

About Rahul Joshi:

22 Years exp, 15th year as Microsoft certified trainer & AWS Authorized instructor

- Helping customers add Application Modernization capabilities by Replatforming ASP.NET sites to Azure App Services, Rearchitecting of monolithic applications to microservices or containers.
- Reengineering of legacy applications to cloud-native apps with improved user experience.
- Designing cloud strategy, solution design, cloud adoption frameworks, app modernization and cloud migration.
- Develop Proof of Concept by working closely with Microsoft and Amazon Web Services and design frameworks for cloud adoption and Enterprise Architecture, Cloud Infrastructure/ Migrations.
- Responsible for Migration to Microsoft Azure (Brownfield and Greenfield Projects). In-Premise To Cloud Migration and Storage Migration.
- Perform Application Readiness Assessment, an investigation at application level in preparation for cloud deployment, to look at issues that will either block or detract from the application's abilities to fully utilize the cloud, then act on this report to ensure cloud readiness.
- Designing applications for scalability
- Migrating to PaaS & Container Architecture, Migrating from Traditional .NET Application Web Apps

"Executed more than 580+ Trainings engagements on Microsoft Azure for more than 220+ clients"

Google Drive Link:

https://drive.google.com/drive/folders/181ebdbVLk5xpLu5ArR_BFWeM9b3N2x3?usp=sharing

Recording:

Please Note, Post Session Completes Zoom Recording Link will be shared on WhatsApp, Download it from Zoom Directly. It will not be uploaded on Google Drive

One Note Documentation:

<https://1drv.ms/u/s!Aht-oGFG3XwWgagy2dnZHuXQmk0wkg>

Case Study: 100% dedicated to Security, Admin, Data Engineers, Architect

The customer was very happy the way we demonstrated Storage Account. But, the customer has some reservations, The customer knows that the data in the storage account is "Encrypted at Rest" using Microsoft Managed Keys which use RSA-2048 Bit. The customer says that the data within the storage account is very critical and has to be protect at different levels. There cannot be any compromise on "Security" and they expect maximum security and costing is not a concern.

So, the customer has to be educated on what strategies can be implemented and we need to practically demonstrate the same to the customer.

STAR

Situation - Case Study

Task:

1. Create a Storage Account (AWS - S3 Storage)
2. Create Key Vault (AWS - KMS - Key Management Service)

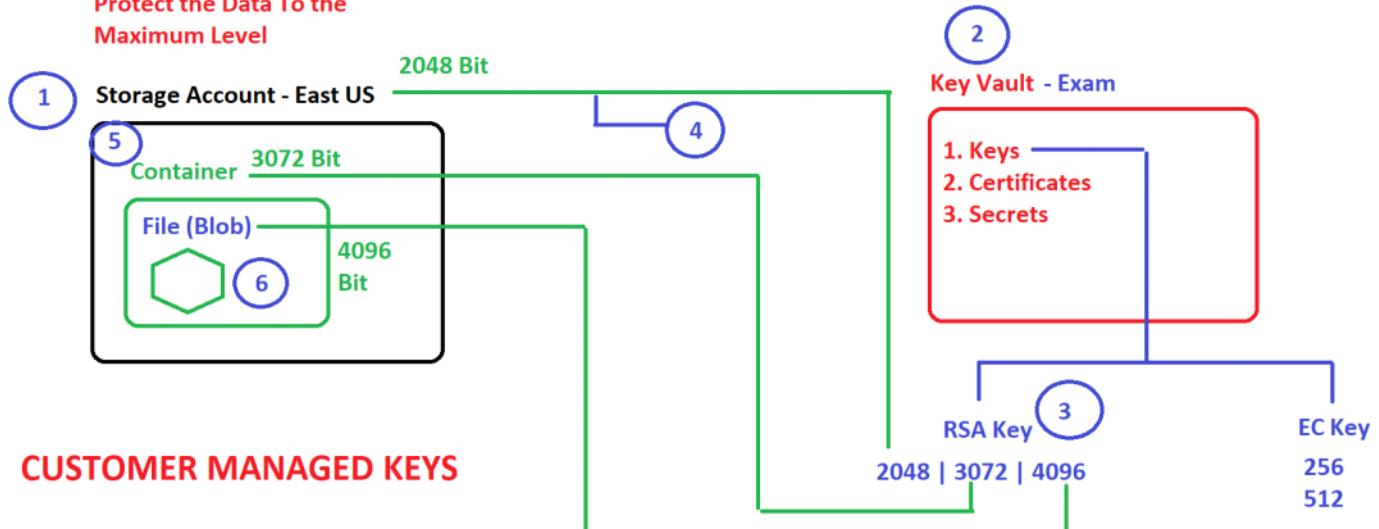
Action:

