



## NETWORK TECHNOLOGIES AND TYPES

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<b>Received:</b> August 20 <sup>th</sup> 2023 <b>Accepted:</b> September 20 <sup>th</sup> 2023 <b>Published:</b> October 21 <sup>st</sup> 2023	This article discusses network technologies and types. In the modern era, where information is power and communication is essential, network technologies play a pivotal role in shaping the way we interact, work, and live. Networks serve as the backbone of our digital society, enabling seamless communication, efficient data exchange, and collaborative efforts across the globe. The concept of networking dates back to the 1960s when the internet's precursor, the ARPANET, was established. It marked the beginning of an era where computers could communicate over long distances, setting the stage for the development of various networking technologies.
<b>Keywords:</b> Network technologies, types, configurations, society, communication functions, network concept, digital technologies, wireless communication.	

The 1990s witnessed the internet revolution, democratizing information access and transforming the world into a global village. The advent of the World Wide Web made the internet user-friendly, allowing individuals and businesses to create websites, share information, and collaborate in ways previously unimaginable. LANs connect devices within a limited geographical area, such as a home, office, or campus. Ethernet cables and Wi-Fi are common technologies used to establish LANs, enabling seamless data sharing and resource accessibility among connected devices.

WANs cover larger geographic areas and connect multiple LANs. Technologies like leased lines, fiber optics, and satellite links facilitate long-distance communication, enabling organizations to establish global connections and share resources across branches and continents.

Wireless networks, including Wi-Fi, Bluetooth, and cellular networks, have revolutionized connectivity by eliminating the need for physical cables. Wi-Fi, for instance, enables wireless internet access within a specific range, empowering users to connect laptops, smartphones, and other devices to the internet seamlessly. The IoT encompasses interconnected devices embedded with sensors, software, and network connectivity. IoT networks enable smart homes, cities, and industries, allowing devices to communicate, collect data, and enhance automation, efficiency, and convenience in various sectors.

VPNs provide secure communication over the internet by creating encrypted tunnels between connected devices. They ensure privacy and confidentiality, making them invaluable for remote workers, businesses, and individuals seeking secure online interactions.

Cloud computing networks leverage the internet to deliver computing services, storage, and applications to users. Cloud technologies facilitate scalability, flexibility, and cost-effectiveness, enabling businesses to access resources on-demand without the need for extensive physical infrastructure.

The evolution of cellular networks from 1G to 5G has revolutionized mobile communications. 5G networks offer unprecedented speed, low latency, and high bandwidth, paving the way for innovations like augmented reality, autonomous vehicles, and advanced healthcare solutions. Beyond 5G, technologies like 6G are on the horizon, promising even faster speeds and groundbreaking applications.

For businesses, networks facilitate efficient communication, seamless collaboration, and streamlined operations. Cloud-based applications, online project management tools, and virtual private networks enhance productivity, enabling teams to work together regardless of their physical proximity.

In the realm of education, networks have transformed the learning experience. Online courses, virtual classrooms, and digital libraries provide access to educational resources worldwide. Additionally, networks facilitate collaborative research among scientists, enabling the exchange of knowledge and accelerating scientific discoveries.

Networking technologies play a vital role in modern healthcare systems. Electronic health records, telemedicine, and remote monitoring enable healthcare professionals to provide timely and personalized care to patients. IoT devices and sensors in healthcare facilities enhance patient monitoring, ensuring efficient healthcare delivery. Smart city initiatives leverage networking technologies to enhance urban living. IoT sensors monitor traffic flow, optimize public transportation, and manage waste disposal efficiently. Smart grids ensure efficient energy distribution, promoting sustainability and reducing environmental impact.

The interconnected nature of networks fosters innovation by providing a platform for collaboration and idea exchange. Open-source communities, research collaborations, and online forums enable innovators and developers to work together, leading to the creation of new technologies, applications, and solutions.

As networks continue to expand, security threats, including cyberattacks, data breaches, and malware, pose significant challenges. Ensuring robust cybersecurity measures, encryption protocols, and user awareness is crucial to safeguarding sensitive information and maintaining trust in digital interactions.

The collection and analysis of vast amounts of data raise concerns about user privacy and ethical implications. Striking a balance between innovation and protecting individual privacy rights is essential. Regulations such as the General Data Protection Regulation in Europe aim to address these concerns and establish guidelines for responsible data usage.

Looking ahead, emerging technologies such as quantum networking, edge computing, and blockchain are set to reshape the networking landscape. Quantum networking promises ultra-secure communication using quantum entanglement, while edge computing brings processing closer to the data source, reducing latency and enhancing efficiency. Blockchain technology offers decentralized and tamper-proof record-keeping, revolutionizing sectors like finance, supply chain management, and healthcare.

The term "Internet Markup Language" or HTML, refers to a markup language specifically designed for electronic documents, commonly used for web pages. It consists of predefined attributes (tags) arranged in a set sequence, essential for web developers to create websites. Each page of this markup language is a collection of attributes (tags) predetermined by web developers, tailored for electronic documents. Of course, in this context, we do not discuss documents "downloaded" from the Internet, stored on a user's personal computer, and viewed through text or graphics editors (photos, images). This information relates to web pages viewed through browser applications.

Website developers create them in HTML (currently, there are many tools and technologies available for this purpose, collectively referred to as "website layout"), in the form of a collection of web pages. The owners of the websites place these pages on internet servers, renting storage space from hosting providers. They operate on the Internet around the clock and serve users' queries to view the web pages uploaded by them.

Users, through their personal computer browsers, have the right to access a specific server via their Internet service provider, provided that the address exists under the designated website name. Additionally, each viewed page's HTML tags are analyzed, and browsers render its representation on the monitor screen according to the web designer's specified format – including titles, fonts, background colors, images, charts, and various other elements.

Creating responsive technologies and redesigning them is convenient, as it requires minimal effort and, most importantly, does not incur excessive costs when building efficient and speedy networks. Even when setting up a simple network, you can connect local networks with one or several entry points, reaching computers located in separate buildings or at considerable distances from each other.

In addition, various difficulties can arise in setting up wireless technologies, such as the positioning of cables. The architectural structure of buildings might interfere, and different types of cables like optical, UTP (Unshielded Twisted Pair), and coaxial cables can be used for these wireless technologies, each posing its own set of challenges. Creating wireless technologies requires careful consideration, as you may encounter issues that need to be resolved using specialized software on computers. The best technologies in our world today, even if they are highly advanced, are the ones that are the most versatile. Universality is the main indicator in any situation – it is essential to have the flexibility to operate anywhere, considering the work environment.

**CONCLUSION:** Modern representatives of technology, such as mobile phones, personal assistants, communicators, and laptops, are considered heralds of contemporary technology. The emergence of wireless technologies and related computer technologies has become increasingly important. This is because they provide the opportunity to establish any communication devices, considering the vastness of our lives. With such a device, you can confidently move around the city, ensuring secure movement and constant communication, eventually obtaining the latest information.

Network technologies have become the backbone of our digital society, connecting people, businesses, and devices in unprecedented ways. From local networks to global communication infrastructures, the evolution of networking technologies has enabled seamless collaboration, innovation, and progress. As we navigate the challenges of cybersecurity and privacy, embracing emerging technologies will further revolutionize our interconnected world, paving the way for a future where communication knows no bounds.

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