Networking has experienced such fast and strong progress in recent times. People have developed networking over time, working on new protocols, networking devices, and other projects to build the world of networking.

Back in the 1960s, computers were starting to become more powerful, but they couldn't easily communicate with each other. Researchers and scientists realized the importance of connecting computers to share information and resources. **That's when ARPANET came into the picture.**

ARPANET (Advanced Research Projects Agency Network) was created in the late 1960s by the U.S. Department of **Defense's Advanced Research Projects Agency (ARPA)**. It was the first widearea network and laid the foundation for the Internet we know today.

ARPANET connected different research institutions and universities, allowing them to exchange data and collaborate. It used a technology called packet switching, where data is divided into small packets and sent across the network. This approach ensured efficient and reliable transmission of information.

As time went on, **ARPANET** grew, and more computers were connected. However, there was a need for a standardized protocol to enable seamless communication across different types of computers and networks. That's where **TCP/IP** comes in.

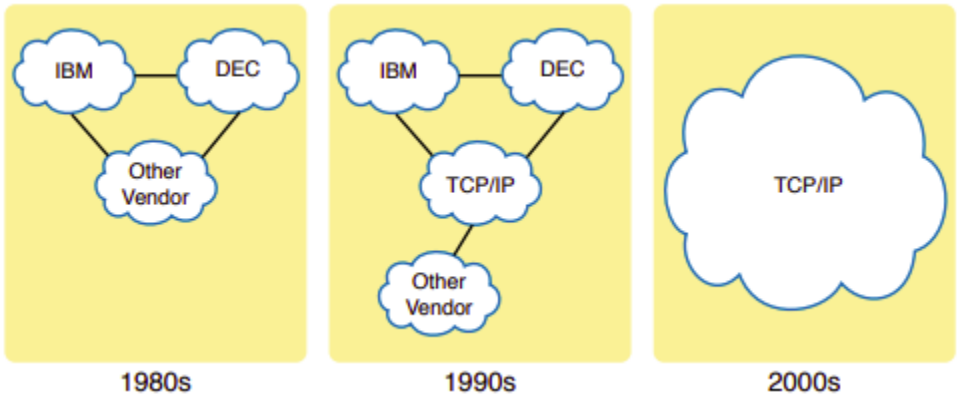
TCP/IP (Transmission Control Protocol/Internet Protocol) was developed in the 1970s to provide a common language for computers to communicate over the network. It consists of two main protocols: TCP, responsible for breaking data into packets, ensuring their reliable delivery, and reassembling them at the destination, and IP, handling the addressing and routing of packets across the network.

TCP/IP became the foundation of the Internet. It allowed computers and networks to interconnect globally, leading to the birth of the modern Internet. Now, people from different parts of the world can easily share information, send emails, browse websites, and engage in online activities.

In the following years, the Internet continued to evolve and grow rapidly. More protocols, applications, and services were developed, making it a fundamental part of our lives today. The **World Wide Web (WWW)** emerged in the 1990s, bringing userfriendly interfaces, websites, and hyperlinks, making the Internet accessible to everyone.

With the widespread adoption of TCP/IP and the Internet, new technologies and innovations flourished. Today, we have social media, online shopping, video streaming, and countless other digital services that have transformed how we connect, communicate, and access information.

Development OF TCP/IP



Today, the world of computer networking uses one networking model: TCP/IP. However, the world has not always been so simple. Once upon a time, networking protocols didn't exist, including TCP/IP. Vendors created the first networking protocols; these protocols supported only that vendor's computers.

For example, IBM, the computer company with the largest market share in many markets back in the 1970s and 1980s, published its Systems Network Architecture (SNA) networking model in 1974. Other vendors also created their own proprietary networking models. As a result, if your company bought computers from three vendors, network engineers often had to create three different networks based on the networking models created by each company, and then somehow connect those networks, making the combined networks much more complex. The left side of Figure shows the general idea of what a company's enterprise network might have looked like back in the 1980s, before TCP/IP became common in enterprise internetworks.

Although vendor defined proprietary networking models often worked well, having an open, vendor neutral networking model would aid competition and reduce complexity. The International Organization for Standardization (ISO) took on the task to create such a model, starting as early as the late 1970s, beginning work on what would become known as the Open Systems Interconnection (OSI) networking model. ISO had a noble goal for the OSI model: to standardize data networking protocols to allow communication among all computers across the entire planet. ISO worked toward this ambitious and noble goal, with participants from most of the technologically developed nations on Earth participating in the process.

A second, less formal effort to create an open, vendor neutral, public networking model sprouted forth from a U.S. Department of Defense (DoD) contract. Researchers at various universities volunteered to help further develop the protocols surrounding the original DoD work. These efforts resulted in a competing open networking model called TCP/IP. During the 1990s, companies began adding OSI, TCP/IP, or both to their enterprise networks.

However, by the end of the 1990s, TCP/IP had become the common choice, and OSI fell away. The center part of Figure 13 shows the general idea behind enterprise networks in that decade—still with networks built upon multiple networking models but including TCP/IP. Here in the twenty first century, TCP/IP dominates.

Proprietary networking models still exist, but they have mostly been discarded in favor of TCP/IP. The OSI model, whose development suffered in part because of a slower formal standardization process as compared with TCP/IP, never succeeded in the marketplace. And TCP/IP, the networking model originally created almost entirely by a bunch of volunteers, has become the most prolific network model.