Wi-Fi out of the box

Future-proof and flexible access point management

Supported by

LANCOM SYSTEMS

techconsult
TECHNOLOGY MARKET ANALYSTS

Table of content

Introduction

A wireless local area network (WLAN), or Wi-Fi network, has become a core application in companies these days. The benefits of networking: seamless collaboration, mobility, flexibility, scalability and convenience are indispensable for companies. A reliable and capable IT network is essential and the prerequisite for the vast majority of business processes. Networking ensures digital communication between employees and customers, high-speed access to information and services and simplified data transmission. This leads to efficient working environments, increased productivity and added value.

Laptops, smartphones and numerous IoT devices are becoming more and more powerful and thus increasing the demands on the IT network. As the number of mobile devices, data-intensive applications and data volumes all grow, the expectations placed on the network infrastructure performance, flexibility, and quality also increase. The sound planning and implementation of a professional Wi-Fi according to the needs of the companies contributes to providing a reliable and secure wireless IT network connection. If the number of devices with their data transfer requirements exceeds the capacity of the IT network, the performance suffers, the susceptibility to interference increases and work processes are slowed down or even interrupted.

Data loss and economic damage such as loss of productivity and revenue are the consequences. Outdated IT networks with low radio frequencies can no longer meet the growing data transfer challenges and quickly turn into bottlenecks. Networks operating at 2.4 GHz and 5 GHz radio frequencies are by now reaching their capacity limits at high utilisation and peak loads. With Wi-Fi 6E, which is based on the current Wi-Fi generation Wi-Fi 6, a 6 GHz radio frequency band is made available for Wi-Fi technology that ensures faster, more stable, low-latency, high-bandwidth connections.

This study addresses the question: What priorities do companies pursue in the context of their Wi-Fi infrastructure? The study also provides answers to the following questions: What is the current status quo, in what spatial conditions is Wi-Fi used and which business applications run over Wi-Fi? What are the requirements for IT network management? And what are the data utilisation and performance challenges that companies are likely to face over the next five years?

The study “Wi-Fi out of the box” was designed in cooperation with LANCOM Systems and carried out by techconsult.

What businesses expect from their Wi-Fi

Users have very specific ideas about what the wireless IT network is supposed to do and what aspects need to be met.

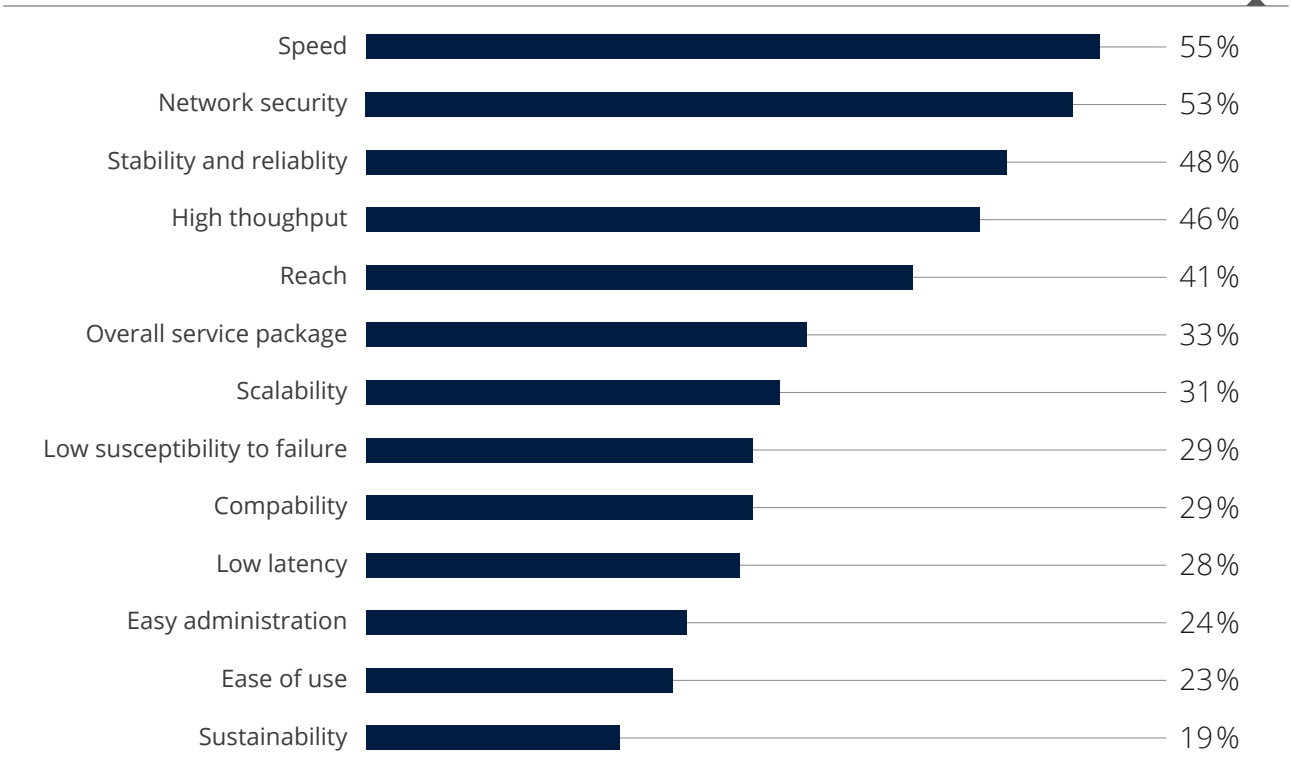
From the user's point of view, Wi-Fi must first and foremost be fast and secure. The speed of data transmission is the highest priority for 55 per cent of respondents. Since the speed is influenced by the Wi-Fi standard used and the frequency band, the higher the standard, the faster the transmission rate. Aspects such as channel width and signal strength also have to be factored in. Obstacles such as walls or other equipment can affect signal quality. The second most important requirement is network security (53 per cent). Security safeguards protect the wireless network from unauthorised access, data leaks and other security threats. Important protection measures include password security, encryption, firewalls on each device and regular updates.

