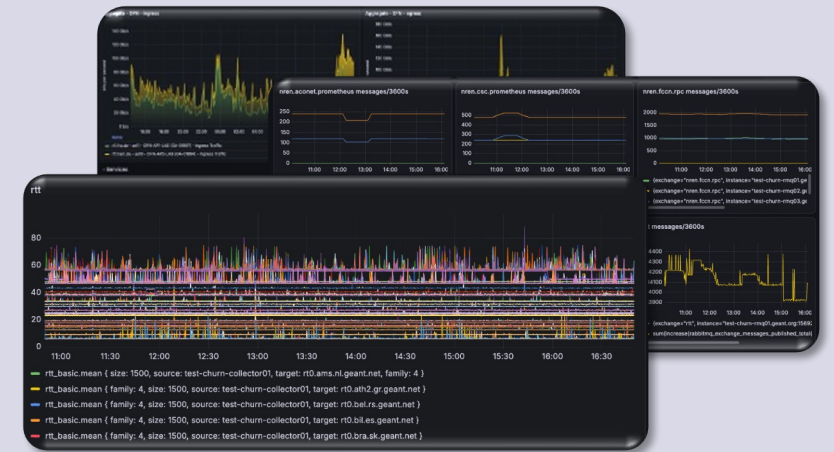
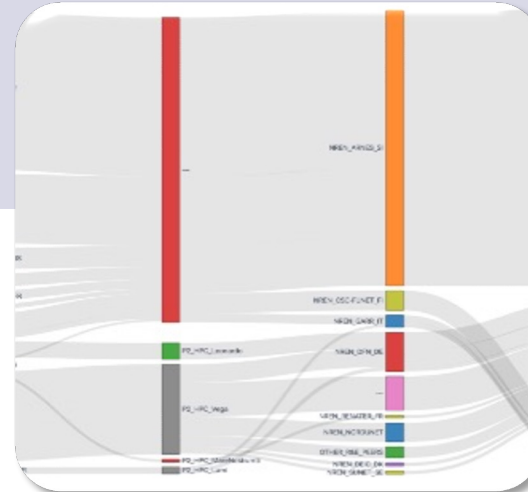


# HyperConnectivity: How will the performance data be used?

Centralised monitoring and  
visibility of domain performance

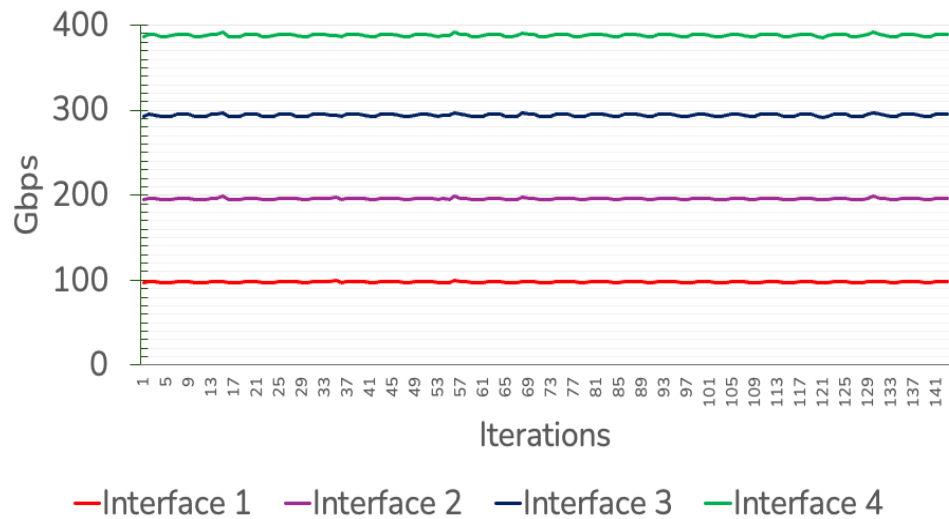
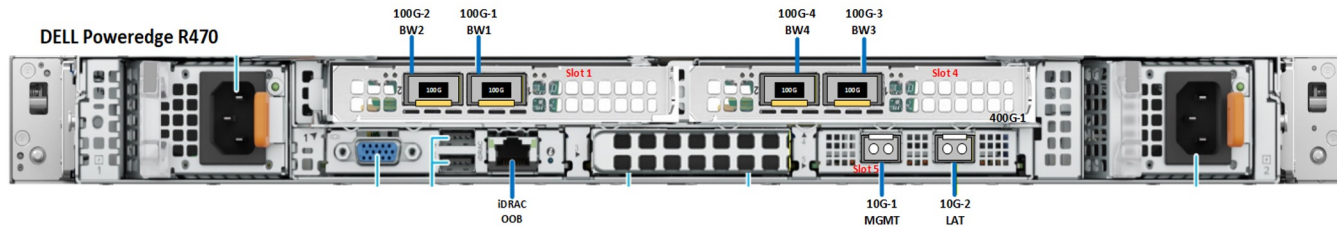


