ANNUAL REPORT 2012





SUMMARY

introduction	2
Who are we?	2
Mission-objectives	3
Message from the director	4
Key figures	8

focus

Workshops 12

10

BNIX 18 CERT.be 21

annual report

Challenges & strategy 24

Customers and users 26

Survey 28

Security 29
Support 30

Support 30 Services 31

Networks 34

Responsibility & 38 organisation

Administration, 39

Finance, HR & Legal Members of

the Management Board

Organisation chart 43

42

Accounts & fiscal results 44

Budget results 45

Profit and Loss Account 46

Balance Sheet 47

WHO ARE WE?

Since 1993, Belnet has been working on the development of the knowledge infrastructure and the network for higher education and Belgian research. The organization provides a broadband Internet connection and associated services to universities, university colleges and administrations.

In 2000, Belnet acquired the status of state service with separate management within the federal science policy. This structure gives it greater autonomy and flexibility to adapt to developments in the field of telecommunications and the Internet.

As part of its activities, Belnet is also responsible for the operation of BNIX (a central platform for the exchange of internet traffic in Belgium), the management and monitoring of FedMAN (Federal Administration network) and the development of CERT.be (the Belgian emergency response team for prevention and computer security). The network today meets the needs of 200 institutions representing more than 700,000 users.

OUR MISSION

OUR STRATEGIC OBJECTIVES

- To encourage scientific developments by providing and maintaining innovative high quality network infrastructures, as well as services related to the needs of higher education and research in Belgium.
- To accelerate the development of the knowledge and information society through our expertise, our unique market position and our economies of scale.
- To develop telecommunications services for and in favor of public institutions.

- To meet the needs in an optimal manner for network infrastructure and related services regarding educational and research institutions and their end users.
- To provide innovative applications and networks in tune with tomorrow's needs.
- To be a strong and visible organisation that caters for all educational and research institutions.
- To deploy our financial and human resources efficiently and effectively, within an optimized structure.



Under the sign of exchange, communication and partnership with clients, 2012 has marked the extension of the strategy initiated in 2011. Spearheading this dynamic, the workshops on services, products and news from the sector have punctuated this year. And especially given new life to the organisation.

You succeeded Pierre Bruyère on January 1, 2012 as Director of Belnet. How did this transfer go and what prospects does it bring to Belnet?

Jan Torreele: As CTO of Belnet, I was very close to Pierre Bruyère and we worked together. This transition was conducted in the best possible conditions. While Pierre Bruyère is now CIO of Belgian Science Policy, he is also chairman of the management committee of Belnet. As such, we have an invaluable ally because his domain knowledge allows us to develop highly advanced technologies for our customers. Take the case of the State Archives, for example, this institution has enormous needs concerning the digitization of archives and storage. With them, we initiated a pilot project that really belongs in the field of research. This opportunity is even more interesting since the experience acquired with this type of synergy can be used for all of our clients.

What are the events that marked 2012?

Jan Torreele: On 1 January 2012, the Marketing and Communication department became a separate unit with its own coordinator. The department, which enjoys greater autonomy, can now develop ambitious strategies. It is now responsible for managing websites, marketing, and communication and ensures the smooth running of events, workshops and conferences.

This structural change confirms that the marketing and communication of our business approach has become of paramount importance. In 2012, customer orientation is one of our major objectives. This mind-set is also embodied in our new logo and all our communication tools.

In 2012, the economic crisis had an impact on our business. Due to more sustained budgetary and administrative controls, we have been forced to allocate more time and human resources to administrative tasks. At the same time, we have tried to offer the same quality of service to our customers. Our employees thus had to work hard to meet this double requirement.

How have you achieved your new policy dedicated to customer relations?

Jan Torreele: We have a major network with a large number of end-users. With nearly 700,000 users, we are in the top 3 of the Belgian internet networks. On the other hand, we have only 200 actual customers, who are all institutional actors. Our agreement with the UCL (Université Catholique de Louvain), for example, represents more than 50,000 users, both students, professors and administrative staff...

The fact that we have relatively few clients allows us to offer custom services, tailored to their specific needs. We sometimes work almost one-to-one, even if the solutions developed for one client can be used for others. This specificity strengthens us, because this way of working is relatively exclusive. It is very unlikely that our institutional clients would be able to get the same service from other operators.

What type of communication did you use to meet your customers' expectations?

Jan Torreele: 2012 was undoubtedly the year of the workshops. We had tested the formula in 2011 with a panel of customers. In 2012, the formula is generalized to all areas of interest. These workshops have taken place very interactively but also very intensive. Participants were able to benefit from practical help from our experts... Success breeds success and so we had to multiply the sessions to meet the demand. We also deployed our expertise to communicate more broadly at thematic events. In 2012, for example, we organised events such as the PoP meeting, an evening of networking for the BNIX, the Belgian Internet Security Conference... For this last event, we addressed all the public and private institutions of the business and finance sector in Belgium and not only our customers.

Why choose such an opening?

Jan Torreele: We found some gaps in conferences dealing with internet security in Belgium. As we had already received a management contract for CERT.be, we have a certain expertise in security. We felt it was our responsibility to organize a conference open to everyone. With nearly 200 participants, this event clearly met a real need. Following this success, we decided to make it an annual event.

Does the importance that you give to customer relations have an impact on the operational organisation of

Jan Torreele: This strategy has in fact led to a real change within Belnet. The various departments have learned to work together and our experts have benefited from interactions with customers - during the workshops-to refine their approach to services. With the launch of the new ITSM (IT Service Management) project, we will reconsider how we operate internally in order to provide better services to our customers. This new management process will run through a single desk, which will handle all the requests from our customers, be they administrative or technical. Thus, through a set of business processes developed within Belnet, we will be able to offer a faster, more efficient and better documented service to our customers. In the long term, this project will have an impact on all the departments of our organisation. It is in fact aligned with most recent international trends concerning the organisation of IT services.

Does the level of your customers' satisfaction reflect the amount of your investment?

Jan Torreele: In 2011, we launched a broad customer satisfaction survey. This survey was extended in 2012 and has allowed us to gauge our services based on the feeling of our customers. Our customers have stated that they are very satisfied with the services of Belnet and the manner in which we offer them. However, we have noted some weaknesses, particularly concerning contact with customers, where we are credited with a score of 70% rather than 90% (average survey score). While it did surprise us somewhat, this result strengthens and motivates us.

You have always made security a major issue for Belnet. Has this approach again been one of your priorities in 2012?

Jan Torreele: With regard to security, we continued to work with CERT.be. The team in charge of the Belgian CERT is relatively young (three years of operation) and its implementation is still in the development phase. Over time, this service will expand the spectrum of its activities. While we primarily focus on organisations and companies, in 2012 we started activities aimed at the general public. During this financial year, the most noteworthy action conducted by CERT.be remains the one concerning the "DNS changer".

To counter this virus, which has infected millions of computers worldwide, we have set up a web site DNS-OK.be to which Belgian users can connect and discover if their computer is infected or not. Where appropriate, they were given instructions to disconnect infected servers and reconnect to healthy servers. More than a million Belgian Internet users have used this service and we benefited from very significant media coverage.

What is the technical outlook for the years to come?

Jan Torreele: In the future, the concepts of "Federation" and "Cloud" will become prevalent. In 2012, we have largely worked on these two issues.

The concept of Federation is a process which provides identification and access privileges to users. Today, users have recourse to several login and passwords to access sites or use various services. In the future, these users will be able to access many sites and services with one and the same ID via their "federation". In the academic field and research fields, we have a head start. With the Federation R&E service that Belnet offers, the same user can be identified thanks to a single academic identity throughout the federation. The technical infrastructure that we provide allows them to use a single secure and controlled identity to access a range of resources. A UCL user, for example, can access the Belnet servers and check its bandwidth with their UCL login and statistics in strict confidence. The major players in the private sector can also allow all federated users to access their services with a single login if they connect to our federation,.

And what is your stance with respect to the "Cloud"?

Jan Torreele: The Cloud is a process used to save the digital content on which a user is working on storage servers located remotely and managed by an external provider. Thanks to the web, it becomes possible to work in realtime on remote content, stored in servers installed at large storage sites. Today, more and more companies entrust their data retention to an external provider. For them, this solution proves to be more practical and more economical because they are able to have servers perfectly scaled to meet their needs. However, some are reluctant to transfer their files to the "Cloud" for reasons of security and confidentiality.



Belnet is therefore ideally positioned to offer this type of service. We are neutral, we have no business goals and we operate according to ethics and strong values. We have also a reliable and efficient telecommunications network 24/24.

What sets you apart from other public administrations?

Jan Torreele: Our situation is quite unusual. We are not file managers, we have customers who pay for access to our services. We have a more operational role (ensuring the continuity of services, helpdesk 24/7). And if we do not manage to maintain our level of quality, we risk losing them at any time, and consequently, losing the financial resources

allocated to us. The creation of the new Marketing and Communication entity stems from this fact: to have the means, we must offer the best services to our customers, but we must especially make them known.

What relationship do you have with other European networks?

Jan Torreele: Our relations with other European research networks are moving in the right direction. Thanks to our exchanges and our many collaborative projects, many new things are now possible across Europe. It is very gratifying.



KEY FIGURES

Accessible to universities, university colleges, research centres and public services, the Belnet fibre optic network spans nearly

2,000 km.

Belnet issued

digital certificates in 2012.

Belnet employed

people at the end of 2012 -FTE (full time equivalent).

38% **Belnet customers** belong to the education sector

87% of the staff uses public transport for their home/work commuting.

The gross financial result amounted to a surplus of

2,682,796 euros.

At the end of 2012, the BNIX network (Belgian National Internet eXchange) had

49 participants.

The investments made during the 2012 fiscal year totalled 1,060,000 euros.

In 2012, Belnet provided

leased lines to its customers.

