eurofiber

# High bandwidth in gear

**Ready for the 4th revolution?**
Future-proof your organization

LIFELINE

# Is your organization ready for Revolution 4.0?

**We are on the eve of the 4th industrial revolution. After the introduction of steam engines, electricity, and computers, digitization is rapidly transforming our economy and society. Boundaries between the physical, digital, and biological worlds are blurring.**

The way we work, live, and communicate is changing revolt nationally with the integration of the Internet of Things (IoT), cloud computing, data integration, and other technological developments.

### Digital transition

Digitalization is currently our main source of growth, innovation, and new business activity. Fifty years ago, Moore's law predicted that computing power doubles every two years. That law still applies today. This means that in fifteen years or so the cell phone will be as intelligent as all human brains combined! The impact of this on government organizations, educational and healthcare institutions, and businesses will be enormous.

### Ready for the future

In this eBook, you will read about the technological trends that will define the 4th revolution in the coming years. Next, we look at three pillars that will make this possible: the network, the cloud, and underlying this, the necessary fiber infrastructure. To conclude, we will show why high bandwidth is so essential for your organization to grow. Are you already ready for the future?

# 1. Gartner trends

**Each year, authoritative market research firm Gartner examines which technology trends will have a significant impact in the coming years. The trends in the most recent report, "Gartner Top 10 Strategic Technology Trends for 2020," can be summarized as "people-centric smart spaces.**

The focus here is on how technological developments affect people (customers, employees) and the spaces they are in (home, school, institution, office, car). According to Gartner, ICT leaders will benefit most from smartly combining these technology trends.

### HyperAutomation

Organizations are combining Artificial Intelligence (AI) and Machine Learning (ML) to quickly identify and automate all possible business processes. Gartner calls this HyperAutomation. AI and ML are increasingly being used to make decisions instead of humans. AI enables devices to respond to data or impulses from their environment and make decisions independently based on them.

Thus, AI is not about computing power, but about the ability to learn (independently) and make decisions. ML converts data into valuable information that is used to make automatic decisions.

### Autonomous things

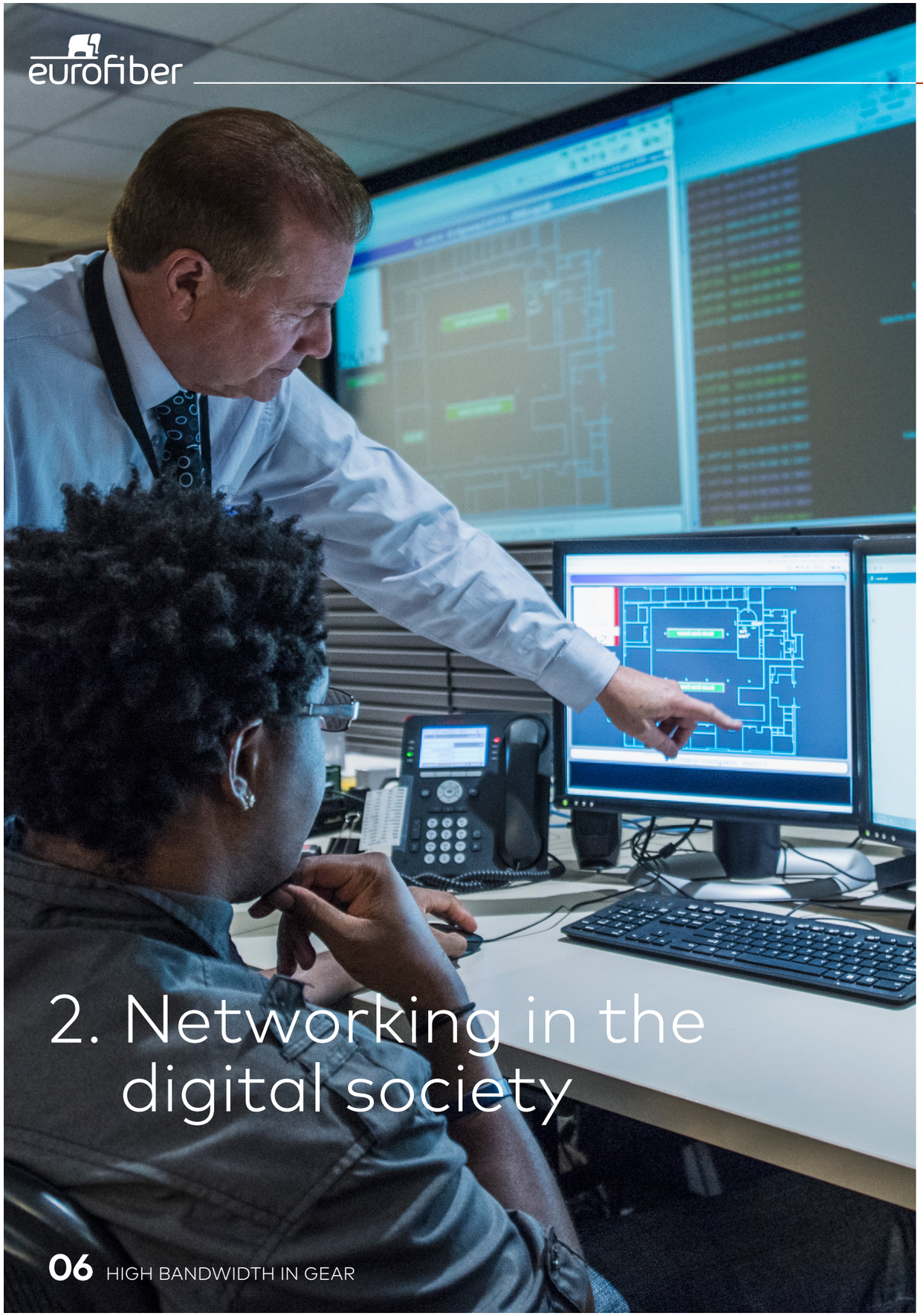
Physical devices that use AI to automate functions previously performed by humans are referred to as autonomous. Increasingly, these applications work in closed environments such as warehouses, but will eventually evolve into more open spaces. Autonomous things or applications operate along a spectrum from semi-autonomous devices to fully autonomous cars. As the number of autonomous things or applications increases, there will be a shift from things working alone to a swarm of collaborative and intelligent things. For example, a group of robots could perform a coordinated assembly process.

