



# Microsoft Azure Fundamentals Training (AZ-900)

## Module 2



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Storage

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# Azure Services – Storage



Blob



File Storage



Tables



Queues



Data Lake  
Storage



Data Box

# Microsoft Azure Services - Storage



Blob

Azure blob is an object type storage in Azure. It is used for storing large amounts of unstructured data.



Tables

Azure tables are used to store large amount of structured data. It is a NoSQL database so it can store non - relational data.



File Storage

# Microsoft Azure Services - Storage



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File Storage

# Microsoft Azure Services - Storage



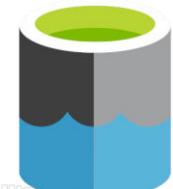
Queues

This service is used for storing large number of messages that can be accessed from anywhere in the world using authenticated HTTP or HTTPS calls.



Data Box

This service can be used to move data to Azure quickly. Data Box offline devices easily move data to Azure when busy networks are not an option. Data Box online appliances transfer data to and from Azure over the network.



Data Lake Storage

# Microsoft Azure Services - Storage



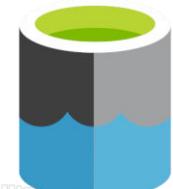
Queues

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Data Box

Azure Data Lake Storage is an enterprise-wide hyper-scale repository for big data analytics workloads. Azure Data Lake enables you to capture data of any size, type, and ingestion speed in one single place for operational and exploratory analytics.



Data Lake Storage

This service can be used to move data to Azure quickly. Data Box offline devices easily move data to Azure when busy networks are not an option. Data Box online appliances transfer data to and from Azure over the network.

# Microsoft Azure Services - Storage



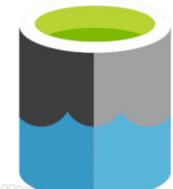
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Data Lake Storage



# Benefits of Microsoft Azure Storage

# Benefits of Azure Storage

## Security

Azure provides top-notch security, as data stored or written in Azure Storage is encrypted. Azure Storage offers full control over who can and cannot access our data

## Accessibility



## Scalability

## High availability

# Benefits of Azure Storage



## Security

## Accessibility

## Scalability

## High availability

The data stored in Microsoft Azure Storage is made accessible over HTTP or HTTPS from anywhere in the world



# Benefits of Azure Storage

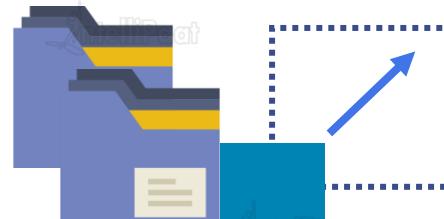
**Security**

**Accessibility**

**Scalability**

**High availability**

Azure Storage is highly scalable in order to meet the on-demand requirements of modern applications



# Benefits of Azure Storage

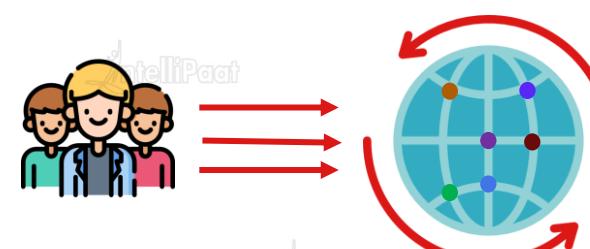
## Security

Users are given the option of replicating their data in multiple data centers so that the data stays available even in the event of outages

## Accessibility

## Scalability

## High availability

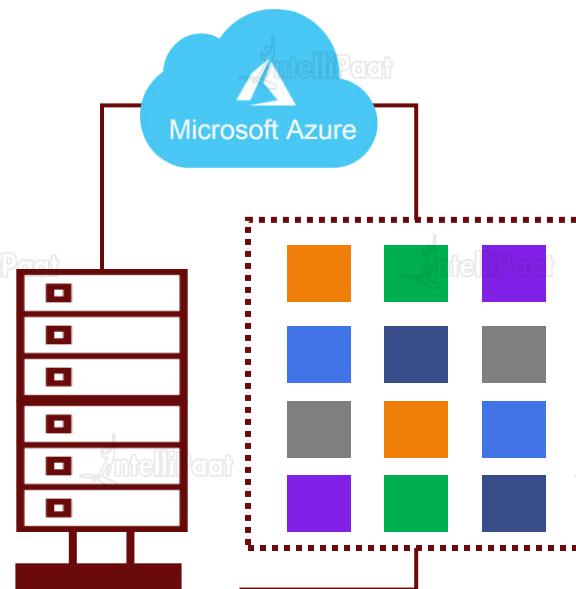




# Introduction to Microsoft Azure Storage

# Microsoft Azure Storage

Microsoft Azure Storage is an umbrella term that represents a suite of cloud-based, highly available and durable storage services that are fully managed by Microsoft and is curated for modern data storage scenarios



# Microsoft Azure Storage

Microsoft Azure Storage is an umbrella term that represents a suite of cloud-based, highly available and durable storage services that are fully managed by Microsoft and is curated for modern data storage scenarios

This suite of cloud-based Microsoft-managed storage services mainly comprises four types of storage services in Azure:



Azure Blob  
Storage



Azure Table  
Storage



Azure Queue  
Storage



Azure File  
Storage



# Overview of Storage Account

# What is Azure Storage Account?

In order to use any type of Azure Storage, you will need to create an account first which is referred to as storage account



Using this account, you will be able to manage and access the storage resources



All your storage data, including blobs, files, queues, and tables, resides in your storage account



The storage account provides a unique namespace for your storage data which will be accessible from anywhere in the world over HTTP and HTTPS



# Types of Azure Storage Accounts

- General Purpose

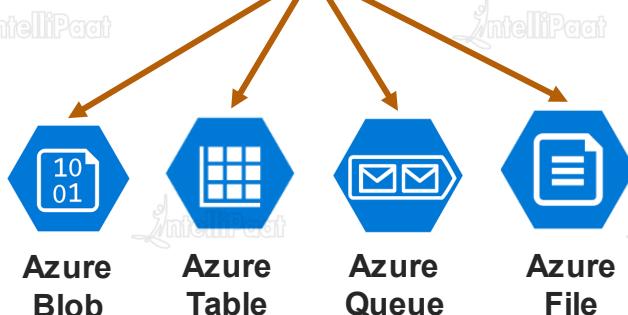
- Blob Storage

# General Purpose Storage Account

Microsoft offers multiple type of storage accounts, each capable of handling different types of storage data.

**General Purpose Storage account**, as the name suggests, is a storage account that can store any type of storage data in general such as object data, NoSQL, queues or files.

## General Purpose Storage Account



# Blob Storage Account

Microsoft offers multiple type of storage accounts, each capable of handling different types of storage data.

As the name suggests, this is "**Blob-only**" storage account. Blob storage accounts also let you choose the access tier that suits you the best.