At the end of 2012, **190** organisations were connected to the Belnet network.

67% of the Belnet staff are younger than 40.

The Belnet Management Board is composed of

11 full members.





Workshops

the advantages of an integrated strategy



Launched in 2010 and 2011, the workshops organized by Belnet were a resounding success in 2012. A real spearhead in reinforcing the strategy based on customer relations, these sessions have received particular attention from Customer Relations and Marketing and Communication departments. The result: very satisfied customers, even more efficient services and the development of a spirit of "collaboration" between the different departments of the organization. Explanation from Elke Dierckens, Belnet Workshop Manager.

The workshops are becoming a veritable institution in Belnet. Why has this concept become so widespread?

Elke Dierckens: Two factors explain this craze. Since our move to our offices on the avenue Louise, we have had suitable meeting rooms that allow us to accommodate our customers in the best conditions. On the other hand, we pay more and more attention to the needs and expectations of our customers. In addition to actual technical added value, we offer advice and expertise to customers who want it.

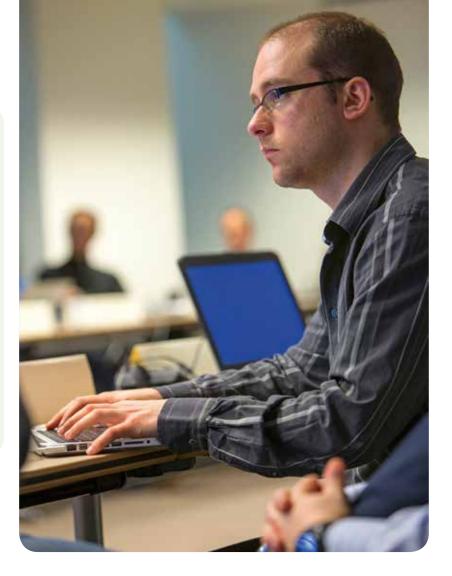
How do you choose the themes of your workshops?

Elke Dierckens: We continually try to identify the expectations of our customers. Their requests are collected throughout the year by our Account Managers or at the various events that we organize. This now well-oiled system allows us to have a very accurate picture of their needs. Each year, the workshops allow us to promote new services as well as those that already exist.

How do you organise your workshops?

Elke Dierckens: At year end, we conduct a large round table with all the Belnet departments. Our goal is to establish what services to promote and what topics might be of interest to our customers.

With the various technical services, we do focus on projects that are going to expire or will be launched. If the launch of a service is, for example, planned for the month of August, the workshop that corresponds to its launch is already



planned for December. With the Account Managers and Technical Advisors from the Customer Relations department, we assess the demands of our customers in order to implement a coherent programming throughout the year.

Specifically, how do you communicate this program?

Elke Dierckens: As soon as the annual programme is planned, we communicate the dates for the first six months so that our customers can arrange and book a session. A month or two prior to each workshop, we send more targeted invitations to contacts who might be interested by one of the themes. To optimize this communication, we now have a dedicated website that systematically includes the list and descriptions of our workshops. We also send reminders via a monthly newsletter sent to all our contacts. Through these media, our clients are better and better informed about the themes that we develop.

How do you organise workshops internally?

Elke Dierckens: During internal meetings, we then organize the workshops based on the following two questions: should participants be simply informed about a product or a problem? Do we want them to implement the service in their system at the end of the workshop? These two types of workshops will attract participants with very different profiles.

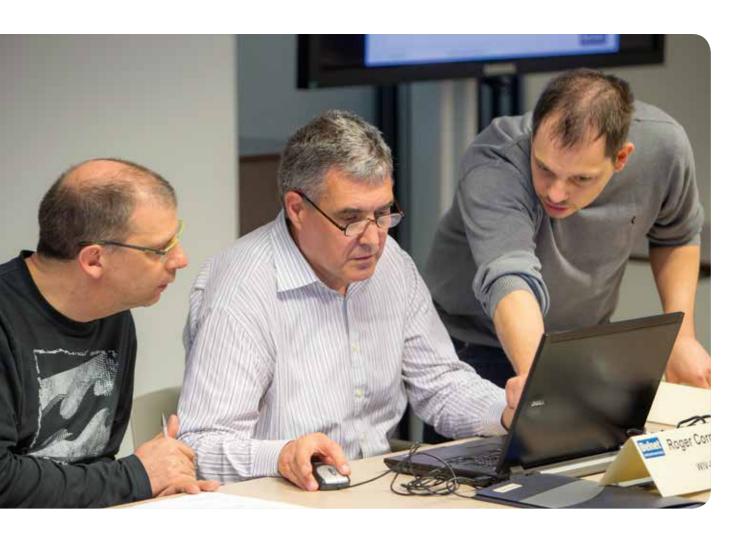
Who leads these workshops?

Elke Dierckens: The development and leading of the workshops are generally entrusted to the Technical Advisors, who depend on the Customer Relations department. They are the ones who know the needs of the customers best. Where appropriate, the "project leaders" from other departments may provide a more technical clarification. To lead these workshops, external speakers recognised for their expertise in specific areas regularly take the floor. Some of our customers also agree to share their experience by presenting a case study. This formula is particularly interesting because the participants identify with these external stakeholders.

How are the sessions organised?

Elke Dierckens: Most of our workshops last half a day, preferably in the afternoon. Some can last a full day with a presentation part in the morning and another more technical part in the afternoon. As a general rule, the workshop begins with a tutorial presentation by a Technical Advisor. After this presentation, participants have a first break where they can discuss freely with the leaders. The session can then resume with a more practical approach (exercises) and concludes with a round table where everyone can ask questions. At the end of the session, the participants are invited to a "network drink" to prolong the session and develop contacts.

The expertise and availability of the Belnet teams push us to make progress.



Is there a follow-up to the outcome of the workshops?

Elke Dierckens: On the feedback form, it states that the participants can take advantage of a personalised follow-up. All they need to do is ask a question or make a request. At the end of each workshop, we analyse these documents in order to implement the individual procedures. The Customer Relations department then takes these requests into account and assigns a Technical Advisor who will contact the customer. All the requests from our customers are thus systematically taken into account.

Is participation in the workshops often followed-up in fact?

Elke Dierckens: In our various workshops on IPv6 for example, we found that some customers switched over more quickly from IPv4 to IPv6. We came to the same conclusion for the workshop on Antispam Pro organised in 2012 which stimulated interest from several organizations. After testing the service via the "test account", several of them decided to adopt the service. Some customers particularly interested in an already full workshop do not hesitate to ask us to hold additional sessions. In these cases, we duplicate, or even triple sessions. In 2012, we have also received requests for the organisation of specifically dedicated workshops on-site or at our premises. We are currently working on the implementation of this concept...

What added value do these workshops provide for Belnet emplouees?

Elke Dierckens: The first added value for our employees is strengthening the collaborative spirit that allows us to carry out projects together. From a technical point of view, the workshops also allow us to reap greater expertise and better understanding of the needs of our customers. Thanks to the technical sessions, our technical experts are less solicited by our customers who find answers to their questions during the workshops. They therefore have more time to devote to the development of new services. For all customers and employees, these workshops are true win-win operations.

IPv6 Workshop

Understanding in order to switch better!

In 2012, one of the most requested workshops concerned the internet protocol IPv6. Renewed several times at the request of customers, these sessions have been acclaimed by participants eager to implement the IPv6 version.

In 1981, version 4 (IPv4) of the Internet Protocol enabled approximately four billion addresses to be created. Today, the number of addresses needed exploded due to the emergence of the internet in countries such as China and the India and the growing number of devices connected to the Internet.

The last available IPv4 addresses were assigned in February 2011 by IANA, the organisation that manages IP addresses throughout the world, which is why a new version of the internet protocol was developed: version 6 of IP (IPv6). With, as a corollary, the availability of a huge number of Internet addresses.

"During the workshops that we organized in 2010 and 2011 on the topic, it was felt that the participants came here

IPv6: 3.4×10^{38} available addresses

The main difference between IPv4 and IPv6 is the length of the addresses: IPv4 addresses are composed of 32 bits and IPv6 addresses are 128 bits, giving a much larger number of available addresses. With IPv4, about 4 billion addresses were available, as opposed to approximately 3.4×10^{38} with IPv6.

out of curiosity," explains Elke Dierckens, Workshop Manager at Belnet. "In 2012, we felt a greater involvement of their part particularly because the need to switch was emerging."

Today, it is indeed strongly recommended to switch to IPv6 addresses. No need to panic, however, because this transition is not sudden: IPv4 and IPv6 will still be used simultaneously for years.

"The Belnet network has been configured for IPv6 since 2003 and the FedMAN network since 2009, " explains Nicolas Loriau, Technical Advisor at Belnet. "Belnet is therefore able to offer its customers a series of IPv6 addresses that they just need to activate. However, this implementation requires a minimum of knowledge. During the workshops on IPv6, all participants learn in particular how to establish a roadmap for the

implementation of IPv6. And at the end of this session, there were many who switched."

While the provision and activation of IPv6 addresses are completely free, organisations must ensure that any modifications are made so that their infrastructure, network or software are prepared for IPv6.

"Just when we thought we had been around all of our potential contacts, we realized that many of our customers are still interested in IPv6. We will therefore organize new sessions in 2013," concludes Elke Dierckens.



I prefer to anticipate so that I don't have to act in an emergency.

What motivation pushed you to participate in the IPv6 workshop?

is still no real urgency to switch from one protocol to another, we know that this day will come soon. I prefer to anticipate so that I don't have to act in an

What do you think of this workshop? Has it met your expectations?

What were the "plus" and "minus" points of this session?

Would you recommend these workshops?



Basic Security and Advanced **Security Workshop**

The legal aspect in the frontline

During the Basic Security workshops organised in 2012, the Belnet and CERT.be teams attempted to inform organisations about the risks and solutions.

