



# Annual Report 2019

**Belnet**  
dedicated connectivity

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# What is Belnet?

Belnet is the federal government organisation that, since 1993, has been **responsible for the Belgian National Research and Education Network** that provides very high-speed internet access and internet services to universities, high schools, research centres and Belgian government services.

It provides its services exclusively to **259 institutions** that represent more than **800,000 end users**.

Belnet has **79 employees** and is part of the Federal Science Policy.

Belnet is also **responsible for BNIX**, the Belgian National Internet eXchange for internet service providers, content providers, hosting companies and large private enterprises.



*We want to put more emphasis on our value proposition and differentiate ourselves from other providers.*

**Dirk Haex**

Technical Director (a.i.) for Belnet

# Focus on strategy

For Belnet, 2019 was a year of reflecting on strategy: operational excellence is still a priority, but the organisation is also concentrating on consolidating client relations. Various projects have been carried out to improve quality and security, visibility and communication. At the same time, Belnet has continued its development and has continued to invest in technological advances.

*Continuing to provide a quality service is still our fundamental objective and we have worked tirelessly to achieve operational excellence.*

**Nathalie Pinsart**

Administration & Community Director (a.i.) for Belnet





In 2019, Belnet began an in-depth review of its strategy. *'Continuing to provide a quality service is still our fundamental objective,' says Nathalie Pinsart, 'and we have worked tirelessly to achieve operational excellence. But we also want to become more customer-oriented in the coming years to create genuine "customer intimacy". In addition, we are often considered as one internet provider, among others. Providing broadband connectivity is certainly our core business, but Belnet is first and foremost a research network, offering public services that, unfortunately, are not widely known. We want to place more emphasis on this value proposition and differentiate ourselves from other providers. This strategic review has prompted us to offer a new business model for Belnet in 2020 and to implement the actions resulting from it.'*

In April 2019, Jan Torreele took long-term leave from the management team. To ensure the continuity of the organisation and its future development, Nathalie Pinsart, Administration & Community Director (a.i.), and Dirk Haex, Technical Director (a.i.), have acted as his replacement.

## Operations

From an operational point of view, 2019 got off to a bad start on account of two incidents: the first, on 29 January, involved infrastructures that host clients' value-added applications and consequently, resulted in certain services being unavailable for a long period. 'The lesson I learned from this,' says Dirk Haex, 'is that our procedures and fail-safe systems were not sufficiently adopted to our clients' needs.'

*In 2017 and 2018, we launched several projects – on which we continued to work in 2019 – to redesign the Belnet network and move towards a more reliable and more efficient service platform.*

*Our efforts were focused primarily on Business Continuity Management processes, with dedicated plans based on advanced monitoring platforms and regularly tested scenarios. As a result, we are able to communicate and provide a solution quickly should a problem arise.' The second incident occurred on 15 February: the Belnet network became saturated, causing disruption to external traffic. This was resolved in less than two hours. 'Thanks to the measures taken, the rest of the year progressed smoothly. In fact, several customers have told us that the steps taken to restore the situation were greatly appreciated. No one can guarantee that such incidents will not re-occur in the future, however, our clients can rest assured that we are doing our utmost to mitigate such incidents as far as possible.'*

## Security

In terms of security, Belnet has continued to improve and widen the scope of its Business Continuity Management plans. In addition, a vulnerability management process and an associated platform have been implemented to track and correct vulnerabilities in infrastructures managed by Belnet. Finally, Belnet created the position of CISO (Chief Information Security Officer), selected in the fourth quarter of 2019 with the help of an external panel. Taking up the position at the beginning of 2020, he is responsible for implementing an information security management system that complies with ISO 27001 standards.

## Networks and Services

Managed by Belnet, the **BNIX platform**, data exchange point between internet service providers and content providers, has attracted new customers, including Amazon Web Services (AWS) and the Colruyt Group in 2019. 'Because of the growing interest in BNIX,' says Nathalie Pinsart, 'we have devised with a development strategy for the platform, which among other things, has resulted in lowering the price.' In line with its strategy of strengthening customer relations, Belnet has implemented a number of **co-creation projects** with customers, such as the distribution network operator Fluvius, the Université Libre de Bruxelles (ULB) and the Vrije Universiteit Brussels (VUB), the specific



