VERITAS-LOGO (1)

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**Course: GST 302**

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Assignment

Write in the following cloud terminologies:

1. AWS
2. Google cloud platform
3. Microsoft Axure

Answers

1. Amazon Web Service

History of AWS

Early Beginnings (2002-2004)

AWS has its roots in Amazon’s internal infrastructure, which was designed to support the company’s e-commerce platform. In 2002, Amazon’s leadership team, including Jeff Bezos, realized that the company’s infrastructure could be leveraged to provide services to external customers.

Launch of SQS (2004)

In 2004, Amazon launched its first web service, Simple Queue Service (SQS), which allowed developers to decouple applications and process messages asynchronously.

Launch of S3 (2006)

In 2006, Amazon launched Simple Storage Service (S3), a cloud-based object storage service that allowed developers to store and retrieve large amounts of data.

Launch of EC2 (2006)

Later in 2006, Amazon launched Elastic Compute Cloud (EC2), a cloud-based virtual machine service that allowed developers to run virtual machines on Amazon’s infrastructure.

Launch of CloudFront (2008)

In 2008, Amazon launched CloudFront, a content delivery network (CDN) service that allowed developers to distribute content across different geographic locations.

AWS Expansion (2009-2010)

In 2009 and 2010, AWS expanded its services with several new offerings, including:

- Elastic MapReduce (EMR): a big data processing service

- Relational Database Service (RDS): a managed relational database service

- Virtual Private Cloud (VPC): a virtual networking service

AWS Re:Invent (2012)

In 2012, AWS launched its annual conference, AWS Re-Invent, which brought together developers, architects, and technical leaders to share knowledge and innovations.

AWS Expansion (2013-2015)

In 2013, 2014, and 2015, AWS continued to expand its services with several new offerings, including:

- DynamoDB: a NoSQL database service

- Lambda: a serverless computing service

- API Gateway: a managed API service

- IoT: a managed IoT service

Recent Developments (2016-Present)

In recent years, AWS has continued to innovate and expand its services, with several notable developments, including:

- Launch of Alexa for Business (2017): a service for building voice-enabled applications

- Launch of SageMaker (2017): a managed machine learning service

- Launch of Outposts (2018): a hybrid cloud service for running AWS infrastructure on-premises

- Launch of Ground Station (2018): a satellite ground station service for satellite operators

Today, AWS is one of the leading cloud providers, offering over 175 services and solutions for businesses, developers, and governments.

Amazon Web Services (AWS) is a comprehensive and broadly adopted cloud platform offered by Amazon. It provides a wide range of cloud computing services that allow businesses and individuals to access technology resources over the internet. Launched in 2006, AWS has grown to become a dominant player in the cloud services market, supporting millions of active customers across various industries.

Key Features of AWS

1. Broad Range of Services: AWS offers a diverse range of services including computing power, storage options, networking, content delivery, development tools, and database management. Key services include:

- Amazon EC2 (Elastic Compute Cloud): Scalable virtual servers in the cloud.

- Amazon S3 (Simple Storage Service): Scalable object storage for data backup, archiving, and analytics.

-Amazon DS (Relational Database Service): Managed relational database service for various engines including MySQL, PostgreSQL, and Oracle.

2. Global Infrastructure: AWS has a vast global network of data centers across different geographic regions, known as Regions and Availability Zones. This infrastructure allows for high availability, fault tolerance, and disaster recovery capabilities.

3. Pay-as-You-Go Pricing: AWS operates on a pay-as-you-go pricing model, enabling users to pay only for the services they consume. This flexibility allows businesses to scale services according to their changing needs.

4. Security and Compliance: AWS is committed to providing a secure cloud computing environment. They offer a comprehensive set of security features, including data encryption, identity and access management, and compliance with various industry standards and regulations.

5. Machine Learning and AI: AWS provides several machine learning and artificial intelligence services, such as Amazon SageMaker for building, training, and deploying machine learning models, as well as Amazon Rekognition for image and video analysis.

6. Developer Tools: AWS supports developers with a suite of tools including AWS CodeCommit, AWS CodeBuild, and AWS CodeDeploy, facilitating continuous integration and continuous deployment (CI/CD) for applications.

Benefits of Using AWS

1. Scalability: AWS allows businesses to scale resources up or down easily, adapting to fluctuating workloads and demands without significant infrastructure investments.

2. Cost Efficiency: The pay-as-you-go model minimizes upfront costs, making it more economical for startups and large enterprises alike to access advanced computing resources.