"The decision to set up a workshop devoted to security stems from a very specific request on the part of our Technical Advisors", says Elke Dierckens, Workshop Manager at Belnet. "Faced with problems of security and increasingly recurring legal aspects, our customers seek them more to get information about the security in the broad sense. This workshop was an opportunity to put this issue in perspective, recalling the

risks and proposing solutions. This first Basic Security workshop was therefore intended for versatile actors who work in small organisations with no human resources allocated solely to security."

Studies show indeed that the low level of awareness among end users increases the risk. In companies, many employees jeopardize the security of IT systems by simple ignorance: working without protection software or with out-of-date versions, by communicating a password in good faith, using weak passwords or by clicking on a link in a phishing e-mail. Countermeasures exist yet in the form of best practices and protection software.

"Our Basic Security workshop is

structured around three basic themes in internet security," explains Nicolas Loriau, Technical Advisor at Belnet. "We first addressed the protection of servers that can be pirated by outside aggressors. We then focused on protection against malwares, the malicious software and unwanted programs that plunder data on computers. We then concluded with the problem of botnets, networks of infected computers that send spam, spread viruses, send hidden data and attack computer systems. Secondly, we proposed a whole series of security countermeasures so that our clients limit the risks in their day-to-day operation."

At the end of this session, some participants wished to prolong the debate by having a more advanced session on security. It is this thinking that led Belnet to organize an Advanced Security workshop in 2013.



The great advantage of this session lay in its technical approach.

Taking into account the long experience invited to speak at the workshop dedicated to the Federation R&E Belnet.

The objective of this workshop was to technical approach that instructors have chosen to focus on. At the end of practical work, each participant succeeded

implementing the Belnet Federation R&E service, and finally to adopt it.

Internet security: legal aspects in the frontline!

Intended for managers responsible for IT security, the "basic security" and "advanced security" workshops also place great emphasis on the legal aspects of the Internet. Explanation by Valérie Castille, Legal Expert at Belnet.

Why include the legal aspects in workshops devoted to security?

Valérie Castille: Because the two aspects are inextricably linked. Those responsible for IT security in organisations are constantly faced with legal considerations: how far can they go, what is permitted or prohibited... Indeed it appears that strengthening the security arrangements on the Internet can involve issues concerning privacy. It is therefore necessary to analyse the context in which these practices apply. For sensitive organizations like hospitals, for example, increasing security may hinder respect for privacy. When, from a technical point of view, these organisations have the opportunity to access a lot of data on users... they do not legally have every right to do so. It is important to find the right balance so that the law is respected and instruct the management what the limits are that they must not cross. During these workshops, we have chosen to address the legal framework in the most comprehensive manner possible.

Why focus on a comprehensive approach to the principles of the law?

Valérie Castille: Because in this area, each case is particular. On the internet, the legal aspects are never frozen. It is a constantly changing law that requires the implementation of a

legal audit within the organisation. The application of this legislation in fact depends on the legal form of the organisation, its area of activity, its managerial strategy... we must then consider the contractual framework to identify the obligations that are imposed. Then there are the legal frameworks, the changes in the law and all of the technological developments. Finally, the increasing use of new technologies within a company also requires an ongoing review of any legal implications.

Is the legal framework for the Internet getting stronger?

Valérie Castille: There are more and more laws but few actors on the ground know them and apply them. We are still witnessing increasing awareness in managers who are questioning the legality of certain operations or procedures. Hence the large number of questions we receive via our technical advisors and CERT.be. The many questions raised by the participants in our workshops also show that it is a topical subject.

Belnet R&E Federation

When unity is strength!

Educational and research institutions connected to the Belnet network now have a common infrastructure: the Belnet R&E Federation. During this workshop, participants took part in a technical session focused on the use of an Identity Provider.

Available from late 2010, the Belnet R&E Federation brings together teaching and research institutions around a common infrastructure. Organisations can offer their users access to the online services available within the federation (like the Filesender and digital certificates). As

service providers, certain organisations may also offer their web applications to all members of the federation.

For this workshop, Belnet deliberately chose to address more technical profiles. After a quick overview of the benefits offered by the service, the instructors discussed the principles and basic technical concepts (Identity Provider, service provider, SRML,...) before concluding with a series of practical activities. Participants learned to implement an identity provider that will allow their students and staff to access all the online services available within the federation.



BNIX

BIIIX The 100% reliable Internet eXchange!

BNIX is the Belgian Internet node that enables organisations and companies to optimize their mutual Internet traffic. Their users and customers also benefit, and this is how.

Founded by Belnet in 1995 to ensure the continuity and development of the Internet in Belgium, the BNIX (Belgian National Internet Exchange) is designed to make Internet traffic faster, more efficient and less expensive. It improves the speed and quality of IP traffic between the Belgian networks of Internet service providers, content providers, hosting companies and businesses. "A major part of our IP traffic - 20 to 25% on average - passes through BNIX, which improves the performance of our own network", explains Jan Torreele, Director of Belnet. "The speed is higher and the excellent redundancy increases the reliability of the system. The quality of the connection is better and peering agreements with specialised operators reduce our interconnection charges."

49 participants

In Belgium, BNIX caters for Internet providers (Belgian and foreign) offering Internet access to their customers, content providers (for example, major media companies), managers of domain names and registered agents, Web hosting and data storage companies and large companies serving a wide customer base or their own organisation via the Internet, such as banks, financial institutions and B2B companies.

A capital network

participants, BICS Amona these (Belgacom International Carrier Services) provides IP-transit services to multinationals and large companies who are customers of Belgacom. "On the Belgian market," says Erik Loos, Senior Product Manager, Capacity & IP at BICS, "it is important to show the most rapid possible routes to any other Belgian ISP. This applies both for hosting and access for our customers. BNIX provides a platform on which operators, with whom we have different interconnections, can immediately provide traffic in Belgium."



Separate sites for increased reliability

Looking to the future, BNIX works with IPv6, the latest version of IP, and is suitable for specific applications such as "multicast". Connections are made in three BNIX data centres located near Brussels: InterXion in Zaventem, Level 3 in Evere and LCL in Diegem. The distribution of its infrastructure across different sites is a guarantee of reliability. In case of a problem at one point, communication is still possible via the other sites.

More info: www.bnix.net

About the "Internet eXchange"

As a reminder, the internet is a global network of networks. An "Internet eXchange" is a physical infrastructure allowing several organisations or companies with their own IP network to interconnect and exchange Internet traffic between them. The modalities of this operation are specified by the participants via "peering" agreements. As a general rule, these agreements include free use of the mutual network capacity. The advantage of this formula is: in addition to a reduction in operating costs, "peering" increases the performance, reliability and control of routing (for details, read the interview with Pierre-François Lareppe, Director of VERIXI sprl).

Testimony

Based in Louvain-la-Neuve, VERIXI is a telecom operator active in the Benelux. The company provides solutions for SMEs, large corporations, hosting providers, Web agencies and other telecommunications operators.

Why did you choose the BNIX network?

Pierre-François Lareppe: In Belgium, the BNIX is a real institution. Most of our customers know this exchange point and many ask us if we are connected to it. While our participation in BNIX reassures our customers, it primarily enables us to offer a particularly reliable and efficient service.

What for you are the advantages of BNIX?

P.-F. L.: Often, the path (route) between two Internet access providers located in the same country can be long, go through 3 or 4 networks, and make a detour via Amsterdam, London or Paris. It is disadvantageous for the end-user who may, for example, feel their connection is slow or find it difficult to display a video without micro-interruptions. BNIX allows service providers in Belgium to shorten this path by establishing direct links between the participants. Belgium is also ideally located to attract participants from other European countries who seek to interconnect on the continent at a central

And from an economic point of view?

P.-F. L.: By participating in BNIX we avoid, wherever possible, making use of upstream suppliers for interconnection networks, which also reduces our costs. BNIX offers high capacity connections that allow us to send large volumes of data to a large number of end users inexpensively.

What are your relationships with Belnet?

P.-F. L.: At the beginning of our collaboration in 2011, we benefited from some very rewarding exchanges with the technical service. The aim was to optimize our connection. Our contact persons were very responsive and the problems that are inherent in any implementation were quickly resolved. Since then, everything has been running remarkably well to date; we have never had any failures or connection problems. And it's been over two years since we connected, we did recently switch our connection from 100 Mbit/s to 1 Gbit/s, and this intervention lasted only a few minutes.

Points of BNIX to improve?

P.-F. L.: One of the greatest strengths of BNIX is its impeccable reliability. It is a solid platform that works to perfection. Currently, BNIX is available in 3 data centres in the vicinity of Brussels. An interesting development would be the deployment of other points of presence in other data centres around the country in order to offer this tool to a new market.



Thanks to BNIX, we have greater reliability and better control over routing.

CERT.be

Point of contact for reporting your incidents online

A recent survey by CERT.be of 2000 Belgian users aged 16-70 years indicates that 6 out of 10 Belgians were confronted by an act of cybercrime in 2012.

Among the ranks of the most frequent attacks, viruses or malicious programs capable of directly damaging a computer get the lion share (25.72%). Attempts to steal money or information (18.56%) are immediately followed by sending unwanted e-mails from a personal address (17.16%) and passwords that suddenly no longer work (14.03%). While, for nearly half of the Internet users surveyed (49.15%), the situation is considered to be worrying or very worrying, one third of them (34.78%) has no opinion on the issue, while 16.07% claim not to be concerned.

Banks and online purchasing

For a large number of respondents, the most sensitive areas are online banking (60.75% of respondents are concerned about this) and online purchases (46.17%). Finally, the study indicates that more than a third of Belgians are immediately cautious when they surf on unknown sites (35.12%) or are asked for personal information (34.73%). Only a quarter of the Internet users surveyed expressed concern about social networks, while only 14.98% of them expressed concern about surfing on an open wireless (Wi-Fi) network.