Amazon Web Services – Information session



connectivity requirements of which and the demand for capacity, continue to grow. Dirk Haex: 'VUB asked Belnet for an update of its connectivity capacity from 10 to 100 Gbit/s and the installation of a fail-safe system. *The Inter-University Institute for High Energies (IIHE), a research centre in particle physics, created by two Brussels universities, needed to expand its bandwidth to exchange large amounts of data, with CERN among others, via the European research and education network GÉANT. In addition, ULB decided to work in partnership with Belnet to connect its various sites in Brussels and Gosselies.*

Belnet has also invested in projects at a federal level. On 13 June 2019, G-Cloud, a programme that aims to develop a community cloud for the state, appointed Belnet as service owner for **FedWAN**, a network connecting the regional sites of the Federal Public Services (FPS) to one other and to their headquarters in Brussels. Nathalie Pinsart added: '*We have thus completely renewed the optical backbone of the Prime Minister's Chancellery to establish a new PoP, a point of presence entirely managed by Belnet, connecting the Chancellery's buildings with its various sites. Belnet also built and manages the WANs for FPS Economy and FPS Finance and started to create the WAN for FPS Employment at the end of 2019.*

Allied to a partnership with the European Commission, Belnet has also worked on the implementation of the first Belgian exchange for the European Blockchain Services Infrastructure (EBSI), a technology that allows data to be stored in a secure and decentralised manner. In 2020, Belnet will be the first organisation in Europe to have developed such a node.

## Bulk Purchasing

*'We have decided to allow our customers to benefit from our purchasing unit's expertise by enabling them to sign up to a framework agreement for the purchase of computer and optical equipment. The initiative has been a great success: participating clients are incorporating the specifications we have drawn up and are benefitting from prices and the associated service conditions, negotiated by Belnet,' Nathalie Pinsart explains.'*

## Product Management

A Product Management cell has been created within Belnet to check that each product corresponds to client requirements. A product strategy has been established and a review of the catalogue has begun with a regular review of prices or the addition of new product functionalities.

The first task for the new unit was to review the SPAM protection service offer. The new service will soon be put into production with a solution that best meets customer expectations: Belnet Advanced Mail Security.

## Financial Statement

Belnet ended 2019 with a positive result of EUR 1.3 million. This balance will be paid into the investment fund for the renewal of the network's optical fibre lease contracts.



Belnet's new website



Move to WTC III

## Visibility

As part of its new customer-oriented approach, Belnet has carried out a series of communication campaigns, including the organisation of events, such as a networking evening on 8 May for decision makers from the Research & Education (R&E) community and public services, that have brought together 72 participants. *'To improve Belnet's visibility,'* Nathalie Pinsart adds, *'we also communicated more in the press. Dirk and I also went to meet with policy-makers to show them the added value Belnet could bring to our two key segments of R&E and government services.'* As for **our new website**, it has not only improved our visibility, but has also increased the interaction with our visitors.

## Move

Belnet has moved from Avenue Louise to the WTC III building in the northern area of Brussels. This was one of the challenges for 2019, that included a switch to a new work method. Employees were equipped with laptops and given the choice of two days of telework. Another initiative to change the infrastructure to a Unified Communications platform was also launched.

## Staff and Internal Organisation

Belnet has set up an internal communication development plan that includes a complete overhaul of its intranet and the launch of an internal newsletter.

In 2019, Belnet attracted new talent: the team increased from 75 to 79 employees under contract, supported by independent consultants. *'Our goal,'* says Nathalie Pinsart, *'is a structure of 95 employees. However, we have been able to hire experienced candidates. In the past, we mainly recruited young candidates who had recently graduated from university. Today, by attracting more experienced candidates, we can rely on a team that combines both youth and experienced talent, which gives us an additional perspective.'*

*The launch of our new website, which makes it easier for candidates to apply, has undoubtedly contributed to this success. When you take stock of all that has been achieved, during the year with a team of 79 people, we can be proud of the results achieved thanks to the work and involvement of our employees,'* Dirk Haex concludes. *'We are, therefore, looking confidently towards the future, convinced of Belnet's ability to implement its new business model.'*



*We can be proud of the results achieved thanks to the work and involvement of our employees.*

**Dirk Haex**

Technical Director (a.i.) for Belnet

# Belnet in practice

## Our Mission

Belnet is the Belgian National Research and Education Network (NREN). Belnet encourages deployment of the knowledge and information society by providing and maintaining high-quality, innovative network infrastructures and associated services to meet the specific needs of higher education, research and public sector administration in Belgium, thanks to its expertise, unique market position and economies of scale.