3. Flexibility and Customization: Users can select from a wide range of services and customize their cloud environment based on specific needs, making AWS suitable for different industries.

4. Innovation: AWS continually innovates and updates its offerings, providing customers with access to the latest technologies and solutions, such as serverless computing with AWS Lambda.

5. Robust Community and Resources: With millions of users and a vibrant community, AWS offers extensive documentation, tutorials, and forums to support users in learning and deploying services effectively.

Use Cases of AWS

1. Website Hosting: Many businesses utilize AWS to host their websites due to its reliability, scalability, and security features.

2. Data Storage and Backup: Organizations leverage Amazon S3 for secure and durable data storage and backup solutions.

3. Big Data Processing: AWS services like Amazon EMR (Elastic MapReduce) enable organizations to process large amounts of data quickly and cost-effectively.

4. Application Development: Developers use AWS to create, test, and deploy applications using various integrated tools and services.

5. IoT Applications: AWS IoT services facilitate building and managing applications that connect IoT devices, collecting and analyzing data at scale.

Amazon Web Services has revolutionized the way businesses and individuals approach cloud computing. Its extensive suite of services, global infrastructure, and commitment to security have made it a preferred choice for organizations looking to leverage the capabilities of the cloud. As cloud technology continues to evolve, AWS remains at the forefront, supporting innovation and enabling organizations to thrive in a digital-first world. Whether you are a startup or an established enterprise, AWS provides the tools and resources necessary to achieve your cloud computing goals.

1. Google Cloud Platform (GCP)

History of Google Cloud Platform

Early Beginnings (2008-2009)

Google Cloud Platform (GCP) has its roots in Google's internal infrastructure, which was designed to support the company's own applications, such as Google Search, Gmail, and Google Maps. In 2008, Google began exploring ways to offer its infrastructure as a service to external customers.

App Engine (2008)

Google App Engine was launched in 2008 as a platform-as-a-service (PaaS) offering. App Engine allowed developers to build and deploy web applications on Google's infrastructure, using languages such as Python, Java, and Go.

Google Storage (2010)

Google Storage was launched in 2010 as a cloud-based storage service. Google Storage allowed developers to store and retrieve large amounts of data, such as videos, images, and documents.

BigQuery (2010)

BigQuery was launched in 2010 as a fully-managed enterprise data warehouse service. BigQuery allowed businesses to analyze large datasets using SQL-like queries.

Google Compute Engine (2012)

Google Compute Engine was launched in 2012 as an infrastructure-as-a-service (IaaS) offering. Compute Engine allowed businesses to run virtual machines on Google's infrastructure, using a variety of operating systems, including Windows, Linux, and Chrome OS.

Google Cloud SQL (2013)

Google Cloud SQL was launched in 2013 as a fully-managed relational database service. Cloud SQL allowed businesses to run MySQL databases on Google's infrastructure.

Google Cloud Datastore (2013)

Google Cloud Datastore was launched in 2013 as a NoSQL database service. Cloud Datastore allowed businesses to store and retrieve large amounts of semi-structured data.

Google Cloud Platform Expansion (2014-2015)

In 2014 and 2015, Google expanded its cloud platform with several new services, including:

- Google Cloud Pub/Sub (2014): a messaging service for building scalable, real-time applications

- Google Cloud DNS (2014): a domain name system (DNS) service for managing domain names

- Google Cloud Load Balancing (2014): a load balancing service for distributing traffic across multiple instances

- Google Cloud Interconnect (2015): a service for connecting on-premises infrastructure to Google's cloud

Google Cloud Platform Rebranding (2016)

In 2016, Google rebranded its cloud platform as Google Cloud Platform (GCP), with a new logo and a unified brand identity.

Recent Developments (2017-Present)

In recent years, Google has continued to expand its cloud platform with new services and features, including:

- Google Cloud AI Platform (2017): a managed platform for building, deploying, and managing machine learning models

- Google Cloud IoT Core (2017): a managed service for securely connecting, managing, and analyzing IoT devices

- Google Cloud Security Command Center (2018): a security and risk management platform for GCP

- Google Cloud Anthos (2019): a hybrid and multi-cloud platform for building, deploying, and managing applications

Today, Google Cloud Platform is a leading cloud provider, offering a wide range of services and solutions for businesses, developers, and governments.

