VERITAS UNIVERSITY

EXTENSIVE NOTES ON AWS, GOOGLE CLOUD PLATFORM AND MICROSOFT AXURE

NAME : CINDY EKAJI MGBE

MATRIC NO: VUG/CSC/22/7809

COURSE: CSC 302 (DISTRIBUTED COMPUTER SYSTEMS)

DEPARTMENT: COMPUTER SCIENCE

LEVEL: 300L

LECTURER: MR. THOMAS BAIDOO

DATE: 14/03/2025

INTRODUCTION

Distributed systems unite several computers (or nodes) to operate as one cohesive system in order to reach shared objectives. The interconnected computers function through a network-based messaging system to reach their common objective. System designers establish distributed systems to achieve scalability and fault tolerance along with resource sharing functionality.

Cloud computing platforms are a prime example of distributed systems, where resources like computing power, storage, and networking are distributed across multiple physical or virtual machines. These platforms provide on-demand access to computing services over the internet, allowing users to scale their applications without managing physical infrastructure.

Cloud computing provides on-demand access to computing resource such as storage, processing power, and networking over the internet. Each provider offers a variety of services, including computing, storage, networking, databases, artificial intelligence, machine learning, security, and DevOps tools.

The three largest cloud service providers are:

- Amazon Web Services (AWS)
- Google Cloud Platform (GCP)
- Microsoft Azure

Cloud computing platforms like Amazon Web Services (AWS), Google Cloud, and Microsoft Azure operate as distributed systems, offering scalable and fault-tolerant services. They provide solutions, enabling distributed computing, storage, networking, and databases.

AMAZON WEB SERVICES (AWS)

Amazon Web Services (AWS) is the biggest and most well-known cloud computing platform. It was launched in 2006 and has been the leader in cloud technology ever since. AWS provides companies and developers with tools to store data, run applications, and manage servers without needing physical hardware.

AWS has computing power, meaning it can run websites, applications, and software in the cloud. It provides EC2, which lets users create virtual computers, and Lambda, which runs code without needing a server. AWS also offers containers for managing applications easily.
For storage, AWS has S3 (Simple Storage Service), where businesses can keep huge amounts of data. If users need fast access to stored data, AWS provides EBS (Elastic Block Store), and for long-term storage, it has Glacier.

Why Choose AWS?
AWS is the largest and most trusted cloud platform, used by top companies worldwide. It has the most services available, making it great for all types of businesses. AWS also has data centers around the world, ensuring high reliability.

However, AWS has a complicated pricing system, making it hard to predict costs. It also has many different services, which can be overwhelming for beginners.

AWS is great for big companies and startups that need reliable and

scalable cloud solutions. It works well for businesses that need high-performance computing, big data storage, and artificial intelligence applications.

GOOGLE CLOUD PLATFORM (GCP)

Google Cloud Platform is Google's cloud computing service, launched in 2008. It is best known for its advanced Artificial Intelligence and Machine Learning tools, making it a popular choice for data analysis and smart applications. GCP provides Compute Engine, which allows businesses to run virtual computers. For running applications without managing servers, it has Cloud Run and Google Kubernetes Engine (GKE), which is perfect for container-based applications.

For storage, GCP offers Cloud Storage, a simple and scalable solution for storing large amounts of data. It also provides Persistent Disks for fast access to stored data.
GCP has powerful databases, including Cloud SQL, a managed database system, and BigQuery, a tool for analyzing large datasets quickly.

One of GCP's biggest strengths is its AI/ML services. Vertex AI is an all-in-one tool for training and deploying AI models, while TensorFlow is one of the most popular open-source machine-learning frameworks.

GCP is best for AI, machine learning, and big data applications. It is highly optimized for data analytics, allowing companies to process large datasets quickly and efficiently. GCP is a great choice for businesses that rely on AI, machine learning, and big data analytics. Companies that need fast and powerful data processing tools will benefit from GCP's capabilities.

MICROSOFT AZURE

Microsoft Azure is Microsoft's cloud computing platform, launched in 2010. It is the second-largest cloud provider after AWS and is widely used by businesses that already use Microsoft products like Windows, Office 365, and Active Directory.

Azure has Virtual Machines, which allow businesses to run applications and websites in the cloud. It also provides Azure Functions, which lets developers run small pieces of code without needing to manage servers. For container-based applications, Azure has Azure Kubernetes Service (AKS).

Azure provides Blob Storage for storing data, Azure Files for file sharing, and Cosmos DB, a database designed for fast performance across multiple locations. For networking, Azure has Virtual Network, which provides a secure way to connect cloud services. It also offers Azure CDN, which helps speed up content delivery.

Microsoft Azure has AI and machine learning tools like Azure Machine Learning, which helps businesses build and deploy AI models. It also provides Cognitive Services, which include AI-powered speech recognition, translation, and image analysis.

Azure is best for businesses that already use Microsoft software because it integrates easily with Windows, Office 365, and SQL Server. It also has strong hybrid cloud solutions, allowing businesses to connect their on-premise systems with cloud services.
However, Azure can be complex to set up for beginners, and it doesn’t have as many third-party integrations as AWS.

It is perfect for companies that need hybrid cloud solutions or want a cloud platform that integrates with Windows-based applications.