**Blob Storage Account**



**Access Tiers**

**Hot**

**Cool**

# Access tier



**Access tier** is an option provided by Blob storage account that can be used to optimize the costs for using Azure storage based on how frequently the stored data is accessed. The access tier can be changed at any time by the user



Hot

Hot tier is typically used for storing data that is accessed regularly. This access tier provides low latency, and hence it's comparatively more expensive than cool tier



Cool

Cool tier is used to store less accessed data or archived data. Cool tier provides higher latency than hot tier which is why it's best suited for data that is not accessed frequently



# Hands on: Creating a Storage Account



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# Azure Blob Storage

# Why Blob Storage

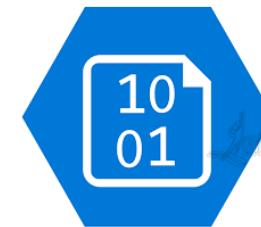


Blob Storages are usually used to store large Binary Files such as audio, video, text etc.

✓ Can be used to store data for archiving, backups, or restoring

✓ Can be used for serving images or documents directly to a given browser

✓ Can be used for writing log files



Azure Blob



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# What is Azure Blob Storage



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# What is Azure Blob Storage



Azure Blob Storage is Microsoft's Object storage solution. Azure Blob is used to store unstructured data which means that it can be used to store data of any format such as document, video files, audio files, and more



Blobs is an abbreviation for Binary Large Objects



Stores data of any format for distributed access



Azure Blob



# Azure File Storage



# Why Azure File Storage?



Azure File Storage is used when we want to share a common storage mount point among multiple computers

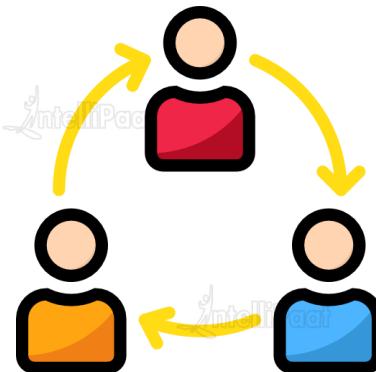
# Why Azure File Storage?

**Shared application settings**

**Diagnostic share**

**Dev./Test/Debug**

We can store configuration files in a centralized location where they can be accessed from many application instances via File Rest API or SMB



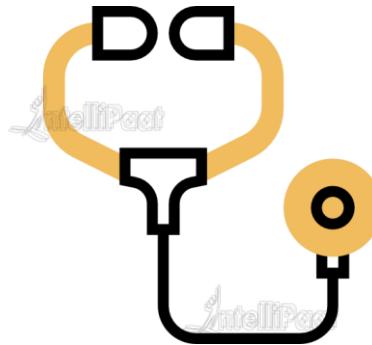
# Why Azure File Storage?

**Shared application settings**

**Diagnostic share**

**Dev./Test/Debug**

You can have applications store their logs, metrics, and crash dumps in a File Share



# Why Azure File Storage?

**Shared application settings**

**Diagnostic share**

**Dev./Test/Debug**

Azure File Storage can be used to store commonly used tools and utilities, which can then be accessed by developers and administrators.





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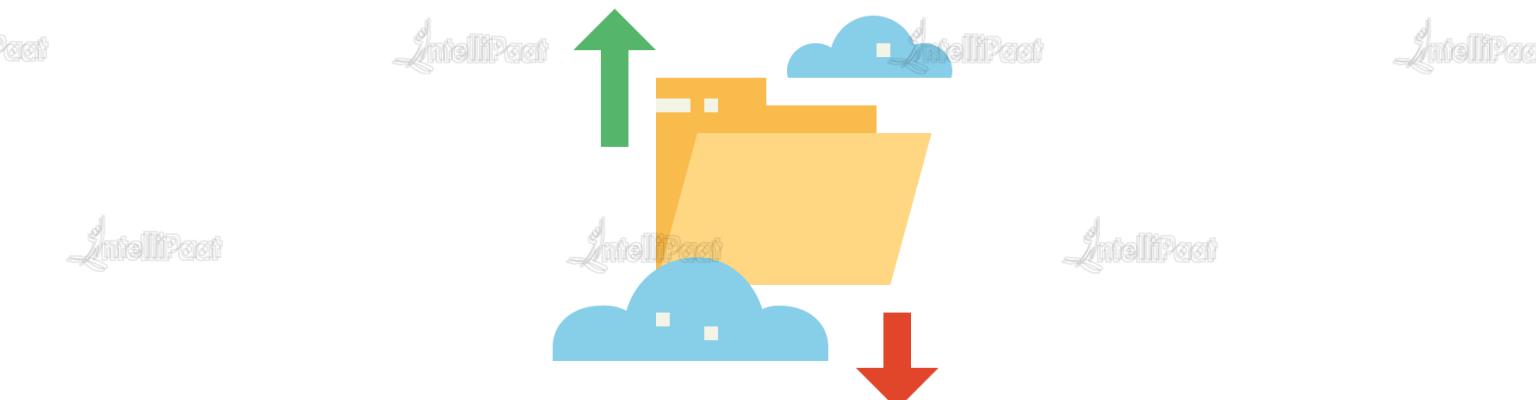


# What is Azure File Storage?



# What is Azure File Storage?

Azure File Storage is a Cloud Service that offers fully managed file shares in the cloud that are accessible via the Server Message Block (SMB) protocol. Azure file shares can be mounted concurrently by cloud or on-premises deployments of Windows, Linux, and macOS.





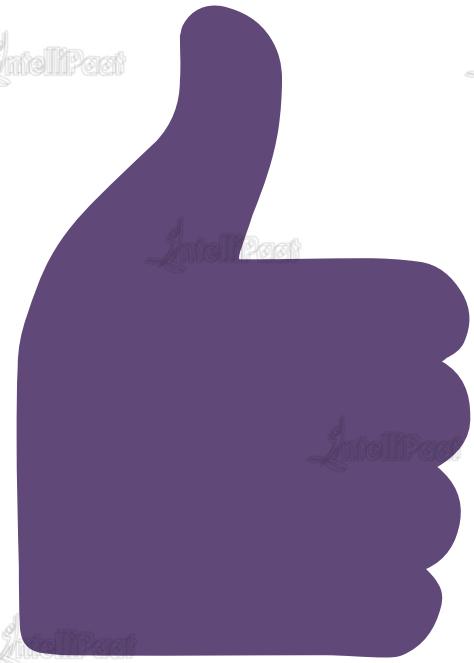
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# Benefits of Azure File Storage



# Benefits of Azure File Storage



**Shared access:** Since Azure file shares support SMB protocol, you can easily replace your on-premises file shares with Azure file shares



**Fully managed:** File shares can be created without the need to manage hardware or an OS



**Resiliency:** Azure files are extremely reliable and fault tolerant



# Azure Table Storage

# Why Azure Table Storage?



01

Stores Structured NoSQL data in the cloud

02

Fast and cost-effective

03

Can be used to store flexible datasets

04

Can store any number of entities in a table



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# What is Azure Table Storage?



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# What is Azure Table Storage?



Azure Table Storage is an Azure Cloud Service that allows you to stores large amounts of structured data in a NoSQL Key Value Store. Azure tables are ideal for storing structured, non-relational data





# When to Use Azure Table Storage?

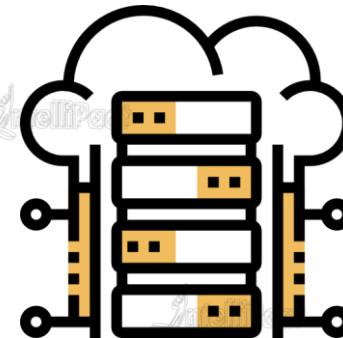
# When to Use Azure Table Storage?