Google Cloud Platform (GCP) is a suite of cloud computing services offered by Google that enables businesses, developers, and individuals to build, deploy, and manage applications and services in the cloud. GCP provides a range of computing solutions, data storage options, machine learning capabilities, and big data tools, allowing users to leverage Google’s infrastructure for their computing needs.

Key Components of GCP

1. Compute Services:

- Google Compute Engine: This is an Infrastructure as a Service (IaaS) that allows users to create and run virtual machines on Google’s infrastructure.

- Google App Engine: A Platform as a Service (PaaS) that enables developers to build and host web applications in Google-managed data centers.

- Google Kubernetes Engine: A managed environment for deploying containerized applications using Kubernetes, allowing for efficient orchestration and scaling.

2. Storage and Databases:

- Google Cloud Storage: A scalable, durable object storage service for storing and retrieving any amount of data at any time.

- Google Cloud SQL: A fully managed relational database service that supports popular databases such as MySQL, PostgreSQL, and SQL Server.

- Google Firestore: A NoSQL document database built for global apps that provide flexible, scalable database solutions.

3. Networking:

- Virtual Private Cloud (VPC): Enables users to create isolated networks and define their own IP addresses, firewall rules, and routing.

Benefits of GCP

1. Scalability: GCP allows businesses to scale their resources up or down according to demand, making it ideal for handling variable workloads without overcommitting resources.

2. Global Network: With a vast network of data centers around the world, GCP provides low-latency access to services, ensuring reliable performance for users globally.

3. Cost-Effectiveness: GCP operates on a pay-as-you-go pricing model, which enables businesses to pay only for the resources they actually use. This can lead to significant savings compared to traditional on-premises infrastructure.

4. Data Analytics and Machine Learning: GCP offers powerful tools for big data processing and analytics, such as BigQuery, as well as advanced machine learning services like TensorFlow, enabling businesses to gain insights from their data.

5. Security: GCP provides robust security features, including encryption at rest and in transit, identity and access management, and compliance with various industry standards, ensuring that data is kept secure.

6. Integration with Other Google Services: GCP seamlessly integrates with other Google services, making it easier to develop, deploy, and manage applications using tools like Google Workspace.

7. High Availability and Reliability: Google’s infrastructure is designed for high availability with built-in redundancy, ensuring that applications remain operational with minimal downtime.

8. Developer-Friendly Environment: GCP supports multiple programming languages and frameworks, along with a rich set of APIs, making it an attractive option for developers to build and deploy applications.

9. Managed Services: Many services in GCP are fully managed, which reduces the operational burden on teams and allows them to focus on building applications rather than managing infrastructure.

10. Commitment to Sustainability: Google is committed to sustainability, with initiatives aimed at carbon-neutral operations and renewable energy usage, which can align with the values of environmentally-conscious businesses.

Challenges Faced while using GCP

1. Understanding Pricing Models: GCP offers complex pricing models based on usage, which can lead to unexpected costs if not monitored closely. Users may find it challenging to estimate costs accurately, especially when scaling resources.

2. Learning Curve: For those unfamiliar with cloud technologies, the transition to GCP can be daunting. Understanding various services, APIs, and best practices may require significant time and training.

3. Configuration and Management: Properly configuring services and managing them can be complex. Misconfigurations can lead to security vulnerabilities and potential data breaches.

4. Integration with Existing Systems: Integrating GCP with on-premises systems or other cloud services may pose challenges. Organizations often face difficulties in ensuring seamless interconnectivity and data migration.

5. Compliance and Security: Staying compliant with regulations and ensuring data security is crucial. Organizations must understand GCP's security features and implement additional measures to protect sensitive data.

6. Vendor Lock-In: Relying heavily on a single cloud provider can create dependency, making it difficult to switch vendors later. Organizations may face challenges in migrating workloads away from GCP if needed.

7. Performance Issues: Depending on the workload, users might encounter performance inconsistencies, particularly during peak usage times. Understanding the factors that affect performance and optimizing accordingly can be challenging.

8. Limited Support for Certain Services: While GCP has a broad range of services, some specific tools or integrations available on other cloud platforms may not have direct equivalents in GCP, requiring users to find workarounds.

9. Choosing the Right Services: GCP offers numerous products, and selecting the right ones for specific use cases can be overwhelming. Organizations need to evaluate their needs carefully to optimize their cloud strategy.

10. Network Configuration: Setting up Virtual Private Clouds (VPCs), subnets, and firewall rules can be complicated, and incorrect configurations might lead to connectivity issues or expose resources unnecessarily.

