

28-08-2020

Milestone M3.2

NREN Survey Distributed, Data Collected and Reporting Website Updated Version 2

Milestone M3.2

Contractual Date:	31-08-2020
Actual Date:	28-08-2020
Grant Agreement No.:	856726
Work Package	WP3
Task Item:	Task 3
Nature of Milestone:	O (Other)
Dissemination Level:	PU (Public)
Lead Partner:	GÉANT Association
Document ID:	GN4-3-20-13A5D2
Authors:	D. Wustenberg (GÉANT Association)

© GÉANT Association on behalf of the GN4-3 project.

The research leading to these results has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 856726 (GN4-3).

Abstract

This document presents the key findings of the 2019 NREN Compendium survey, as confirmation that the survey has been distributed, data collected and reporting website updated, in fulfilment of Milestone M3.2.

Table of Contents

1	About the Compendium	1
1.1	Overview	1
1.2	Methodology	1
1.3	Timeline	2
2	Key Findings	3
3	Conclusions	5
	References	6
	Glossary	6

Table of Figures

	Figure 2.1: Countries represented in the 2019 Compendium (in green)	3
--	---	---

Table of Tables

	Table 1.1: Timeline of 2019 Compendium survey	2
--	---	---

1 About the Compendium

1.1 Overview

The GÉANT Compendium of National Research and Education Networks in Europe (the Compendium) is the result of a broad, collective effort to portray the networks of the research and education community in Europe.

National Research and Education Network (NREN) organisations run special communication networks dedicated to supporting the needs of the scientific and academic community within a country. In Europe, NRENs are interconnected by the pan-European GÉANT network, the largest and most advanced R&E network in the world.

Published since 2000, the Compendium is a living picture of what NRENs do every day to meet users' requirements and help them in their research, teaching and learning activities. The annual NREN Compendium survey invites Europe's NRENs to provide detailed information about their network, equipment and users. The survey conducted in 2019 focused on the period from January to December 2018. It requested information relating to five areas of interest to NRENs: organisation, policies, users, network and service portfolios. The survey questions were drafted under the guidance of subject specialists from within the GN4-3 project. This same group is also leading the analysis of the respondents' data. The key findings from the survey are summarised in this document; further details will be provided in Deliverable D3.3 *Compendium Report (1)*, which is currently being prepared for issue in September. Specific reports compiled from NREN data may also be generated from the online version of the Compendium [[COMPENDIUM](#)].

1.2 Methodology

The Compendium survey is carried out by GN4-3 Work Package 3 User and Stakeholder Engagement, Task 3 Stakeholder Insights (WP3 T3).

The survey questions were drafted in collaboration with subject specialists from within the GN4-3 project; the same group is also involved in reviewing and analysing the respondents' data, and helping to produce the detailed Deliverable D3.3 *Compendium Report (1)*.

The survey is conducted online, with all European NRENs invited to take part. The information is provided by those who actually carry out the NRENs' work, from the executive directors, to technical officers, to service portfolio strategists and many more professionals.

1.3 Timeline

The timeline for the 2019 Compendium survey is shown in Table 1.1 below.

Milestone	Date	Status
Survey distributed/opened	August 2019	Completed
Survey closed	December 2019	Completed
Data collected	February 2020	Completed
Reporting website updated	March 2020	Completed
D3.3 <i>Compendium Report (1)</i> produced	September 2020	In progress

Table 1.1: Timeline of 2019 Compendium survey

2 Key Findings

Figure 2.1 below shows the countries represented in the 2019 Compendium (i.e. whose NRENs responded to the 2019 Compendium survey).



Figure 2.1: Countries represented in the 2019 Compendium (in green)

The 2019 Compendium survey shows an ever-evolving NREN user landscape.

The environment in which the networks operate still varies considerably. Most European countries have a liberalised telecommunications market where access to bandwidth and technology is unconstrained by regulation or monopoly. NRENs therefore need to respond to the specific demands of the research and education community to retain their user base. The data from the Compendium survey should help to trace how NRENs meet this challenge.

Reflecting the still-increasing importance of data networks in research and education, budgets and staff numbers have expanded (by 17% and 6%, respectively – these increases follow a slight contraction in the year before), a growth that NRENs used to upgrade their networks and further develop their service portfolio.

The importance of National Research and Education Networks is also manifest in the ever-increasing volume of traffic they carry. About half of the NRENs reported a rise in traffic, and the data highlights the wide variation in traffic from GÉANT partner NRENs. Across all NRENs, the recorded traffic grew by slightly less than 10% in 2018. (This increase in NREN traffic is mirrored by an increase in GÉANT traffic, which the figures indicate is higher than an individual NREN growth.) NRENs expect this trend to continue into the medium term: more than half of the NRENs who responded to the survey forecast an average traffic growth of 50% by 2022, across all organisations within the NRENs' remit. As with last year, the highest growth is expected to come from schools, with an anticipated traffic growth of 76%, followed by universities and research institutions, estimated to grow by 64% each.

NRENs typically upgrade their network at regular intervals, which in turn typically manifests in capacity jumps of the connection to the customers and of the network backbone itself. While characteristic capacity jumps can be seen for some NRENs (which increased the average connectivity of the NRENs' backbone networks by about 10%), the typical connectivity provided to universities and research institutions has not increased on average, mirroring last year's result, which means that connectivity capacities for the research sector are currently stagnating. There have still been increases in traffic, though, so clearly the existing capacity is able to support the needs of the sector. Average connectivity has increased for other customers, e.g. schools, probably due to this being a relatively new market sector that still needs development.

The capacity ranges from 1 Mbps up to 100G. Over half of respondents indicate 1G as typical capacity for connected universities and research institutions. Both institution types are the best connected, with the largest share of typical connectivity of 10G. Schools, where they are connected by the national NREN, normally have more modest requirements; link capacity here is on average close to 100 Mps.

The trend of many NRENs moving beyond their core role as connectivity providers and providing additional services continues. In doing so they are responding to technological changes and changes in the demands of the research and education community. One such development is the ongoing commodification of IT services that just a few years ago were relatively obscure. NRENs have moved to make their experience in procurement of such services available to their customers – cloud services are a prime example here.

Another development is the involvement of NRENs not just in running infrastructure used for education but also in supporting content providers – NRENs that choose this path may become an important gatekeeper or mediator between content providers and consumers in the education sector.

3 Conclusions

The diversity and complexity of the different NRENS can make comparisons challenging, but it is the ambition of the Compendium survey and the Compendium itself to help to provide an insight into this thriving community. Through this annual snapshot, produced each year since 2000, GÉANT continues to monitor the growth and changes among the NRENS in a systematic way.

The Compendium is a community-led document, created by the NREN community, for the NREN community, as a means to understand the status of the collective as a whole, as well as of each NREN. It is a valuable, authoritative dataset with and on which NRENS can inform and build their strategy decisions.

References

[COMPENDIUM] <https://compendium.geant.org/>

Glossary

EC	European Commission
GN4-3	GÉANT Network 4 Phase 3 project, part-funded from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No. 856726
NREN	National Research and Education Network
R&E	Research and Education
WP3	Work Package 3 User and Stakeholder Engagement
WP3 T3	WP3 Task 3 Stakeholder Insights