The IT network must be available at all times to ensure that employees can access the IT network regardless of their location. A high-performance and modern Wi-Fi network must provide a stable and reliable connection (48 per cent) of good quality even at high terminal densities in industrial halls, in densely populated areas or other demanding locations. 33 per cent of respondents would like an overall service package, which should include the devices for networking, network security and network management. In addition,

the network should be able to keep pace with the growth of the business and adapt to changing circumstances. Just under a third value scalability, low susceptibility to interference and compatibility of the Wi-Fi devices or the Wi-Fi standards. 24 per cent of the surveyed companies expect simplified administration through automated configuration. Integrated management systems that automate the organisation, optimisation and control of the wireless network architecture simplify the deployment of an IT network. Other aspects mentioned are low latencies, user-friendliness and sustainability.

WLAN requirements

Basis: 361 companies| Multiple resoponses possible



Wireless freedom in everyday work

What is the current business standard?

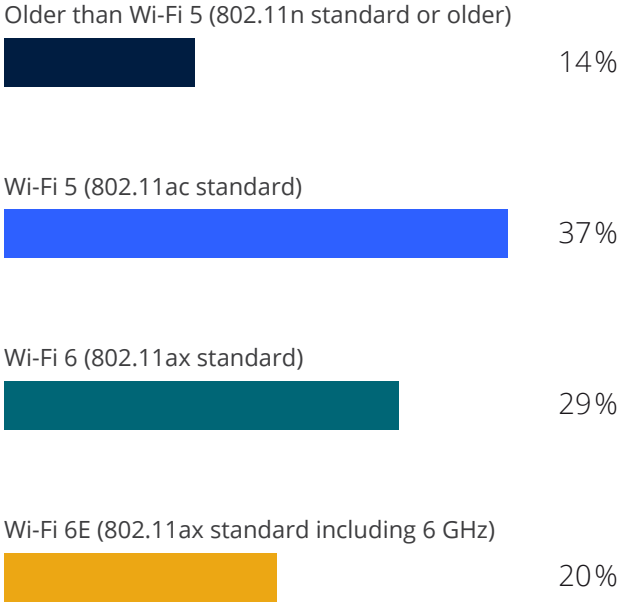
With the increase in IoT technologies, the growing number of mobile devices and data-intensive applications, as well as the convenience of wireless connectivity that we have come to expect, the demand for more bandwidth is continuously increasing. To counter this development, Wi-Fi 6E has been developed. This version additionally transfers the Wi-Fi 6 features to the 6 GHz frequency band. One in five of the companies surveyed already use Wi-Fi 6E.

With Wi-Fi 6, aka IEEE 802.11ax, not only the speed, but also the average throughput per Wi-Fi client was increased. 29 per cent currently use Wi-Fi 6. Especially in environments with very high device density, both standards, Wi-Fi 6 and Wi-Fi 6E, can exploit their advantages and ensure simultaneous and trouble-free operation of many Wi-Fi terminals or IoT devices with highest data rates. Compared to older standards, network capacity and performance have been improved and efficiency increased.