1. Microsoft Axure

History of Microsoft Azure

Early Beginnings (2005-2008)

Microsoft Azure has its roots in Microsoft’s internal infrastructure, which was designed to support the company’s online services, such as Hotmail and MSN. In 2005, Microsoft began exploring ways to offer its infrastructure as a service to external customers.

Project Red Dog (2006)

In 2006, Microsoft launched Project Red Dog, a internal project aimed at creating a cloud-based infrastructure for hosting web applications. Project Red Dog was later renamed to Azure.

Azure Announcement (2008)

In October 2008, Microsoft announced Azure, a cloud-based operating system that would allow developers to build and deploy web applications on Microsoft’s infrastructure.

Azure Launch (2010)

In February 2010, Microsoft launched Azure, with a focus on providing a platform-as-a-service (PaaS) offering for developers. The initial release included Azure Compute, Azure Storage, and Azure Fabric.

Azure Expansion (2011-2012)

In 2011 and 2012, Microsoft expanded Azure with several new services, including:

- Azure Virtual Machines (2012): an infrastructure-as-a-service (IaaS) offering

- Azure Web Sites (2012): a platform-as-a-service (PaaS) offering for web development

- Azure Mobile Services (2012): a platform-as-a-service (PaaS) offering for mobile app development

Azure Rebranding (2014)

In 2014, Microsoft rebranded Azure as Microsoft Azure, with a new logo and a renewed focus on providing a comprehensive cloud platform.

Azure Expansion (2015-2016)

In 2015 and 2016, Microsoft expanded Azure with several new services, including:

- Azure Container Service (2015): a container orchestration service

- Azure Functions (2016): a serverless computing service

- Azure IoT Hub (2016): an IoT device management service

Recent Developments (2017-Present)

In recent years, Microsoft has continued to innovate and expand Azure, with several notable developments, including:

- Azure Stack (2017): a hybrid cloud platform for running Azure services on-premises

- Azure Cosmos DB (2017): a globally distributed, multi-model database service

- Azure Machine Learning (2018): a cloud-based machine learning service

- Azure Arc (2019): a hybrid cloud platform for managing and governing Azure services across multiple environments

Today, Microsoft Azure is one of the leading cloud providers, offering a comprehensive platform for businesses, developers, and governments to build, deploy, and manage applications and services.

Microsoft Axure is not a correct term. I believe you meant to ask about Microsoft Azure or Axure RP.

If you meant Microsoft Azure, here’s an explicit write-up:

What is Microsoft Azure?

Microsoft Azure is a comprehensive cloud computing platform provided by Microsoft. It offers a wide range of services, including computing, storage, networking, and artificial intelligence, to support various business needs.

Features of Microsoft Azure

1. Scalability: Azure allows businesses to scale up or down to match changing demands.

2. Flexibility: Azure supports a wide range of programming languages, frameworks, and tools.

3. Security: Azure provides robust security features, including encryption, firewalls, and access controls.

4. Artificial Intelligence: Azure offers AI and machine learning capabilities to support business intelligence and analytics.

5. Hybrid Cloud: Azure supports hybrid cloud environments, allowing businesses to integrate cloud and on-premises resources.