### Human Augmentation

The use of technology and science to augment a person's cognitive and physical experiences is known as Human Augmentation. This human augmentation is not a new concept. After all, people have been enhancing themselves for hundreds of years with prostheses and glasses, for example. Technology is now about to go further: replacing human abilities with "superhuman abilities" such as an implant that connects a human brain directly to a computer or an external skeleton that provides superhuman strength.

Distributed cloud

This is why companies and organizations are already turning more to cloud applications. The evolution from centralized public cloud to distributed public cloud has ushered in a new era of cloud computing. The distributed cloud refers to the distribution of public cloud services to locations outside the cloud provider's physical data centers, which are still managed by a provider.



# 2. Networking in the digital society

**Looking around, one sees how governments and organizations are already taking full advantage of digital technology. Consider the introduction of digital learning and testing in education. Or take-home automation that provides remote care for the elderly so that they can continue to live independently for longer in a safe manner. Around the world, smart city projects are sprouting up in major cities for more livable, urban environments. Digital transformation is today's reality.**

### 50 billion connected devices

Organizations may be coping well with the available capacity now, but one thing is certain: the demand for capacity will increase at a rapid pace in all sectors in the coming years. A major reason for this is autonomous devices: the Internet of Things (IoT). By the end of 2020, there were whopping 50 billion devices connected to the Internet. Those devices all collect data that they transport to the cloud via the Internet.

### Fast network

Because of all these developments, the need for a strong foundation in the form of a solid network is growing. Fiber optic technology plays a crucial role in this. The definition of a fast network is that it can transport a lot of data in a short time, while also keeping latency on a connection low so that data arrives at its destination with the least possible delay. The maximum Internet speed currently possible over fiber is already tremendously high. This speed will increase many times over in the future. This is also necessary if we want to use all the possibilities of digitization in the future.

### Reliable network

In addition to speed, reliability is of course essential for a network to realize ongoing digitization. Especially in critical environments like a hospital or an educational institution, the primary process immediately comes to a standstill if the network degrades - or worse - fails.

