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Title of Assignment: A case study on Amazon EC2 / Microsoft Azure.		
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Aim: A case study on Amazon EC2 / Microsoft Azure.

Problem Statement: A case study on Amazon EC2 / Microsoft Azure.

Background Information:

Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides resizable computing capacity in the cloud. It is designed to make web-scale computing easier for developers. Amazon EC2's simple web service interface allows you to obtain and configure capacity with minimal friction. It provides you with complete control of your computing resources and lets you run on Amazon's proven computing environment. Amazon EC2 reduces the time required to obtain and boot new server instances to minutes, allowing you to quickly scale capacity, both up and down, as your computing requirements change.

Amazon EC2 changes the economics of computing by allowing you to pay only for the capacity that you actually use. Amazon EC2 provides developers with the tools to build failure-resilient applications and isolate themselves from common failure scenarios.

1)Elastic Compute Units: The Elastic Compute Unit (ECU) was introduced by Amazon EC2 as an abstraction of computer resources. One EC2 Compute Unit provides the equivalent CPU capacity of a 1.0-

2)Amazon EC2 Instances Types:

- Standard
- Micro
- High-memory
- High CPU
- Cluster Compute
- Cluster GPU

3)EC2 Storage Types:

- Elastic Block Storage (EBS): This is persistent, network-based storage, which can be attached to running instances or also used as a persistent boot medium.
- Instance storage: It is the local storage, which is non-persistent and data will be lost after an instance terminates.

4)Elastic IP Addresses: Amazon's Elastic IP Address feature is similar to a static IP address in traditional data centers, with one key difference. A user can programmatically map an Elastic IP Address to
any virtual machine instance without a network administrator's help and without having to wait for DNS to propagate the new binding. It exists until it is explicitly removed. It remains associated with the account, even while it is associated with no instance.

5)Amazon CloudWatch: Amazon CloudWatch is a web service that provides monitoring for AWS cloud resources and applications, starting with Amazon EC2. It provides you with visibility into resource utilization, operational performance, and overall demand patterns—including metrics such as CPU utilization, disk reads and writes, and network traffic. You can get statistics, view graphs, and set alarms for your metric data. You can also supply your own business or application metric data. Amazon CloudWatch will begin aggregating and storing monitoring data that can be accessed using web service APIs or Command Line Tools.

6)Automated Scaling: Auto Scaling allows you to automatically scale your Amazon EC2 capacity up or down according to conditions you define. With Auto Scaling, you can ensure that the number of Amazon EC2 instances you're using scales up seamlessly during demand spikes to maintain performance and scales down automatically during demand lulls to minimize costs. Auto Scaling is particularly well suited for applications that experience hourly, daily, or weekly variability in usage. Auto Scaling is enabled by Amazon CloudWatch and available at no additional charge beyond Amazon CloudWatch fees.

Comparison between AWS & AZURE:

The basis of comparison	AWS	AZURE
Compute	AWS uses Elastic Compute Cloud (EC2) as a primary solution for scalable computing and for management of software containers with Docker or Kubernetes it uses ECS (EC2 Container service) and uses EC2 container registry.	For computing purposes Azure uses virtual machines and to scale to a large extent uses virtual machine scale sets for software management, Docker container it uses Container Service (AKS) and uses Container Registry for Docker container registry.
Storage	Storage is next to the main service for the cloud provider. AWS uses S3 (Simple storage service) which is longest running than Azure and it provides lots of documentation and tutorials. It offers Archive storage by a Glacier, data archive, and S3 Infrequent access (IA)	Azure uses Storage Block blobs for storage which is comprised of blocks and uploads large blobs efficiently. It uses Storage cool and storage archive for archiving data.
Networking	AWS uses a virtual private cloud for networking and uses an API gateway for cross-premises connectivity. AWS uses Elastic	Azure uses a virtual network for networking or content delivery and uses a VPN gateway for cross-premises connectivity. For load balancing during content

	load balancing for load balance during networking.	delivery, it manages with a load balancer and application gateway
Deploying Apps	AWS also offers similar solutions with Elastic Beanstalk, Batch, Lambda, container service, etc. But it doesn't have many features on the app hosting side.	Azure has multiple app deployment tools such as cloud services, container services, functions, batch, app services, etc.
Database	Almost all cloud providers provide the ability to implement a database in both SQL and NoSQL solutions. AWS uses a relational database as a service by using RDS, for NoSQL, it uses Dynamo DB, and for caching it uses Elastic Cache.	Azure uses SQL database, MySQL, and PostgreSQL for the relational database, it uses Cosmos DB for NoSQL solutions and Redis Cache for caching purposes.
Open-source Developers	AWS is excellent for open-source developers as it welcomes Linux users and offers several integrations for different open-source applications.	Azure provides the facility for enterprise users they can use their current active directory account to sign on to the Azure cloud platform and runs the .net framework on Windows, Linux, and macOS.

Cloud Resource Requirements: AWS/Microsoft Azure

GitHub Repo Link:

PrathamRaka/Cloud-Computing-Analysis (github.com)

Conclusion:

Organizations all over the world recognize Microsoft Azure over Amazon Web Services (AWS) as the most trusted cloud for enterprise and hybrid infrastructure. AWS is 5 times more expensive than Azure for Windows Server and SQL Server. AWS EC2 users can configure their own VMS or pre-configured images whereas Azure users need to choose the virtual hard disk to create a VM which is pre-configured by the third party and need to specify the number of cores and memory required.