However, 37 per cent of the respondents still work with the previous version 802.11ac, Wi-Fi 5. Only a few companies (14 per cent) use an even older standard that operates exclusively in the 2.4 GHz frequency band.

Highest Wi-Fi standard used in companies

Basis: 361 companies

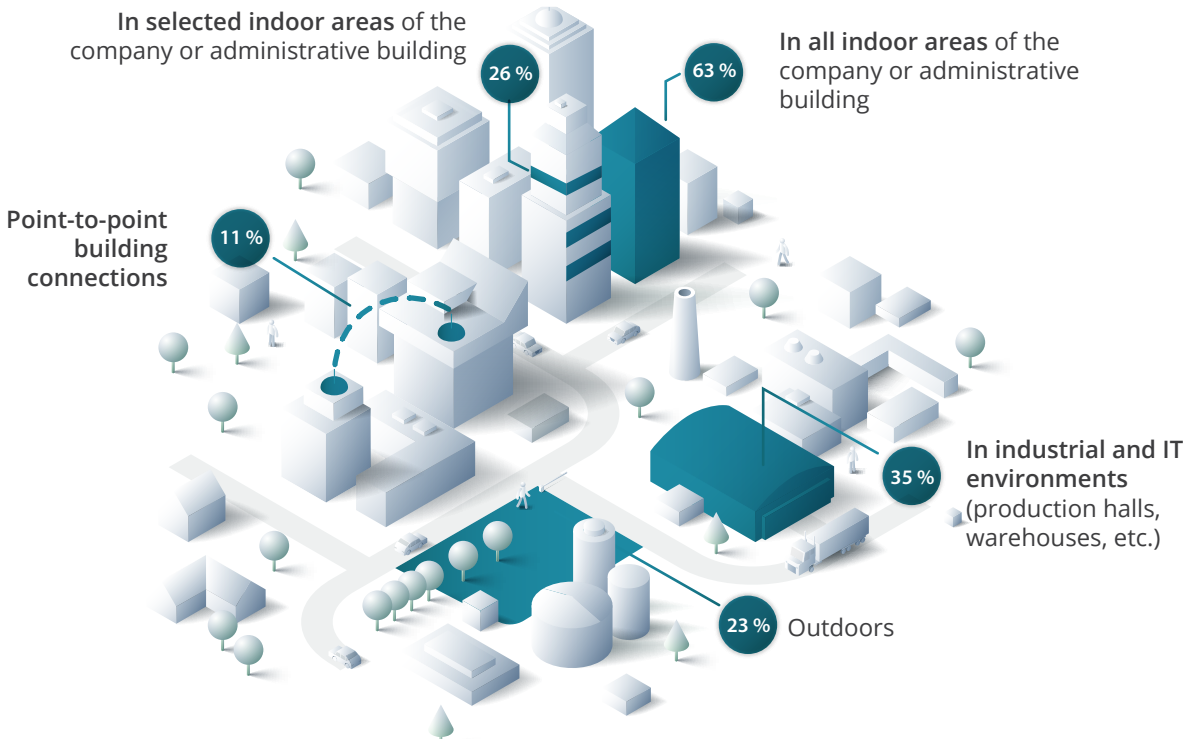


Where do companies use Wi-Fi?

In the business environment, Wi-Fi connections have become established in different environments, depending on specific requirements. The majority, 63 per cent of companies, have Wi-Fi available in all indoor areas. This enables wireless connectivity for employees in offices, meeting rooms and common areas, allowing access to corporate resources, email, cloud services and other business-critical applications from anywhere. A further 26 per cent do not provide Wi-Fi in all, but only in selected indoor areas. In production halls, warehouses or IT environments such as data centres, Wi-Fi environments also make an important contribution to productivity and collaboration.

Wi-Fi environments

Basis: 361 companies| Multiple responses possible



Which applications run over Wi-Fi?

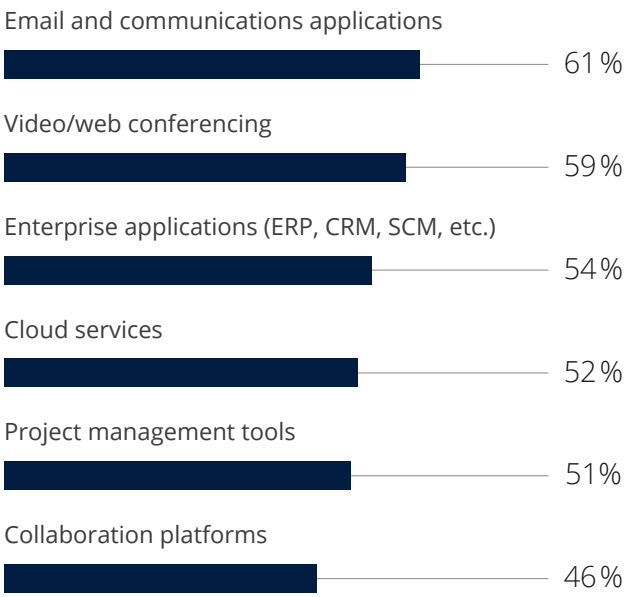
Business processes over Wi-Fi are spread across different applications.