Professionalism on a large scale

The main danger of cybercrime no longer comes from individual hackers, but rather organised gangs who trade personal data, trade secrets and malicious software on the black market. These groups launch targeted attacks on companies and organisations, but unlike the individual hackers, they essentially want to remain invisible. The company's systems can therefore be infiltrated without their knowledge. Malware or malicious software used by criminals is increasingly difficult to neutralize. Some even have their own defence mechanisms. CERT.be automatically gathers information about the

threats and incidents through sensors, honeypots (decoy systems) and other mechanisms. Starting from the principle that unity is strength, the organisation also collects all available information from other cuber emergency teams, organisations and companies.

Lack of reactions

One of the most disturbing findings of this survey is that the concern about cyber-attacks does not affect behaviour. Thus, more than a third of Belgians use the same password for private and business purposes and 21% use the same password for all their accounts. For the managers at CERT.be, the lesson from this survey is simple: we need more than ever to inform people about the dangers of cybercrime. The team is working hard on a centralised website where everyone can find objective information about the dangers of the web and get advice on how to protect themselves better.

CERT.be

Founded in 2009, the CERT.be is the federal cyber emergency team (the computer security emergency response team). Neutral and non-commercial, the organisation is a public service recognised by an international network of security experts.

At the request of Fedict (the federal public service for information and communication technology), the management of CERT.be is entrusted to Belnet. Before the creation of this department, Belnet had already established its own CERT to monitor its network and to inform its customers. This first CERT was the de facto international point of contact for everything relating to the protection of the Belgian networks.

The primary mission of CERT.be is to provide the Belgian population and organisations with information concerning security. Because it continually collects and analyses data on security incidents, CERT.be is able to detect the source of a problem more quickly and more easily. It also has experts to support organisations in the resolution of a serious security incident.

The 5 missions of CERT.be

- Gather and provide information on security incidents.
- Provide support in case of an incident.
- Coordinate the management of large-scale incidents.
- Contribute to the establishment of CERT activities within companies.
- Share data and knowledge through publications and

Testimony

Manager of Banking Operations at Febelfin, Patrick Wynant is also responsible for the security of banking systems. Today, this expert is adamant: as cybercrime increases, users of the net should be more careful.

What are the trends in cybercrime in the banking sector?

Patrick Wynant: In Belgium, in 2012, more than a thousand cases of internet banking fraud were recorded, with a total amount of more than 3 million euros. Last year, phishing was the technique most commonly used by scammers to defraud internet banking customers. Even if this number of incidents of fraud remains relatively minimal compared to the 460 million sessions recorded annually, we must constantly remind ourselves of the security precautions.

A phenomenon on the increase?

P. W.: After experiencing a remarkable increase in 2011 and 2012, the figures on cybercrime are stabilising, as banks educate their customers who are becoming more cautious. Also note that in Belgium, the customer is reimbursed by their bank in case of fraud.

What are your instructions concerning security?

P. W.: It is essential that users sufficiently secure their computer (including via an up-to-date anti-virus scanner and properly protected Wi-Fi connection). In addition, they should never respond to phone calls or e-mails from people requesting personal data and bank codes via the Internet. A bank never asks for



We are actively working with CERT.be to implement effective procedures to counter malicious sites, particularly concerning phishing.

this kind of information! Their electronic signature must be attached only to orders expected or requested. If there is any doubt (when the procedure differs from the usual scenario, for example), users must immediately stop the current operation and contact their bank. Finally, it is advisable to regularly check your account statements to identify anomalies.

What strategy do you prefer for countering this cybercrime?

P. W.: We are increasing the messages in the media and on the sites of banks to warn about the risks of cybercrime. Banks are also developing strategies that detect abnormal situations or behaviours, such as a transfer to an unlikely country for example. The customer is immediately contacted by the bank so that it can verify the validity of the transaction. This practice is quite

complex because there are five million transfers per day and the detection of anomalies is not easy.

What are your links with CERT.be?

P. W.: We have very good relations with CERT.be. We are working on implementing more effective and rapid procedures to block malicious sites, particularly with respect to phishing. An organisation like CERT.be brings coherence to our joint actions. Cyber security sector should, however, be able to draw on additional resources in connection with the increasing scope of this crime.

What do you think of Belnet's Belgian Internet Security Conference?

P. W.: The conference organised by Belnet to promote security on the Internet is a meeting highly anticipated bu professionals. It allows us to update our data and share our experience. The initiatives that Belnet has taken in this area provide consistency and a real added value to the actions of the various professionals. Because now, it is important to be able to confer on our actions to counter the scourge that cyber-crime represents today. We must constantly drive home the message to the general public, as the weak link is unfortunately the end user who does not always appreciate the full extent of the dangers threatening them.

The most common incidents in 2012

Social engineering and phishing

In 2012, the increase in fraud was mainly attributable to this type of attack. Here the criminals are no longer content to exploit weak spots in technology, they directly attack the "psychological" faults and the credulity of the users. Fraudsters send e-mails – allegedly from the bank – to customers first and ask them to complete a variety of information, including their phone number on a website or in an attachment. They then contact the customers by telephone. Posing as an employee of the bank and for reasons of security, they ask them to tell them the response code displayed on the screen of the card reader. With this information, fraudsters can then withdraw money by bank transfer, illegally, from the accounts of their victims.

Malware

In addition to these current practices is fraud by malware. This concerns malicious viruses that manage to install themselves on computers, given their low level of protection. The "Trojan horse", one of the most common forms of malware, presents itself as a regular program, a video, a game or another application for contaminating the computer without the knowledge of its user. Trojans are used to collect passwords, logins and e-mail addresses, or even to collect money from bank accounts.

Advanced persistent threats

In this type of attack, criminals attempt to surreptitiously enter the systems of companies and stay there as long as possible to steal as much as they can: intellectual property rights, commercial secrets, information about internal processes.

Distributed denial of service (DDoS) attack

A "DDoS attack" is a type of attack perpetrated by a botnet. Actually, a large number of infected computers that connect simultaneously to a company's (web) server and send spam, spread viruses, send hidden data and attack the company's server, making it temporarily unavailable or causing it to crash.



Customers and users

Services

31

Networks 34

Fraud evolution Internetbanking remains very secure: 2 frauds / 1 million sessions Re-imbursement Fraudeverlies in euro Aantal fraudes 126 5 0000 0000 2.531.042 2,500,000 1.000.000 50 1.500.000 549,528 d 1,000,000 73 119,740 500,000 **PLANTER**

Customers and users

Meeting the needs of organisations

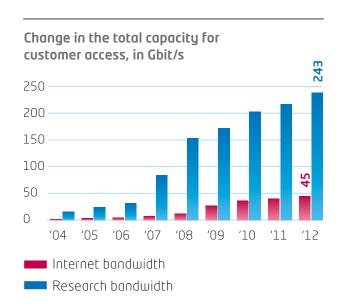
At the end of 2012, the Belnet community numbered 190 small to very large connected institutions 75% of which come from the higher education and research sector (including hospitals and cultural organisations). A quarter of the rest of these customers consisted of businesses and public services. In total, Belnet has some 700,000 users (students, researchers, teachers and civil servants).

More and more customers

In 2012, many government agencies wanted to connect to the Belnet network. The trend is also confirmed with hospitals that have research activities (10% of the connected institutions). Six organisations have also joined Belnet during this financial year: the Flemish Theatre Institute and Kaaitheater in Brussels, the Heilig Hart hospital in Leuven, Techspace Aero (Liège hi-tech company); the Brussels Office of the Spanish High Council for Scientific Research, the Brussels Faculty of the University of Kent, the Bruxelles Propreté/Net Brussel regional public enterprise.

Teaching and research

In 2012, all university colleges and Belgian universities without exception had access to a privileged connection as well as the services of Belnet. This quick and reliable connection has enabled researchers, academics, students and academic staff to access the Internet, national and



international research networks as well as a range of dedicated services (digital certificates, eduroam, leased lines, Belnet R&E Federation).

To assist academic institutions with network modifications that require various mergers and restructuring, Belnet has strengthened its offer of collaboration with each of them.

Public services and federal government

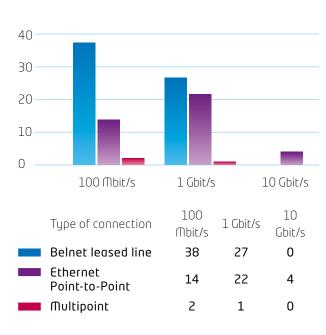
In 2012, the faculties of medicine and hospitals that conduct scientific research once again showed a keen interest in the Belnet network. This trend is explained by an ever more pressing need for increased bandwidth and the availability guarantees offered by Belnet. On behalf of Fedict (the federal public service for information and communication technology) Belnet is continuing to develop and manage the FedMAN3 (Federal Metropolitan Area Network)

network. This network connects federal administrations to one another and to the Internet.

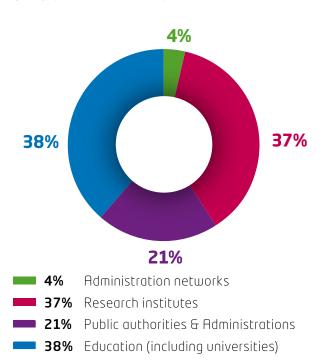
Other customers and users

Via the BNIX (Belgian National Internet eXchange) network, Belnet provides a service for providers offering internet access to their customers, content providers, like large media companies, managers of domain names, registered agents as well as web hosting and data storage companies. Through this channel, Belnet also addresses companies such as banks, financial institutions and B2B companies that serve their own organisations or their customers via the Internet. At the end of the 2012 fiscal year, 49 companies (the majority, internet services and content providers) were connected to BNIX.