<https://cheapsslsecurity.com/p/ecc-vs-rsa-comparing-ssl-tls-algorithms/>

RSA vs ECC: Side by Side Comparison

RSA	ECC
A well-established method of public-key cryptography	A newer public-key cryptography method compared to RSA.
Works on the principle of the prime factorization method.	Works on the mathematical representation of elliptic curves.
RSA can run faster than ECC thanks to its simplicity.	ECC requires bit more time as it's complex in nature.
RSA has been found vulnerable and is heading towards the end of its tenure.	ECC is more secure than RSA and is in its adaptive phase. Its usage is expected to scale up in the near future.
RSA requires much bigger key lengths to implement encryption.	ECC requires much shorter key lengths compared to RSA.

Protect the Data To the Maximum Level



CUSTOMER MANAGED KEYS

Home >
Storage accounts ⚡ ...

Default Directory (talktorahuljoshioutlook.onmicrosoft.com)
+ Create Restore Manage view Refresh Export

Filter for any field... Subscription equals all Resource gr

Create a storage account ...

Basics Advanced Networking Data protection Encryption Tags Review

Manage your storage account settings with other resources

Subscription *

Resource group * [Create new](#)

Instance details

If you need to create a legacy storage account type, please click [here](#).

Storage account name
Region

Instance details

If you need to create a legacy storage account type, please click [here](#).

Storage account name
Region
Performance Standard: Recommended for most scenarios (general-purpose v2 account)
 Premium: Recommended for scenarios that require low latency.
Redundancy

Create a storage account ...

Basics Advanced Networking Data protection Encryption Tags Review

Security

Configure security settings that impact your storage account.

Require secure transfer for REST API operations

Enable blob public access

Enable storage account key access

Default to Azure Active Directory authorization in the Azure portal

Minimum TLS version

Permitted scope for copy operations (preview)

Data Lake Storage Gen2

The Data Lake Storage Gen2 hierarchical namespace accelerates big data analytics workloads and enables file-level access

[Review](#)

[< Previous](#)

[Next : Networking >](#)

Create a storage account ...

Basics Advanced **Networking** Data protection Encryption Tags Review

Network connectivity

You can connect to your storage account either publicly, via public IP addresses or service endpoints, or privately, using a private endpoint.

Network access *

Enable public access from all networks

Enable public access from selected virtual networks and IP addresses

Disable public access and use private access

Enabling public access from all networks might make this resource available publicly. Unless public access is required, we recommend using a more restricted access type. [Learn more](#)

Network routing

Determine how to route your traffic as it travels from the source to its Azure endpoint. Microsoft network routing is recommended for most customers.

Routing preference *

Microsoft network routing

[Review](#)

[< Previous](#)

[Next : Data protection >](#)

Create a storage account ...

Basics Advanced Networking Data protection Encryption Tags Review

Recovery

Protect your data from accidental or erroneous deletion or modification.

- Enable point-in-time restore for containers
Use point-in-time restore to restore one or more containers to an earlier state. If point-in-time restore is enabled, then versioning, change feed, and blob soft delete must also be enabled. [Learn more](#)
- Enable soft delete for blobs
Soft delete enables you to recover blobs that were previously marked for deletion, including blobs that were overwritten. [Learn more](#)
- Enable soft delete for containers
Soft delete enables you to recover containers that were previously marked for deletion. [Learn more](#)
- Enable soft delete for file shares
Soft delete enables you to recover file shares that were previously marked for deletion. [Learn more](#)

Tracking

Manage versions and keep track of changes made to your blob data.

- Enable versioning for blobs

[Review](#)

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[Next : Encryption >](#)

Create a storage account ...

Basics Advanced Networking Data protection [Encryption](#) Tags Review

Encryption type (1) *

- Microsoft-managed keys (MMK)
- Customer-managed keys (CMK)

Enable support for customer-managed keys (1)

- Blobs and files only
- All service types (blobs, files, tables, and queues)

⚠ This option cannot be changed after this storage account is created.

Enable infrastructure encryption (1)

-

[Review](#)

[< Previous](#)

[Next : Tags >](#)

Does Microsoft by Default Encrypt the Data at Rest? YES

Create a storage account ...