It is primarily email and communication applications (61 per cent) that are used on mobile devices via Wi-Fi. 59 per cent of respondents say that they communicate with colleagues or customers in real time via videoconferencing using Wi-Fi.

54 per cent of respondents have wireless access to various enterprise applications such as CRM, ERP or SCM tools. 46 per cent can access collaboration platforms via Wi-Fi. 52 per cent mention cloud services. In 28 per cent of the companies surveyed, Wi-Fi is an important connection technology for the IoT. Users ensure wireless connectivity between networked devices to share and analyse data and enable automated processes.

Business applications over Wi-Fi

Basis: 361 companies| Multiple responses possible



Key challenges

As digitalisation increases, not only is the number of internet-capable devices increasing; data volumes are also rising rapidly due to data-intensive cloud applications. In addition, there are hybrid modes of operation (47 per cent), which also drive up data transmissions and require corresponding bandwidth. Not every company is optimally prepared for this; many face problems and obstacles.

One of the biggest challenges is ensuring the desired quality and speed of the Wi-Fi network, while at the same time increasing the amount of data transmitted. Large numbers of devices and high data transmission rates can lead to bottlenecks, especially in highly frequented areas. 43 per cent of respondents are affected by the increasing number of users and data load peaks that threaten Wi-Fi stability and impact performance.

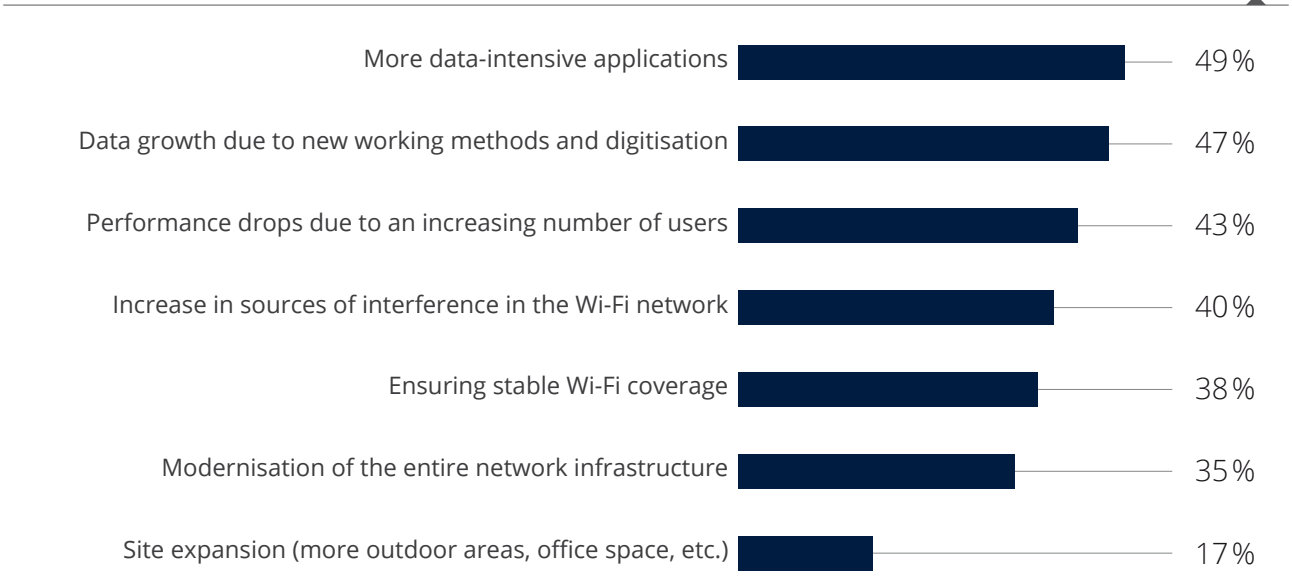
Four out of ten companies see a problem in increasing sources of interference from external Wi-Fi networks and other non-Wi-Fi radio sources. The concerns are entirely justified. Particularly in densely populated areas, there can be overlaps and interference between different Wi-Fi networks. This can lead to poorer signal quality and reduced speed. Bluetooth devices operating in the 2.4 GHz band or weather or flight radars, which have priority in the 5 GHz band, can also cause interference.