**Large amount of data**

**De-normalized data**

**Fast access**

Azure Table Storage is used to store large amounts (Terabytes) of data capable of serving web scale applications



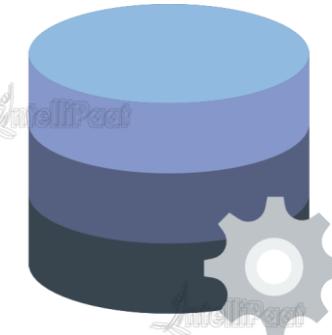
# When to Use Azure Table Storage?

**Large amount of data**

**De-normalized data**

**Fast access**

Azure Table Storage is used to store datasets that don't require complex joins, foreign keys, etc.



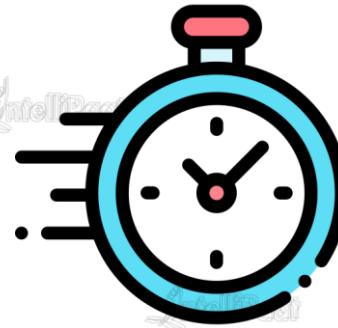
# When to Use Azure Table Storage?

**Large amount of data**

**De-normalized data**

**Fast access**

Azure Table Storage is used in quickly querying data using a clustered index



# Azure Table Storage Concepts

# Azure Table Storage Concepts



## 1 URL format

Azure Table Storage accounts use this URL format to be accessed: `http://<storage account>.table.core.windows.net/<table>`

## 2 Accounts

All access to Azure Storage is done through a storage account

## 5 Properties

A property is a key-value pair that is contained in an entity. Each entity has three system properties, these are: a partition key, a row key, and a timestamp. Entities with the same partition key can be queried more quickly

## 3 Table

A table is a collection of entities

## 4 Entity

An entity is a set of properties, like a database row



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# Azure Table Storage Keys



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# Azure Table Storage Keys

In Azure Table Storage system, every entity has a primary key. This primary key is a composite primary key that is made up of two parts:

1. Partition key

2. Row key



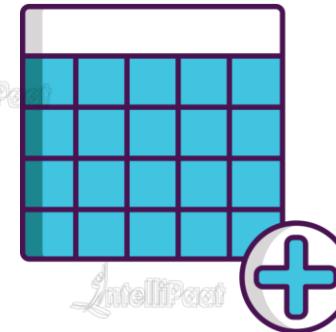
# Azure Table Storage Keys

## Partition key

A Partition key is used to partition a table to support load balancing

A Partition key is used to identify the partition that an entity belongs to

## Row key



# Azure Table Storage Keys



**Partition key**

**Row key**

A Row key is used to uniquely identify an entity (record) in a given partition

The Partition key and the Row key together form the primary key for the entity





# Azure Storage Queue

# Why Storage Queue?



Storage Queues allow us put messages in them so other processes can read and process those messages. For e.g. a message might contain email address of newly signed up user. Other processes can take messages from the queue and send those messages emails.





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# What are Storage Queues?

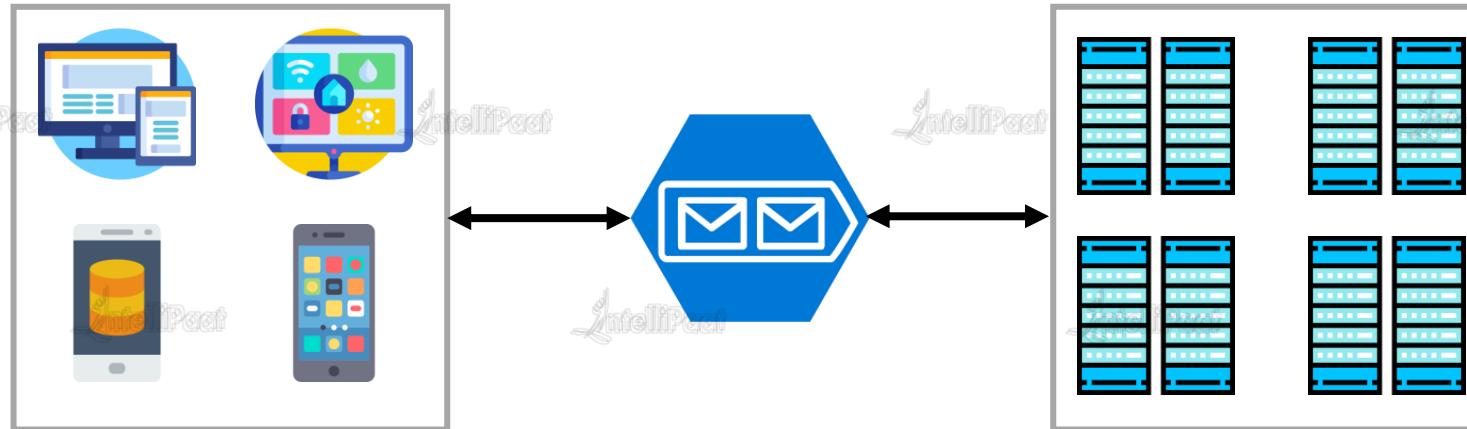


# What is Azure Queue Storage?

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Azure Queue storage is a service for storing large numbers of messages that can be accessed from anywhere in the world





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# Queue Service Concepts

# Queue Service Concepts



## 1 Accounts

All access to Azure Storage is done through a storage account

## 2 URL format

Queues are addressable using the following URL format:  
`https://<storage account>.queue.core.windows.net/<queue>`

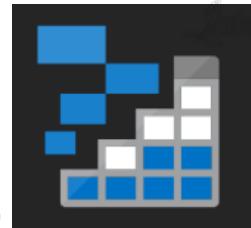


## 3 Queue

A queue contains a set of messages. The queue name must be in lowercase

## 4 Message

A message can be in any format and up to 64 KB. The maximum time-to-live allowed can be any positive number, or -1 indicating that the message doesn't expire. The default time-to-live is seven days



# Azure Storage Explorer

# Why Azure Storage Explorer?



01

Azure Storage Explorer is a standalone app that enables you to easily work with Azure Storage data on Windows, macOS, and Linux

02

It is free to download from Microsoft Website

03

You need to connect to your storage account via Azure Storage Explorer to be able to use it



# What can you do with Azure Storage Explorer?

# What can you do with Azure Storage Explorer?



## Blob storage

View, delete, and copy Blobs and folders

## Queue storage

Upload and download Blobs

## Table storage

Manage snapshots for Blobs

## File storage

# What can you do with Azure Storage Explorer?



**Blob storage**

**Queue storage**

**Table storage**

**File storage**

Peek most recent 32 messages

View, add, and dequeue messages

Clear queue

# What can you do with Azure Storage Explorer?



Blob storage

Queue storage

Table storage

File storage

Query entities with OData or query builder

Add, edit, and delete entities

Import and export tables and query results

# What can you do with Azure Storage Explorer?



**Blob storage**

**Queue storage**

**Table storage**

**File storage**

Navigate files through directories

Upload, download, delete, and copy files and directories

View and edit file properties



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# Why Shared Access Signature?



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# Why Shared Access Signature?