Basics Advanced Networking Data protection Encryption Tags Review

Basics

Subscription	MSDN Platforms
Resource Group	rg-rahulvjoshi-training
Location	eastus
Storage account name	strahul2008
Deployment model	Resource manager
Performance	Standard
Replication	Locally-redundant storage (LRS)

Advanced

Secure transfer	Enabled
Allow storage account key access	Enabled
Allow cross-tenant replication	Enabled
Default to Azure Active Directory authorization in the Azure portal	Disabled
Blob public access	Enabled
Minimum TLS version	Version 1.2

[Create](#)

< Previous

Download a template for automation

Action 2: Creating Key Vault

The screenshot shows the Azure portal's navigation sidebar on the left with various service categories like Compute, Storage, and Security. Under the Security category, the 'Key vaults' service is highlighted with a yellow box. The main content area displays a list of security-related services, with 'Key vaults' also highlighted with a yellow box.

Key vaults

Default Directory (talktorahulvjoshioutlook.onmicrosoft.com)

[+ Create](#) [Manage deleted vaults](#) [Manage view](#) [Refresh](#)

Filter for any field... [Subscription equals all](#) [Resource group](#)

Name ↑ Type ↑

Basic Documentation

<https://docs.microsoft.com/en-in/azure/key-vault/general/basic-concepts>

Best Practice

<https://docs.microsoft.com/en-in/azure/key-vault/general/best-practices>

Use separate key vaults

Our recommendation is to use a vault per application per environment (development, pre-production, and production), per region. This helps you not share secrets across environments and regions. It will also reduce the threat in case of a breach.

Create a key vault

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *	MSDN Platforms
Resource group *	rg-rahulvijoshi-training
	Create new

Instance details

Key vault name *	kyrahul2008
Region *	East US

Pricing tier * ⓘ Standard

Recovery options Standard

Premium (includes support for HSM backed keys)

Soft delete protection will automatically be enabled for this key vault.

Premium Provides you with **HSM Device - Hardware Security Module Device**. If you use Premium, Microsoft will have an Hardware device in their datacenter and keep your keys, secrets and certificates on that device, please note, this is expensive solution, but best protection, this is widely used by Banks, financial org, government and any place where data is highly classified and sensitive.



https://en.wikipedia.org/wiki/Hardware_security_module

Pricing:

<https://azure.microsoft.com/en-in/pricing/details/key-vault/>

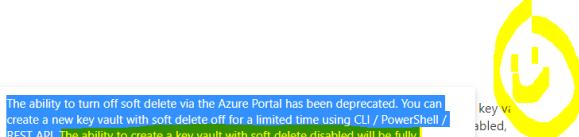
	Standard	Premium
RSA 2048-bit keys	₹2.398/10,000 transactions	₹2.398/10,000 transactions
Advanced key types—	₹11.986/10,000 transactions	₹11.986/10,000 transactions
RSA 3072-bit, RSA 4096-bit and Elliptic-Curve Cryptography (ECC) keys		

cheap

	Standard	Premium
RSA 2048-bit keys	N/A	₹79.903 per key per month ¹ + ₹2.398/10,000 transactions
Advanced key types ¹ —	N/A	
RSA 3072-bit, RSA 4096-bit and Elliptic-Curve Cryptography (ECC) keys		
HSM-protected keys		
		First 250 Keys ₹399.513 per key per month
		From 251 – 1500 keys ₹199.757 per key per month
		From 1501 – 4000 keys ₹71.913 per key per month
		4001+ keys ₹31.961 per key per month
		+ ₹11.986/10,000 transactions

\$\$\$

Pricing tier * ⓘ Standard



Soft-delete ⓘ Enabled

Days to retain deleted vaults * ⓘ 1
✖ The value must be between 7 and 90.

Purge protection ⓘ Disable purge protection (allow key vault and objects to be purged during retention period) Enable purge protection (enforce a mandatory retention period for deleted vaults and vault objects)

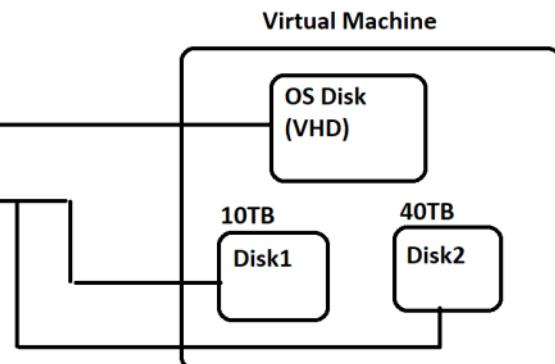
[Previous](#) [Next](#) [Review + create](#)

Create a key vault ...