Enhanced visibility for  
performance support

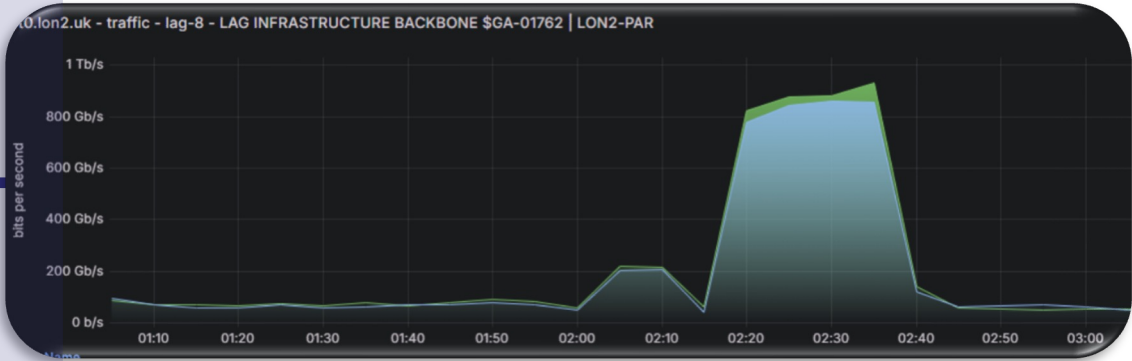
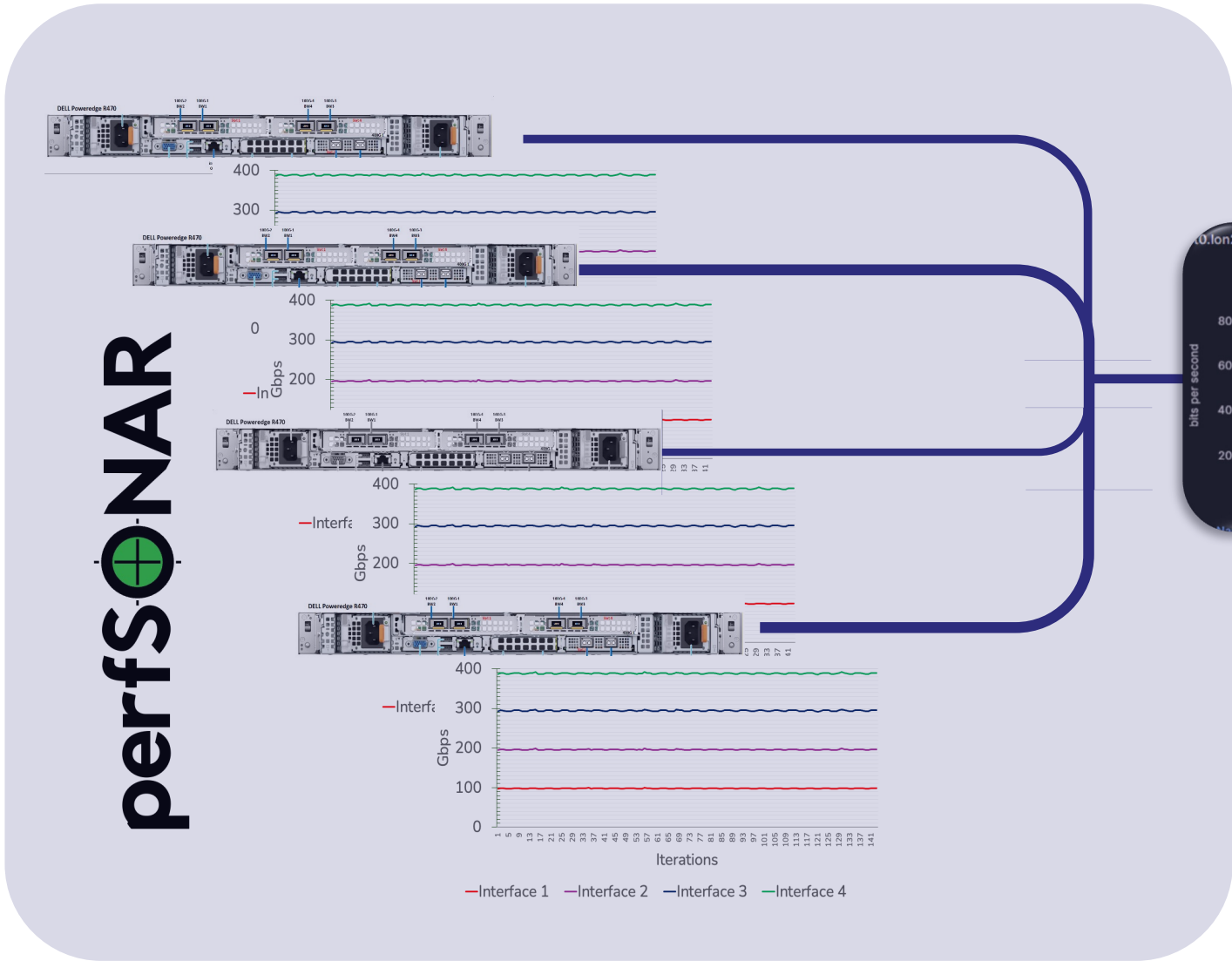