# One trend is self-driving cars

But reliable availability is also crucial in small and medium-sized enterprises, industries, government services, or financial services. For this reason, network suppliers are increasingly building in redundancy: organizations then purchase two separate connections so that they can seamlessly switch from one to the other in the event of a disaster. End users often do not even notice this.

### Longer-term trends

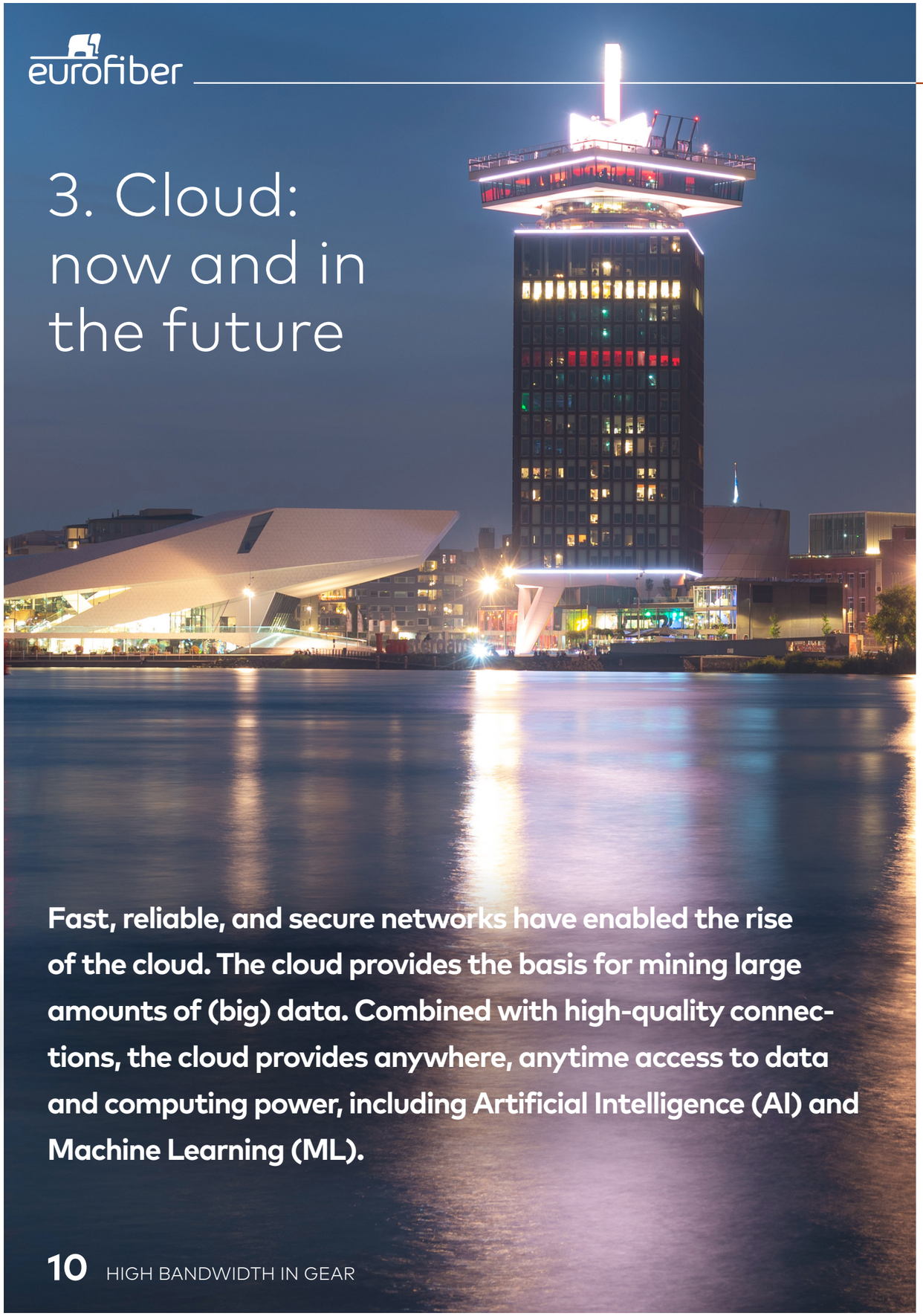
An example of a longer-term trend that has already begun is self-driving cars. When these soon drive completely autonomously, it will have consequences for the business model of a great many companies. Organizations are already discussing this frequently, particularly how it will affect their organization and customers.