Basics [Access policy](#) Networking Tags Review + create

Enable Access to:
 Azure Virtual Machines for deployment ⓘ
 Azure Resource Manager for template deployment ⓘ
 Azure Disk Encryption for volume encryption ⓘ

Permission model Vault access policy Azure role-based access control



DO NOT GET CONFUSED, THIS IS RELATED TO VHD AND NOT AZURE STORAGE

Current Access Policies

Name	Email	Key Permissions	Secret Permissions	Certificate Permissions	Action
USER					
Rahul Joshi	talktorahuljoshi_outl...	12 selected	7 selected	15 selected	Delete

Create a key vault ...

Basics Access policy Networking Tags Review + create

Enable Access to:

- Azure Virtual Machines for deployment ⓘ
- Azure Resource Manager for template deployment ⓘ
- Azure Disk Encryption for volume encryption ⓘ

Permission model

- Vault access policy
- Azure role-based access control

+ Add Access Policy

Current Access Policies

Name	Email	Key Permissions	Secret Permissions	Certificate Permissions	Action
USER	Rahul Joshi	12 selected	7 selected	15 selected	<button>Delete</button>

Previous Next Review + create

Create a key vault ...

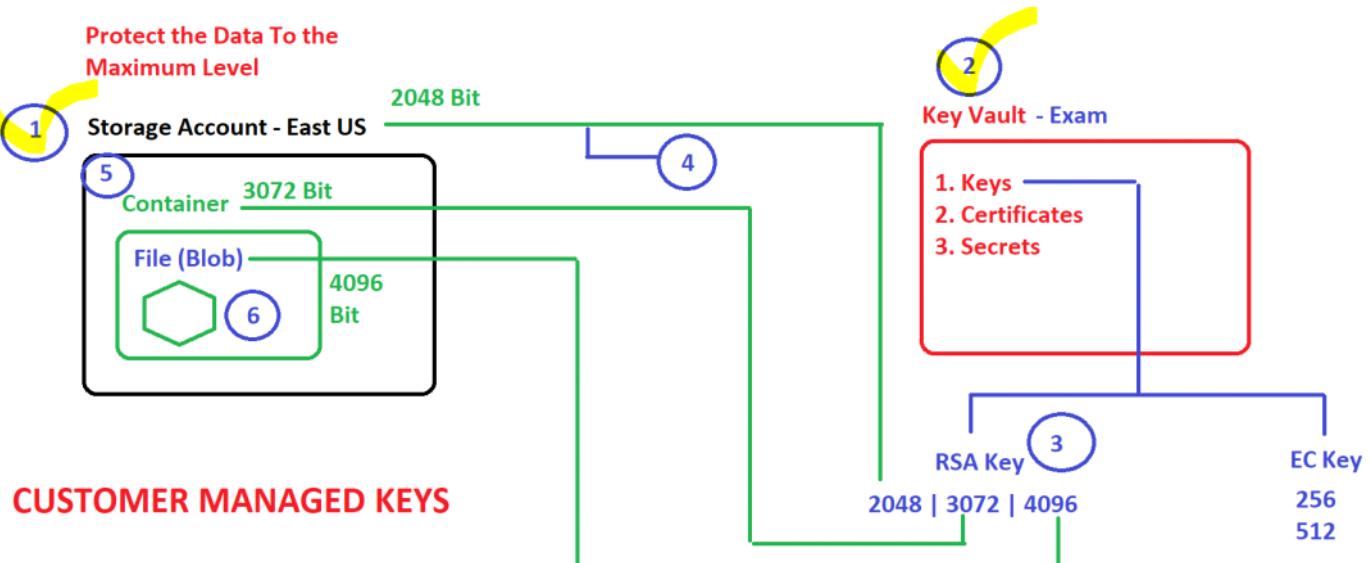
Basics Access policy Networking Tags Review + create

Network connectivity
You can connect to this key vault either publicly, via public IP addresses or service endpoints, or privately, using a private endpoint.

Connectivity method

- All networks
- Selected networks
- Private endpoint

In Real Production environment, always fence the Key Vault behind a Network, do not keep it All Networks.



A screenshot of the Azure Key Vault 'Keys' blade. The left sidebar shows navigation options: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Events, Settings, Keys (which is selected and highlighted in yellow), Secrets, Certificates, Access policies, and Networking. The main area has a search bar at the top and a 'Generate/Import' button. Below it, there is a table with columns 'Name' and 'Status'. A message states 'There are no keys available.'