Overview of the use of the connection services on the Belnet network



Number of institutions per customer group (end of 2012: 190)



Belnet Customer Survey

In 2012, Belnet initiated a customer satisfaction survey. The survey not only analyses the degree of customer satisfaction, but also the level of importance they attach to each service. The results of this survey helped to strengthen the concrete action plan aimed to improve the services offered and to identify the actions with the highest priority.

Satisfied and very satisfied clients

At the end of the survey, 53% of the participants stated that they were very satisfied, compared with 41% satisfied and 6% less satisfied. Customers appreciate the quality of the services, network connectivity and opportunities for backup, reliability, the transition to the IPv6 protocol, high bandwidth, the availability of domain name registration, digital certificates, all at a good quality/price ratio. Very positive about Belnet, they are willing to recommend services.

A positive image

In terms of image, customers regard Belnet as a professional, reliable and competent supplier. They found that the organisation is particularly concerned with the services offered to customers, the technical performance and the excellent price/quality ratio. Oriented solutions, the Belnet staff provide a flexible and personalised service.

Net Promotor

Belnet Net Promotor Index: 8.91/10

Belnet network customer satisfaction



Cybercrime in the crosshairs

As demonstrated by the survey* conducted by the Federal Computer Security Emergency Response Team (CERT.be) the response showed that 6 out of 10 Belgians had encountered an act of cybercrime in 2012. CERT.be - managed by Belnet - has intensified its campaign to end users. Objective: To inform in order to strengthen their computer immunity and protect them.

More than seven years ago, Belnet developed its own CERT and proposed creating a Belgian computer security emergency response team. Its mission: monitor the Belnet network and provide its users with information and advice about computer security. In 2009, the Federal Public Service for Information Technology and Communication (Fedict) quite naturally asked Belnet to be responsible for the functioning of the national CERT.be.

A single effective point of contact

In 2012, the merger of the two entities jointly managed by Belnet became effective and all security-related issues have been handled via CERT.be. This merger guarantees the quality of the service because expertise is now concentrated under a single banner, a single contact address and a single web site. Customers who were regularly following the news of Belnet CERT on Twitter have been redirected to the account of CERT.be. To report incidents, customers must now use the e-mail address cert@cert.be.

Designed to protect institutions, businesses, citizens and sensitive economic sectors such as transport, energy and telecommunications, CERT.be cooperates with other security specialists worldwide, intervenes in an emergency and offers advice to the general public (via its website). Each month, the Belgian CERT deals with an average of 165 serious incidents.

Belnet intensifies the fight

In recent years, several security problems such as the DNS Changer virus have affected the reliability of the DNS (Domain Name System) system. You may recall that this globally broadcast virus automatically referred users to copies of known web sites in order to steal their data and direct them to malicious sites. To overcome these problems, Belnet had already enabled the validation of the DNSSEC protocol on its servers. On February 13, 2012, CERT.be launched the web site www.dns-ok.be, which enabled Belgian users to easily check (until July 9, 2012) whether their computers had been infected with the DNS Changer malware. In this spirit, all domain names linked to Belnet are now signed with the DNSSEC protocol.

Belgian Internet Security Conference

At the end of 2012, Belnet organised the first "Belgian Internet Security Conference". This event is aimed at decision makers in all sectors of the IT field (private, public, research and education), who are active or interested in cyber security issues. As part of this, Belnet invited a panel of experts to discuss the problem of cybercrime. The conference was organised in partnership with CERT.be, Fedict, Febelfin, Agoria, BELTUG, B-CCENTRE, IBPT, FCCU, FPS Justice and FPS Economy.

Incidents reported since 2010

2010	2,135 incidents reported, of which 1,389 were real incidents
2011	2,609 incidents reported, of which 1,494 were real incidents
2012	3,866 incidents reported, of which 1,981 were real incidents

Unlike other protocols like SSL, **DNSSEC** does not secure just a communication channel. It protects data and DNS records from end to end. It thus enables the theft of data to be prevented.

^{*} Of 2,000 Belgian Internet users aged 16 to 70 years.

Priority to listening

To allow its users to take full advantage of the new services and products offered, Belnet optimised its customer relations again in 2012.

Satisfaction survey

Between 26 January and 1 March 2012, 200 customers and institutions took part in the annual Belnet satisfaction survey. It is apparent that 85% of clients are satisfied with the services and products offered by Belnet. The excellent quality/price ratio, associated with reliability, availability and the expertise of the Belnet staff are major advantages that emerge from this survey. Among the ranks of the most popular services, IP connectivity, IP back-up connectivity and IPv6 get the lion's share.

Conferences and workshops

With an infrastructure at its premises at the Avenue Louise (Brussels), in 2012 Belnet significantly expanded its range of workshops and conferences initiated in 2011. These meetings have covered topics such as sector news and the services provided by Belnet.

Helpdesk 24/7

To ensure the continuity of its services, Belnet improved the reliability of its 24/7 Helpdesk further in 2012. The first point of contact for clients facing a connectivity problem, the helpdesk monitors all technical incidents 24/7. Included in the basic package, the use of this service entails no additional cost to the customer. However, only the contact

persons designated by Belnet are entitled to contact the helpdesk.

Advice on demand

Implemented to meet the expectations of customers, the Belnet Customer Relations team remains their preferred point of contact. With a simple phone call or via e-mail, they can receive detailed information about a service or the status of its implementation. Where appropriate, technical experts go on site to resolve a problem or optimize a connection.

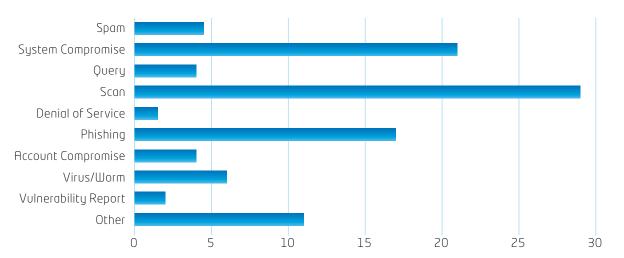
Advisory Boards and Working Groups

The Belnet experts now invite customers to share their opinions, their technical requirements and expectations before developing a new service.

Bandwidth statistics

In 2012, Belnet customers had a new way to access customized statistical data about their bandwidth consumption by entering their Belnet Personal Login. In addition to the overview of their data, they were able to get a detailed check on their connections: main connection, Ethernet point-to-point connection and back-up connections.





Services

adapted to the needs of the customers

By connecting to the Belnet network, all organisations benefit from a reliable range of standard and functional services. The Belnet R&E customers can still request additional services tailored to their specific needs (Services Plus) and have them configured with or without additional costs. In 2012, the Belnet range developed further and was enriched with a set of tools tailored to the needs of users.

IPv6 connectivity

The successor to IPv4, IPv6 ("Internet Protocol" version 6) is the latest generation of the Internet Protocol. The main difference lies in the length of address: IPv4 addresses are composed of 32 bits and IPv6 addresses are 128 bits, with a much larger number of addresses. With IPv4, about 4 billion addresses were available as opposed to approximately 34×10^{38} with IPv6.

The last IPv4 addresses were assigned in February 2011 by the IANA (the organisation that manages IP addresses around the world) and the exhaustion of public IPv4 addresses appears imminent. The transition between these two protocols, however, remains progressive as IPv4 and IPv6 will be used simultaneously for years. During the World IPv6 Launch, on June 6th 2012, major Internet service providers and large web companies (Google, Facebook ...) led the way in offering their services via IPv6.

In 2012, Belnet also encouraged its customers to become familiar with the new protocol via a series of workshops and a dedicated website: www.IPv6.be. Belnet also reserved 280 IPv6 addresses for each customer, totalling 1.2 quadrillion (12.10^{23}) addresses.

Digital Certificate Service

As a "Registration Authority" Belnet issue digital certificates for the servers and DNS names of its customers. This digital certificate enables organisations to protect their network and offer their users secure communication with their servers, including via the HTTPS protocol.

In 2012, the issuer of Belnet certificates (Comodo) tightened the security of the application process for server certificates and expanded its "Domain Control Validation" system. While the application process remains the same, the customer representative is now required to validate each field by providing a valid e-mail address. This new protocol enables Comodo to send a confirmation e-mail to the applicant.

Recognized throughout the digital Internet world*, these digital certificates are only available to research centres, universities and university colleges who join the Belnet R&E Federation. Organisations can authenticate their software via "code signing certificates". They also receive "personal certificates" which guarantee the identity of the sender through their digital signature.

In 2012, Belnet issued 1214 digital certificates to its customers.

* Via TERENA, the association of European research networks at the base of the Digital Certificate Service.

Belnet R&E Federation

The Belnet R&E Federation enables member institutions to share services and applications they use individually. They can also take advantage of significant economies of scale through targeted offers.

Via this system, organisations can become Identity Providers (giving access to a range of interesting services) or Service Providers (by offering their own services). They can also use the services that Belnet puts at the disposal of the members of the Federation such as viaBel.net, FileSender, Antispam Pro and the Personal Certificates service.

In 2012, eduGAIN was also added to the list of services available via the Federation. Belnet is a member of this intercontinental federation project developed by Géant (Pan-European data network for research and education), allowing access to the services of other federations (of the other NRENS).

viaBel.net

Eln 2012, Belnet launched viaBel.net a URL shortening tool via the Belnet R&E Federation. Thanks to its simple and secure interface, Belnet customers can quickly create, save and distribute their shortened URLs. The tool also offers other options such as the ability for organisations to gain access to all the URLs listed, to manage and delete stored URLs and to produce statistics.

FileSender

This new service offered by Belnet in 2012 enables large files to be sent and received in a reliable and secure manner. Accessible via the Belnet R&E Federation, the service also enables vouchers to be sent (an invitation that offers recipients temporary access to the service). This opportunity allows people whose organisation is not a member of the Federation to upload and send files. Appreciated bu customers and users of Belnet, the FileSender service is increasingly in demand. The number of downloads increased from 31 in March to 98 in July 2012. In the same period, the number of uploads increased from 22 to 100.