That ranges from the government to insurance companies and large hospitals. They are planning for the longer term, up to 15 years. In these time windows, such trends are important things to include.

### Connectivity requirements

Considering that such a vehicle generates approximately 4 to 30 terabytes of data per day alone, it will not surprise many that the connectivity requirements placed on the underlying infrastructure must be optimal. Much of this data travels via mobile networks and fixed fiber network infrastructure to data centers. Such as the data centers of the central government, where traffic flows are analyzed in real-time on which certain actions can be executed. To send this enormous amount of data from A to B as quickly as possible, stable, secure, and future-proof network infrastructure is an absolute must. Fiberglass is the ideal transport medium for this, which also offers the necessary flexibility. Our customers are already factoring this into their strategic plans for the future.

# 3. Cloud: now and in the future



**Fast, reliable, and secure networks have enabled the rise of the cloud. The cloud provides the basis for mining large amounts of (big) data. Combined with high-quality connections, the cloud provides anywhere, anytime access to data and computing power, including Artificial Intelligence (AI) and Machine Learning (ML).**

The cloud is currently the foundation for technological innovation. More and more government organizations, schools, hospitals, and businesses are using cloud solutions. With that, the cloud is also driving a growing need in transporting large amounts of data in real-time.

### Secure connection as the basis for cloud strategy

Each cloud provider offers a different format and sets its conditions for redundancy, for example. Organizations can quickly find the multi-cloud or hybrid cloud to be complex and challenging. Lack of insight into the cost of use, uncertainty about controlling availability and performance, and potential integration problems with existing IT processes and systems are among the reasons for this.

This is why some organizations prefer public cloud solutions over the public Internet. However, this form of "easy access" also carries risks, especially when transmitting and accessing privacy-sensitive data. A secure cloud connection is essential for many organizations and is the foundation for any cloud strategy.

### Innovations

Today's cloud offers the ability to quickly adopt new, innovative, applications and technologies. Because many organizations have switched to 'Infrastructure as a Service' (IaaS), they have huge amounts of data in the cloud, which they want to use as quickly, easily, and cost-efficiently as possible.

For example, by using this big data for advanced data analytics and AI applications. This allows agencies to make better decisions and react faster to current developments. Without the availability of such applications in the cloud, this would be nearly impossible, or at the very least difficult, time-consuming, and very costly. Software for data analytics and AI requires an enormous amount of computing power. Until recently this was only accessible to the very largest organizations, with the advent of cloud applications this has suddenly become accessible to many different organizations.

### Beyond the hype

According to Gartner, the cloud has now passed the hype phase. Both Platform as a Service (PaaS), Infrastructure as a Service (IaaS,) and Software as a Service (SaaS) are adding value. Gartner's Interactive Hype Cycle also shows that Hybrid Cloud (a mix of private and public cloud services) is on a similar rise. By now, organizations and businesses have a clear picture of how to apply Hybrid Cloud.




### Distributed cloud

Distributed cloud refers to the distribution of public cloud services to locations outside the cloud provider's physical data centers, which are still managed by the provider. The evolution from centralized public cloud to distributed public cloud has ushered in a new era of cloud computing. It also enables providers to deliver on the promises of a hybrid cloud, a system that combines external services from a provider with internal services run on-premises.