A screenshot of the Azure Key Vault 'Keys' blade. The left sidebar shows navigation options: Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Events, Settings, Keys (which is selected and highlighted in yellow), Secrets, Certificates, Access policies, and Networking. The main area has a search bar at the top and a 'Generate/Import' button. Below it, there is a table with columns 'Name' and 'Status'. A message states 'There are no keys available.'

Create a key

A screenshot of the 'Create a key' blade. The left sidebar shows navigation options: Options, File Upload * (with a red asterisk), Name * (with a red asterisk), Key type (with a red asterisk), and Set activation date (with a red asterisk). The right side shows an 'Options' dropdown set to 'Import', which is highlighted in yellow. Below it are buttons for 'Generate', 'Import', and 'Restore Backup'. The 'RSA' radio button is selected under 'Key type'. There is also a checkbox for 'Set activation date'.

Generate means, Microsoft will generate the Key for you, Import means, you create the key locally and upload the Key in Azure, this is also one of the better options customer does choose. We have an example around this as well

Create a key

A screenshot of the 'Create a key' blade. The left sidebar shows navigation options: Options, Name * (with a red asterisk), Key type (with a red asterisk), and RSA key size (with a red asterisk). The right side shows an 'Options' dropdown set to 'Generate', which is highlighted in purple. Below it are input fields for 'Name' (set to 'storagekey') and 'Key type' (set to 'RSA'). Under 'RSA key size', the '2048' radio button is selected. There is also a checkbox for 'Set activation date'.

Secret, which not many people know.
EC-P256 is equal to RSA 3072

Training:

Create a key ...

Options	Generate
Name * ⓘ	storagekey
Key type ⓘ	<input checked="" type="radio"/> RSA <input type="radio"/> EC
RSA key size	<input checked="" type="radio"/> 2048 <input type="radio"/> 3072 <input type="radio"/> 4096
Set activation date ⓘ	<input type="checkbox"/>
Set expiration date ⓘ	<input type="checkbox"/>
Enabled	<input checked="" type="radio"/> Yes <input type="radio"/> No
Tags	0 tags
Set key rotation policy	Not configured

Create

Note: It is always a good practice to rotate the keys, as if anyone gets to know about the key, that can be very critical. Either you can use Rotation Policy option to rotate key automatically, or if you wish to do the same thing manually, you can create a new version. Please note, when you create a new version (the name of the key) does not change, but you are allowed to change from RSA 2048 to any other strength or keep it as it is.

storagekey ...

Versions

+ New Version Refresh Delete Download Backup

Version	Status
CURRENT VERSION fb8ef61033b14b9ba8e6874b236571ce	✓ Enabled

Create a key ...

Options	Generate
Name ⓘ	storagekey
Key type ⓘ	<input checked="" type="radio"/> RSA <input type="radio"/> EC
RSA key size	<input checked="" type="radio"/> 2048 <input type="radio"/> 3072 <input type="radio"/> 4096
Set activation date ⓘ	<input type="checkbox"/>
Set expiration date ⓘ	<input type="checkbox"/>
Enabled	<input checked="" type="radio"/> Yes <input type="radio"/> No
Tags	0 tags
Set key rotation policy	Not configured

Create

This key will be now for Container - 3072 RSA

kvrahul2008 | Keys

Key vault

Search (Ctrl+ /) <> + Generate/Import ⏪ Refresh ⏴ Restore Backup ⏵ Manage di

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Events Settings

Keys Secrets

The key 'storagekey' has been successfully created.

Name	Status
storagekey	✓ Enabled

Create a key

Options

Generate

Name * containerkey

Key type RSA

RSA key size 3072

Set activation date

Set expiration date

Enabled Yes

Tags 0 tags

Set key rotation policy Not configured

Create

kvrahul2008 | Keys

Key vault

Search (Ctrl+ /) <> + Generate/Import ⏪ Refresh ⏴ Restore Backup ⏵ Manage di

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Events

The key 'containerkey' has been successfully created.

Name	Status
containerkey	✓ E
storagekey	✓ E

Create a key ...

Options	Generate
Name *	filekey
Key type	<input checked="" type="radio"/> RSA <input type="radio"/> EC
RSA key size	<input type="radio"/> 2048 <input type="radio"/> 3072 <input checked="" type="radio"/> 4096
Set activation date	<input type="checkbox"/>
Set expiration date	<input type="checkbox"/>
Enabled	<input checked="" type="radio"/> Yes <input type="radio"/> No
Tags	0 tags
Set key rotation policy	Not configured

Create

kvrahul2008 | Keys ...