Vulnerability Scanner

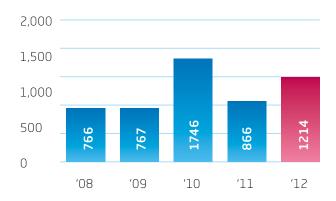
The Vulnerability Scanner reports problems posing a potential threat (obsolete software, vulnerable machines) within the customer's IT resources.

The contract between the tool supplier and Belnet is expiring (21 May 2013) and will not be extended. For Belnet, this decision does not affect the quality of the tool or the need for each institution to have such a service. Belnet simply decided that the value added to date by this service was not significant enough.

Ethernet Point-to-Point and Multipoint

An increasing number of educational, research institutions and government agencies want to interconnect their geographically remote sites. To meet this demand, Belnet, in addition to Ethernet point-to-point service that allows to two sites to be connected, also offers a Multipoint service. This

Number of certificates issued



Distribution of certificates issued in 2012

Number of server certificates: 1,127 Number of personal certificates: 77 Number of code signing certificates: 10

service enables three or more sites within the same or different organisations to be interconnected.

For these organisations, all the sites are connected to the same Ethernet network via a single large virtual switch. This enables an Ethernet network to be set up. Another variant, the Multipoint IP, enables the LANs of different sites to be interconnected solely on the basis of routing IP addresses. The organisations thus have an IP network.

For the sake of simplification, the Point-to-Point and Multipoint service were combined in the Multipoint service in 2012. This simplification resulted in the pricing being reduced.

In 2012, Belnet provided

leased lines for its customers

"Fibre Channel" Service

In 2011, Belnet customers were able to use the new "Fibre Channel" service, a technology for connecting servers and storage within a SAN network (Storage Area Network). Thanks to this technology, the organisation is able to transfer data at speeds of 2, 4, 8, or even 10 Gbps.

Media Transport

Offered to organisations in 2011, the media transport service ensures the transport of audio and video data in real time. It guarantees a prioritised bandwidth of 10 Mbit/s on an existing point-to-point link. This prioritisation is carried out from a media transport port on the Belnet service router installed at the customer's site. In 2012, Belnet continues its momentum by offering to route voice traffic over the IP network using ENUM*.

 * ENUM (Telephone Number Mapping) is a mechanism enabling a telephone number to be used as a search key in the DNS to join a person or another entity.

Video conferencing

Since it uses a multipoint control unit (Multipoint Control Unit or MCU), video conferencing is an advanced solution for high-definition recordable conferences between geographically remote participants.

The multipoint control unit enables the images and the sound sent by the various participants to be received and centralized. From these data, it is able to generate new with images with sound of the highest quality. In 2012, Belnet now offers such a central MCU on its network. Organisations thus have the possibility of holding a virtual conference with other users.

Eduroam

Designed for academic world and research, eduroam (educational roaming) provides any user with simple and secure access to wireless networks from their own institution, but also all other participating institutions. Through eduroam, students, researchers and teachers have the ability to access - with their normal username and password - wireless Internet at other universities or colleges in Europe. Negotiations are underway to make this functionality an international standard extended to universities throughout the world.

Basic Package and Services Plus

The range of Belnet services consists of a basic package and a range of optional services listed under the name Services Plus.

The **basic package** includes all services provided free of charge with the network connection.

- Connectivity (Belnet, research networks and Internet)
- Time sunchronisation
- IP addressing (including both IPv4 and IPv6)
- DNS services
- Software archives
- Bandwidth statistics
- 24/7 Helpdesk
- Support and advice
- Workshops and conferences

The Belnet **Services Plus** gives the user additional functionality, comfort, security and reliability for their connection.

- Backup connection
- IPv6 connectivitu
- Ethernet Point-to-Point
- Multipoint (Ethernet/IP)
- Belnet leased line
- Managed service for leased lines
- Lightpath international
- Media transport service
- Fibre Channel
- Domain name registration
- Digital certificate service
- Vulnerability Scanner
- Antispam Pro
- Video conferencing
- Instant messaging
- Eduroam
- Belnet R&F Federation

With the "lightpath international link" tool, organisations can establish a connection with an organisation located abroad. The local connection in Belgium is supplemented by an international connection. The latter is in turn connected to the local national research network abroad.

Network

Always more reliable & efficient

As part of its missions, Belnet manages three networks: Belnet, BNIX and FedMAN. Supplemented in 2012 with new Points of Presence (PoPs), the performance of the Belnet network again met the demands of research and higher education. As for BNIX, its new version continues to draw more participants attracted by its efficiency and economic benefits that it induces. Completed in 2012, the implementation of the new FedMAN3 provides even more efficient and reliable communication between the citizen and the federal government.

Belnet Network

Implemented with the collaboration of the competent authorities as well as various trading partners, the Belnet network contributes to the growth of the knowledge and information community in Belgium.

Extending over more than 2000 km, this optical fibre network is accessible to universities, university colleges, research centres and public services. Particularly high performance, it enables date to be communicated via light ("light paths") routes and allows direct connections between two points without the intervention of routers.

Supplemented in June 2012 with three new Points of Presence (PoP) in Hasselt (on the new campus located in the old city prison), Ghent and Leuven, the network is even more powerful. With a bandwidth capacity of up to 10 Gbit/s (or

multiples of 10 Gbit/s), customers and users have Internet access ten times faster than before.

* The hybrid Belnet network combines a traditional IP network with an optical layer based on fibre optic.

FedMAN3 Network

Developed by Belnet on behalf of Fedict*, the FedMAN (Federal Metropolitan Area Network) network connects federal administrations to each other as well as to the Internet. This provides particularly efficient and reliable communication between the citizen and the federal government. To renew the FedMAN network, Belnet - in collaboration with Fedict - preferred to opt for the existing services and infrastructure of Belnet (including leased line), rather than build a separate physical network. For the operational management of the FedMAN3 network - which became The first collaboration between Belnet and **Fedict** dates back to 2001. The FedMAN1 network was operational from June 2002 to February 2006. The next generation network, FedMAN2, remained operational until March 2012.

operational in February 2012 - Belnet has invested in separate fibre optic circuit and two additional PoPs in Brussels. Thanks to this technological option, all FedMAN customers

* Federal Public Service for Information Technology and Communication

are now connected in a redundant manner.

BNIX

Established by Belnet in 1995, the BNIX network (Belgian National Internet eXchange) enables participating organisations* to exchange traffic more quickly, cheaply and locally for e-mail, video and any kind of reciprocal traffic. Connections are made via three BNIX data centres: InterXion in Zaventem, Level 3 in Evere and LCL in Diegem.

To optimize the exchange of data, a "route server" service was deployed by Belnet in 2011. In 2012, this service impacted the BNIX network, which is able to significantly reduce operational complexity (due to the growing number of participants) in terms of configuration and peering session management. This technical improvement has been accompanied by a reduction in rates, which impacted both new and existing customers. At the end of 2012, BNIX had 49 participants.

* Internet service providers (Belgacom, TeleneL.), Internet content providers and large private companies (VRT, EVH,...).

International networks and collaboration

A member of TERENA, the European association of research and education networks, Belnet is also part of the GÉANT3 European research network and enables access to other global research networks, including the American Internet2 network.

In 2012, Belnet again expanded its cross-border cooperation projects with European partners (via the implementation of

BNIX is also a member of Euro-IX, the European association of Internet interconnection points.

As part of the MoU (Memorandum of Understanding), an optical fibre connects Amsterdam to CERN in Geneva, via Brussels and Paris.

"cross border fibre"). These cross-border connections help ensure continuity and performance between these different networks, even in case of failure of the European GÉANT3 network. In addition they optimize the direct interactions between Belgian, Luxembourg, French and Dutch academic institutions

Partnerships

Belnet collaborates with several Belgian and foreign players in the knowledge and information community.

National partners:

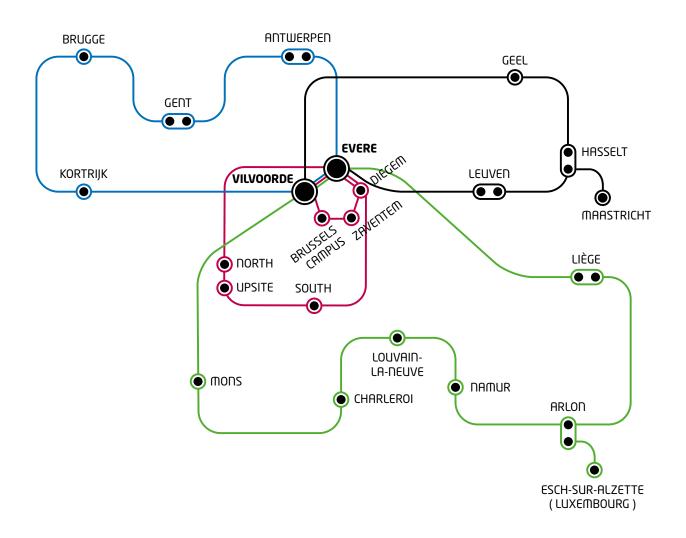
- All universities, colleges and research centres in Belgium;
- The Flemish Community and the Walloon Region;
- Fedict, the Federal Public Service for Information Technology and Communication;
- ISPA, the Internet Service Providers Association of Belgium;
- DNS Belgium.

