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Computer Science 1

**The Evolution of Servers and Cloud Computing: A Historical Overview**

**Introduction**

Servers and the evolution of cloud computing are central features of the technological history of recent times. This essay is aimed at studying the evolution, from the initial computing machines, till the complicated and clever cloud environments of the last years. Emphasis will be given both on the developments and their impacts in the business and the civilian environment.

**The Dawn of Computing and Early Servers**

In a more conceptual sense, however, servers can be traced to the early 20th century and the rise of the first numerically big mechanical computers – for example, the tabulating machines designed for use in the 1890 US Census. However, the cultural forces that powered today’s servers could be traced back to the dynamic of a new kind of computer developed in the 1960s, and christened mainframes: the first widely available mainframe, the IBM System/360, came off the production line in the early 1960s.That code interpreter is still present in the mail server. A mainframe was a huge, room-sized machine, usually with external cooling facilities. Mainframes offered massive amounts of computing power to multiple users at the same moment, with the users attached to random terminals.

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**The Rise of the Internet and Web Servers**

The 1990s were precipitated by the exponential growth of the Internet. With the advent of the World Wide Web, the ability to serve content – a web server – became paramount. Apache and Microsoft’s IIS held the lions’ share of sites.This era also saw the rise of server farms—large data centers that housed vast amounts of server hardware to support escalating Internet usage and enterprise applications.

**Birth and Growth of Cloud Computing**

The phrase ‘cloud computing’ dates back to the early 2000s, but its metaphysical heritage is from the 1960s, when John McCarthy remarked that ‘computation may someday be organized as a public utility’. The first concrete realization became feasible only in 2006, with the launch of Amazon Web Services (AWS), a suite of cloud computing services scalable to almost any needs. This signaled the inversion of the whole server paradigm: forget physical servers being stashed in your company’s closet in an air-conditioned room with beeping lights and blinking cables and buzzers. Such critical pieces of infrastructure are now being (virtually) stashed in somebody else’s air-conditioned room instead.

IT overhead and capital expenditures can be reduced by simply scaling up and down what has been made available in the cloud. Over the next few years, competition on the cloud-computing market would bring forth capable alternative offerings, such as Microsoft Azure, Google Cloud, IBM Cloud and other services providing portions of IT services. Some of these services divide up infrastructure-as-a-service (IaaS) over platform-as-a-service (PaaS) and software-as-a-service (SaaS).

**Impact and Future Directions**

What cloud computing has made possible shouldn’t be understated. As the Buzzword of the Year, it’s had a profound impact on capabilities across sectors. It has an unprecedented ability to accelerate initiatives through access to infinite, elastic compute and distributed storage, as well as an instant ability to scale up and down. The cloud has leveled the playing field for access to technology, such that start-ups with little support can build on the same quasi-infinite resources that companies once needed to own in-house, thereby dramatically reducing the cost for getting started.

Going forward, the movement of AI and machine learning into cloud services promises increased innovation, as does edge computing, the move to process data where it’s generated rather than in a central data center facility. That in turn will be fuelled by the still-expanding Internet of Things (IoT), the vast network of devices capable of communicating with each other and with sensors on devices and in the physical environment. Mobile computing will continue to be an important driver.

**Conclusion**

The development of network-attached servers, and the evolution of cloud computing, is telling of the advances in technology we’ve witnessed over the past decades. From humongous mainframes to next-generation cloud environments, a non-stop ambition for innovation in the computing space has tried to keep pace with the rapid growth in user demand and internet-based interactions, and smoothen the overall experience for end-users. Cloud technologies are poised to play an ever-increasing role in all aspects of the emerging digital reality.

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