



Cloud Computing

with

Azure & Aws

Basic Terminologies

- Data
- Information
- Communication
- Tele-Communication
- Network
- Network Types
- Intranet VS Internet

Network Types

- PAN
- LAN
- MAN
- WAN
- GAN

PAN

- **Personal Area Network (PAN):**
- PAN is the most basic type of network, designed to connect devices within a short range (typically around one person).
- It allows personal devices like smartphones, tablets, laptops, and wearables to communicate and share data with each other.
- PAN uses technologies such as Bluetooth, IrDA, and Zigbee.
- Examples of PAN devices include USB drives, computers, phones, tablets, printers, and PDAs

LAN

- LAN is the most frequently used network.
- It connects computers within a limited area (locally), such as an office, home, or school.
- LANs use either wired (Ethernet) or wireless (WiFi) connections.
- Common uses include sharing files, printers, and software among connected devices

MAN

- MAN covers a larger geographical area than LAN but smaller than WAN.
- It connects multiple LANs within a city or campus.
- MANs are often used by universities, businesses, and government organizations¹

WAN

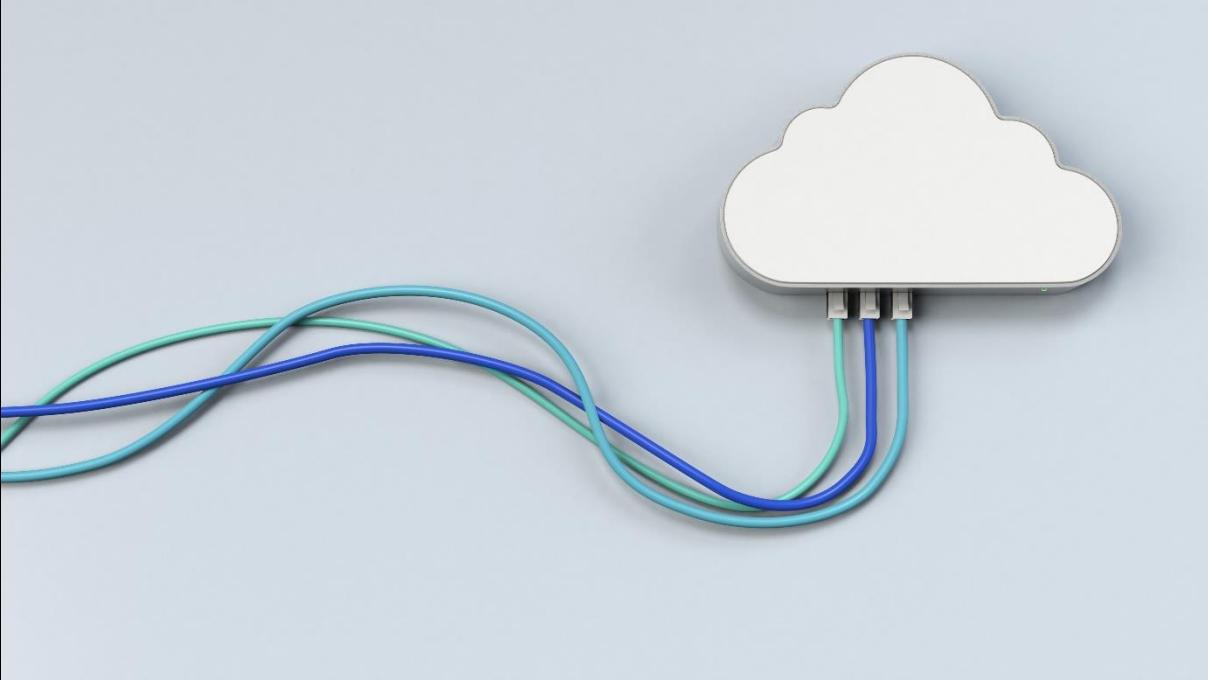
- WAN spans a large geographical area, connecting LANs across cities, countries, or continents.
- The internet itself is a global WAN.
- WANs use technologies like leased lines, satellites, and fiber optics

GAN

- GAN is an extension of WAN that covers a global scale.
- It connects networks across the world, often using satellite links.
- Examples include international corporations and research institutions

WIIIFM...

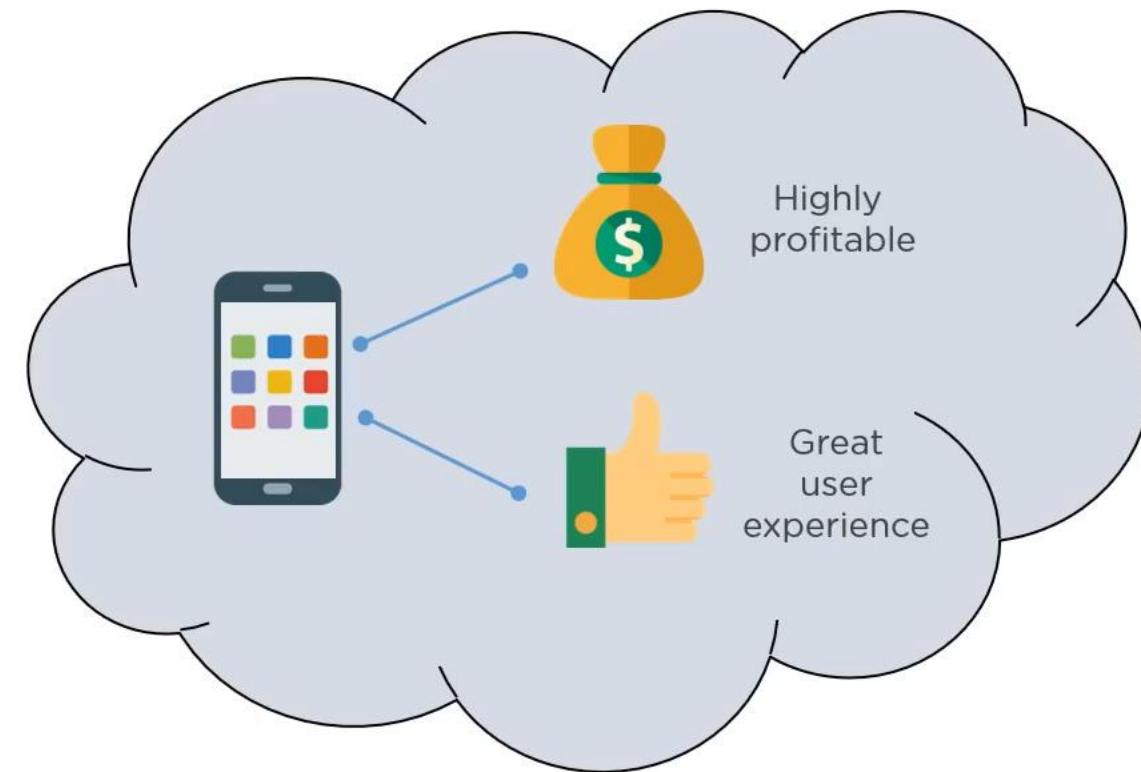
- Why Cloud Computing
- What is Cloud Computing
- What is Azure / AWS
- Azure Services
- AWS Services
- Uses



Why Cloud Computing

Why Cloud Computing?

ASSUME YOU HAVE AN IDEA FOR AN AMAZING APPLICATION



Why Cloud Computing?

FOR IT TO BE SUCCESSFUL, YOU'LL HAVE TO RELEASE IT ON THE INTERNET

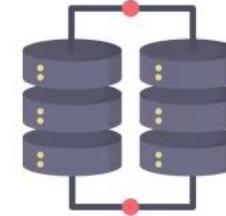


Why Cloud Computing?