Key vault

Search (Ctrl+J)

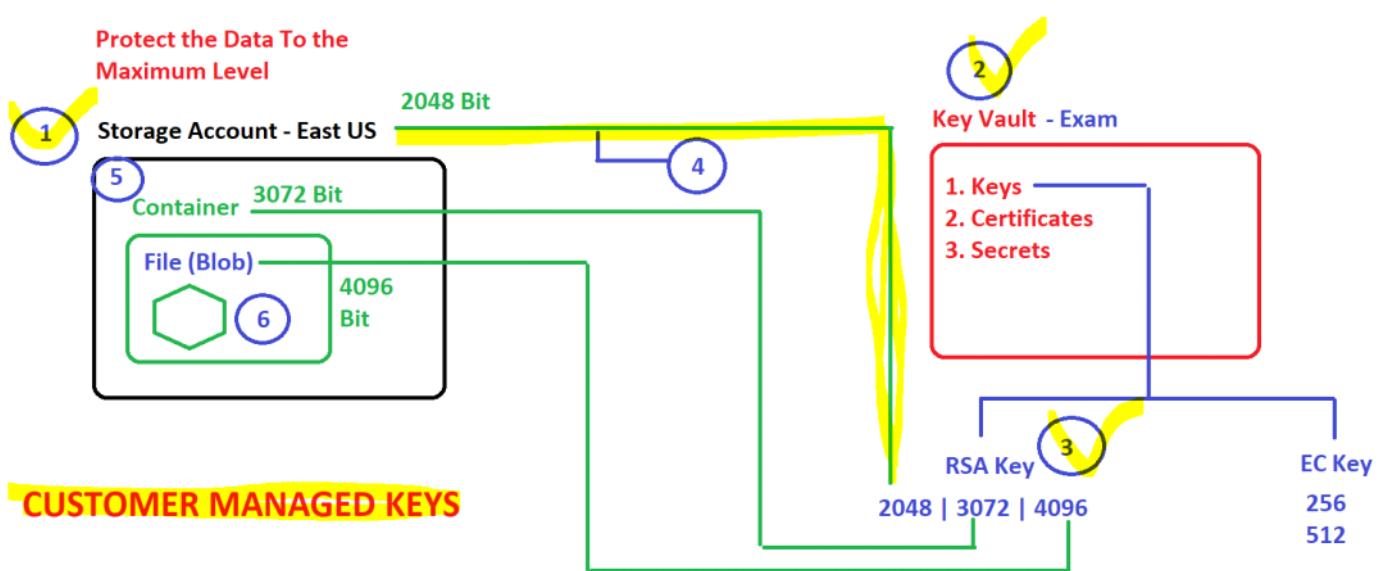
Overview Activity log Access control (IAM) Tags Diagnose and solve problems Events

Generate/Import Refresh Restore Backup Manage deleted key

The key 'filekey' has been successfully created.

Name	Status
filekey	✓ Enabled
containerkey	✓ Enabled
storagekey	✓ Enabled

Protect the Data To the Maximum Level



Let us convert the Microsoft Managed Encryption of Storage Account to Customer Managed Encryption

Microsoft Azure

Search resources, services, and docs (G+/)

Home > Storage accounts

Default Directory (talktorahuljoshioutlook.onmicrosoft.com)

+ Create | Restore | Manage view | Refresh

Filter for any field... Subscription equals all

Name ↑

- stpriyankanilakhe
- strahul2008
- sttest41807

Create a resource

Home

Dashboard

All services

FAVORITES

All resources

Resource groups

App Services

Function App

SQL databases

Azure Cosmos DB

Virtual machines

Load balancers

Storage accounts

Virtual networks

Azure Active Directory

strahul2008 | Encryption

Storage account

Search (Ctrl+ /)

Tables

Encryption

Encryption scopes

Storage service encryption protects your data at rest. Azure Storage encrypts your data as it's written in our datacenters, and automatically decrypts it for you as you access it.