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A shared access signature (SAS) is a token that grants restricted access rights to Azure Storage resources. With SAS, we can grant clients access to resources in our storage account, without sharing our account keys



Granting Access to clients  
Using SAS

Clients Accessing  
Resource Groups in  
Storage Account



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# What is SAS in Blob Storage



# Shared Access Signature



A shared access signature (SAS) is a secure token that allows you to specify the time span and permissions allowed for access to a storage resource such as a blob or container.

If you wish to grant someone access to a storage resource for a specified time you can generate an SAS token that the person or application will need to provide to gain access to the specified resource within the specified time.

SAS token

```
?sv=2018-03-28&ss=b&srt=sco&sp=r&se=2019-08-06T11:30:17Z&st=2019-08-06T11:03:17Z&sip=49.204.69.206&spr=https&sig=khwXjZag...
```



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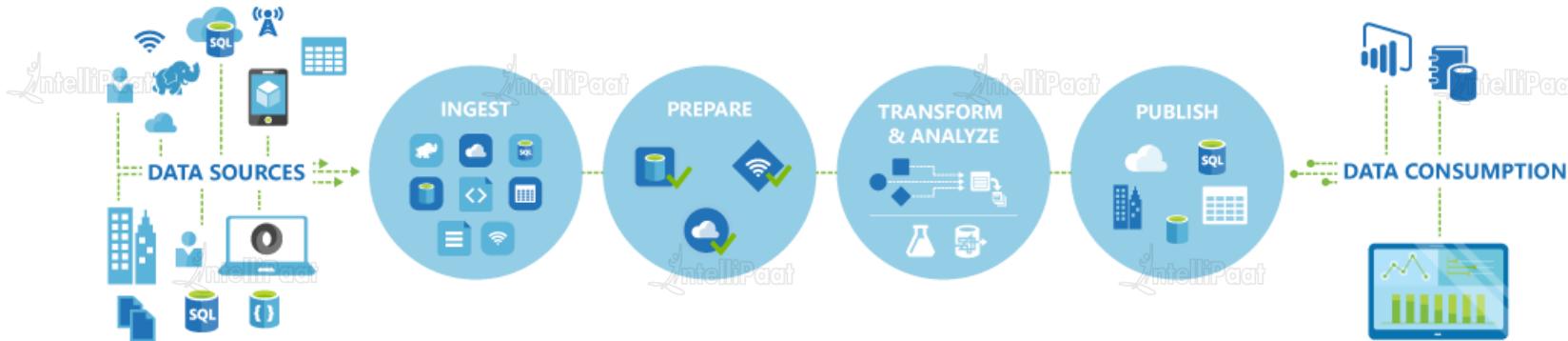


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# What is Azure Data factory?

Azure Data Factory is a cloud-based data integration service that allows you to create data-driven workflows in the cloud for orchestrating and automating data movement and data transformation.

We can make use of Azure Data Factory to create and schedule data-driven workflows that can ingest data from various data stores.



# Copy Data Tool



The azure data factory Copy Data tool eases and optimizes the process of transferring data between the source to destination data store.

For example, it may be used *to copy data from Blob storage to an SQL database.*  
Some of the benefits of using the Copy Data tool are:



No need to understand the Data factory workflow to use Copy Data tool



The tool creates the required resources to transfer the data automatically



It helps you avoid any errors by validating the data that is being ingested



Copy data

Copy Data tool



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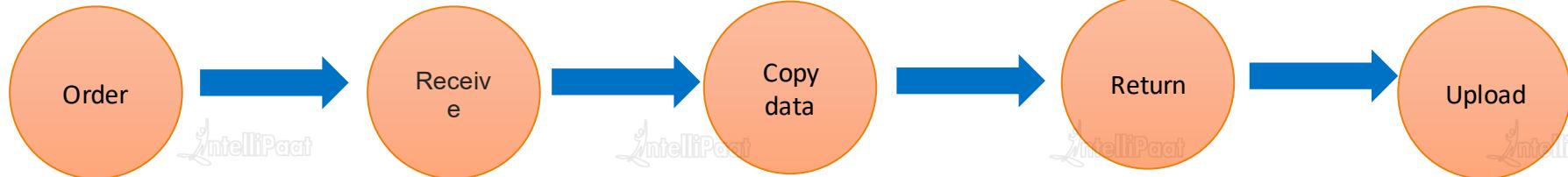


# Azure Databox

# Azure Databox

Azure databox is a service offered by Microsoft azure that lets you transfer terabytes of data to Azure in a quick, inexpensive and reliable way.

The data transfer takes place by shipping you a proprietary Data box storage device. The device is transported to your data center through a regional carrier and has a rugged casing to protect and secure data during transit.



## Azure Databox Use Cases



01

One Time Migration: Large amount of On-premise data is moved to Azure

02

Initial bulk transfer: Initial bulk transfer with seed data box followed by incremental transfers over time

03

Periodic uploads: Data that is generated periodically is moved to Azure



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# Why Azure Storage Replication?

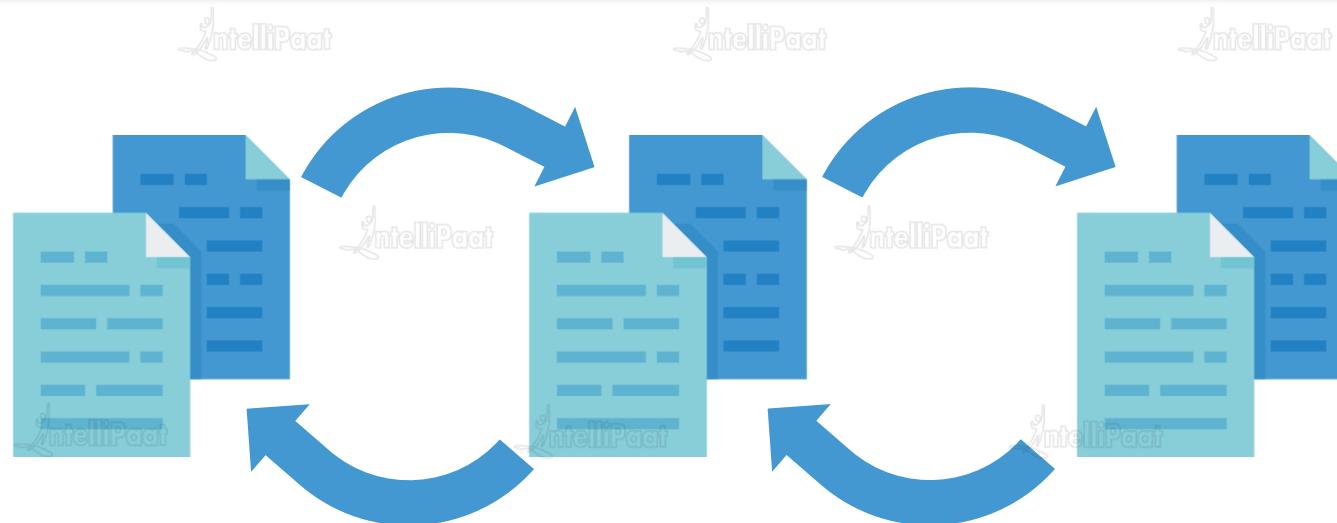


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# Why Azure Storage Replication?