The modern working environment in many companies also includes the options of flexible and hybrid working. However, the stable Wi-Fi coverage required for this poses a problem for 38 per cent of companies. The performance and reliability of the Wi-Fi is also affected by the entire network infrastructure, including network boxes, LAN cables and switches. At least one third of respondents have vulnerabilities. These companies should work swiftly to upgrade their IT network infrastructure, particularly with security in mind. IT networks must be resilient and include robust security mechanisms to prevent unauthorised access and data loss. In addition, modern network infrastructure can be managed more easily and automatically when the right tools are used.

Accurate planning and configuration of the Wi-Fi network will solve many of these challenges.

Challenges in the context of Wi-Fi

Basis: 361 companies| Multiple responses possible



Ensuring optimum quality

Various measures are necessary to ensure optimum Wi-Fi quality.

Wi-Fi site survey

Universal, trouble-free Wi-Fi access requires ideal coverage across the board. Starting with a site analysis, the assessment of the building structure, conditions in the outdoor area, right through to the number of users and the type of devices used, the site survey also includes the planning of capacities.On top of this, there is security, which includes implementing encryption, authentication methods, and access restrictions to prevent unauthorised access and data loss. For 61 per cent of respondents, the Wi-Fi site survey is the be all and end all in order to achieve reliable Wi-Fi quality wherever it is needed in the company. Attention must also be given to the positioning of the wireless transmitters to ensure the required signal strength to facilitate device roaming and to provide redundancy for business-critical Wi-Fi applications. In order to ensure intercompatibility, 57 per cent consciously select the IT network components.

Automation and cloud management

Germany is now also affected by the shortage of skilled workers, and the information technology sector is of course not immune. According to the German Press Agency, there were 67,924 vacancies in the information technology sector nationwide in 2022. There is still no sign of the situation improving. In fact, this problem is likely to become even more acute in the medium and long term. As a result, companies will also face persistent difficulties in finding qualified professionals to manage and maintain their IT networks. In this context, they are being forced to take measures to alleviate the skills shortage in the area of network management. This is made possible by Wi-Fi cloud management and automated Wi-Fi optimisation. 42 per cent of companies are going down this route and moving Wi-Fi management into the cloud. Instead of configuring and managing each Wi-Fi device individually, cloud management enables centralised management of all Wi-Fi devices from a single location. This allows centralised control of Wi-Fi settings, security protocols, access restrictions and other configuration options. Plus, the network is easy to scale by adding new devices or removing existing devices. 38 per cent of IT network administrators are making use of automated Wi-Fi optimisation solutions. This allows Wi-Fi installations to be optimised based on usage data, thereby minimising the workload for IT administrators.

Proactive preparation

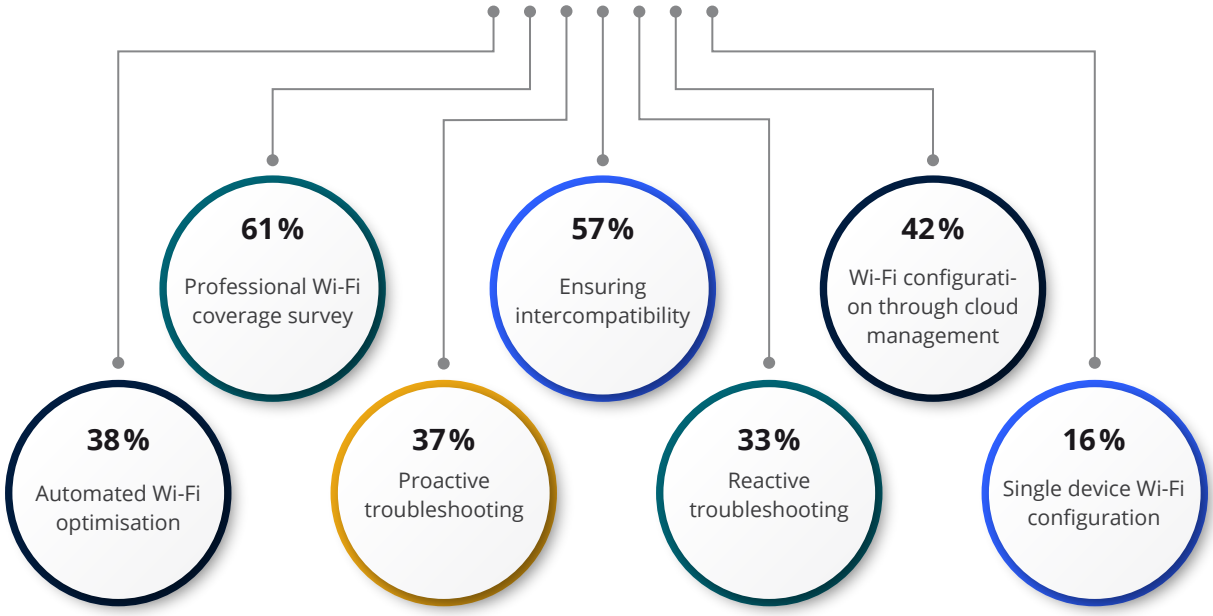
To ensure a rapid response to network outages or performance limitations, network administrators need to be notified early when critical thresholds are exceeded or not met. 37 per cent of respondents rely on proactive troubleshooting through automatic alerts