## Our Vision

**'Dedicated connectivity'** Belnet provides specific connectivity in the fields of services, federation and networks for several clearly identified target groups within education, research and public sector administration, and furthermore, provides access to (services on) the global Internet as well as to (inter)national research networks on every continent.

## Our Values

### **Trust**

Belnet is a reliable, stable, non-commercial and neutral partner to its customers.

### **Professionalism**

Belnet operates professionally with the required expertise and know-how.

### **Dedicated**

Belnet is dedicated to its customers and develops an infrastructure and services adapted to their needs.

### **Effectiveness**

Belnet is an effective, dynamic, high-quality organisation.

## Our strategic objectives

### **Operational excellence**

Belnet seeks to provide a quality service that its customers can trust.

### **Security**

Information security is a priority and is an essential element of its operating method, services, and activities.

### **Dedicated services**

Belnet provides services that meet the specific needs of its customers group.

### **Performing organisation**

Belnet is a professional, performing organisation that is perfectly adapted to fulfilling its mission.

# Belnet in 2019

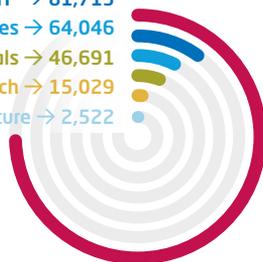
## Belnet network

### Number of end users per Community

Higher education → 615,340  
FedMAN & FedWAN\* → 81,715  
Public services → 64,046  
Hospitals → 46,691  
Research → 15,029  
Art & Culture → 2,522

**825,343**

(end 2019)



### Number of institutions per Community

Research → 75  
Higher education → 68  
Public services → 47  
FedMAN & FedWAN\* → 34  
Hospitals → 19  
Art & Culture → 16

**259**

(end 2019)



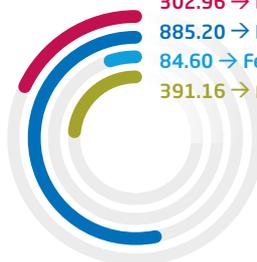
### Evolution of the number of end users

2019 → 825,343  
2018 → 806,283  
2017 → 799,293  
2016 → 740,086



### Total access capacity of customers (in Gbit/s)

302.96 → Belnet Internet bandwidth  
885.20 → Belnet research bandwidth  
84.60 → FedMAN Internet bandwidth  
391.16 → FedWAN network bandwidth



\* Federal institutions

# Employees

## Belnet employees profile (in %)



Technical Department<sup>1</sup> → 49,4%  
 Administration & Finance Department<sup>2</sup> → 25,3%  
 Community Relations Department<sup>3</sup> → 21,5%  
 Management → 3,8%

## Evolution of the number of employees



2019 → 79  
 2012 → 60  
 2007 → 34

# Social networks

## Number of followers on Twitter



1 Networks, ICT-Logistics, Services & Security, Project Management Office, Information Technology Service Management

2 Management Support, Legal, Purchasing, Finance, Human Resources, Reception

3 Business Management, Customer Relations, Marketing & Communication, Product Management

# BELNET Network

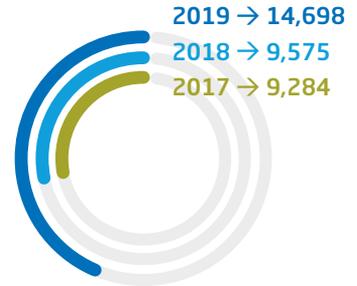
## Digital Certificates Service (DCS)

Belnet's **Digital Certificates Service** offers a wide range of digital certificates that can be simply and securely managed by research or higher education institutions and Belgian public services organisations.

### Number of customers using DCS



### Total number of certificates issued



## Belnet Leased Line (BLL)

The **Belnet Leased Line** service allows higher education and research organisations as well as Belgian public services organisations to easily connect to the Belnet network.

Belnet looks for the most suitable leased line to an access port on its network for these organisations and sets up a monitoring system to guarantee high-performance and permanently available connectivity.