**Storage Replication** ensures that you always have access to your data stored on Azure Storage even in the face of failures. Replication is how Azure Storage guarantees durability and availability





# What is Azure Storage Replication?



# What is Azure Storage Replication?



The data in your Microsoft Azure Storage account is always replicated to ensure durability and high availability

Azure Storage copies your data so that it is protected from planned and unplanned events, including hardware failures, network or power outages, and massive natural disasters

You can choose to replicate your data within the same data center, across zonal data centers within the same region, or across geographically separated regions



# Data Replication Options



# Data Replication Options



**Locally redundant storage (LRS)**

**Zone-redundant storage (ZRS)**

**Geo-redundant storage (GRS)**

**Read-access geo-redundant storage (RA-GRS)**

Replicates three copies of your data within the same data center where you have your data



# Data Replication Options



**Locally redundant storage (LRS)**

**Zone-redundant storage (ZRS)**

**Geo-redundant storage (GRS)**

**Read-access geo-redundant storage (RA-GRS)**

Replicates your data synchronously across three storage clusters in a single region



# Data Replication Options



**Locally redundant storage (LRS)**

**Zone-redundant storage (ZRS)**

**Geo-redundant storage (GRS)**

**Read-access geo-redundant storage (RA-GRS)**

Replicates your data to a secondary region that is hundreds of miles away from the primary region



# Data Replication Options



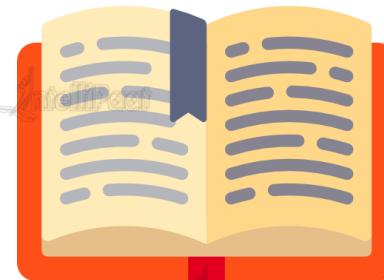
**Locally redundant storage (LRS)**

**Zone-redundant storage (ZRS)**

**Geo-redundant storage (GRS)**

**Read-access geo-redundant storage (RA-GRS)**

Provides read-only access to the data in the secondary location



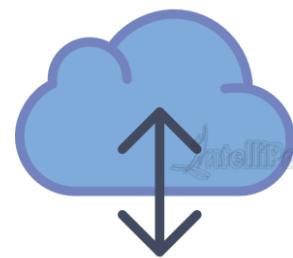
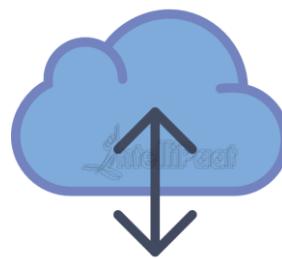
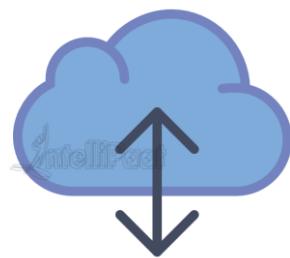
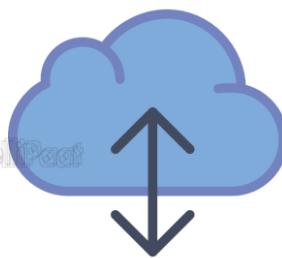


# Why Azure Import/Export service?

# Why Azure Import/Export service?



Transferring the data over the Internet can take days, weeks, or even months. To avoid this issue, Microsoft provides the Import/Export service where you ship your physical disks directly to Azure data center, and they will upload them for you





# What is Azure Import/Export service?

# What is Azure Import/Export Service?



Azure Import/Export service is used to securely import large amounts of data to Azure Blob Storage and Azure Files by shipping disk drives to an Azure data center

This service can also be used to transfer data from Azure Blob Storage to disk drives and ship to your on-premises sites

Data from one or more disk drives can be imported either to Azure Blob Storage or Azure Files

Supply your own disk drives and transfer data with the Azure Import/Export service. You can also use disk drives supplied by Microsoft



# Azure Import/Export Use Cases



# Azure Import/Export Use Cases



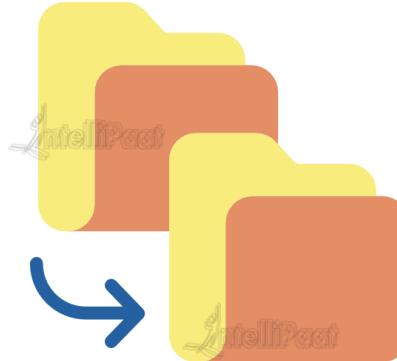
**Data migration to the cloud**

**Content distribution**

**Backup**

**Data recovery**

Move large amounts of data to Azure quickly and cost effectively



# Azure Import/Export Use Cases



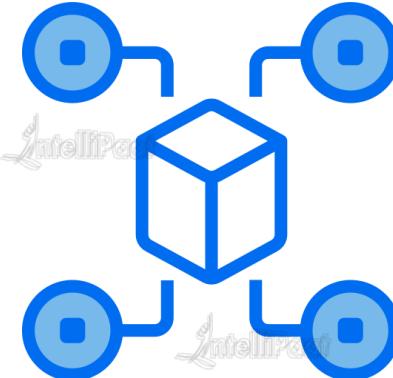
**Data migration to the cloud**

**Content distribution**

**Backup**

**Data recovery**

Quickly send data to your customer sites



# Azure Import/Export Use Cases



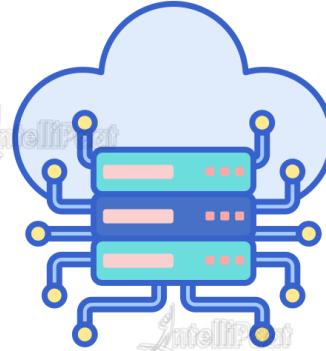
**Data migration to the cloud**

**Content distribution**

**Backup**

**Data recovery**

Take backups of your on-premises data to store in Azure Storage



# Azure Import/Export Use Cases



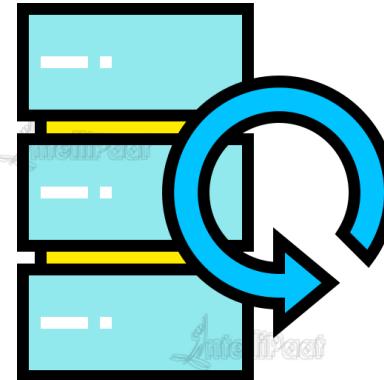
**Data migration to the cloud**

**Content distribution**

**Backup**

**Data recovery**

Recover large amounts of data stored in storage and have it delivered to your on-premises location





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# Azure Import Export Job Flow



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# Azure Import Export Job Flow



## Creating

1. Prepare the Hard Drive using Import / Export Client Tool and Encrypt the drive with Bit Locker
2. Create an Import Export Job using Azure Portal



## Shipping

3. Ship the hard drives to Microsoft Data Center.
4. The Carrier Delivers the hard drive to the data center.



## Transferring

5. Hard Drives are processed at the data centers.
6. Data is copied from Hard Drive to Storage Account.



## Complete

8. Hard Drives are shipped back to the customer.



## Packaging

7. Hard Drives are packages for return shipping.



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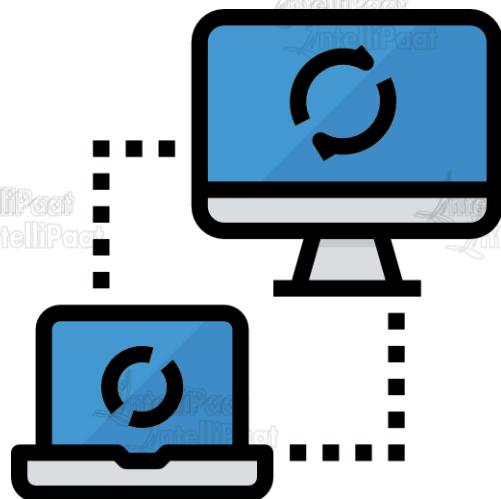