FOR THIS YOU'LL NEED...



Servers



Storage



Developers



Dedicated Network



Application Security

Why Cloud Computing?

Initial set-up is very expensive and risky



If number of users increase, you will have to buy more servers to keep up with demand



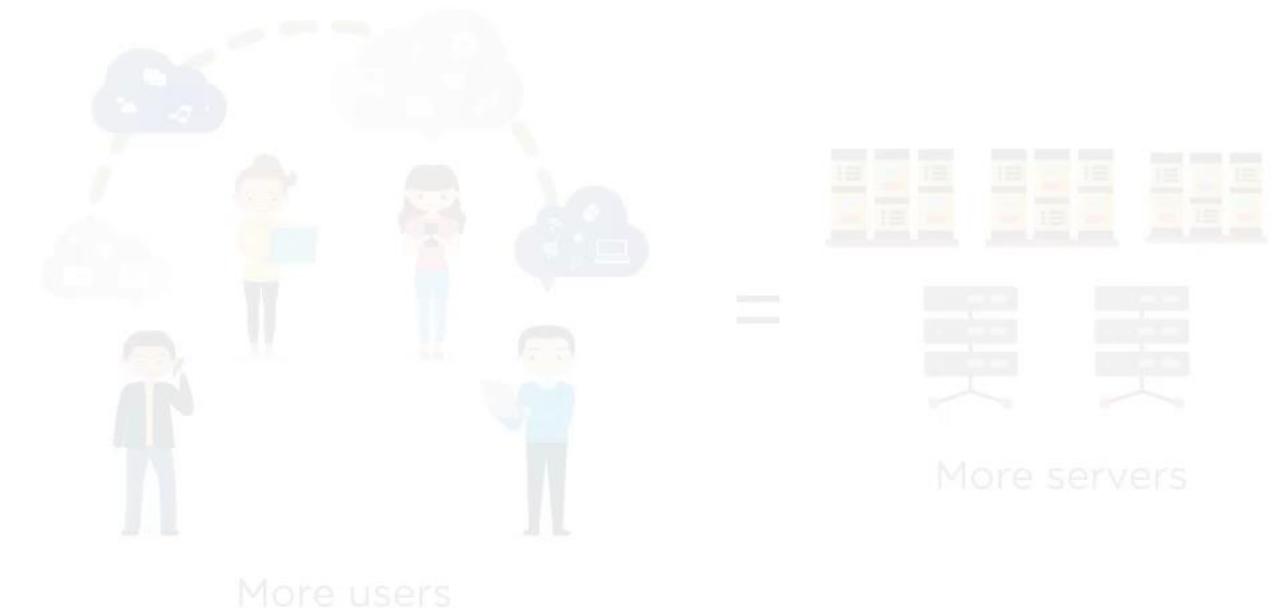
But, there are 2 major disadvantages to this approach

Why Cloud Computing?

Initial setup is very expensive and risky



If number of users increase, you will have to buy more servers to keep up with demand



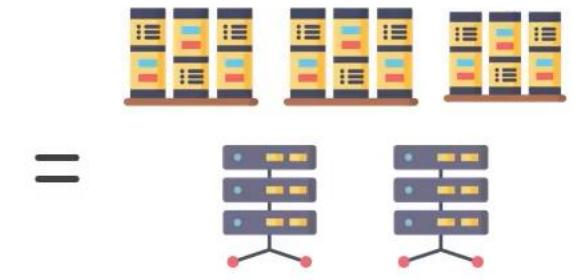
Why Cloud Computing?

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If the number of users increase, you will have to buy more servers to keep up with demand



More users



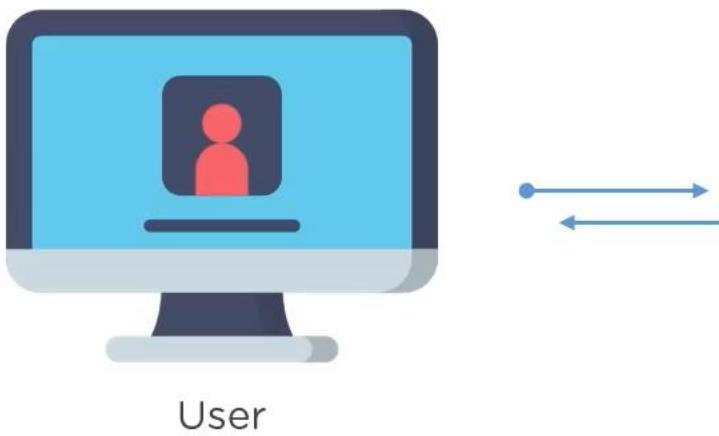
More servers



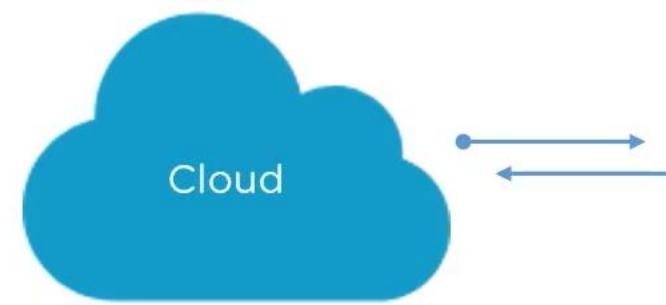
What is Cloud Computing

What is Cloud Computing?

Cloud computing is a platform that provides access to computing resources over the internet



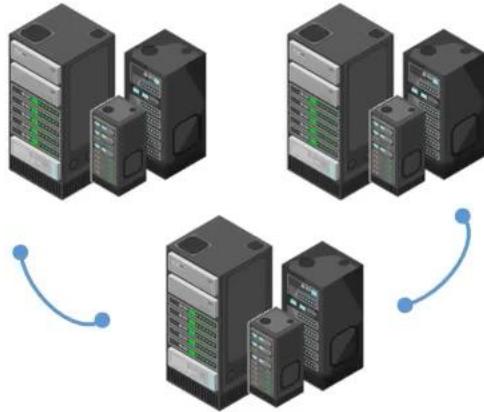
User



Computing resources
(Virtual Machines, Storage, etc.)

What is Cloud Computing?

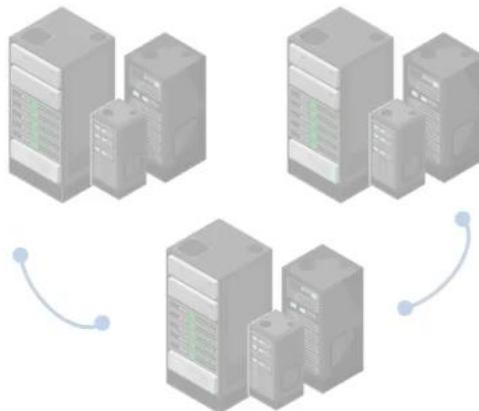
Cloud computing is a platform that provides access to computing resources over the internet



Cloud providers own massive datacenters which have hundreds of servers, storage systems and components critical to the organization's working

What is Cloud Computing?

Cloud computing is a platform that provides access to computing resources over the internet

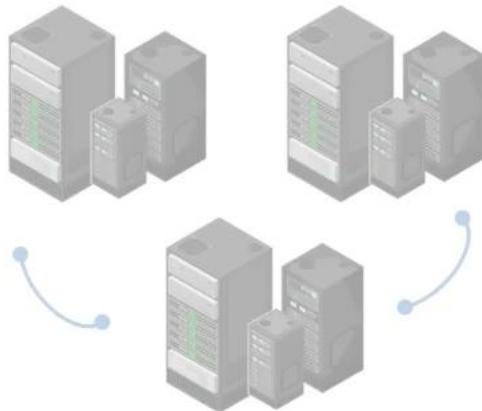


Cloud providers own massive datacenters which have hundreds of servers, storage systems and components critical to the organization's working

Users can access any service based on their requirement

What is Cloud Computing?