and constant monitoring. They have realised that using these tools enables them to proactively eliminate performance limitations. Automatic alerts allow problems to be identified quickly and directed to the right teams. Response times are shortened and downtime reduced. This saves costs and at the same time leads to positive customer satisfaction. Instead of responding only when problems arise, potential bottlenecks can be identified and remedied at an early stage. This also allows for better planning and more efficient use of resources such as server capacity, network bandwidth or storage space.

This makes it all the more surprising that one third of respondents still carry out reactive troubleshooting manually in the event of fault reports. If only a small number devices are in use, single device configuration may make sense. However, if faults occur simultaneously and the company has a large number of network devices, it becomes difficult to identify and resolve all problems in a timely manner. Delays in troubleshooting can then affect the productivity of the business in critical processes. In addition, it is time-consuming if the technician has to deal with each individual faulty device, especially when the problems are complex or serious.

Measures to ensure good Wi-Fi quality

Basis: 361 companies| Multiple responses possible



Future developments in the Wi-Fi area

This section looks at what companies expect from a future-oriented Wi-Fi network and what features and characteristics need to be meet.

With data volumes continuing to grow, it is no surprise that 51 per cent of respondents want Wi-Fi technology that meets the increasing demands placed on data throughput. It should be noted that the speed of transmission depends not only on the quality of the Wi-Fi, but also on the speed of the internet connection and the capacity of the server. Wi-Fi must be not only fast, but also stable (45 per cent). Stability requires a wide frequency band and is only guaranteed if old network components and old firmware are updated and sources of interference are avoided. High-performance routers and more modern devices supporting higher Wi-Fi standards also play a significant role in faster and stable transmission rates. Radio frequencies that are too low can also lead to network disruptions and even crashes.

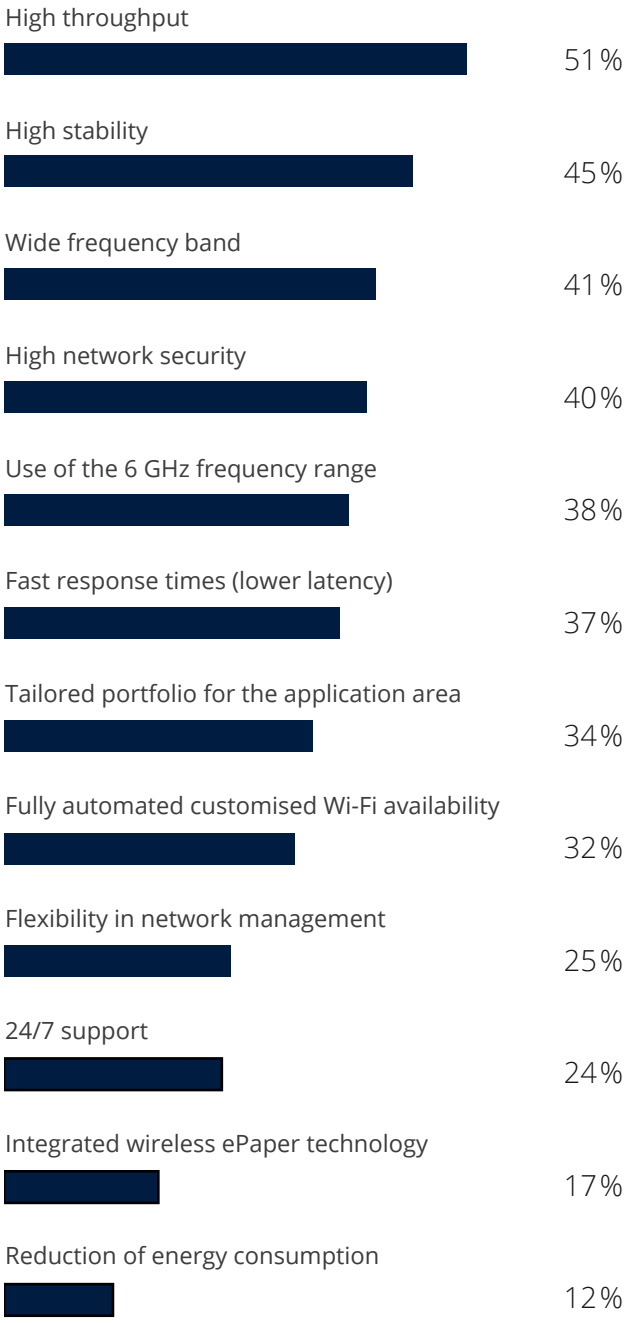
38 per cent of companies surveyed are concerned that the traditional 2.4 GHz and 5 GHz radio frequencies are becoming increasingly overloaded and would like to see additional use of the 6 GHz frequency range in the future. This area is opened up with Wi-Fi 6E.