### Eurofiber Cloud Proposition

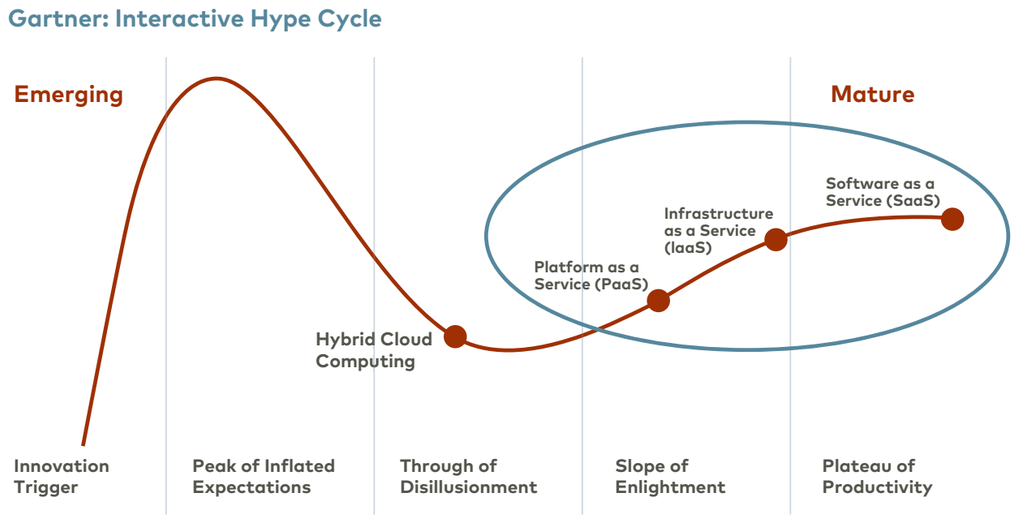
At Eurofiber we are working on a Eurofiber Cloud Proposition: we help clients make the transition to the cloud. We do this by starting with the basics: an open, secure, reliable, and future-proof network. The finely meshed Eurofiber network is growing by an average of 40 kilometers every week.

Both the major cloud providers and virtually all Dutch Data Centers are connected to our network.

### Hybrid Cloud

A Hybrid Cloud, also called Multi-Cloud, consists of one or more private clouds running on their own hardware in a data center or on servers purchased from a cloud provider.

A Hybrid Cloud always also includes one or more public clouds (For example, Amazon Web Services, Google Cloud, Microsoft Azure, or Oracle Cloud). This cloud solution provides the ability to distribute workloads and move applications and data between private and public clouds.




**SaaS**

Software as a service (SaaS) is software offered as an online service. The customer no longer needs to purchase the software themselves, but instead subscribes on a per-month and also per-user basis. The SaaS provider takes care of installation, maintenance, and management (including updates). Users usually access the software over the Internet from the SaaS provider. For privacy-sensitive information, organizations are increasingly choosing an alternative that avoids the public Internet.

**IaaS**

With Infrastructure as a Service (IaaS), the infrastructure is offered virtually. A major advantage is that an organization does not have to purchase and manage its own servers, network equipment, storage, workstations, and virtualization. Scalability is also a big advantage, especially when demand fluctuates quickly and shows large peaks. After all, the customer only pays for what he uses. A good network connection between the user locations and the IaaS environment is crucial here. Often the Internet does not suffice for such an application and IT decision-makers opt for a private connection or network to ensure continuity.

**PaaS**

Platform as a Service (PaaS) offers a development platform as a service. Organizations can use it to develop, run and manage applications themselves. The cloud provider takes care of building and maintaining the infrastructure, including the runtime, middleware, and operating system.

# 4. Fiber optics: ins & outs

**Nowadays people want to be accessible anywhere, anytime. Connectivity has become a basic need and also the foundation for the digital Netherlands. Governments, care institutions, education, and businesses: never before has a reliable connection been as important as now.**

Think of working from home, the virtual classroom, remote care, and Smart Cities. The quality, capacity, speed, and uptime of these connections are also increasing. After all, you don't want any hiccups or delays (latency) in the transport of this crucial data.

### High-quality fiber connections

Connectivity will always be a combination of wireless and fixed connection. A fiber connection can transport unlimited amounts of data to the other side of the world in a fraction of a second. No form of transport can compete with it. Transmission towers for mobile phone and Internet traffic are therefore interconnected via high-quality fiber optic connections. Shortly, more and more wireless antennas will be connected to a fiber-optic network, providing 100 percent reliable coverage over time. Guaranteed coverage is a hard requirement for self-driving cars, among other things. After all, a failing connection can have disastrous consequences.

### More bandwidth, higher speeds

The bandwidth of fiber optics and its speed will increase dramatically in the coming years. One of the techniques for this now under development is hollow fiber. The biggest gain here is not in the fiber itself but in the method of exposure.

## Hollow fiber, even higher speeds

With hollow fiber, it is possible to transmit two weeks' worth of non-stop HD video images from Amsterdam to Paris within a fraction of a second. Five years ago, such speeds were unthinkable. Try to imagine what bandwidths and speeds will be possible ten years from now.