Cloud computing is a platform that provides access to computing resources over the internet



Cloud providers own massive datacenters which have hundreds of servers, storage systems and components critical to the organization's working



Users can access any service based on their requirement



Users only pay for the services they use and nothing else

What is Cloud Computing?

Cloud Computing is used for the following types of services



Machine learning
and data analysis



Data storage
and backup



Streaming media
content



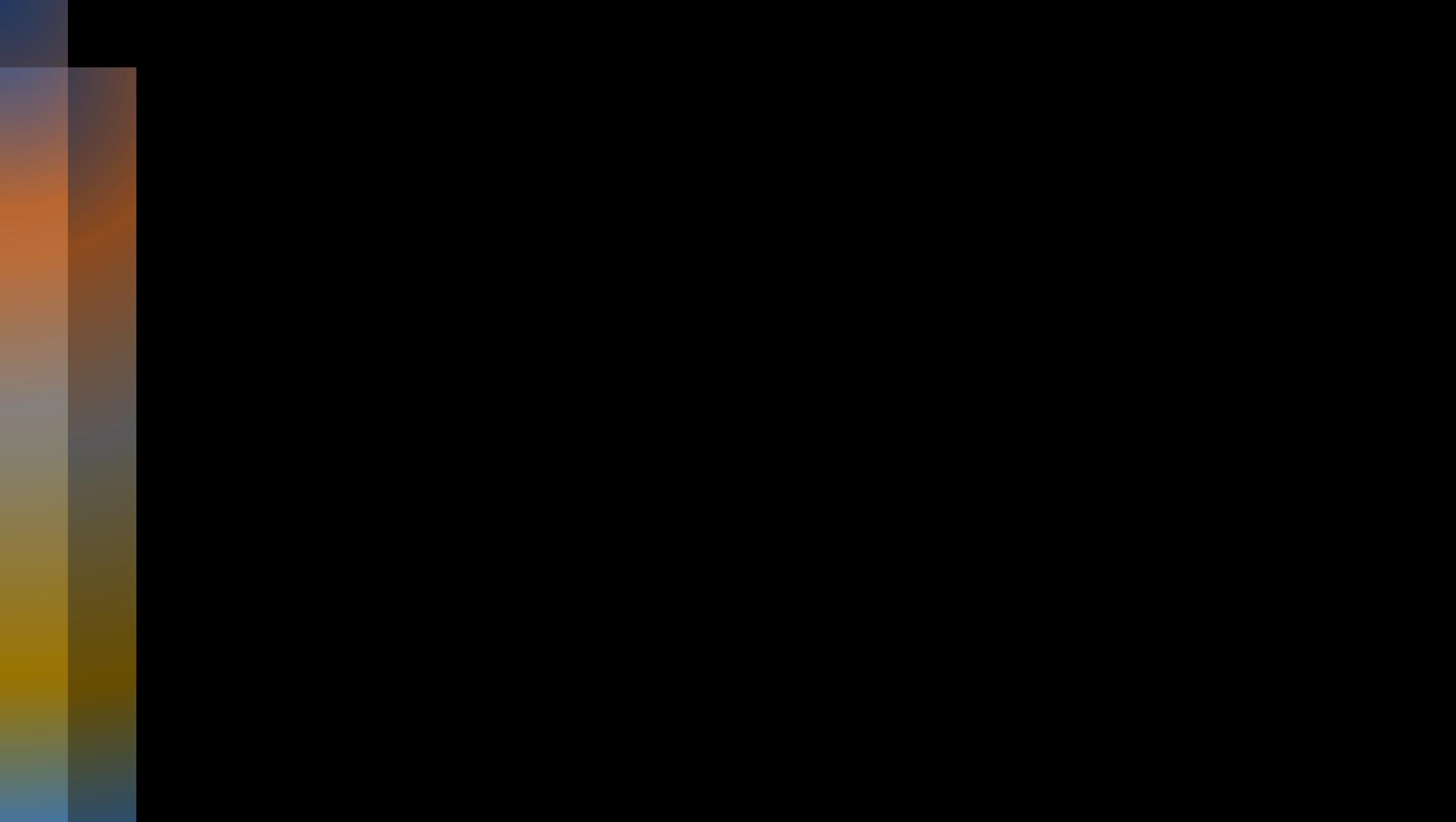
Creating and
testing applications



Automating
software delivery



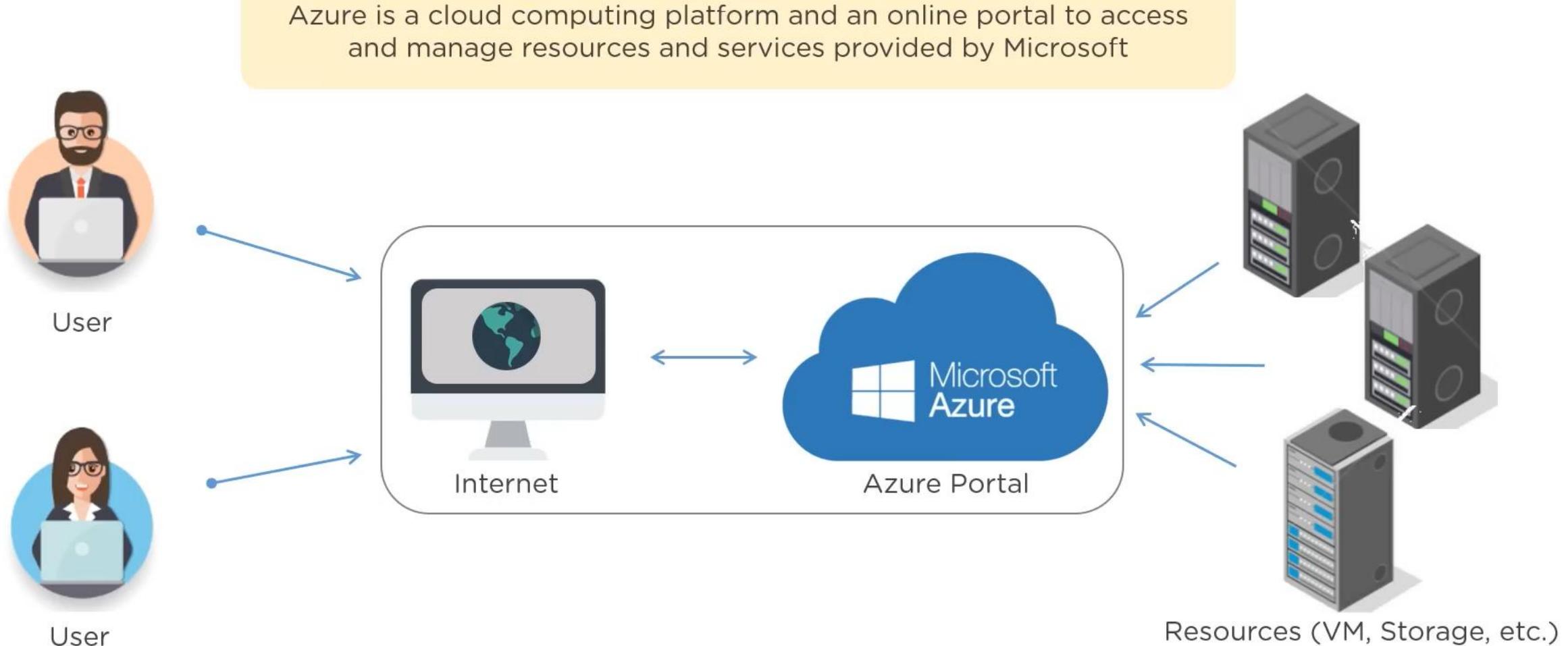
Hosting blogs and
applications





What is Microsoft Azure

What is Azure?