# Why Azure File Sync?

# Why Azure File Sync?



Azure File Sync allows the synchronization of on-premises file servers with Azure Files supported by Storage Accounts





# What is Azure File Sync?



# What is Azure File Sync?



Azure File Sync provides on-premises users and applications with quicker access to cloud files

Azure File Sync is powered by local caches and continually synchronizes with Windows Server

This helps organizations with multiple sites to centralize their files onto a single shared server or VM

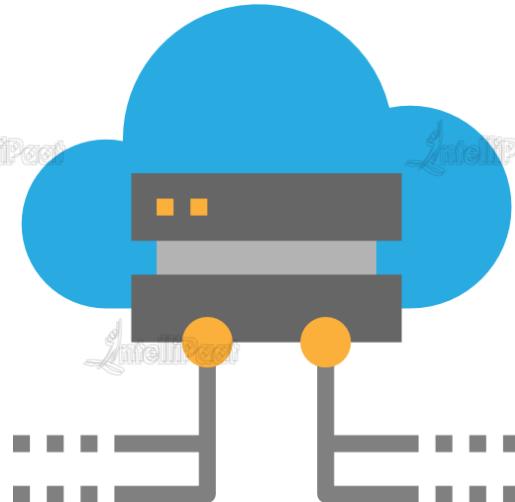


# Azure Blob Storage Backup

# Azure Blob Storage Backup



The Azure Backup service backs up data to the Microsoft Azure cloud. Data can be backed up and recovered at a granular level, including backup of files and folders



# Azure Blob Storage Backup Options

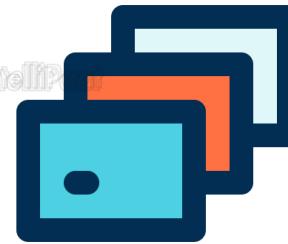
# Azure Blob Storage Backup options

**AZ Copy**

You can copy Blobs to a second storage account using the AZ Copy

**Snapshots**

**Azure archive storage**



# Azure Blob Storage Backup options



**AZ Copy**

**Snapshots**

**Azure archive storage**

Blob storage can create snapshots. These are snapshots of individual blobs, not the whole account. They exist only in the storage account, and you cannot store them in a vault



# Azure Blob Storage Backup options

AZ Copy

Snapshots

Azure archive storage

It is used mostly to store data that is used quite rarely. It is the lowest-priced storage tier. Data at rest is automatically encrypted





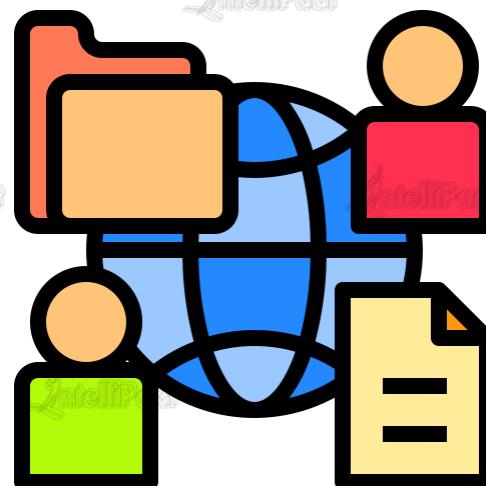
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# Why Azure CDN?

# Why CDN?



Content Delivery Network (CDN) provides alternative server nodes for users to download resources (usually static content like images). These nodes are spread throughout the world

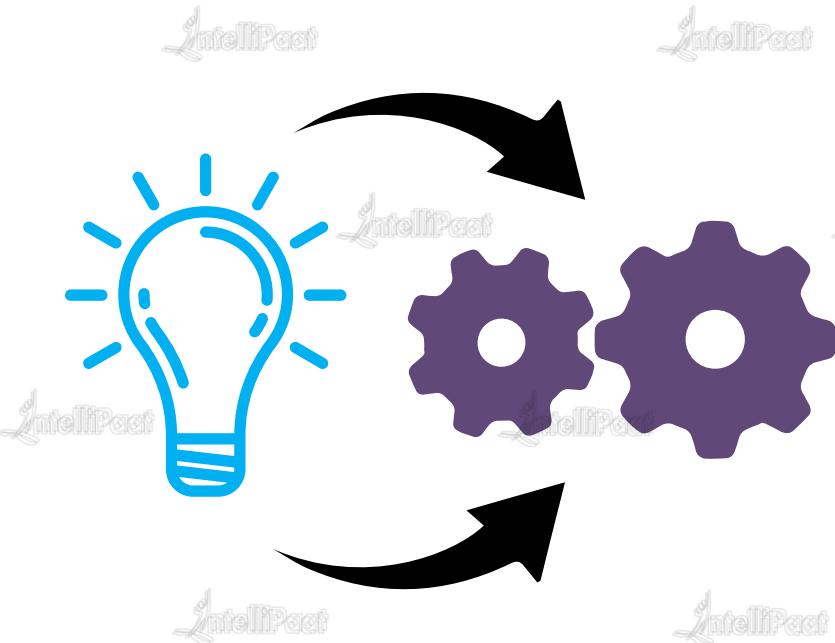




# What is Azure CDN?



# What is Azure CDN?



**01**

Azure CDN is a global CDN solution for delivering high-bandwidth content

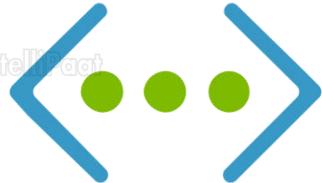
**02**

You can cache static objects loaded from Azure Blob storage by using the closest point of presence (POP) server

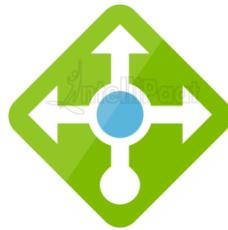
**03**

Azure CDN can also accelerate dynamic content, which cannot be cached, by leveraging various network and routing optimizations

# Azure Services – Networking



Virtual Networks



Load Balancers



Application Gateway



DNS Zones



CDN Profiles

# Microsoft Azure Services -Networking



Virtual network or Vnet is a logically isolated network in the whole Azure cloud dedicated to your subscription.

Virtual Networks



This service is used to distribute the incoming traffic among multiple healthy virtual machines.

Load Balancers



Application gateway is a web traffic load balancer that lets user manage the traffic to their web applications.

Application Gateway



This is a hosting service for domains in Azure. you can manage your DNS records by hosting your domain in Azure.



Azure content delivery network is a CDN solution by Azure. It is used to store cached version of applications or storage in different regions.