Services Offered by Microsoft Azure

1. Compute Services: Azure offers virtual machines, containers, and serverless computing options.

2. Storage Services: Azure provides blob storage, file storage, and disk storage options.

3. Networking Services: Azure offers virtual networks, load balancers, and application gateways.

4. Database Services: Azure provides relational databases, NoSQL databases, and data warehousing options.

5. AI and Machine Learning Services: Azure offers cognitive services, machine learning, and bot frameworks.

Benefits of Using Microsoft Azure

1. Cost-Effective: Azure provides a pay-as-you-go pricing model, reducing costs.

2. Increased Agility: Azure enables businesses to quickly deploy and scale applications.

3. Improved Reliability: Azure provides high availability and disaster recovery capabilities.

4. Enhanced Security: Azure offers robust security features to protect business data.

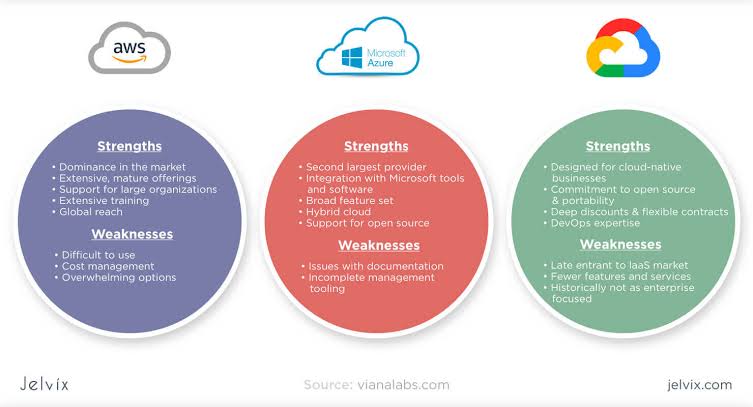
Use Cases for Microsoft Azure

1. Web and Mobile Applications: Azure supports the development and deployment of web and mobile applications.

2. Data Analytics and BI: Azure provides data warehousing, business intelligence, and analytics capabilities.

3. IoT and Edge Computing: Azure supports IoT and edge computing scenarios, enabling real-time data processing.

4. Artificial Intelligence and Machine Learning: Azure offers AI and machine learning capabilities to support business intelligence and analytics.



Here’s a comprehensive comparison of AWS, GCP, and Microsoft Azure:

Overview:

1. AWS (Amazon Web Services): Launched in 2002, AWS is the oldest and largest cloud provider, offering a wide range of services and features.

2. GCP (Google Cloud Platform): Launched in 2009, GCP is a suite of cloud computing services offered by Google, known for its innovative and scalable solutions.

3. Microsoft Azure: Launched in 2010, Microsoft Azure is a comprehensive cloud platform that integrates with Microsoft’s products and services, offering a wide range of solutions.

Compute Services:

1. AWS: EC2 (virtual machines), Lambda (serverless computing), Elastic Beanstalk (managed platform)

2. GCP: Compute Engine (virtual machines), Cloud Functions (serverless computing), App Engine (managed platform)

3. Microsoft Azure: Virtual Machines (virtual machines), Azure Functions (serverless computing), App Service (managed platform)

Storage Services:

1. AWS: S3 (object storage), EBS (block storage), Elastic File System (file storage)

2. GCP: Cloud Storage (object storage), Persistent Disks (block storage), Cloud Filestore (file storage)

3. Microsoft Azure: Blob Storage (object storage), Disk Storage (block storage), File Storage (file storage)

Database Services:

1. AWS: RDS (relational databases), DynamoDB (NoSQL databases), DocumentDB (document-oriented databases)

2. GCP: Cloud SQL (relational databases), Cloud Bigtable (NoSQL databases), Cloud Firestore (document-oriented databases)

3. Microsoft Azure: Azure SQL Database (relational databases), Cosmos DB (globally distributed databases), Azure Database for PostgreSQL (open-source databases)

Security and Compliance:

1. AWS: IAM (identity and access management), Cognito (user identity and access), Inspector (security assessment)

2. GCP: IAM (identity and access management), Cloud Identity (user identity and access), Security Command Center (security monitoring)

3. Microsoft Azure: Azure Active Directory (identity and access management), Azure Security Center (security monitoring), Compliance Manager (compliance management)

Pricing:

1. AWS: Pay-as-you-go pricing, with discounts for reserved instances and committed usage

2. GCP: Pay-as-you-go pricing, with discounts for committed usage and prepaid instances

3. Microsoft Azure: Pay-as-you-go pricing, with discounts for reserved instances and committed usage

Integration and Compatibility:

1. AWS: Integrates with Amazon’s e-commerce platform and other AWS services

2. GCP: Integrates with Google’s productivity suite (G Suite) and other GCP services

3. Microsoft Azure: Integrates with Microsoft’s productivity suite (Office 365) and other Azure services

Machine Learning and AI:

1. AWS: SageMaker (machine learning platform), Rekognition (computer vision), Comprehend (natural language processing)

2. GCP: AI Platform (machine learning platform), Cloud Vision (computer vision), Cloud Natural Language (natural language processing)

3. Microsoft Azure: Azure Machine Learning (machine learning platform), Azure Cognitive Services (computer vision, natural language processing, and more)

Customer Support:

1. AWS: 24/7 support via phone, email, and chat, with additional support options for enterprise customers

2. GCP: 24/7 support via phone, email, and chat, with additional support options for enterprise customers

3. Microsoft Azure: 24/7 support via phone, email, and chat, with additional support options for enterprise customers

Conclusion:

Each cloud provider has its strengths and weaknesses, and the choice between AWS, GCP, and Microsoft Azure depends on your specific needs and requirements. Consider factors such as pricing, security, and compatibility when making your decision.