What is Azure?



Free to start and
also provides pay-
per-use model



80% of fortune 500
companies use
Azure services



Launched on
February 1st, 2010



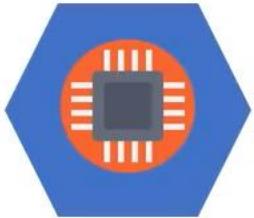
Supports multiple
programming languages
like C#, Node.Js, Java
etc.



Datacenters in 42
regions around
the world

Azure Services

Azure services are divided into 18 categories and contains more than 200 services



Compute



Networking



Storage



IoT



Migration



Mobile



Analytics



Containers



AI + Machine Learning



Integration



Management Tools



Developer Tools



Security



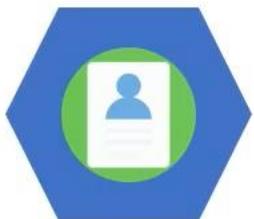
Databases



DevOps



Media

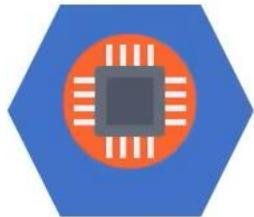


Identity



Web

Azure Services - Compute



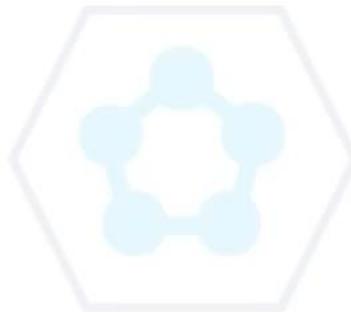
Compute



Virtual Machine



Cloud service



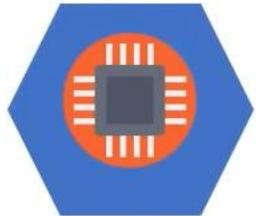
Service Fabric



Functions

Create windows or linux virtual machines of any configuration in a matter of seconds

Azure Services - Compute



Compute



Virtual Machine



Cloud service



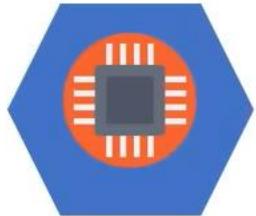
Service Fabric



Functions

Users can create scalable applications within the cloud using the virtual machines whose provisioning, load balancing and health monitoring are handled by Azure post-deployment

Azure Services - Compute



Compute



Virtual Machine



Cloud service



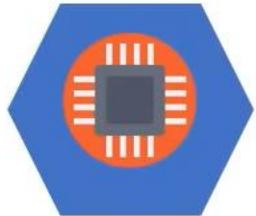
Service Fabric



Functions

Service Fabric simplifies
microservice development and
application lifecycle
management

Azure Services - Compute



Compute



Virtual Machine



Cloud service



Service Fabric



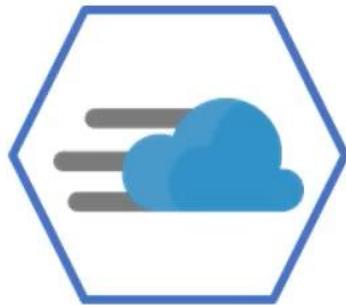
Functions

Easily build applications
using serverless functions in
any programming language
of the user's choice

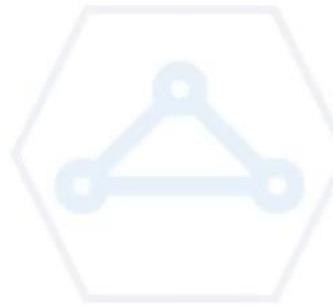
Azure Services - Networking



Networking



Azure CDN



Express route



Virtual Network



Azure DNS

Azure CDN services are used for delivering high bandwidth content to users worldwide

Azure Services - Networking



Networking



Azure CDN



Express route



Virtual Network



Azure DNS

Express route lets on-premise networks into Microsoft cloud through a private connection

Azure Services - Networking



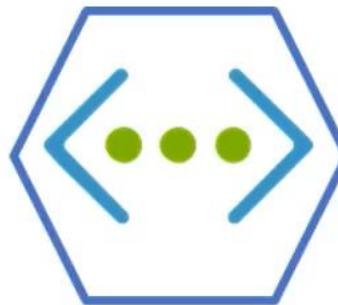
Networking



Azure CDN



Express route



Virtual Network



Azure DNS

Virtual Network enables
Azure resources to
securely communicate
with each other

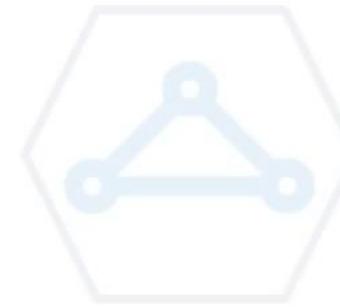
Azure Services - Networking



Networking



Azure CDN



Express route



Virtual Network



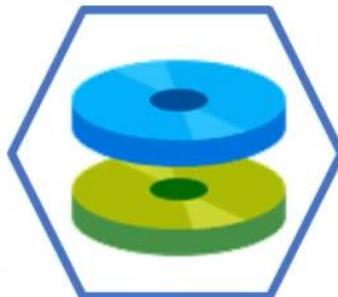
Azure DNS

Azure DNS is a hosting service that allows the user to host their DNS domains in Azure

Azure Services - Storage



Storage



Disk Storage



Blob Storage



File Storage



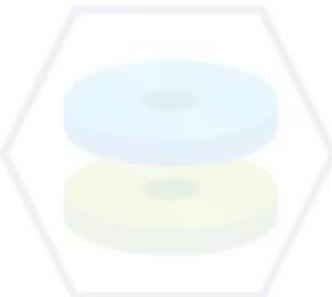
Queue Storage

Provides cost-effective
HDD/ SSD options
which can be used with
Azure Virtual Machines

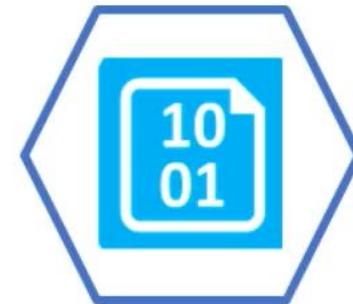
Azure Services - Storage



Storage



Disk Storage



Blob Storage



File Storage



Queue Storage

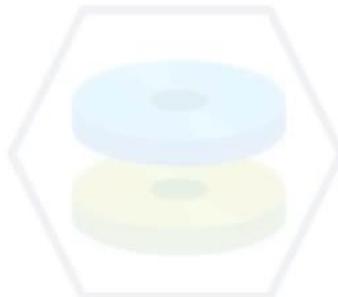
Blob storage is optimized for storing massive amounts of unstructured data, such as text or binary data

Skip back 10 seconds (Ctrl+Left)

Azure Services - Storage



Storage



Disk Storage



Blob Storage



File Storage



Queue Storage

Managed file storage in the cloud that are accessible via industry standard server message block (SMB) protocol

