



GÉANT Open Exchange: Service Description



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1 Introduction

1.1 About this Document

This document provides a service description for the interconnectivity services provided over the pilot GÉANT Open facility (GÉANT Open) in London. It outlines the services offered, the applicable users, the support and the core connectivity policies.

The service specification described here is valid for the pilot phase of the facility only. In the event of a successful pilot, the service description will be reviewed and updated as required in support of a full production service.

1.2 GÉANT Open: Purpose and Architecture

The purpose of GÉANT Open is to facilitate the interconnection of research and education network users by providing a facility that will enable inter-regional connections and other connections to the GÉANT network domain. GÉANT Open is designed to offer NRENS, eligible user communities and approved commercial partners a flexible, high-performance, neutral interconnection point to allow policy-free interconnections.

The exchange point is situated at the edge of the GÉANT network domain and is considered to be an additional network entity from all other GÉANT-operated networks. Its architecture will be reviewed at the end of the pilot. Owing to the nature of GÉANT Open, interconnections to and from the wider GÉANT network(s) will be subject to modified access conditions when compared to interconnections between other parties. These are detailed in Section 4 below.

1.3 Purpose of the GÉANT Open Pilot

The purpose of the pilot is to establish the basis of how the GÉANT Open is operated and managed vis-a-vis its connection policies and operational interfaces. In addition, its role is, in part, to determine the services and features supported by the facility based on the experience gained within the pilot and on the user experience and expectation. As a pilot service, many of the features normally assumed to be in place within a production service are not implemented.

2 GÉANT Open Pilot Service Scope

The current pilot service is designed to:

- Provide a proof of concept for the technology to operate an Open Exchange facility within the GÉANT community.
- Identify a customer profile for users to enhance the design of any future production service.
- Determine the operational parameters for any future production service.
- Identify the operational and support requirements for offering a production service.
- Provide technical, usage, support and financial cost models for determining the commercial viability of any production service.

The proposed service is designed as a pilot service. As such it will offer:

- Reasonable endeavours support levels.
- No contractual Service Level Agreement (SLA).
- No hardware redundancy or contingency (except as provided within the switching equipment).
- No assurance of continuity of service under the same terms beyond the timeframe of the pilot.

3 GÉANT Open Service Description

3.1 User Types

For the purposes of this service description, four different user types are defined as potential connectors on the GÉANT Open:

- GÉANT international partners (NRENs and regional network partners).
- Research and educational organisations “sponsored” by their local NREN.
- Commercial organisations “sponsored” by an NREN.
- GÉANT.

GÉANT is defined separately from other partners solely to recognise the different operational characteristics of the GÉANT network and to recognise the management and operational role DANTE has with respect to GÉANT Open.

Sponsorship of commercial organisations and individual research and educational organisations is necessary to ensure that GÉANT meets its contractual and commercial responsibilities to its shareholders and is in compliance with its legal obligations. These user types must, in the first instance, have their applications to connect to GÉANT Open agreed by their local in-country NREN. (For example, an Italian R&E connector will require the approval of GARR, the Italian NREN.)

3.2 Core Services

The Open Exchange offers two core services:

- Peer-to-peer policy-neutral interconnections between participating organisations connecting on GÉANT Open (with the exception of GÉANT).
- Interconnectivity between GÉANT and other participating organisations.

These are described in more detail below.

The two services are not differentiated on a technical basis. At the technology level, the connectivity between the GÉANT network and the Open Exchange is similar to that of any other peering partner.

3.2.1 Peer-to-Peer Neutral Interconnections

This service provides connectivity between any two members. The service can be offered in two options: VLAN ID and Port to Port (or “transparent”). These are described in more detail below. The VLAN-ID and Port-to-Port-based modes are mutually exclusive. It is not possible to provision a Port-to-Port service together with a VLAN-ID service based on the same port.

The default service will be the VLAN-ID-based service.

Peer-to-peer connectivity between commercial organisations is not permitted. (Further information about eligibility and connection policies is provided in Section 4.)

3.2.1.1 VLAN-ID-Based Interconnection

The VLAN-ID-based mode interconnects two Open Lightpath Exchange (OLE) members with a Layer 2 (L2) circuit (“pseudowire”). Multiple VLAN-ID-based circuits can be provisioned for a single connector on a single port. This is shown conceptually in Figure 3.1 below.



Figure 3.1: Peer-to-peer switching within the Open Exchange

3.2.1.2 Port-to-Port-Based Interconnection

The port-to-port-based or transparent mode interconnects two OLE members' ports together and provides transparent transmission of all Ethernet frames, independently from the VLAN-ID.

