**Module 2: Essay Paper**

Brandon Trinkle

Information Technology, Arizona State University

IFT 320: Class Name

Professor Rahul Kashyap

9/3/2024

**Chapter 1: Questions**

The evolution of computing services has undergone several significant stages, transitioning from centralized and powerful machines to distributed, scalable services available over the internet. According to Kale (2015), the earliest phase was supercomputing, which focused on using highly powerful computers to perform complex calculations at extremely high speeds. This was followed by cluster computing, where multiple interconnected computers, or nodes, worked collaboratively to enhance processing efficiency beyond the capabilities of a single machine. The next stage was grid computing, which expanded on the concept of clusters by utilizing resources spread across multiple, geographically dispersed locations to solve large-scale computational problems. Subsequently, utility computing emerged as a model that provided computing resources as a metered service, similar to public utilities like electricity or water, allowing customers to pay only for what they used. Finally, the evolution culminated in cloud computing, which encompasses various "as-a-service" models, such as Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), Communication as a Service (CaaS), and Management as a Service (MaaS). These models offer on-demand, scalable resources accessed over the internet, revolutionizing how businesses and individuals’ access and utilize technology. (Guide to Cloud Computing for Business and Technology Managers, 2015)

**Chapter 13: Questions**

**Amazon**: “Cloud computing is the on-demand delivery of IT resources over the Internet with pay-as-you-go pricing. Instead of buying, owning, and maintaining physical data centers and servers, you can access technology services, such as computing power, storage, and databases, on an as-needed basis from a cloud provider like Amazon Web Services (AWS).” (Amazon, 2024)

**NIST**: “Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction. This cloud model is composed of five essential characteristics, three service models, and four deployment models.” (Mell & Grance , 2011)

**ZDNET:** “Cloud computing is the delivery of computing services—including servers, storage, databases, networking, software, analytics, and intelligence—over the Internet ("the cloud") to offer faster innovation, flexible resources, and economies of scale.” (Ranger, 2022)

Cloud computing is characterized by five essential attributes that define its core capabilities. The first is on-demand self-service, which enables users to automatically access computing resources, like server time and storage, whenever needed without requiring human intervention from the service provider. The second characteristic, broad network access, ensures that these resources are available over the internet and accessible from a variety of devices such as laptops, smartphones, and tablets. Resource pooling is the third attribute, where cloud providers use a multi-tenant model to dynamically allocate resources like storage, processing power, and network bandwidth to serve multiple customers efficiently. The fourth characteristic, rapid elasticity, allows cloud resources to scale quickly in response to varying user demands, providing a seemingly unlimited capacity that can be adjusted as needed. Finally, measured service ensures that resource usage is automatically monitored, controlled, and reported, promoting transparency between the provider and the consumer for effective cost management and accountability. Together, these five characteristics form the foundation of cloud computing's flexibility, scalability, and efficiency. (Guide to Cloud Computing for Business and Technology Managers, 2015, p. 260)

Cloud computing provides several key benefits that make it a valuable resource for organizations. First, it offers scalable infrastructure systems, including servers, storage, and networks that can be adjusted according to user demand, ensuring that resources are allocated efficiently and cost-effectively. Second, cloud computing provides web-based application software with user interfaces and APIs that support a wide variety of configurations, enhancing flexibility and accessibility for end users. Third, it facilitates rapid application development and deployment by providing software that supports the development, integration, and management of cloud-based applications. This rapid deployment capability allows businesses to bring products to market faster and respond quickly to changing conditions. Additionally, cloud services provide system and application management software that supports self-service provisioning, configuration, and monitoring of usage, which reduces the need for extensive in-house IT support. Finally, the use of IP networks connects end users to the cloud infrastructure, enabling seamless access to resources and applications from various locations, further promoting collaboration and operational efficiency. (Guide to Cloud Computing for Business and Technology Managers, 2015, p. 261)

# References

Amazon. (2024, August 28). *What is cloud computing?* Retrieved from https://aws.amazon.com/: https://aws.amazon.com/what-is-cloud-computing/

Guide to Cloud Computing for Business and Technology Managers. (2015). In V. Kale, *Guide to Cloud Computing for Business and Technology Managers.* Boca Raton, FL: CRC Press.

Mell, P., & Grance , T. (2011). The NIST Definition of Cloud Computing. *National Institute of Standards and Technology*, 2.

Ranger, S. (2022, Feburary 25). *What is cloud computing? Everything you need to know about the cloud explained*. Retrieved from https://www.zdnet.com/: https://www.zdnet.com/article/what-is-cloud-computing-everything-you-need-to-know-about-the-cloud/