### Evolution of the number of requests



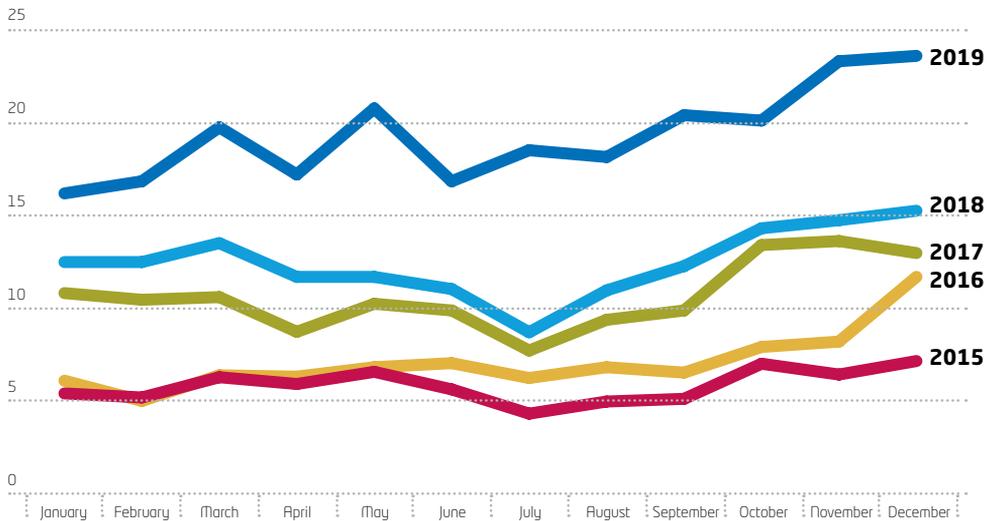
## Evolution of the number of institutions using eduroam and govroom services



**eduroam** is a service that provides users at research and higher education institutions with simple, secured access to their own organisation's wireless network but also to the network of other participating organisations across the whole world.

**govroom** is a service that allows civil servants to surf securely and wirelessly to all affiliated public services organisations in Belgium.

## Evolution of the in external traffic (in Petabyte)



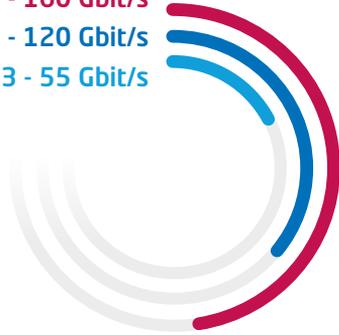
# Belgian National Internet Exchange (BNIX)

## Traffic evolution

Tripled  
in six years

2019 - 160 Gbit/s  
2018 - 120 Gbit/s  
2013 - 55 Gbit/s

Last year, the quantity of data exchanged on BNIX increased spectacularly. Average traffic on the platform was 160 Gbit/s. By means of comparison, in 2018 it was 'only' 120 Gbit/s. Data traffic has followed the daily rhythm of internet use, which begins early in the morning and reaches its peak between 8 p.m. and 10 p.m.



## The BNIX platform



58

PARTICIPANTS

Three new participants joined the BNIX platform in 2019: Amazon Web Services (AWS), the Colruyt Group and Destiny.



3

DATA CENTRES



INFRASTRUCTURE

13.2 Tbps

is the switch capacity

**These are 4x more powerful than the previous ones.**

# +31%

Data traffic 2018/2019

Traffic has increased by 31% in one year.

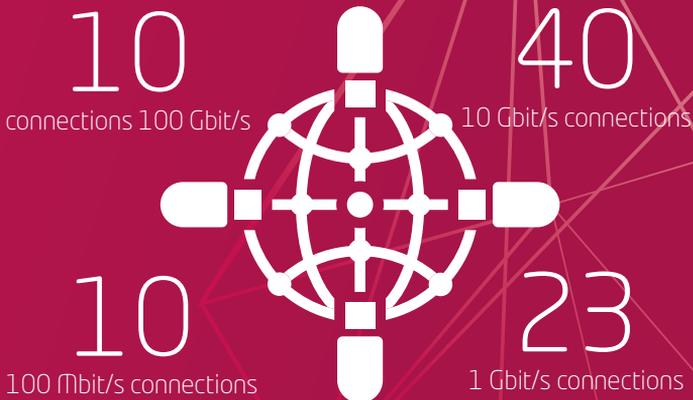
# 619,708,416 GB

Data volume 2019

The Belgian Internet node processed 619,708,416 GB of data.

The strong increase in traffic on the BPIX platform can be explained in part by the connection of Amazon Web Services (AWS), cloud computing services supplier, in the autumn of 2019. The arrival of AWS generated a lot of additional traffic on the BPIX platform regularly pushing it to peaks of 340 Gbit/s. Furthermore, the platform reflects the ever-increasing use of digital services and devices within society.