Proactive capacity planning  
and incident support

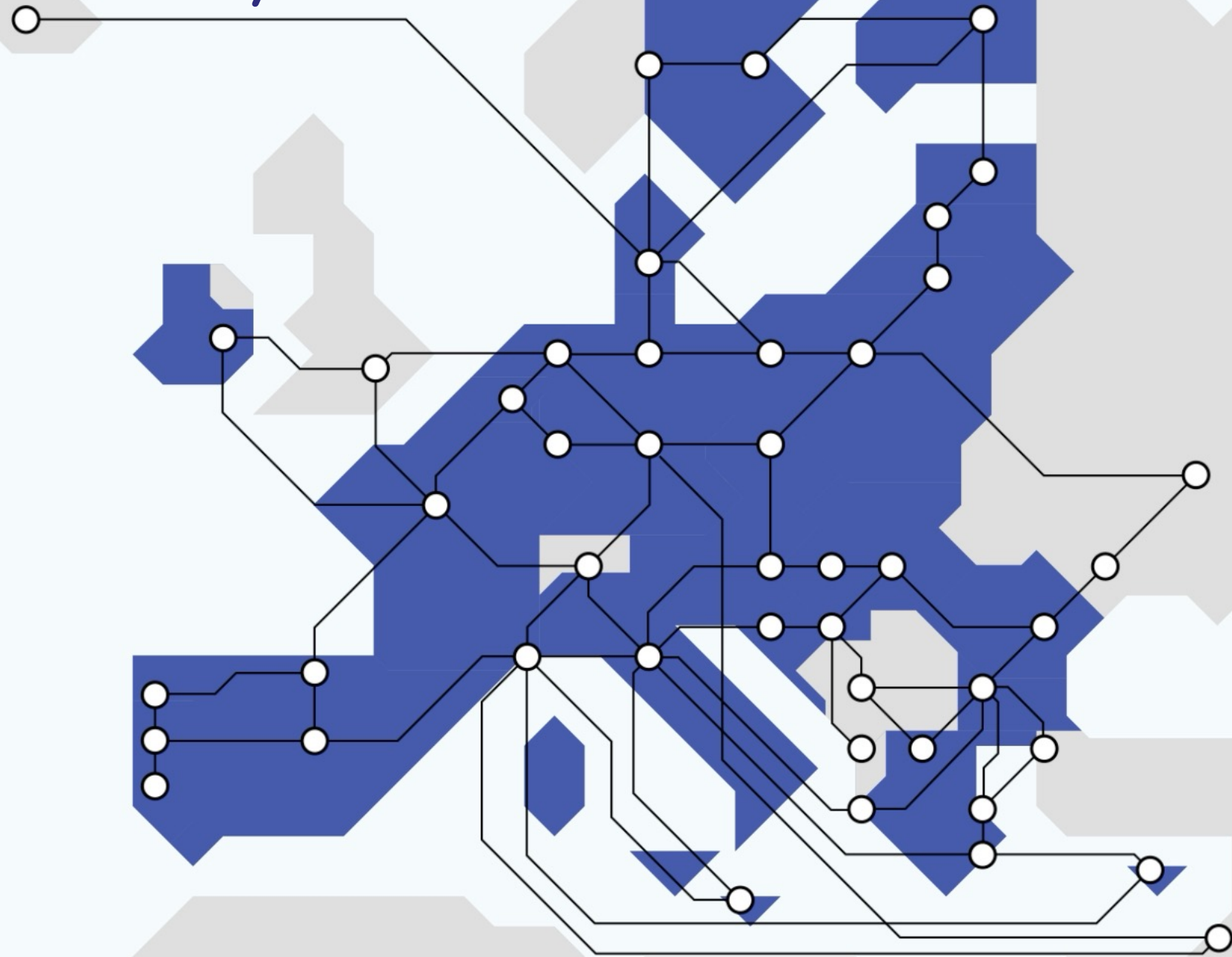
# HyperConnectivity: How will throughput be checked?



# Throughput testing overview: Does it scale?



# The EuroHPC Hyperconnectivity Service



# EuroHPC Hyperconnectivity Service:

## CONNECTIVITY - CAPABILITY - COLLABORATION

### GÉANT + NRENs + HPC sites

### Delivering the Multi domain service

- + Enhanced systems to enable pro-active planning
- + Higher capacity connectivity
- + Broader connectivity to commodity providers
- + Increased visibility of the sites to potential users of HPC sites

### Next steps

- Confirm ability to join
  - onboarding documents now available.
- gathering network data

