Bangladesh Open University

Diploma in Computer Science and Application Program (DCSA)

**Operating Systems**

TMA - 2

History of server-based operating systems (OS)

Submitted by

MD JASHEDUL ISLAM SHAUN

ID : 21150890015

The history of server-based operating systems (OS) is closely intertwined with the evolution of computer networks and the demand for centralized computing resources. Let's explore the details of this history:

**Mainframe Era:**

In the early days of computing, mainframe computers dominated the landscape. These large and powerful machines were the backbone of early server-based systems. Operating systems like IBM's OS/360 and Burroughs MCP were designed to efficiently manage resources such as CPU time, memory, and peripheral devices in a centralized manner. Mainframe operating systems allowed multiple users to connect remotely and share computing resources, laying the foundation for server-based computing.

**Client/Server Architecture:**

With the advent of local area networks (LANs) in the 1980s, the client/server architecture gained prominence. This architecture distributed the processing tasks between a server, which provided centralized resources, and multiple client computers that accessed and utilized those resources. Operating systems such as Novell NetWare, Windows NT, and Unix variants played a crucial role in facilitating this client/server model by providing robust networking capabilities, file sharing, and security features.

**Network-Attached Storage (NAS):**

In the 1990s, the demand for shared storage systems led to the emergence of Network-Attached Storage (NAS). NAS devices provided dedicated file storage and retrieval services over the network. Operating systems like FreeBSD, Linux, and Windows Server were adapted to support NAS functionality. These operating systems incorporated file system protocols such as NFS (Network File System) and SMB (Server Message Block) to enable seamless access to files from multiple client systems.

**Internet and Web Servers:**

The rapid growth of the internet in the 1990s gave rise to web servers, which played a pivotal role in serving web pages and facilitating the World Wide Web. Operating systems like Unix (including variants like Linux and FreeBSD), Windows NT/Windows Server, and macOS provided the foundation for web server software such as Apache HTTP Server, Microsoft Internet Information Services (IIS), and Nginx. These operating systems offered robust networking capabilities, scalability, and security features critical for serving web content.

**Cloud Computing and Virtualization:**

The 2000s witnessed the emergence of cloud computing, which further transformed server-based operating systems. Cloud platforms like Amazon Web Services (AWS), Google Cloud Platform (GCP), and Microsoft Azure required highly scalable and virtualized environments to provision computing resources on-demand. Operating systems were enhanced to support virtualization technologies such as VMware, Xen, and KVM. Linux-based distributions like Ubuntu, CentOS, and Red Hat Enterprise Linux became popular choices for cloud servers due to their open-source nature, stability, and extensive community support.

**Containerization:**

Containerization technologies like Docker and Kubernetes have gained significant traction in recent years. Operating systems have adapted to support containerization, enabling lightweight and isolated application deployments. Linux distributions such as CoreOS, Atomic Host, and RancherOS have been developed specifically for containerized environments, providing minimal footprints and optimized performance for running containers.

**Hybrid and Edge Computing:**

In the present era, server-based operating systems are evolving to accommodate hybrid and edge computing models. Hybrid environments combine on-premises servers with cloud infrastructure, while edge computing brings computing resources closer to the data source. Operating systems are being designed to handle distributed computing scenarios, enabling seamless integration between local servers, cloud resources, and edge devices.

The history of server-based operating systems demonstrates the ongoing quest for centralized resource management, scalability, security, and adaptability to evolving technological paradigms. As computing technologies continue to advance, server-based operating systems will likely continue to evolve to meet the demands of modern IT infrastructure.