### Active connections: number and types



# Profit and loss account

Services invoiced compared  
to 2018

+1.13%

Services invoiced

€+9,121,040



## Reserve Fund and Investment Fund

In 2019, the gross financial profit, before profit appropriation, was + EUR 1,303,664. When appropriating profit, the decision was made to add this to the investment fund.

The sum of EUR 2,000,000 was added to the investment fund, bringing the total funds to EUR 18,295,000.

This investment fund was set up to finance future investments, based on a long-term plan.

## Expenses

Expenses relating to human resources increased in 2019 compared to the previous business year, due to recruitment (2 FTE).

Other expenses have decreased in comparison to 2018.

This decrease is due to the fact that there were fewer investments and fewer general costs.

## Income Statement, in euros

	Financial year 2017	Financial year 2018	Financial year 2019
<b>Expenditure</b>			
Other use of consumer goods and third-party services	7,816,615	9,799,193	<b>9,189,121</b>
Property and other expenditure	3,215	5,932	<b>912</b>
Direct and indirect staff pay	5,415,083	5,798,202	<b>5,886,465</b>
Financial depreciation on set-up costs, tangible and intangible assets	3,483,774	2,060,802	<b>1,464,142</b>
Income (expenditure) transfers other than social contributions	87,937	110,110	<b>186,004</b>
Capital losses on existing assets and liabilities	2,767	0	<b>0</b>
Allowance for reserve fund	0	0	<b>0</b>
Allowance for fund allocated to investment	0	0	<b>2,000,000</b>
Allowance for funds allocated to income	0	0	<b>0</b>
Allowance for provision for risks and expenditure	0	0	<b>0</b>
Overall net accounting result	236,480	190,001	<b>-696,336</b>
Overall total expenditure	17,045,870	17,964,240	<b>18,030,308</b>
<b>Income</b>			
Services invoiced	8,348,439	9,019,209	<b>9,121,040</b>
Interest and other financial income	0	0	<b>0</b>
Exceptional income	14,431	40,668	<b>0</b>
Income transfers other than taxes and social contributions	8,683,000	8,904,362	<b>8,909,268</b>
Allowances for provisions for future risks and expenses	0	0	<b>0</b>
Allowances for reserve funds	0	0	<b>0</b>
Overall total income	17,045,870	17,964,240	<b>18,030,308</b>