Equally important is network security and the regular installation of security updates (40 per cent). They protect sensitive data from cyber attacks and ensure a functioning and trusted network. In addition, from the user's point of view, a forward-looking Wi-Fi should offer fast response times (37 per cent) and, depending on the area of application, a tailor-made portfolio (34 per cent). Operating costs can be reduced with fully automated, demand-based control.

Ensuring all these aspects requires not only optimal positioning of Wi-Fi access points and the use of efficient Wi-Fi standards, but also the use of monitoring and analysis tools that provide insights into specific needs and usage behaviour.

Expectations of a future-ready Wi-Fi

Basis: 361 companies| Multiple responses possible



Wi-Fi 6E enables high-performance IT networks for intensive data volumes

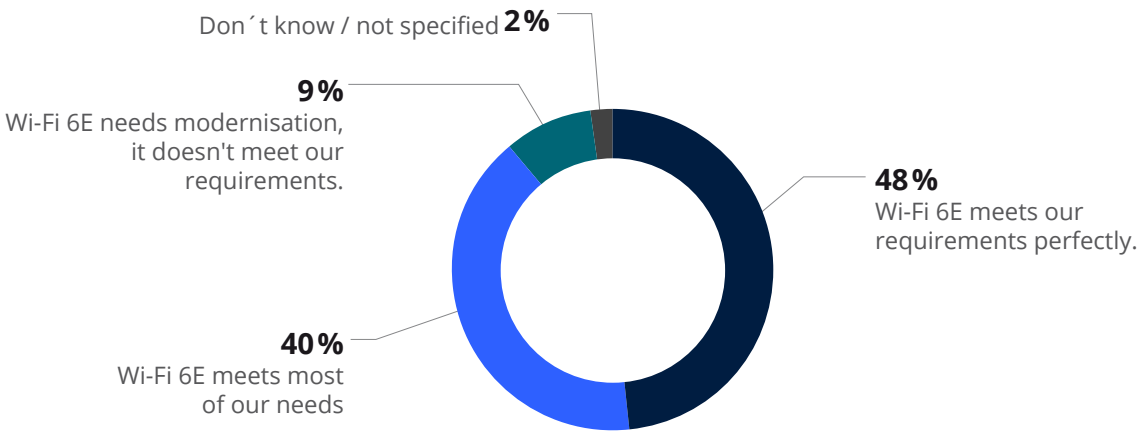
Gigabit speeds are a key enabler for the digital transformation and industries of the future. They support demanding applications such as IoT and cloud technologies in transferring large amounts of data.

The combination of gigabit speeds and Wi-Fi 6E opens up new possibilities for robust wireless connections and fast transfer rates through the additional use of the 6 GHz frequency range. The results of the study show that Wi-Fi 6E meets the current Wi-Fi requirements of companies.

48 per cent are fully convinced, while another 40 per cent assume that Wi-Fi 6E will largely meet their requirements. However, both the gigabit speed and Wi-Fi speed depend not only on network infrastructure, device compatibility and environmental conditions. In order to fully benefit from the advantages of Wi-Fi 6E, it is necessary that both the access points and the terminals support this standard.

Statements regarding Wi-Fi 6E

Basis: 361 companies



Conclusion

Wi-Fi has become an indispensable component of corporate communications and technology. A fast, reliable and secure wireless LAN network is critical to business success. It makes work processes more efficient and helps to ensure companies remain competitive. This is because it offers advantages that are essential for today's business world: mobility, flexibility and efficiency.

Planning a professional Wi-Fi network requires a careful approach from companies to ensure that the network actually meets their needs. When installing Wi-Fi networks, care must be taken to choose technology that is suitable for the company, to create a stable and efficient working environment and to take the necessary security measures.