DNS Zones

CDN Profiles

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DNS Zones

CDN Profiles



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# Introduction to Microsoft Azure Virtual Network



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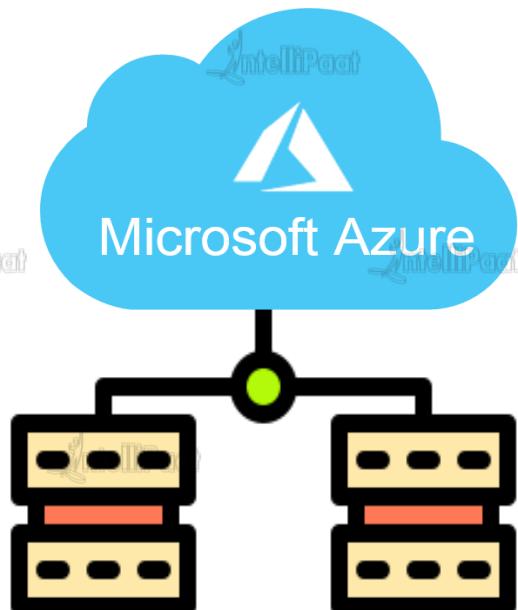
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# Introduction to Microsoft Azure Virtual Network

Azure Virtual Network (VNet) is the fundamental building block for your private network in Azure. VNet enables many types of Azure resources, such as Azure Virtual Machines (VM) to securely communicate with each other, the Internet, and on-premises networks





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# Vnet Components

## Address space

An Address Space is a range of IP Addresses. Azure will assign the next available IP Address from this address space to a resources in your virtual network.

## Subnets

## Regions

## Subscription



# VNet Components

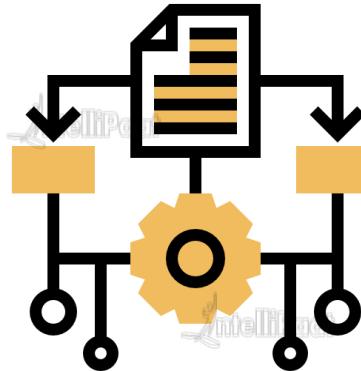
**Address space**

**Subnets**

**Regions**

**Subscription**

A Subnet is a logical segment of a Virtual Network. A Subnet is allocated a portion of the virtual network's address space



# VNet Components



**Address space**

**Subnets**

**Regions**

**Subscription**

Virtual Networks are scoped to a single location called a region. Multiple virtual networks from different regions can be connected together using Virtual Network Peering



# VNet Components



**Address space**

**Subnets**

**Regions**

**Subscription**

Virtual Networks are scoped to a subscription. You can implement multiple virtual networks within each Azure subscription and Azure region.





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# Hands-on: Create VNET





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# Connecting Different VNets



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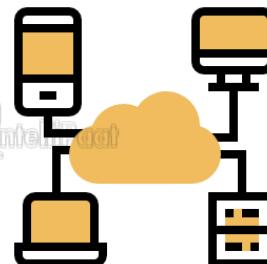
# Connecting different VNets



There are two ways you can connect your Azure VNets:

## 1. VNet Peering

## 2. VNet to VNet Connection Gateway





# VNet Peering

# VNet Peering

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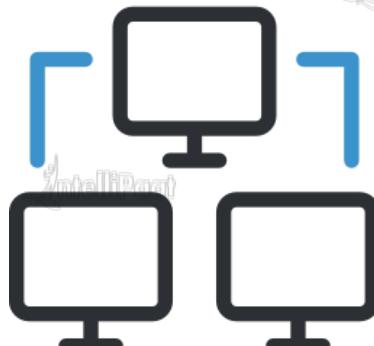
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www.intellipaat.com

Virtual network peering enables you to connect to Azure virtual networks. Once peered, the virtual networks appear as one, for connectivity purposes

The traffic between virtual machines is routed through the Microsoft infrastructure, through private IP addresses only

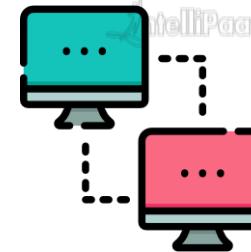


# VNet Peering



Azure supports two types of Virtual Network Peering:

VNet peering - connecting VNets within the same Azure region

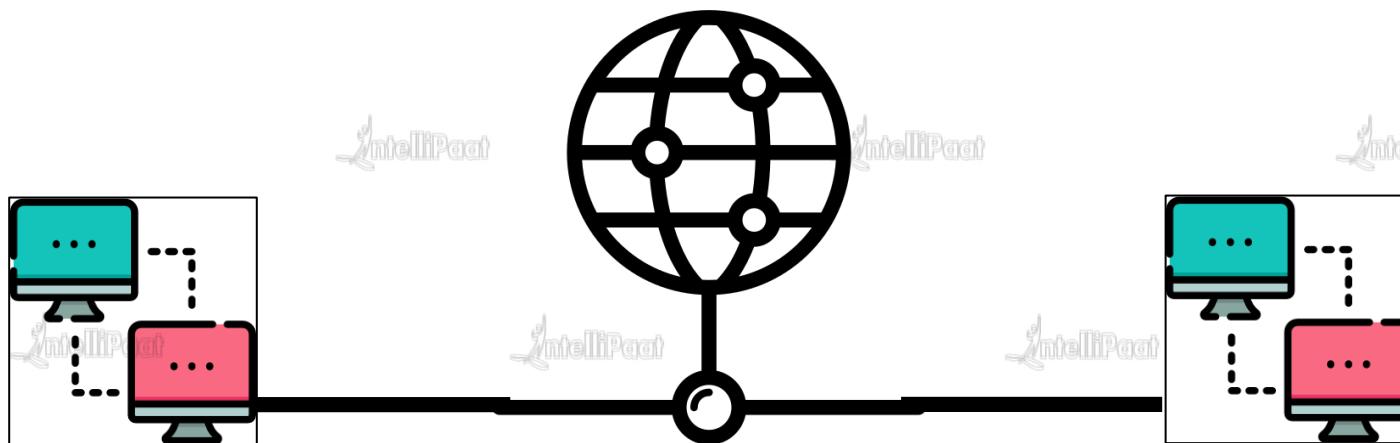


Global VNet peering - connecting VNets across Azure regions

# VNet to VNet Connection Gateway

# VNet to VNet Connection Gateway

You can connect two VNets to each other using VNet-To-VNet VPN gateway connection. This connection type uses a VPN gateway to provide a secure tunnel with IPsec/IKE and functions the same way when communicating





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# IP Addresses

You can assign IP addresses to Azure resources to communicate with other Azure resources, your on-premises network, and the Internet. There are two types of IP addresses you can use in Azure:

**1. Public IP addresses:** Used for communication with the Internet, including Azure public-facing services

**2. Private IP addresses:** Used for communication within an Azure virtual network (VNet) and your on-premises network, when you use a VPN gateway or ExpressRoute circuit to extend your network to Azure





# IP Address Allocation Methods



# IP Address Allocation Methods

There are two methods in which IP addresses are allocated:

**Dynamic:** Azure assigns the next available unassigned or unreserved IP address in the subnet's address range



**Static:** You select and assign any unassigned or unreserved IP address in the subnet's address range

# IP Address Allocation Methods

## Public and Private IP Allocation:

When a public IP address needs to be assigned to an Azure resource, it is dynamically allocated from a pool of available public IP address within the location the resource is created



A private IP address can be allocated with either Dynamic Allocation or Static Allocation





