

GN4-3N

Planning for the Future



GÉANT is undertaking the most significant refresh of the GÉANT network in a decade, with a major project designed to support the needs of Europe's research and education community for the next 15 years.

CONNECT spoke to Bram Peeters, GÉANT's Chief Network Operations Officer, to understand more about the GN4 Phase 3 Network (GN4-3N) project and what it will deliver to the research and education community.

Bram, GN4-3N is one of the largest and most expensive projects ever planned in the research and education networking sector, why do we need GN4-3N?

This project will help to future-proof Europe's R&E network – anticipating and staying ahead of the expected growth in data transfer, and to provide cost efficiencies and stabilise costs. We can realise this in the GN4-3N project by investing in fibre now.

The current GÉANT network has been instrumental in delivering advanced network services to European NRENs and supporting worldwide connectivity for international research but it is now reaching the limits of its capabilities and is currently fairly inflexible in service provision. If we remain stuck to the current approach it will become progressively more expensive to support growth, new user needs and new services.

GÉANT is experiencing growth of 35% per annum, which means that in 10 years, traffic will grow 20 times, and in 15 years, traffic will be around 90 times larger! The challenge is to build a network infrastructure that can not only support this kind of growth, but is also able to cope with un-known needs

Across Europe, countries have significant plans to develop data-intensive services, including supporting the next generation of “big science” projects. The aim is to be able to bridge the digital divide to ensure that, wherever possible, access to network services and capacity is an enabler for countries, not a roadblock to these projects.

What are the aims of this project?

There are three main aims for GN4-3N.

First, we're aiming to directly connect 24 countries on the fibre backbone. When combined with the NORDUnet network, this gives 75% fibre coverage for European NRENs.

Second, we will focus on optical networking using open line systems. This will decouple the photonic layer from transmission layer to future-proof service provision – essential for a 15- year project.

Finally, these open optical systems will be able to carry traffic across other networks and to carry other network traffic across ours – to remove the “hard edges” between GÉANT and NREN networks. The result of this will be the ability to more easily deliver dedicated networks for our larger partners.

This is a vast project for GÉANT, what are the challenges you anticipate?

This is both a huge network project and also a paradigm shift in our procurement policy, and as such, there are a number of challenges. There is new technology, new suppliers and a new approach to working and this is a steep learning curve. The concepts of spectrum sharing is still new and we will need to work with vendors and NRENs to find solutions that are scalable, sustainable and that will stand the test of time.

Fifteen years is a long-term investment and so the relationship with suppliers will need to be adapted, with suppliers becoming partners rather than vendors. This ability to work with them and to share a clear, common roadmap will be crucial to success.

There is a huge amount of skill and knowledge in the community and we will need to continue to leverage this to understand the future needs of our NREN partners. One challenge will be managing expectations of 38 different NRENs, each with their own specific needs and vision.

Of course, while this is happening we still need to maintain the existing quality of the network and support our current users and services. It is a bit like changing an F1 engine whilst the car is still lapping the circuit! Our team is crucial to this build and support work.

What has been done so far, and where do you expect the project to be by the end of 2019?

Like all big projects, getting the groundwork prepared is crucial and in this instance, it is literally the case, with the first two elements: the procurement of fibre optic services and launching the optical transmission equipment tender. By the end of 2019, we anticipate the first fibre to be in place.

In addition the process of community engagement started in 2017, and will continue throughout the project, ensuring the community understands what is happening and we understand what the community needs and expects.

For more information on GN4-3N visit: geant.org/GN4-3N