Azure Services - Storage



Storage



Disk Storage



Blob Storage



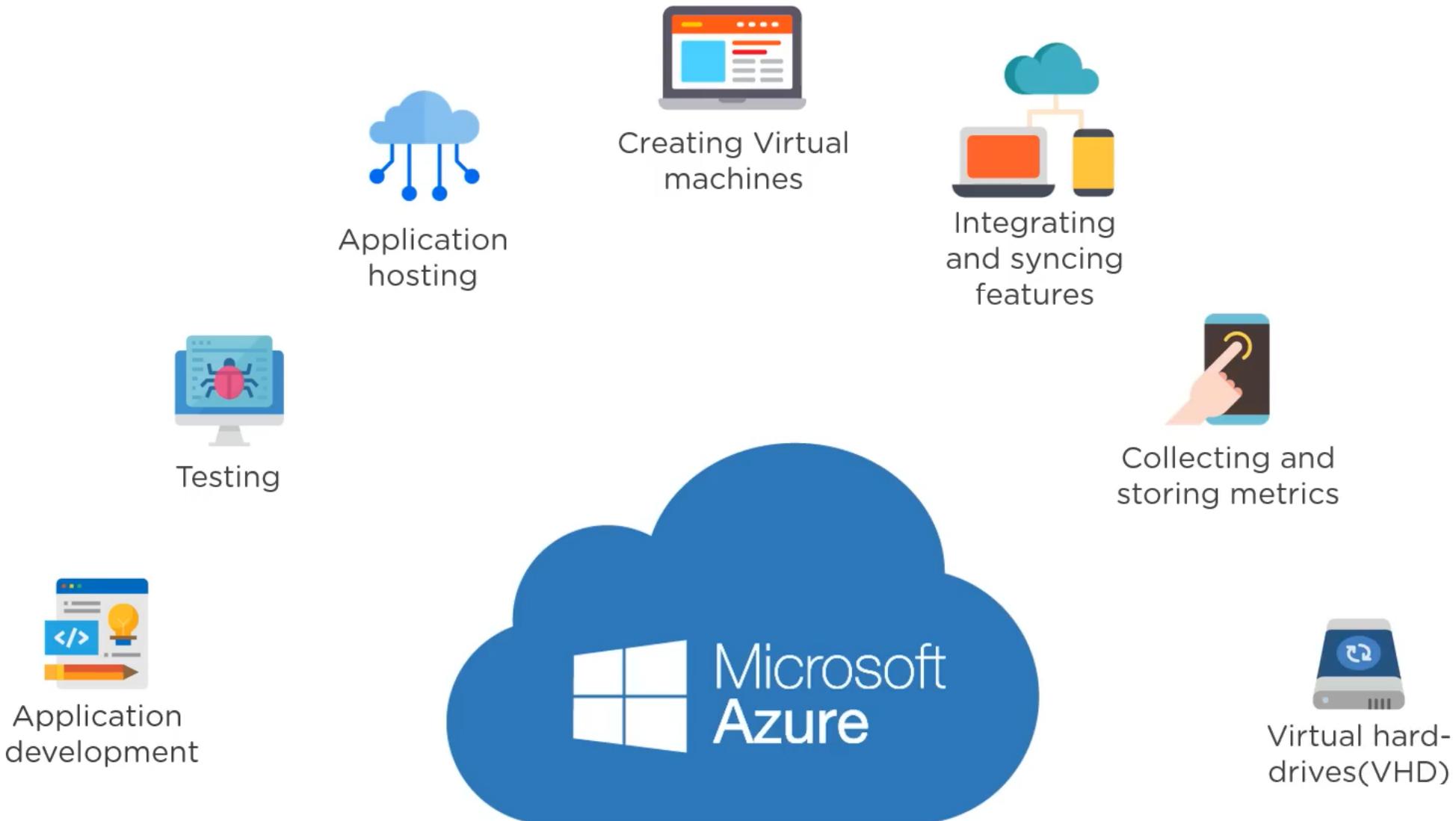
File Storage



Queue Storage

Queue storage provides durable message queuing for large workloads and can be accessed from anywhere in the world

Uses of Azure



AWS to Azure services comparison

- As the leading public cloud platforms, Azure and AWS each offer a broad and deep set of capabilities with global coverage. Yet many organizations choose to use both platforms together for greater choice and flexibility, as well as to spread their risk and dependencies with a multicloud approach. Consulting companies and software vendors might also build on and use both Azure and AWS, as these platforms represent most of the cloud market demand.

Marketplace

AWS service

[AWS Marketplace](#)

Azure service

[Azure Marketplace](#)

Description

Easy-to-deploy and automatically configured third-party applications, including single virtual machine or multiple virtual machine solutions.

AI & Machine Learning

AWS service

[SageMaker](#)

[Alexa Skills Kit](#)

[Lex](#)

[Lex](#)

[Polly, Transcribe](#)

Azure service

[Machine Learning](#)

[Bot Framework](#)

[Speech Services](#)

[Language Understanding \(LUIS\)](#)

[Speech Services](#)

Description

A cloud service to train, deploy, automate, and manage machine learning models.

Build and connect intelligent bots that interact with your users using text/SMS, Skype, Teams, Slack, Microsoft 365 mail, Twitter, and other popular services.

API capable of converting speech to text, understanding intent, and converting text back to speech for natural responsiveness.

Allows your applications to understand user commands contextually.

Enables both Speech to Text, and Text into Speech capabilities.

AI & Machine Learning

[Rekognition](#)

[Cognitive Services](#)

[Skills Kit](#)

[Virtual Assistant](#)

[Computer Vision](#): Extract information from images to categorize and process visual data.

[Face](#): Detect, identify, and analyze faces and facial expressions in photos.

The Virtual Assistant Template brings together a number of best practices we've identified through the building of conversational experiences and automates integration of components that we've found to be highly beneficial to Bot Framework developers.

Big Data & Analytics – Data Warehouse

AWS service

Redshift

Lake Formation

Azure service

Synapse Analytics

Data Share

Description

Cloud-based enterprise data warehouse (EDW) that uses massively parallel processing (MPP) to quickly run complex queries across petabytes of data.

A simple and safe service for sharing big data.

Time Series

AWS service

[Amazon Timestream](#)

Azure service

[Azure Data Explorer](#)

Description

Fully managed, low latency, and distributed big data analytics platform that runs complex queries across petabytes of data. Highly optimized for log and time series data.

[Azure Time Series Insights](#)

Open and scalable end-to-end IoT analytics service. Collect, process, store, query, and visualize data at Internet of Things (IoT) scale--data that's highly contextualized and optimized for time series.

Big Data Architecture

AWS service	Azure service	Description
<u>EMR</u>	<u>Azure Data Explorer</u>	Fully managed, low latency, distributed big data analytics platform to run complex queries across petabytes of data.
<u>EMR</u>	<u>Databricks</u>	Apache Spark-based analytics platform.
<u>EMR</u>	<u>HDInsight</u>	Managed Hadoop service. Deploy and manage Hadoop clusters in Azure.
<u>EMR</u>	<u>Data Lake Storage</u>	Massively scalable, secure data lake functionality built on Azure Blob Storage.

Data Orchestration / ETL

AWS service	Azure service	Description
Data Pipeline , Glue	Data Factory	Processes and moves data between different compute and storage services, as well as on-premises data sources at specified intervals. Create, schedule, orchestrate, and manage data pipelines.
Glue	Microsoft Purview	A unified data governance service that helps you manage and govern your on-premises, multicloud, and software as a service (SaaS) data.