Overall, it is important to take into account the specific features and differences when planning and implementing indoor and outdoor Wi-Fi to provide a reliable and secure Wi-Fi network. The walls and ceilings in the interior can diminish signals. Here, it is important to consider the number and position of access points accordingly. For example, when installing outdoors, care must be taken to ensure that the access points are weather-resistant.

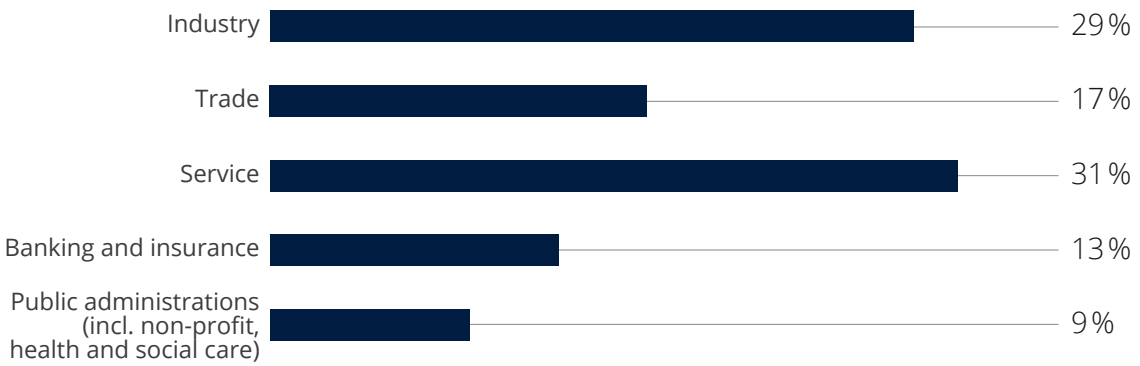
In the supplier market, technologies and experts are available to help companies find the right standard and optimal solution. To ensure that the Wi-Fi network is set up effectively and securely, companies are well advised to define goals and get expert help. By addressing all the specific needs, companies will be able to make an informed choice that meets their needs while staying within budget.

Study design and sample

The "Wi-Fi out of the box" study was designed and carried out by techconsult GmbH on behalf of LANCOM Systems. The study involved 361 companies working from 250 computer workplaces. The survey was conducted via an online questionnaire. The sample consisted of companies from all sectors in the DACH and Benelux regions. Key contacts were IT managers, IT administrators and network administrators.

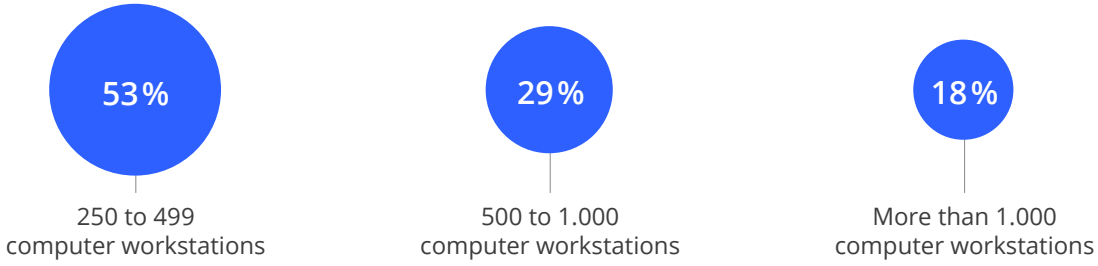
Surveyed sectors within the study

Basis: 361 companies



Number of computer workstations in the company

Basis: 361 companies



Headquarters

Basis: 361 companies

Due to rounding adjustments, some totals may not add up to 100%.

This study uses gender-neutral language wherever possible. All terms, examples and information therein applies generally to all genders in the sense of equal treatment.

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Further information

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About techconsult GmbH

techconsult GmbH was founded in 1992 and is one of the most well-established analyst firms in Central Europe. Thecompany's strategic consulting services focus on the IT and communications industries. Through long-standing standard and individual studies, techconsult has a unique collection of data in German-speaking countries, with respect to both the continuity and depth of information. It is therefore an important consulting partner for CXOs and the IT industry for product innovation, marketing strategies and sales development.

About LANCOM Systems GmbH

LANCOM Systems is a leading European manufacturer of secure, reliable and future-proof network and security solutions (WAN, LAN, Wi-Fi & firewalls) for business and administration. LANCOM Systems combines hardware business with virtual network components and cloud-based software-defined networking (SDN). Software and hardware development as well as production primarily take place in Germany; the same applies to network management hosting (LANCOM Management Cloud). The company attributes particular importance to providing trusted solutions with excellent security features. The product lines are characterised by long life cycles and professional management.

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