



GÉANT L3VPN Service Description

Multi-point, VPN services for NRENs

GÉANT L3VPN

Overview

The GÉANT L3VPN service offers the National Research and Education Networks (NRENs) the ability to profit from the network reach and versatility of the GÉANT network for multi-point to multi-point connections over great distances.

Many research projects require the additional security and reassurance of a Virtual Private Network (VPN) to ensure data services are isolated from general IP traffic. GÉANT L3VPN can provide privately routed networks over the existing GÉANT infrastructure from/to any connected locations in Europe, North America and further afield. This allows for a higher level of separation from the global IP routing information, when required. By creating a virtual IP network, all sites on the VPN can flexibly communicate without the need to set-up separate networks. These VPN sites will also benefit from the confidentiality and security of a private infrastructure.

L3VPN offers a cost-effective solution for teams requiring many-to-many site connectivity support where GÉANT Plus virtual circuits would be too complex to administer.

The service is delivered over the GÉANT IP network, and takes full advantage of the statistical multiplexing available at the IP layer. It is available for all NRENs and shares the NREN's existing IP capacity. The service is offered over a VLAN on the existing IP port. Per-VLAN rate limiting is available, if required, and should be specified at the time of the L3VPN request.

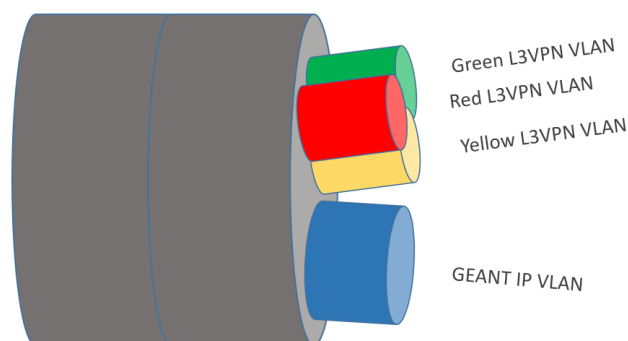


Figure 1: Representation of the VLANs within the physical access.

Robust: L3VPN services provide automated re-routing and recovery.

Flexible: Ideally suited for many-to-many connectivity requirements.

Capacity: Utilises NREN Access Port Capacity.

Fast delivery: No additional hardware requirements.

Extended footprint: Available to all GÉANT NRENs, allowing for connectivity to International partners.

Cost effective: No additional cost to setup a multipoint-to-multipoint connection with the standard GÉANT L3VPN service subscription.

GÉANT L3VPN SERVICE DESCRIPTION

Technical Description of the Service

Infrastructure

The Multi-Protocol Label Switching (MPLS) Layer 3 VPNs use a peer-to-peer model that uses Border Gateway Protocol (BGP) to distribute VPN-related information:

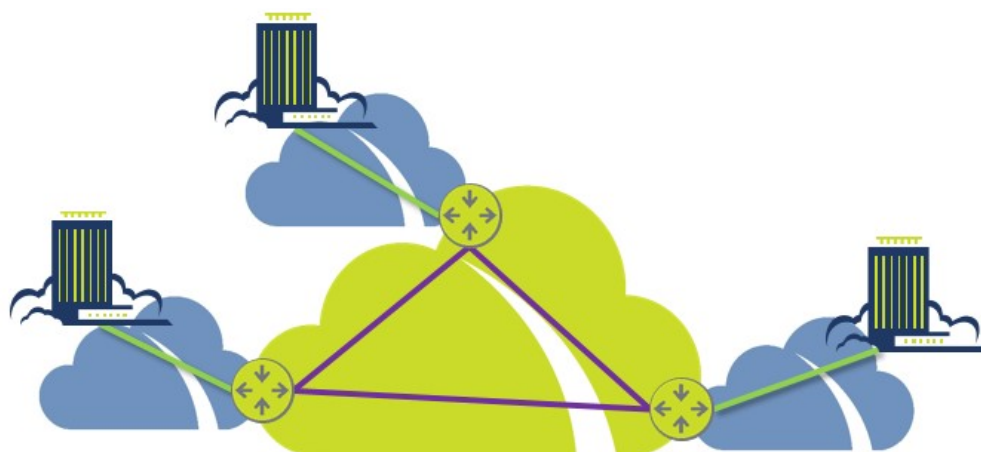


Figure 2: Virtual connection of the end users over an overlay network

This highly scalable, peer-to-peer model acts as a large-scale virtual router for the NRENs.