Analytics & Visualization

AWS service	Azure service	Description
Kinesis Analytics	Stream Analytics	Storage and analysis platforms that create insights from large quantities of data, or data that originates from many sources.
QuickSight	Data Lake Analytics	Business intelligence tools that build visualizations, perform ad hoc analysis, and develop business insights from data.
CloudSearch	Cognitive Search	Delivers full-text search and related search analytics and capabilities.
Athena	Data Lake Analytics	Provides a serverless interactive query service that uses standard SQL for analyzing databases.
Elasticsearch Service	Azure Synapse Analytics	Azure Synapse Analytics is a limitless analytics service that brings together data integration, enterprise data warehousing, and big data analytics. It gives you the freedom to query data on your terms, using either serverless or dedicated resources at scale.
Elastic on Azure		Use the Elastic Stack (Elastic, Logstash, and Kibana) to search, analyze, and visualize in real time.

Compute

AWS service	Azure service	Description
Amazon EC2 Instance Types	Azure Virtual Machines	AWS and Azure on-demand VMs bill per seconds used. Although AWS instance types and Azure VM sizes have similar categories, the exact RAM, CPU, and storage capabilities differ. For information about Azure VM sizes, see Azure VM sizes .
VMware Cloud on AWS	Azure VMware Solution	AWS and Azure solutions let you move VMware vSphere-based workloads and environments to the cloud. Azure VMware Solution is a VMware-verified Microsoft service that runs on Azure infrastructure. You can manage existing environments with VMware solution tools, while modernizing applications with cloud native services.
AWS Parallel Cluster	Azure CycleCloud	Create, manage, operate, and optimize HPC and large compute clusters of any scale.

Auto Scaling

AWS service

[AWS Auto Scaling](#)

Azure service

[Virtual machine scale sets](#), [App Service autoscale](#)

Description

In Azure, virtual machine scale sets let you deploy and manage identical sets of VMs. The number of sets can autoscale. App Service autoscale lets you autoscale Azure App Service applications.

Batch processing

AWS service

Azure service

Description

AWS Batch

Azure Batch

Azure Batch helps you manage compute-intensive work across a scalable collection of VMs.

Storage

AWS service	Azure service	Description
Disk volumes on Amazon Elastic Block Store (EBS)	Data disks in Azure Blob Storage .	Data disks in blob storage provide durable data storage for Azure VMs. This storage is similar to AWS EC2 instance disk volumes on EBS.
Amazon EC2 instance store	Azure temporary storage	Azure temporary storage provides VMs with similar low-latency temporary read-write storage to EC2 instance storage, also called ephemeral storage.
Amazon EBS Provisioned IOPS Volume	Azure premium storage	Azure supports higher performance disk I/O with premium storage. This storage is similar to AWS Provisioned IOPS storage options.
Amazon Elastic File System (EFS)	Azure Files	Azure Files provides VMs with similar functionality to Amazon EFS.

Containers and container orchestrators

AWS service	Azure service	Description
Amazon Elastic Container Service (Amazon ECS) , AWS Fargate	Azure Container Apps	Azure Container Apps is a scalable service that lets you deploy thousands of containers without requiring access to the control plane.
Amazon Elastic Container Registry (Amazon ECR)	Azure Container Registry	Container registries store Docker formatted images and create all types of container deployments in the cloud.
Amazon Elastic Kubernetes Service (EKS)	Azure Kubernetes Service (AKS)	EKS and AKS let you orchestrate Docker containerized application deployments with Kubernetes. AKS simplifies monitoring and cluster management through auto upgrades and a built-in operations console. See Container runtime configuration for specifics on the hosting environment.
AWS App Mesh	Istio add-on for AKS	The Istio add-on for AKS provides a fully-supported integration of the open-source Istio service mesh.

Serverless computing

AWS service	Azure service	Description
<u>AWS Lambda</u>	<u>Azure Functions</u> , <u>WebJobs</u> in Azure App Service	Azure Functions is the primary equivalent of AWS Lambda in providing serverless, on-demand code. AWS Lambda functionality also overlaps with Azure WebJobs, which let you schedule or continuously run background tasks.

Database

Type	AWS Service	Azure Service	Description
Relational database	RDS	SQL Database Database for MySQL Database for PostgreSQL Database for MariaDB Azure SQL Database serverless Serverless SQL pool in Azure Synapse Analytics	Managed relational database services in which resiliency, scale and maintenance are primarily handled by the Azure platform.
Serverless relational database	Amazon Aurora Serverless		Database offerings that automatically scales compute based on the workload demand. You're billed per second for the actual compute used (Azure SQL)/data that's processed by your queries (Azure Synapse Analytics Serverless).
NoSQL	DynamoDB (Key-Value) SimpleDB Amazon DocumentDB (Document) Amazon Neptune (Graph)	Azure Cosmos DB	Azure Cosmos DB is a globally distributed, multi-model database that natively supports multiple data models including key-value pairs, documents, graphs, and columnar.
Caching	ElastiCache Amazon MemoryDB for Redis	Cache for Redis	An in-memory-based, distributed caching service that provides a high-performance store that's typically used to offload nontransactional work from a database.
Database migration	Database Migration Service	Database Migration Service	A service that executes the migration of database schema and data from one database format to a specific database technology in the cloud.

DevOps and application monitoring

AWS service	Azure service	Description
CloudWatch, X-Ray	Monitor	Comprehensive solution for collecting, analyzing, and acting on telemetry from your cloud and on-premises environments.
CodeDeploy	DevOps	A cloud service for collaborating on code development.
CodeCommit		
CodePipeline		
Developer Tools	Developer Tools	Collection of tools for building, debugging, deploying, diagnosing, and managing multiplatform scalable apps and services.
CodeBuild	DevOps Pipeline	Fully managed build service that supports continuous integration and continuous deployment (CI/CD).
	GitHub Actions	
Command-line interface	CLI	Built on top of the native REST API across all cloud services, various programming language-specific wrappers provide easier ways to create solutions.
	PowerShell	
eksctl	az aks	Manage Azure Kubernetes Service (AKS) using these Azure CLI commands.
AWS CloudShell	Azure Cloud Shell	Azure Cloud Shell is an interactive, authenticated, browser-accessible shell for managing Azure resources. It gives you the flexibility to choose the shell experience that best suits the way you work, either Bash or PowerShell.
OpsWorks (Chef-based)	Automation	Configures and operates applications of all shapes and sizes, and provides templates to create and manage a collection of resources.
CloudFormation	Resource Manager	Provides a way for users to automate the manual, long-running, error-prone, and frequently repeated IT tasks.
	Bicep	
	VM extensions	
	Azure Automation	
Cloud Development Kit	Azure Developer CLI	Developer-friendly imperative commands that enable consistent and repeatable work and standardized infrastructure-as-code modules.
	Azure Verified Modules	

Internet of Things (IoT)

AWS service	Azure service	Description
IoT Core	IoT Hub	A cloud gateway for managing bidirectional communication with billions of IoT devices, securely and at scale.
Greengrass	IoT Edge	Deploy cloud intelligence directly onto IoT devices, catering to on-premises scenarios.
Kinesis Firehose , Kinesis Streams	Event Hubs	Services that facilitate the mass ingestion of events (messages), typically from devices and sensors. The data can then be processed in real-time micro-batches or be written to storage for further analysis.
IoT Things Graph	Digital Twins	Services you can use to create digital representations of real-world things, places, business processes, and people. Use these services to gain insights, drive the creation of better products and new customer experiences, and optimize operations and costs.