# Balance Sheet

Funds allocated for investment  
compared to 2018

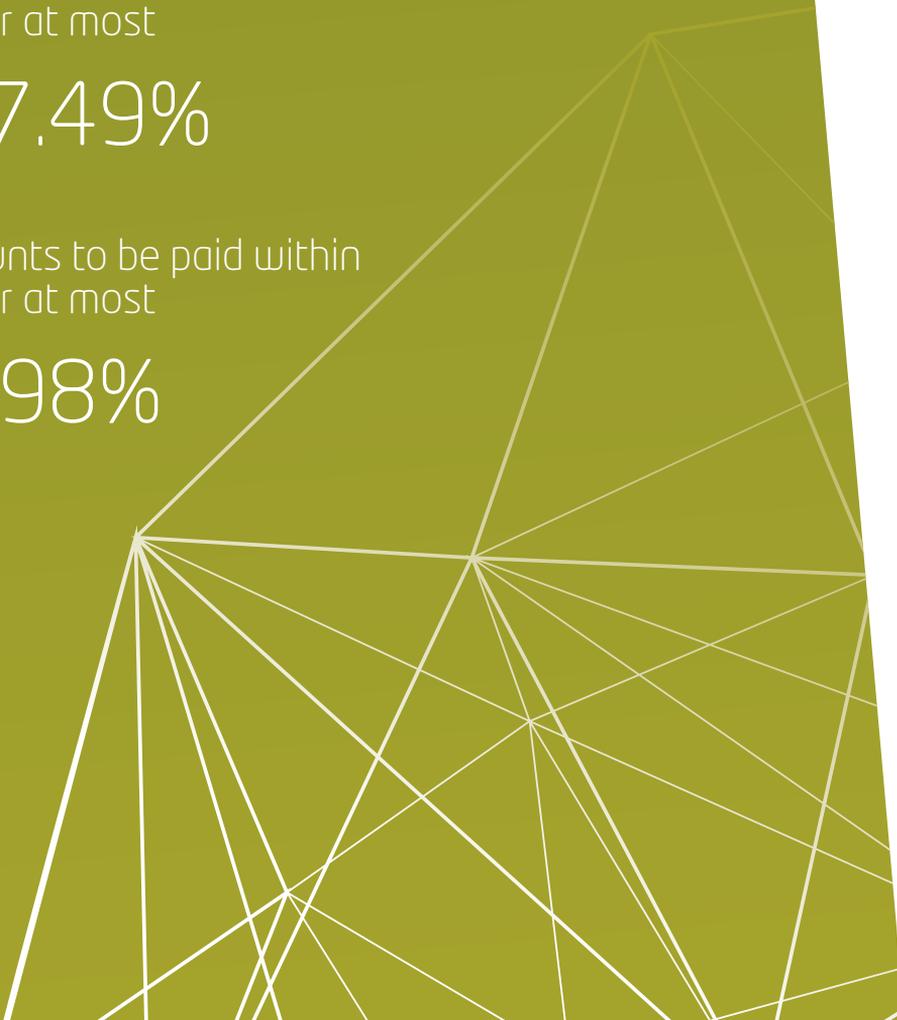
€+2,000,000

Amounts to be received within  
a year at most

-17.49%

Amounts to be paid within  
a year at most

-7.98%



## Investments

The investments made during the financial year 2018 (EUR 1,804,417) were mainly related to network equipment, required for the further development of the Belnet research network, along with the investments needed for Belnet's move to the WTC III building. During this financial year, depreciation was set at EUR 1,464,142, which is lower than the previous year, as was the case last year. The depreciations were made according to the Commission's recommendations for the inventory of state assets (25% for IT equipment, 20% for rolling stock and 10% for other capital goods).

## Liabilities and Assets

Accounts with third parties not subject to the General Accounting Plan (GAP) fell once again, following a sharp rise in 2018.

At the end of 2018, we had an outstanding account of EUR 802,618 with the VAT authorities. This was settled in 2019, which significantly reduces the accounts with third parties that are not subject to the General Accounting Plan (GAP).

## Balance sheet, in euros

	Financial year 2017	Financial year 2018	Financial year 2019
<b>Assets</b>			
Tangible assets	2,672,983	2,416,599	<b>2,113,809</b>
Debts more than a year old payable by third parties not subject to the GAP	163,112	38,492	<b>38,492</b>
Debts a year old at most payable by third parties not subject to the GAP	1,272,422	2,044,393	<b>797,385</b>
Debts a year old at most payable by third parties subject to the GAP	2,997,992	2,807,047	<b>3,205,608</b>
Certificates and treasury bills	18,193,000	18,193,000	<b>17,193,000</b>
Demand bank accounts and postal orders - cash deposits and stamps	5,088,660	4,066,936	<b>6,674,051</b>
Asset balancing and pending accounts	919,669	874,914	<b>1,523,225</b>
Total assets	31,307,837	30,441,380	<b>31,545,570</b>
<b>Liabilities</b>			
Net assets or net corporate assets or liabilities	10,305,582	10,495,583	<b>9,799,246</b>
Reserve funds	821,888	821,888	<b>821,888</b>
Funds allocated for investment	16,295,000	16,295,000	<b>18,295,000</b>
Funds allocated for income	-	-	-
Provisions for risks and expenditure	-	-	-
Debts a year old at most payable to third parties not subject to the GAP	3,179,152	2,176,366	<b>2,002,378</b>
Debts a year old at most payable to third parties subject to the GAP	622,135	641,771	<b>590,837</b>
Liabilities balancing and pending accounts	84,081	10,772	<b>36,222</b>
Total liabilities	31,307,837	30,441,380	<b>31,545,570</b>

# Services offered by Belnet in 2019



## Cloud

- Belnet Storage
- GÉANT Cloud Solutions
- Belnet FedSender



## Community Support

- Belnet FTP
- Belnet Service Desk
- Belnet Portal



## Trust & Security

- Antispam Pro
- Belnet DDoS Mitigation
- Digital Certificates Service



## Identity, Mobility & Federation

- FileSender
- Belnet R&E Federation
- eduroam
- govroom
- Belnet guestroom



## Connectivity & Internet

- Internet connectivity
- Belnet Leased Line
- Belnet Media Transport Service
- Network Time Protocol
- Belnet Cloud Connect - MS AZURE
- DNS Service
- Domain Name Registration
- Fiber Channel
- International connectivity
- Multipoint



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