Please note that after enabling Storage Service Encryption, only new data will be encrypted, and any existing files in this storage account will retroactively get encrypted by a background encryption process. Learn more about Azure Storage encryption

Encryption selection

Enable support for customer-managed keys Blobs and files only

Infrastructure encryption Disabled

Encryption type Microsoft-managed keys Customer-managed keys

Encryption selection

Enable support for customer-managed keys Blobs and files only

Infrastructure encryption Disabled

Encryption type Microsoft-managed keys Customer-managed keys

When customer-managed keys are enabled, the storage account named 'stra key vault'. Both soft delete and purge protection are also enabled on the key' Learn more

Key selection

Encryption key Select from key vault Enter key URI

Key vault and key * Select a key vault and key

Identity type System-assigned User-assigned

Save Discard

Select a key ...

Subscription *

Key store type Key vault Managed HSM

Key vault *

Key *

2048 RSA

strahul2008 | Encryption ...

Storage account

Search (Ctrl+ /)

Tables

Security + networking

Networking

Azure CDN

Access keys

Shared access signature

Encryption

Microsoft Defender for Cloud

Data management

Geo-replication

Data protection

Object replication

Blob inventory

Static website

Lifecycle management

Azure search

Settings

Save Discard

Encryption selection

Enable support for customer-managed keys Blobs and files only

Infrastructure encryption Disabled

Encryption type Microsoft-managed keys Customer-managed keys

When customer-managed keys are enabled, the storage account named 'strahul2008' will retroactively get encrypted by a background encryption process. Learn more [\[?\]](#)

Key selection

Encryption key Select from key vault Enter key URI

Key vault and key * Select a key vault and key

Identity type System-assigned User-assigned

Notifications

More events in the activity log → Dismi

Successfully updated 'strahul2008'

Successfully updated server side encryption for 'strahul2008'.
a few seconds ago

What about the old data, what if this storage account has 10TB or 1PB of Data, what will happen to that data?

Encryption Encryption scopes

Storage service encryption protects your data at rest. Azure Storage encrypts your data as it's written in our datacenters, and automatically decrypts it for you as you access it.

Please note that after enabling Storage Service Encryption, only new data will be encrypted, and any existing files in this storage account will retroactively get encrypted by a background encryption process. Learn more about Azure Storage encryption [\[?\]](#)



EXAM Point of View - Important, Interview

Encryption Scope

Scope = Boundary

Storage - 2 Scopes

1. Container Scope
2. File Scope

Means, in simple words, Encryption at container level and Encryption at file level (here level means Scope)

Step is very simple:

Create Scope and attach it to either a container / file, and when you create the scope that time only tell Microsoft which key has to be used, RSA or EC - 2048, 3072 or 4096

<https://docs.microsoft.com/en-us/azure/storage/blobs/encryption-scope-overview>

The screenshot shows the Azure Storage account settings for 'strahul2008'. In the left sidebar, 'Encryption' is selected under 'Security + networking'. The main area shows the 'Encryption scopes' tab, which is highlighted with a yellow arrow. Below it, there are buttons for '+ Add', 'Refresh', 'Enable', and 'Disable'. A message says 'Showing 0 scopes'. There is a table with columns 'Name', 'Status', and 'Encryption type', which displays 'No results.'

Create encryption scope

The form fields are as follows:

- Encryption scope name *: containerscope
- Encryption type:
 - Microsoft-managed keys
 - Customer-managed keys
- Encryption key:
 - Select from key vault
 - Enter key URI
- Subscription: MSDN Platforms
- Key vault *: kvrahul2008
- Key *: containerkey
- Infrastructure encryption:
 - Disabled
 - Enabled

A large yellow 'RSA 3072' is written over the form.

Interview Question: What is Double Encryption?

Infrastructure encryption in Azure Storage enables double encryption of data. With infrastructure encryption, data is encrypted twice — once at the service level and once at the infrastructure level — with two different encryption algorithms and two different keys.

Create encryption scope

The form fields are as follows:

- Encryption scope name *: containerscope
- Encryption type:
 - Microsoft-managed keys
 - Customer-managed keys
- Encryption key:
 - Select from key vault
 - Enter key URI
- Subscription: MSDN Platforms
- Key vault *: kvrahul2008
- Key *: containerkey
- Infrastructure encryption:
 - Disabled
 - Enabled

A large yellow 'Double enc' is written over the form.

Now, we create another encryption scope for File Level

The screenshot shows the 'Encryption scopes' section of the Azure Storage account 'strahul2008'. It lists one scope named 'containerscope' which is currently enabled. The encryption type is set to 'Customer-managed keys' using the key 'containerkey'. The interface includes standard filtering and sorting options.