3.2.2 Partner Access to GÉANT Network

Access from GÉANT Open into the GÉANT network infrastructure will be possible, in order to facilitate access to the GÉANT network and for any onward connectivity to services on the GÉANT network. This is shown conceptually in Figure 3.2 below. This connectivity will be via the VLAN-ID mode only, as using the Open Exchange to provide port-to-port connectivity will not offer any commercial or technical advantages compared with a direct connection to GÉANT.



Figure 3.2: Access into the GÉANT infrastructure

4 Eligibility and Connection Policies

4.1 Connection to Switching Fabric

Any organisation asking to be connected to the GÉANT Open switching fabric will need to comply with the following requirements.

4.1.1 Prerequisites

To connect, the organisation must:

- Comply with the purpose of GÉANT Open, i.e. it must serve research and education networks.
- Finance its own connections to the switching fabric.
- Pay for the lease of the required interface cards.
- Pay a share contributing to the amortisation of GÉANT Open capital expenses.
- Pay a share contributing to the operation of GÉANT Open.

These fees will be described in a separate document (currently under development).

4.1.2 Connection Policies

Here below it is indicated the connection policy that applies to an organisation, depending on its location (inside or outside the GÉANT NREN territory) and type (GÉANT NREN or NREN independent):

If that organisation is a GÉANT NREN:

- Connection is allowed.

If that organisation is standalone, unrelated to any NREN:

- Connection is allowed, provided the local GÉANT NREN has waived its right to connect the organisation, i.e. the local GÉANT NREN has first right of refusal to connect the organisation.

For an organisation from outside the GÉANT NREN territory:

- Connection is allowed.

Connection does not guarantee any onward connectivity and DANTE reserves the right during the pilot to set a maximum for the total capacity each organisation can use.

4.2 Connection between GÉANT and GÉANT Open Connectors

Here below it is indicated the policies that determine whether GÉANT will agree to connect to other entities connecting at GÉANT Open. The exchange point connecting entity is from inside the GÉANT NREN territory

If the entity is a GÉANT NREN:

- Provided they pay for the additional access, according to the GÉANT Cost Sharing Model.

If the entity is standalone and unrelated to any NREN:

- Provided they pay for the unsubsidised access, The exchange point connecting entity is from outside the GÉANT NREN territory

If the entity is an international GÉANT partner (i.e. Regional or National Research and Education Networks based outside the EU:

- At no cost, subject to agreed capacity limits set by the NREN PC or based on a mutual interconnection arrangement where costs of intercontinental capacity costs are shared.

If the entity is any other organisation (for instance, a commercial cloud provider with scientific research users from GÉANT:

- Provided they pay for the unsubsidised access,

4.3 Connection Summary

The connection policies for the different Open user types are summarised in Table 4.1 below.

	NREN	NREN-Independent R&E Organisation (1)	GÉANT	Commercial Organisation (1)
NREN	Allowed	Allowed	Allowed	Allowed
NREN-Independent R&E Organisation (1)	Allowed	Allowed	Allowed	Allowed
GÉANT	Allowed	Allowed	N/A	Allowed
Commercial Organisation (1)	Allowed	Allowed	Allowed	Prohibited

Table 4.1: Eligibility matrix

Notes:

1. With the permission of a sponsoring NREN.

5 Charging Policy

For the pilot service the core principle of charging is cost recovery for equipment used and operational costs. This will be detailed in the separate fee structure document. The intention is that GÉANT Open is both a not-for-profit and a non-subsidised infrastructure. The fees ensure that GÉANT Open will be financially self-sustaining. The pricing would be applicable as per the decision and recommendation of the Cost Sharing Working Group (CSWG), after an initial free period of three months.

Connectivity between GÉANT and any other partner may also incur charges for any services interconnected within the GÉANT network at the normal cost-recovery rates. Again these will be detailed in the fee structure document.

6 Support

As it is a pilot, the support level for this service will be on a reasonable endeavours basis.

One of the key activities for the pilot is to determine the service and support procedures for any potential production service. Configuration and day-to-day support will therefore be undertaken on a reasonable endeavours basis until these procedures have been designed, agreed and documented.

The GÉANT NOC will provide a basic monitoring service and provide the point of contact for all trouble ticket reports.

7 Service Level Agreement

As it is a pilot, no Service Level Agreement will be included within this service. One of the purposes of the pilot is to determine a suitable Service Level Agreement. This will be done in conjunction with the users and with reference to the practical experience gained within the pilot.

8 GÉANT Open Exchange Policy

The following document provides GÉANT Open policy approved by the Exec:

- GN3-12-072_GEANT_Open_Exchange_Policy_v2 0 (N. Hersoug)

Glossary

ID	Identifier
KPI	Key Performance Indicator
LAN	Local Area Network
Ln	Layer n
NOC	Network Operations Centre
NREN	National Research and Education Network
OLE	Open Lightpath Exchange
R&E	Research and Education
SLA	Service Level Agreement
VLAN	Virtual LAN