Each peer ("customer") network connecting to a Layer 3 VPN does so using a specific and dedicated VLAN. These VLANs are associated on the GÉANT ("provider") routers with a specific Virtual Routing and Forwarding (VRF) table. Multi-Protocol BGP (MP-BGP) is used between the provider routers to ensure that only this VRF is populated with routes advertised via the associated customer VLANs. Multi-Protocol Label Switching (MPLS) tunnels are used across the GÉANT backbone network to keep the traffic contained to that specific Layer 3 VPN.

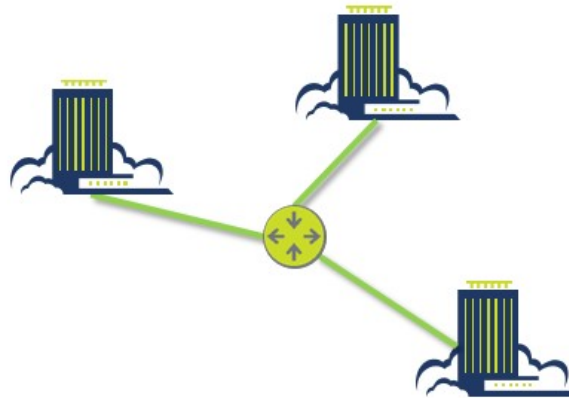


Figure 3: L3VPN logically represented by a router

Technical Parameters

This section highlights the parameters defining the standard service offered.

L3VPN interface connection

New L3VPNs are setup using a VLAN over the same interface used for the NREN's IP subscription. If the L3VPN requires a new port, the standard (one-off) port price will be charged.

L3VPN limitation per interface

The IP capacity is limited only by the NREN's IP capacity.

L3VPN participant limit per instance

For a L3VPN deployment, where the design involves connectors outside of the GÉANT Membership (non-EU NRENs or organisations not connected to EU NRENs), please discuss the feasibility with your Partner Relations representative

More information on the offered solutions can be found on the GÉANT Partner Portal:

<https://partner.geant.org/>

Demarcation Point

A L3VPN is presented as a VLAN on an NREN's IP access interface.

Connections to Destinations Outside of Europe

Although the primary focus of the GÉANT L3VPN service is to offer European NRENs the ability to quickly and flexibly provision multi-point to multi-point connections, it is possible to extend this network reach even further. As the GÉANT L3VPN service leverages the IP infrastructure, NRENs connected to the GÉANT network can additionally reach International Partners.

The possibility of extending an NREN's global reach can be discussed on a case-by-case basis, as the remote end of the network needs to be able to accept circuits and enable BGP sessions. For further information, please contact the GÉANT Partner Relations Team: partner-relations@geant.org

Service-Level Target

Availability Target

GÉANT L3VPN is delivered over the highly resilient IP network, and as such, offers extremely high availability:

The GÉANT L3VPN is considered unavailable when the point-to-point virtual connection is not able to transit traffic because of an outage on the GÉANT Backbone.

Time to Fix a Fault and Time to Respond Target

The targeted time to fix a fault on the network applies only to hardware issues in the GÉANT backbone.

The GÉANT OC provides 24×7 support throughout the year. Notifications are issued to the affected partner within 15 minutes of incident detection by a central network monitoring system.

Please refer the GÉANT Service Level Target documentation on the GÉANT Partner Portal for more information.

Request procedure, service implementation and delivery time

Requesting Additional GÉANT Access Capacity

The bandwidth capacity used by the L3VPN service is part of the NRENs GÉANT IP capacity. Where additional capacity is required, due to an increase in traffic levels, the IP service will be upgraded. No bandwidth is required to be specifically apportioned to the L3VPN.

Service Implementation and Delivery Time

Each deployed L3VPN will have its own specific requirements and will require an element of design work performed by GÉANT in co-ordination with the co-ordinating/ requesting NREN. Once the initial requirements are known, an estimate of implementation time for the L3VPN across the GÉANT network will be provided.

Pricing

The GÉANT L3VPN Service is available for all GÉANT NRENs wishing to use it. It is a Product included with the standard IP subscription, and the configuration of the VLANs supporting the different services is performed when a new service is requested.

To discuss your specific solutions, including additional, dedicated interfaces and/or connectors outside the GÉANT network, please contact the GÉANT Partner Relations Team: partner-relations@geant.org

GÉANT L3VPN Summary Table

Supported Nominal Data Rates	<p>Delivered over the standard IP service Access Port.</p> <p>Additional Interfaces may be requested. If required, please speak with your Partner Relations representative.</p>
Protocols Supported	
Optical Connectors	
Supported Client Interfaces	
Protection Options	<p>The L3VPNs are deployed over existing NREN access Ports and will take advantage of the configurations employed there – for example Primary/ Backup or load balancing configurations.</p>
Operations Centre Coverage	24/7/365