Management and governance

AWS service	Azure service	Description
AWS Organizations	Management Groups	Azure management groups help you organize your resources and subscriptions.
AWS Well-Architected Tool	Azure Well-Architected Review	Examine your workload through the lenses of reliability, cost management, operational excellence, security, and performance efficiency.
Trusted Advisor	Advisor	Provides analysis of cloud resource configuration and security, so that subscribers can ensure they're making use of best practices and optimum configurations.
AWS Billing and Cost Management	Microsoft Cost Management	Microsoft Cost Management helps you understand your Azure invoice (bill), manage your billing account and subscriptions, monitor and control Azure spending, and optimize resource use.
Cost and Usage Reports	Usage Details API	Services to help generate, monitor, forecast, and share billing data for resource usage by time, organization, or product resources.
Management Console	Portal	A unified management console that simplifies building, deploying, and operating your cloud resources.
Application Discovery Service	Migrate	Assesses on-premises workloads for migration to Azure, performs performance-based sizing, and provides cost estimations.
Systems Manager	Monitor	Comprehensive solution for collecting, analyzing, and acting on telemetry from your cloud and on-premises environments.
Personal Health Dashboard	Resource Health	Provides detailed information about the health of resources, as well as recommended actions for maintaining resource health.
CloudTrail	Activity log	The Activity log is a platform log in Azure that provides insight into subscription-level events, such as when a resource is modified or when a virtual machine is started.
CloudWatch	Application Insights	A feature of Azure Monitor, Application Insights is an extensible Application Performance Management (APM) service for developers and DevOps professionals, which provides telemetry insights and information, in order to better understand how applications are performing and to identify areas for optimization.
Config	Application Change Analysis	Application Change Analysis detects various types of changes, from the infrastructure layer all the way to application deployment.
Cost Explorer	Cost Management	Optimize costs while maximizing cloud potential.
Control Tower	Azure Lighthouse	Set up and govern a multi account/subscription environment.
Resource Groups and Tag Editor	Resource Groups and Tags	A Resource Group is a container that holds related resources for an Azure solution. Apply tags to your Azure resources to logically organize them by categories.
AWS AppConfig	Azure App Configuration	Azure App Configuration is a managed service that helps developers centralize their application and feature settings simply and securely.
Service Catalog	Azure Managed Applications	Offers cloud solutions that are easy for consumers to deploy and operate.
SDKs and tools	SDKs and tools	Manage and interact with Azure services the way you prefer, programmatically from your language of choice, by using the Azure SDKs, our collection of tools, or both.

Messaging and eventing

AWS service	Azure service	Description
Simple Queue Service (SQS)	Queue Storage	Provides a managed message queuing service for communicating between decoupled application components.
Simple Notification Service (SNS)	Service Bus	Supports a set of cloud-based, message-oriented middleware technologies, including reliable message queuing and durable publish/subscribe messaging.
Amazon EventBridge	Event Grid	A fully managed event routing service that allows for uniform event consumption using a publish/subscribe model.
Amazon Kinesis	Event Hubs	A fully managed, real-time data ingestion service. Stream millions of events per second, from any source, to build dynamic data pipelines and to immediately respond to business challenges.
Amazon MQ	Service Bus	Service Bus Premium is fully compliant with the Java/Jakarta EE Java Message Service (JMS) 2.0 API. Service Bus Standard supports the JMS 1.1 subset focused on queues.

Networking

Area	AWS service	Azure service	Description
Cloud virtual networking	Virtual Private Cloud (VPC)	Virtual Network	Provides an isolated, private environment in the cloud. Users have control over their virtual networking environment, including selection of their own IP address range, creation of subnets, and configuration of route tables and network gateways.
NAT gateways	NAT Gateways	Virtual Network NAT	A service that simplifies outbound-only Internet connectivity for virtual networks. When configured on a subnet, all outbound connectivity uses your specified static public IP addresses. Outbound connectivity is possible without a load balancer or public IP addresses directly attached to virtual machines.
Cross-premises connectivity	VPN Gateway	VPN Gateway	Connects Azure virtual networks to other Azure virtual networks, or customer on-premises networks (Site To Site). Allows end users to connect to Azure services through VPN tunneling (Point To Site).
DNS management	Route 53	DNS	Manage your DNS records using the same credentials and billing and support contract as your other Azure services

Networking

DNS-based routing	Route 53	Traffic Manager	A service that hosts domain names, plus routes users to Internet applications, connects user requests to datacenters, manages traffic to apps, and improves app availability with automatic failover.
Dedicated network	Direct Connect	ExpressRoute	Establishes a dedicated, private network connection from a location to the cloud provider (not over the Internet).
Load balancing	Network Load Balancer	Load Balancer	Azure Load Balancer load balances traffic at layer 4 (TCP or UDP). Standard Load Balancer also supports cross-region or global load balancing.
Application-level load balancing	Application Load Balancer	Application Gateway	Application Gateway is a layer 7 load balancer. It supports SSL termination, cookie-based session affinity, and round robin for load-balancing traffic.
Route table	Custom Route Tables	User Defined Routes	Custom, or user-defined (static) routes to override default system routes, or to add more routes to a subnet's route table.
Private link	PrivateLink	Azure Private Link	Azure Private Link provides private access to services that are hosted on the Azure platform. This keeps your data on the Microsoft network.

Networking

Private PaaS connectivity	<u>VPC endpoints</u>	<u>Private Endpoint</u>	Private Endpoint provides secured, private connectivity to various Azure platform as a service (PaaS) resources, over a backbone Microsoft private network.
Virtual network peering	<u>VPC Peering</u>	<u>VNET Peering</u>	VNet peering is a mechanism that connects two virtual networks (VNets) in the same region through the Azure backbone network. Once peered, the two virtual networks appear as one for all connectivity purposes.
Content delivery networks	<u>CloudFront</u>	<u>Front Door</u>	Azure Front Door is a modern cloud content delivery network (CDN) service that delivers high performance, scalability, and secure user experiences for your content and applications.
Network Monitoring	<u>VPC Flow Logs</u>	<u>Azure Network Watcher</u>	Azure Network Watcher allows you to monitor, diagnose, and analyze the traffic in Azure Virtual Network.

Traditional On-Premise (On-Prem)

Applications

Data

Runtime

Middleware

Operating System

Virtualization

Servers

Storage

Networking

Infrastructure as a Service (IaaS)

Applications

Data

Runtime

Middleware

Operating System

Virtualization

Servers

Storage

Networking

Platform as a Service (PaaS)

Applications

Data

Runtime

Middleware

Operating System

Virtualization

Servers

Storage

Networking

Software as a Service (SaaS)

Applications

Data

Runtime

Middleware

Operating System

Virtualization

Servers

Storage

Networking



Self Managed



Managed By Vendor

Security, identity, and access

AWS service	Azure service	Description
Identity and Access Management (IAM)	Microsoft Entra ID	Allows users to securely control access to services and resources while offering data security and protection. Create and manage users and groups, and use permissions to allow and deny access to resources.
Identity and Access Management (IAM)	Azure role-based access control (RBAC)	Azure role-based access control (RBAC) helps you manage who has access to Azure resources, what they can do with those resources, and what areas they have access to.
Organizations	Subscription Management + Azure RBAC	Security policy and role management for working with multiple accounts.
Multi-Factor Authentication	Microsoft Entra ID	Safeguard access to data and applications while meeting user demand for a simple sign-in process.
Directory Service	Microsoft Entra Domain Services	Provides managed domain services, such as domain join, group policy, LDAP, and Kerberos/NTLM authentication, which are fully compatible with Windows Server Active Directory.
Cognito	Microsoft Entra External ID	A highly available, global identity management service for consumer-facing applications that scales to hundreds of millions of identities.
AWS Config	Policy	Azure Policy is a service in Azure that you use to create, assign, and manage policies. These policies enforce different rules and effects over your resources so those resources stay compliant with your corporate standards and service-level agreements.
Organizations	Management Groups	Azure management groups provide a level of scope above subscriptions. You organize subscriptions into containers called "management groups" and apply your governance conditions to the management groups. All subscriptions within a management group automatically inherit the conditions applied to the management group. Management groups give you enterprise-grade management at a large scale, no matter what type of subscriptions you have.