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# Azure VNet Routing



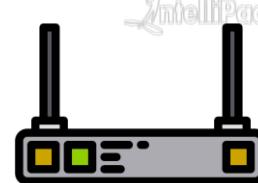
# Azure VNet Routing



Routing traffic between different subnets in a virtual network is taken care of by Azure



You can create your own routes to override Azure's default routing





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# Azure Network Interface

# Azure Network Interface

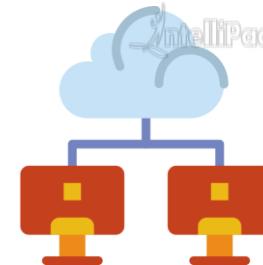


A network interface (NIC) is the interconnection between a Virtual Machine and a virtual network

A VM must have at least one NIC, but can have more than one



Multiple Network Interfaces allow a VM to connect to different subnets and send or receive traffic over the most appropriate interface





# Azure Subnets

# Azure Subnets



A subnet is a partition of your virtual network in Azure VNet



Having an organization's network divided into subnets allows it to be connected to the Internet with a single shared network address



Subnets were initially designed for solving the shortage of IP addresses over the Internet





# Why Subnets?

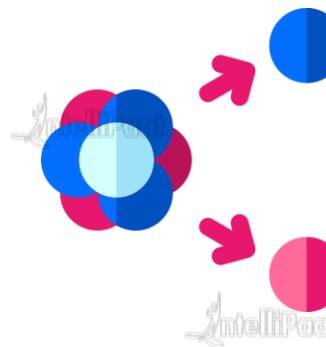
# Why Subnets?

**Logical divisions**

**Improved network security**

**Improved network performance**

Subnetting helps you maintain clean separations within a network. This separation helps in maintaining a large network



# Why Subnets?

**Logical divisions**

**Improved network security**

**Improved network performance**

With logical divisions between subnets, you have greater control over who has access to what



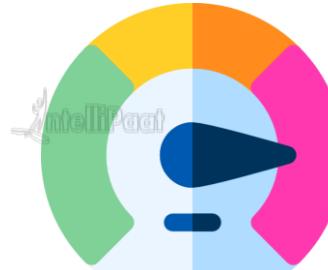
# Why Subnets?

**Logical divisions**

**Improved network security**

**Improved network performance**

Subnetting reduces the amount of broadcast traffic by containing network broadcasts at the subnet level instead of sending all broadcasts to the entire network





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# Azure DNS

Azure DNS is a hosting service for DNS domains that provide name resolution by using Microsoft Azure infrastructure.

The Domain Name System, or DNS, is responsible for converting a URI to its IP address



# Why Azure DNS?

**Reliability and performance**

**Security**

**Ease of use**

**Alias records**

In Azure DNS, each DNS query is responded to by the closest available DNS server



# Why Azure DNS?

**Reliability and performance**

**Security**

**Ease of use**

**Alias records**

Azure DNS is based on Azure Resource Manager (ARM), which provides various security features such as Role-based access control, Activity logs, and Resource locking



# Why Azure DNS?

**Reliability and performance**

**Security**

**Ease of use**

**Alias records**

Azure DNS can manage DNS records for your Azure services and provide DNS for your external resources as well



# Why Azure DNS?

**Reliability and performance**

**Security**

**Ease of use**

**Alias records**

Alias Records are used to refer to an Azure resource, such as an Azure public IP address, an Azure Traffic Manager profile, or an Azure Content Delivery Network (CDN) endpoint

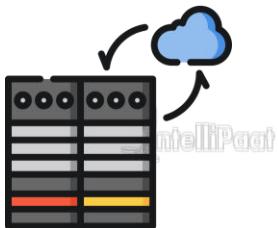


# Azure Private DNS



Azure Private DNS provides a reliable, secure DNS service to manage and resolve domain names in a virtual network

Private DNS allows you to use your own custom domain names rather than the Azure-provided ones



It provides name resolution for virtual machines (VMs) within a virtual network and between virtual networks



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# Network Security Groups



# Azure Security Group

A network security group is used to encapsulate rules to filter incoming and outgoing traffic to and from several types of Azure resources

For each rule, you can specify source and destination, port, and protocol





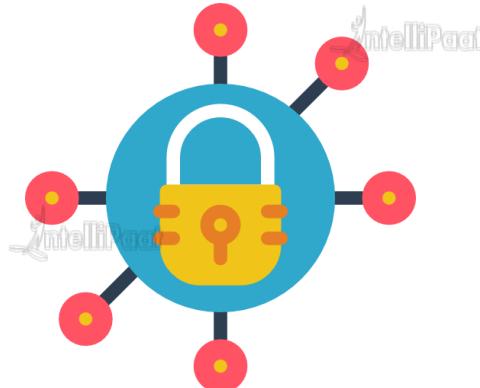
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# Security Rules

# Azure Security Rules

A Security Rule is used in Azure to specify some constraint on incoming or outgoing traffic.

Each rule specifies some properties





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# Security Rule Properties



# Security Rule Properties

## Name

It is a unique name within the network security group which is used to identify and refer to a rule

## Priority

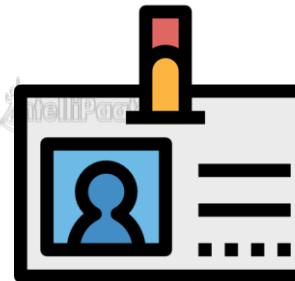
## Source or destination

## Protocol

## Direction

## Port range

## Action



# Security Rule Properties

## Name



## Priority



## Source or destination



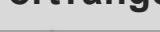
## Protocol



## Direction



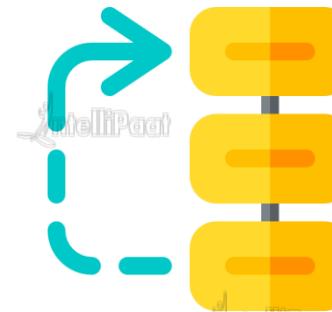
## Port range



## Action



It indicates a number between 100 and 4096. Rules are processed in priority order, with lower numbers processed before higher numbers. Once traffic matches a rule, processing stops



# Security Rule Properties

Name

Priority

Source or destination

Protocol

Direction

Port range

Action

Any, or an individual IP address



# Security Rule Properties

Name

Priority

Source or destination

Protocol

Direction

Port range

Action

TCP, UDP, ICMP, or others



# Security Rule Properties

Name

Priority

Source or destination

Protocol

Direction

Port range

Action

It indicates whether the rule applies to inbound or outbound traffic



# Security Rule Properties

Name

Priority

Source or destination

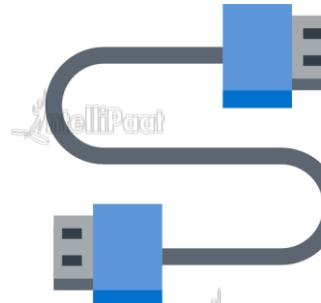
Protocol

Direction

Port range

Action

You can specify an individual or range of ports for your rules. Specifying ranges enables you to create fewer security rules



# Security Rule Properties

Name

Priority

Source or destination

Protocol

Direction

Port range

Action

Action indicates whether to allow or deny traffic





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# Service Tags



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# Service Tags



A service tag is used to group IP Addresses to make it easy to apply security rules.

Service tags allow easy creation and allow to minimize complexity of rule creation.

Service Tags are managed by Azure. You cannot create or assign your own service tags.





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