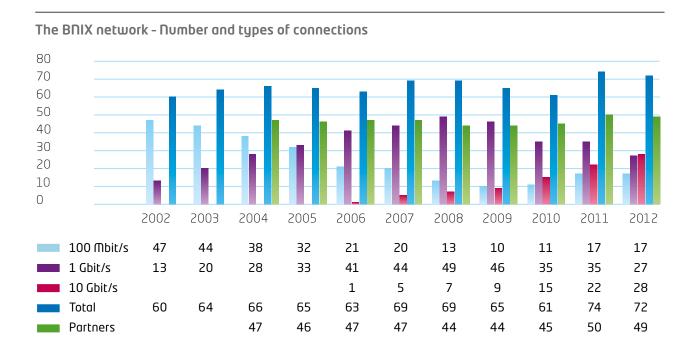
International partners:

- **DANTE**, which manages GÉANT3, the European research network;
- Euro-IX, the European association of Internet Exchange nodes;
- **TERENA**, the European association of research and education networks

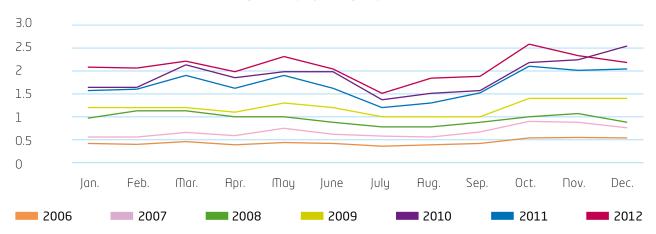
As part of the European **IOT@** project, the establishment of a link between Arlon (Belgium) and Eschsur-Alzette (Grand Duchy of Luxembourg) enables the Belnet network to be directly connected to the Luxembourg network, RESTENA, and the French network, RENATER.

The Belnet fibre optic network now has a second PoP (Point-of-Presence) in Hasselt. A CBF (Cross Border Fiber) also connects Hasselt to Maastricht.

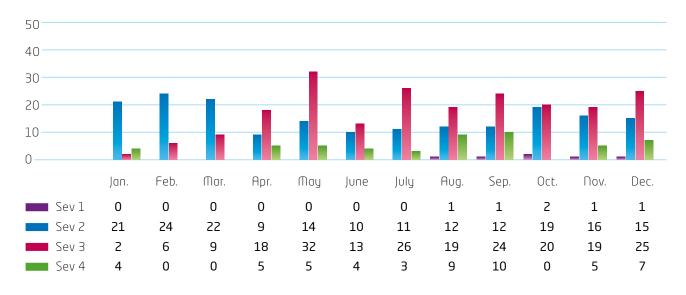




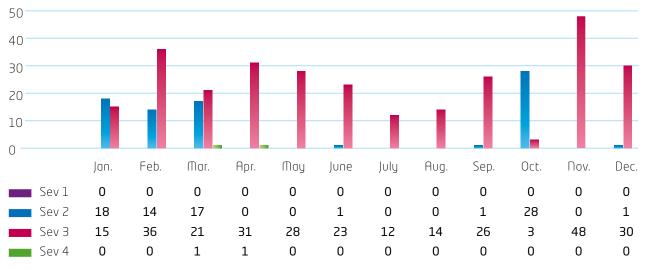
The Belnet network - External traffic growth (in petabytes)



The Belnet network - Incidents reported by the monitoring system in 2012



The Belnet network - Incidents reported by the customers in 2012



Sev1 Total failure of the backbone or point of presence not accessible

 $\textbf{Sev2} \ \ \mathsf{Reduced} \ \mathsf{operation} \ \mathsf{(disrupting} \ \mathsf{the} \ \mathsf{service)}$

 $\textbf{Sev3} \ \ \textbf{Problem of redundancy, without impact on service}$

Sev4 Request for information



Administration, Finance, HR & Legal

In 2012, the Administration, Finance, HR and Legal unit of Belnet contributed largely to the success of the organisation's strategic line. Responsible for the financial management, monitoring the regulation of public procurement, human resources, legal aspects, reception and the secretariat, this unit has experienced all the developments which led Belnet to refine its transversal model based on customer relations.

New direction

Technical Director of the organisation for nearly 12 years, Jan Torreele became the new Director of Belnet as of January 1, 2012. He replaces Pierre Bruyère, appointed Director-General ICT of the federal science policy. Highly committed to the Belnet R&D programmes, the new Director will continue to provide technological expertise by combining the role of technical director. For his part, Pierre Bruyère was appointed to the chairmanship of the Management Board of Belnet. He also continues as that for TERENA, the European organisation for the coordination of research networks.

Management Board

The Belnet Management Board met four times in 2012 at the premises of Belnet. To review the issues and decisions relating to the strategy and the development of the activities of Belnet, the Management Board applies itself to fulfilling the following tasks:

- Establishment of the budget;
- Approval of the annual report of activities and the annual investments plan;
- Approval of the accounts for the past year;
- Fixing the fees for the services provided by Belnet;
- Organisation general administrative, logistic and technical services;

- Management of resources and heritage services;
- Approval of procurement and the staff recruitment plan.

In this context, decisions are made by deliberation. To approve each decision, the board needs a majority of its voting members

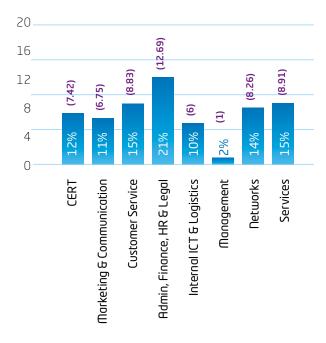
The Belnet Management Board is composed of eleven members, who are:

- The Director of Belnet (automatically Vice President);
- Two officials from the Federal Public Service for Science Policy - of which at least one general officer (automatically President);
- One of the director generals of the federal scientific establishments located on the Uccle plain (IRM, ORB or IRSB);
- Four members not part of the Federal Science Policy (2 French and 2 Dutch) or appointed by the Minister.

In an advisory capacity is added the inspector of finances accredited by the Minister, the Belnet accountant and secretary of the management board.

In 2012, Pierre Bruyère was appointed Chairman of the Management Board (as well as ICT Director-General of Federal Science Policy), whilst Jan Torreele took over the position of Vice-President (as director of Belnet).

Average number full-time employees by service



The figures in parentheses represent the number of employees.

Two new units

In 2012, Belnet changed the operating structure (organisation) of its various units. The purpose of this change was to support the development of technical activities while optimising the management of customer relations.

Previously attached to corporate management, the communication cell has been repositioned - including integrating the marketing resources of customer service - to become a full Marketing and Communication Unit.

Headed by Laetitia Lagneau (coordinator), this new unit has transversal competence allowing it to intervene and collaborate at all levels: services, support, network, CERT.be... The new team has also taken charge of the entire management of the websites in order to make an interface that is as attractive as it is effective.

At the centre of the "customer relations" strategy adopted by Belnet in 2012, the Marketing and Communication Unit has made a major contribution to the success of the workshops and other events organised by Belnet. To complete these missions successfully, its numbers rose from three to seven employees (6.75 FTE).

The incorporation of the "Legal" unit into the Administration and Finance unit resulted from this same strategic thinking. Its new status within the organisation now allows it to respond to the expansion of the administrative procedures and the demand generated by the increased activity of Belnet.

A transverse and collaborative model

As in the previous year, 2012 has been especially challenging for the employees of Belnet. Our growing range of workshops a more transversal approach between units. Every fifteen days, the unit coordinators have got into the habit of meeting with

An expanding workforce

In the 2012 financial year, Belnet carried out new strategic recruitments. The Belnet workforce thus increased from 54 full-time equivalents in 2011 to nearly 60 in 2012.

Despite the economic crisis, the steady growth in the size of the Belnet workforce is the result of a combination of several factors: a constantly increasing range of services, the demand for personalized monitoring expressed by customers in satisfaction surveys and workshops, the principle of continuity (back-up for key positions) associated with the quality of service, the expansion of CERT.be and the creation of two more autonomous units within the organisation.

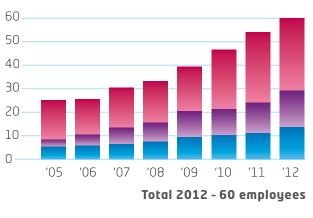
Within Belnet, 50% of employees are employed in technical units (Networks, Internal ICT & Logistics, Services, CERT), 27% in external relations (Customer Service, Marketing & Communication) and 23% in administration (Management, Legal, Finance, HR and Secretariat).

This year, as always, Belnet has endeavoured to maintain the linguistic balance of its teams so as to meet the demands of its customers in the best possible way.

Most of the employees are younger than 40 (67%) and employed to level R (79%). Nearly one-third of the employees are women. The vast majority of the employees (87%) use public transit for their home-to-work commuting.

Finally, 80% of employees use "telecommuting" and regularly work at home (one day per week).

Change in the total number of employees, in FTE





(Customer Service, Marketing & Communication)

Administration (Management, Legal, Finance, HR, Secretariat)

Management service has again focused on employee expecta-

In these times of economic turbulence, the requirements for administrative procedures are increased. This new situation has

thing. While the impact of the crisis was only felt a little in the recruitment of new talent, we again found that the positive aura

Members of the Management Board



PRESIDENT

Pierre Bruyère

Director ICT, SPP Science Policy

VICE-PRESIDENT

Jan Torreele

Acting Director Belnet

VOTING MEMBERS

Gisèle Roulleaux

Attaché, SPP Science Policy

Paul Lagasse

Professor at the University of Ghent

Yves Delvaux

Director Operations & Technology, A.S.T.R.I.D.