### Self-learning, more secure networks

Technology trends such as Artificial Intelligence (AI) and Machine Learning (ML) are having their effect on infrastructure. With these techniques, your bandwidth automatically adjusts itself, according to the message you want to send. Thus, the network learns how to send a message the fastest and most efficiently. Another innovation is the role of data centers.

They are turning into central control points with intelligent applications to manage data remotely. Geographically fragmented data together form a centrally accessible, virtual database. This also increases security.

# 5. High bandwidth: **Essential for growth!**

**With all the trends and developments such as the Internet of Things, Industry 4.0 (smart industry), big data, and 5G, we are truly ushering in a new era. One in which technology plays an increasingly important role in all core processes of organizations. As a result, the demand for connectivity is ever-increasing, and is desperately needed to innovate. The importance that was further underlined by the Covid pandemic; caused a real technological innovation spurt!**

### Ready for the future

Although it certainly takes preparation, all these changes offer organizations plenty of opportunities and possibilities. The question is, is your organization already sufficiently prepared for the future? A future-proof organization is flexible, and scalable and collaborates with others in an ecosystem. Either directly or through a digital platform. In such an ecosystem, data can be shared horizontally in a secure way and innovative companies - large and small - work together on innovations. Success factors of such an ecosystem are flexibility, security, efficiency, trust, up-to-date communication, co-creation, and vital infrastructure.

### Adoption of the cloud

Due to the digital transformation - the shift to location-independent working and being able to access your data anywhere - cloud adoption has increased tremendously. There, too, the pandemic accelerated adoption. With the need to work from home, there was a sudden urgency to move data and applications to the cloud. And as we return to normal, we are working more and more hybrid. Corporate locations remain places where people congregate, get creative, and develop new products and services. Therefore, the bandwidths to run those applications and applications on are only increasing. Applications are also becoming more and more data-driven, and through all kinds of analysis of that data, their intensity is also growing.

Recent survey figures also show the growth of cloud adoption. For example, about 70% of all organizations indicate that they now host more than half of their workloads in the cloud. In particular, the SMBs are fast-growing when it comes

to accepting the cloud. Yet with the rise of the multi-cloud, organizations see the security of this environment in particular as the biggest challenge*.

Making meters with high bandwidth Due to the intensive way we communicate with each other and the fact that data and applications are increasingly moving to the cloud, cloud adoption got a huge boost. Not surprisingly, cloud users make their business and IT environment flexible and agile and provide continuity. No longer does the fear of not knowing where data and apps are located reign, but instead the feeling of relief, 24/7 accessibility, good security, and that things are now better organized than before.

At the same time, cloud adoption is the essence of high bandwidth and is accelerating tremendously. Hybrid and data-driven work, connectivity between business locations, and working in ecosystems simply cannot be done without it anymore. That is why organizations are increasingly demanding high bandwidths and the demand for 5 or 10 Gbit/s, for example, is becoming more normal. Fiber optics and high bandwidth make companies ready for the future and for all the technological developments to come. It ensures that they can continue to grow!

**Upgrade broadband network**
More and more Eurofiber customers are understanding that fiber is the foundation, and we understand that this is why we now need to take a big step towards the 4th revolution high bandwidth. With a major upgrade (10 Gbit/s) of our broadband network in the Netherlands and Belgium - followed by an upgrade in Germany and France - we are ensuring that we can offer even more clients high bandwidth with a very short delivery time. Truly the next level! We are laying a good foundation for customers to continue to grow. Thus, cloud adoption is continuous and new applications can be added at any time.

### Many advantages

With this upgrade of the high-bandwidth network, Eurofiber is largely continuing to do what it has always done; only now at a higher standardized level. Thus we are offering the highest form of connectivity, with reliable, redundant connections which are automatically converted to another route if something should go wrong. This guarantees that clients are always back up and running within eight hours. In this way, Eurofiber can unburden clients as much as possible and offer super-secure, scalable connections. As a future-proof company, you simply cannot do without a broadband connection. By laying a good foundation for this, Eurofiber enables clients to grow. This is how we take the next step together!

Source: https://findstack.com/nl/cloud-adoption-statistics/


**Questions or prefer personal advice?**
Do you have questions or would you prefer personal advice? Then please contact us by phone. We can be reached on weekdays from 8.30 a.m. to 5 p.m. at **030 208 0054**

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