Encryption

AWS service	Azure service	Description
<u>Server-side encryption with Amazon S3 Key Management Service</u>	<u>Azure Storage Service Encryption</u>	Helps you protect and safeguard your data and meet your organizational security and compliance commitments.
<u>Key Management Service (KMS), CloudHSM</u>	<u>Key Vault</u>	Provides security solution and works with other services by providing a way to manage, create, and control encryption keys stored in hardware security modules (HSMs).

Firewall

AWS service	Azure service	Description
<u>Web Application Firewall</u>	<u>Web Application Firewall</u>	A firewall that protects web applications from common web exploits.
<u>AWS Network Firewall</u>	<u>Firewall</u>	Provides inbound protection for non-HTTP/S protocols, outbound network-level protection for all ports and protocols, and application-level protection for outbound HTTP/S.

Security

AWS service	Azure service	Description
<u>Inspector</u>	<u>Defender for Cloud</u>	An automated security assessment service that improves the security and compliance of applications. Automatically assess applications for vulnerabilities or deviations from best practices.
<u>Certificate Manager</u>	<u>App Service Certificates available on the Portal</u>	Service that allows customers to create, manage, and consume certificates seamlessly in the cloud.
<u>GuardDuty</u>	<u>Microsoft Sentinel</u>	Detect and investigate advanced attacks on-premises and in the cloud.
<u>Artifact</u>	<u>Service Trust Portal</u>	Provides access to audit reports, compliance guides, and trust documents from across cloud services.
<u>Shield</u>	<u>DDoS Protection Service</u>	Provides cloud services with protection from distributed denial of services (DDoS) attacks.

Storage

AWS service	Azure service	Description
<u>Simple Storage Services (S3)</u>	<u>Blob storage</u>	Object storage service, for use cases including cloud applications, content distribution, backup, archiving, disaster recovery, and big data analytics.

Virtual server disks

AWS service	Azure service	Description
<u>Elastic Block Store (EBS)</u>	<u>Managed Disks</u>	SSD storage optimized for I/O intensive read/write operations. For use as high-performance Azure virtual machine storage.

Shared files

AWS service

Elastic File System

Azure service

Files

Description

Provides a simple interface to create and configure file systems quickly, and share common files. Can be used with traditional protocols that access files over a network.

Archiving and backup

AWS service

S3 Infrequent Access (IA)

S3 Glacier, Deep Archive

Backup

Azure service

Storage cool tier

Storage archive access tier

Backup

Description

Cool storage is a lower-cost tier for storing data that is infrequently accessed and long-lived.

Archive storage has the lowest storage cost and higher data retrieval costs compared to hot and cool storage.

Back up and recover files and folders from the cloud, and provide offsite protection against data loss.

Hybrid storage

AWS service	Azure service	Description
<u>AWS Storage Gateway: S3 File Gateway</u>	<u>Azure Data Box Gateway</u> , <u>Azure File Sync</u>	Provides on-premises, locally cached NFS and SMB file shares that are cloud-backed.
<u>AWS Storage Gateway: Tape Gateway</u>	<i>None</i>	Replaces on-premises physical tapes with on-premises, cloud-backed virtual tapes.
<u>AWS Storage Gateway: Volume Gateway</u> <u>DataSync</u>	<i>None</i> <u>File Sync</u>	Provides on-premises iSCSI based block storage that is cloud-backed. Azure Files can be deployed in two main ways: by directly mounting the serverless Azure file shares or by caching Azure file shares on-premises using Azure File Sync.

Bulk data transfer

AWS service	Azure service	Description
Import/Export Disk	Import/Export	A data transport solution that uses secure disks and appliances to transfer large amounts of data. Also offers data protection during transit.
Import/Export Snowball, Snowball Edge, Snowmobile	Data Box	Petabyte- to exabyte-scale data transport solution that uses secure data storage devices to transfer large amounts of data to and from Azure.

Web applications

AWS service	Azure service	Description
Elastic Beanstalk	App Service	Managed hosting platform providing easy to use services for deploying and scaling web applications and services.
API Gateway	API Management	A turnkey solution for publishing APIs to external and internal consumers.
CloudFront	Azure Front Door	Azure Front Door is a modern cloud content delivery network (CDN) service that delivers high performance, scalability, and secure user experiences for your content and applications.
Global Accelerator	Azure Front Door	Easily join your distributed microservices architectures into a single global application using HTTP load balancing and path-based routing rules. Automate turning up new regions and scale-out with API-driven global actions and independent fault-tolerance to your back-end microservices in Azure or anywhere.
Global Accelerator	Cross-regional load balancer	Distribute and load balance traffic across multiple Azure regions via a single, static, global anycast public IP address.
Lightsail	App Service	Build, deploy, and scale web apps on a fully managed platform.
App Runner	Web App for Containers	Easily deploy and run containerized web apps on Windows and Linux.
Amplify	Static Web Apps	Boost productivity with a tailored developer experience, CI/CD workflows to build and deploy your static content hosting, and dynamic scale for integrated serverless APIs.

End-user computing

AWS service

[WorkSpaces](#), [AppStream 2.0](#)

Azure service

[Azure Virtual Desktop](#)

Description

Manage virtual desktops and applications to enable corporate network and data access to users, anytime, anywhere, from supported devices. Amazon WorkSpaces support Windows and Linux virtual desktops. Azure Virtual Desktop supports multi-session Windows 10 virtual desktops.

[WorkLink](#)

[Application Proxy](#)

Provides access to intranet applications without requiring VPN connectivity. Amazon WorkLink is limited to iOS and Android devices.

Miscellaneous

Area	AWS service	Azure service	Description
Backend process logic	Step Functions	Logic Apps	Cloud technology to build distributed applications using out-of-the-box connectors to reduce integration challenges. Connect apps, data, and devices on-premises or in the cloud.
Enterprise application services	WorkMail , WorkDocs , C hime	Microsoft 365	Fully integrated cloud service that provides communications, email, and document management in the cloud and is available on a wide variety of devices.
Gaming	GameLift	PlayFab	Managed services for hosting dedicated game servers.
Media transcoding	Elastic Transcoder	Media Services	Services that offer broadcast-quality video streaming services, including various transcoding technologies.
Workflow	Step Functions	Logic Apps	Serverless technology for connecting apps, data and devices anywhere, whether on-premises or in the cloud for large ecosystems of SaaS and cloud-based connectors.
Hybrid	Outposts	Stack	Azure Stack is a hybrid cloud platform that enables you to run Azure services in your company's or service provider's datacenter. As a developer, you can build apps on Azure Stack. You can then deploy them to either Azure Stack or Azure, or you can build truly hybrid apps that take advantage of connectivity between an Azure Stack cloud and Azure.
Media	Elemental MediaConvert	Media Services	Cloud-based media workflow platform to index, package, protect, and stream video at scale.
Satellite	Ground Station	Azure Orbital	Fully managed cloud-based ground station as a service.
Quantum computing	Amazon Braket	Azure Quantum	Managed quantum computing service that developers, researchers, and businesses can use to run quantum computing programs.



**What we
have
discussed
so far...**

Key Notes

Why Cloud Computing

What is Cloud Computing

What is Azure

Azure & AWS Services

Uses of Azure