Paul Vandeloo

Vice-President ICT, I MEC

Daniel Gellens

Director-General (interim) of the Royal Meteorological Institute

Marc Acheroy

Professor at the Ecole Royale Militaire

ADVISORY MEMBERS

Marianne Jacques

Belnet accountant

Erwin Moeyaert

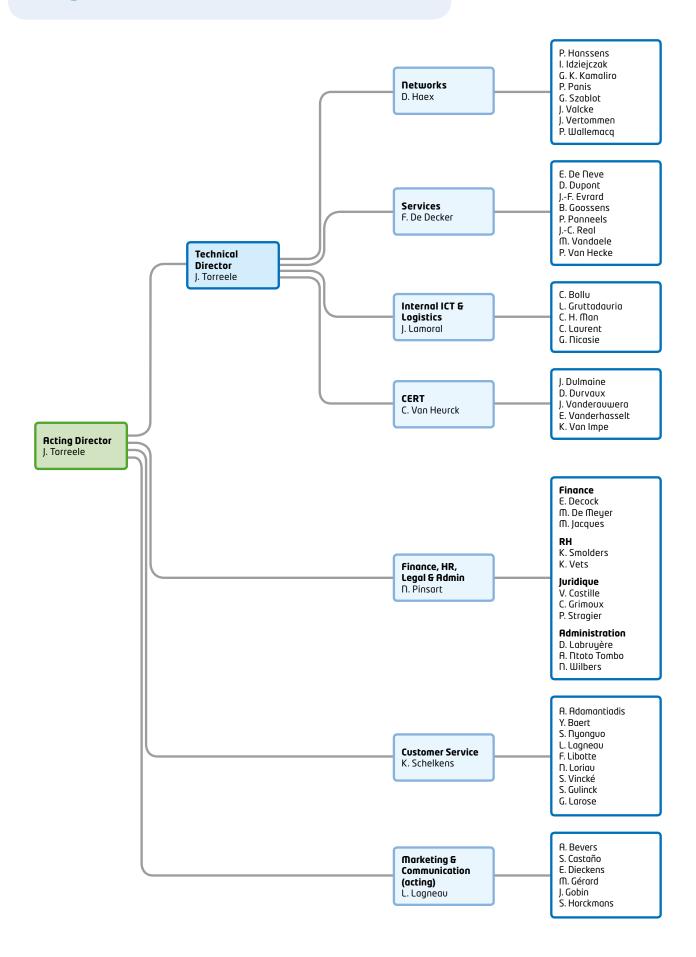
Inspector General of Finances

SECRETARY

Nathalie Pinsart

Administration Coordinator, Finance, HR and Legal, Belnet

Organisation chart





Budget results

The fiscal result amounted to a surplus of 2,764,858 euros (14,069,866 euros (income) - 11,305,008 euros (expenditure)).

Operating grant

Operating grant and equipment at 8,503,000 euros is slightly lower than that of fiscal year 2011. During the previous year, an additional grant was collected in order to meet moving expenses incurred by Belnet.

Increase in amounts

The amounts for services invoiced (5,855,000 euros) including flat-rate and various tariff amounts on the one hand, and lump sum and non-tariff amounts on the other. In 2012, lump sum amounts decreased slightly by 5% over the previous year, while non-lump-sum amounts increased by 30% from 2011, thanks to the new FedMAN3 project (1,106,000 euros) and the federal CERT project in Belgium entrusted to Belnet by Fedict (a budget of 997,500 euros allocated for the year 2012).

Excerpts from the Budgetary Accounts, in thousands of euros

Expenditure in thousands of euros	year 2010	year 2011	Financial year 2012
		gee: 1011	300. 2022
National lines	213	253	93
European lines	544	597	598
Commercial Internet	500	425	423
Maintenance of network and service equipment	2,539	2,717	3,716
Overheads	1,414	1,109	1,024
Salaries	2,153	2,613	3,380
Other investments	1,483	2,966	1,061
Transfer of revenue to Sofico and the Flemish Region*	0	0	0
FedMAN II project (including investments)	842	903	186
Operation of CERT.be	381	761	825
Grant to the reserve fund	0	200	0
TOTAL	10,068	12,542	11,305
Income in thousands of euro			
Grants	8,363	8,593	8,503
FedMAN II project	860	903	207
Operation of CERT.be	620	761	825
Services invoiced	3,150	3,753	4,524
Interest	36	89	11
Deductions towards provisions and transfer of receipts	0	0	0
TOTAL	13,029	14,098	14,070

 $^{^{\}star}$ As part of the collaboration agreement for the connection of the university colleges in Flanders and Wallonia.

Profit and Loss Account

The gross financial result created a surplus of 2,682,796 euros.

Reserve fund and investment fund

During the previous financial year (2011), the management board decided at the meeting to approve the accounts, to provide a grant for investment funds for the amount of 9,655,000 euros. In 2012, funds for investment were provided with an additional provision of 1,545,000. The investment fund is therefore increased to 11.2 million euros on the basis of the investment plan prepared by the Belnet management. The fund will finance the purchase of optical equipment, IP equipment and optical fibre material for the cyclical renewal of the network, the next due to be held in 2014.

Expenditure in balance

Costs for services and other goods were down 400,000 euros mainly due to lower costs for the maintenance and repair of the equipment (398,000 euros) and reduction of the costs specific to IT management (68,000 euros). During fiscal 2011, the high costs were accounted for installation of lines in the Ardennes and for the removal of installations.

These reductions were offset by increases in the cost of line rental (142,000 euros) related to an increase in the BLL activity set up at the end of 2009. Each year, the rental expenses increased, in order that all customers are finally connected via BLL. Costs inherent in human resources have also increased compared to the previous year mainly due to the significant increase in average headcount in 2012 (9 employees added against three employees who left Belnet).

Profit and Loss Accounts, in euros

	Financial uear 2010	Financial year 2011	Financial year 2012
Expenditure	gedi E010	gedi EU11	gedi Lori
Other uses of consumer goods and external services	6,039,234	6,542,348	6,141,945
Increased property and various taxes	27,412	7,962	6,724
Direct and indirect personnel salaries	2,614,912	3,383,810	3,792,524
Economic depreciation on accommodation expenses, intangible and tangible fixed assets	3,747,587	1,894,449	1,636,346
Transfer of income (expenditure) other than social security premiums	108,429	104,209	110,075
Capital losses on existing assets and liabilities	7,200	24,000	1,454
Allocation to the reserve fund	0	200,000	0
Allocation to the fund designated for investments		9,655,174	1,544,826
Supplements to provisions for future risks and charges	200,000	0	0
General accounting result	345,402	-7,270,082	1,137,970
Total expenditure	13,090,176	14,541,870	14,371,863
Income			
Services invoiced	4,683,806	5,446,933	5,855,152
Interest and other financial income	36,385	88,558	10,970
Extraordinary income	6,985	51	2,742
Transfer of income other than taxes and social security allowances	8,363,000	8,806,328	8,503,000
Deductions from provisions for future risks and charges	0	200,000	0
Total income	13,090,176	14,541,870	14,371,863

Balance Sheet

Investments

Investments made in the course of the 2012 financial year (1,060,000 euros) mainly in equipment (911,000 euros) necessary to further the development of the research network Belnet, as well as investments in equipment and infrastructure (68,000 euros) linked to the installation in the new premises. Amortisation recognised during this fiscal year amounted to EUR 1,636,000. They have been carried out according to the recommendations of the Commission pour l'Inventaire du Patrimoine de l'État (commission for the inventory of state heritage) (25% for computer equipment, 20% for rolling stock and 10% for other equipment investment).

Accounts Payable and Accounts Receivable

The accounts payable within one year to third parties not subject to the General Accounting Plan include an amount

of 365,000 euros on the administration of TVR. A reclassification as doubtful accounts of 19,000 euros was made. In accordance with the valuation rules adopted in 2007, loans classified as doubtful for more than a year amounting to a total of 1,400,000 euros have been the subject of a procedure for cancellation of accrual and were absorbed during this fiscal year.

The accounts receivable within one year from third parties subject to the GAP amounted to 747,000 euros against 1,723,000 euros in 2011, taking into account invoices issued at year-end 2011 to Fedict (1,284,000 euros) relating to the payment for the FedMAN II and CERT project.

Balance sheet, in euros

	Financial	Financial	Financial
Assets	year 2010	year 2011	year 2012
	2 22 2 24 5	2 2 44 0 45	2.755.224
Tangible fixed assets	2,238,245	3,341,045	2,765,224
External receivables due in no more than one year, not subject to GAP	299,902	341,533	396,669
External receivables due in no more than one year, subject to GAP	160,232	1,723,542	746,589
Share certificates and treasury certificates	12,193,000	17,193,000	13,693,000
Bank and giro accounts – cash in hand and stamps	4,146,257	813,500	7,417,391
Transitory assets and unallocated amounts	841,396	750,048	1,078,969
Total assets	19,879,032	24,162,668	26,097,841
Liabilities			
Net assets or Own assets or Net liabilities	16,872,119	9,602,036	10,940,006
Reserve fund	621,888	821,888	621,888
Fund designated for investment	-	9,655,174	11,200,000
Provisions for liabilities and charges	200,000	-	-
External debts due in no more than one year, not subject to GAP	1,702,666	3,156,261	2,419,099
External debts due in no more than one year, subject to GAP	135,126	30,239	401,375
Transitory liabilities and unallocated amounts	347,234	896,980	515,473
Total liabilities	19,879,033	24,162,668	26,097,841

ACKNOWLEDGMENTS

© Belnet 2013

Belnet is deeply grateful to the following people for the quality of their collaboration during the production of this annual report:

- Kristof Vermeersch (Provincial Government of West Flanders)
- Philip Brusten (KU Leuven)
- Pierre-François Lareppe (VERIXI sprl)
- Patrick Wynant (Febelfin)
- The members of the Board of Management of Belnet
- All Belnet employees

No part of this publication may be reproduced without the formal written permission of Belnet. For more information about the data presented in this annual report, please contact Belnet at info@belnet.be or on 02 790 33 33.

This annual report was printed on paper made from raw materials from sustainably managed forests and other controlled sources.



Belnet

Louizalaan 231 Avenue Louise 1050 Brussels

> Tel.: +32 2 790 33 33 Fax: +32 2 790 33 34

> > www.belnet.be