The screenshot shows the 'Create encryption scope' dialog. The 'Encryption scope name' field contains 'filescope'. The 'Encryption type' section has 'Customer-managed keys' selected. In the 'Key vault' section, 'kvrahul2008' is chosen from the dropdown. Under 'Key', 'filekey' is specified. The 'Infrastructure encryption' section has 'Disabled' selected. A large yellow 'RSA' watermark is overlaid on the form.

Just creating the scope won't help, you have to apply this scope when container is created and file is uploaded.

The screenshot shows the 'Containers' section of the Azure Storage account 'strahul2008'. The 'Containers' link in the left sidebar is highlighted in yellow. The main area shows a search bar and a table with a single row labeled '\$logs'.

DEFAULT DIRECTORY (TALKTORA...)

New container

Name *

 ✓

Public access level ⓘ

Private (no anonymous access)

Advanced

Encryption scope

containerscope

Use this encryption scope for all blobs in the container

Enable version-level immutability support ⓘ

In order to enable version-level immutability support, your storage account must have versioning turned on.

Create **Discard**



Us this encryption scope for all the blobs in the container, it means, when anyone uploads a file in this container, by default the file will use the same encryption of container which is 3072 RSA

New container

Name *

 ✓

Public access level ⓘ

Private (no anonymous access)

Advanced

Encryption scope

containerscope

Use this encryption scope for all blobs in the container

Enable version-level immutability support ⓘ

In order to enable version-level immutability support, your storage account must have versioning turned on.

Create **Discard**



So, if you try to upload a file in this container, then you cannot select a scope, by default it will use the scope of container.

Upload blob

data/

Hot (Inferred)

Upload to folder

Blob index tags

Key	Value
<input type="text"/>	<input type="text"/>

Encryption scope Use existing default container scope: containerscope Choose an existing scope

Container settings prevent overriding its encryption scope

Retention policy No retention Choose custom retention period:

Now, I will create a Fresh container and will not use Encryption scope, but I will try to upload a file and use **filescope (RS-4096)** when uploading a file.

New container

Name *

Public access level

Storage | Containers

Storage account

Search (Ctrl+F) + Container ⌂ Restore container:

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Name
<input type="checkbox"/> \$logs
<input checked="" type="checkbox"/> criticaldata
<input type="checkbox"/> data

[Upload](#) [Change access level](#) [Refresh](#) | [Delete](#) [Char](#)

Authentication method: Access key ([Switch to Azure AD User Account](#))

Location: criticaldata

Search blobs by prefix (case-sensitive)

[Add filter](#)

Name	Modified
No results	

Upload blob

criticaldata/

Files (1)

"encryption.png"

Overwrite if files already exist



[Advanced](#)

[Upload](#)

hive

ESS 1

Encryption scope
 Use existing default container scope
 Choose an existing scope
filescope

Retention policy
 No retention
 Choose custom retention period:
08/20/2022 11:54:42 AM

[Enable version-level immutability on the container to set a retention policy.](#)

[Upload](#)

Additional

Key vault

Key vault

Search (Ctrl+ /)

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Events

Settings

Keys

[Generate/Import](#) [Refresh](#) [Restore Backup](#) [Manage deleted keys](#)

The key 'fileeckey' has been successfully created.

Name	Status
fileeckey	✓ Enabled
containerkey	✓ Enabled
filekey	✓ Enabled
storagekey	✓ Enabled

strahul2008 | Containers

Storage account

Search (Ctrl+/)

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

[Container](#) [Change access level](#) [Restore containers](#) [f](#)

Search containers by prefix

Name	Last modified	Public acc
\$logs	8/20/2022, 10:50:30 ...	Private
criticaldata	8/20/2022, 11:54:11 ...	Private
data	8/20/2022, 11:51:11 ...	Private

Upload Change access level Refresh

Authentication method: Access key ([Switch to location](#))

Location: criticaldata

Search blobs by prefix (case-sensitive)

Add filter

strahul2008 | Encryption

Storage account

Encryption **Encryption scopes**

+ Add Refresh Enable Disable

Showing 2 of 2 scopes

Name	Status	Encryption
containerscope	Enabled	Customer-managed
filescope	Enabled	Customer-managed

Containers File shares Queues Tables

Security + networking

Create encryption scope

Encryption scope name *

Encryption type Customer-managed keys

Encryption key Select from key vault

Subscription

Key vault *

Key *

Infrastructure encryption Disabled

Create

Encryption scope ecfilescope could not be created. Error: Values for request parameters are invalid: keyVaultKeyUri. For more information, see - <https://aka.ms/storageaccountkeyvaultconfiguration>

Homework:

Can RSA and EC stay together?

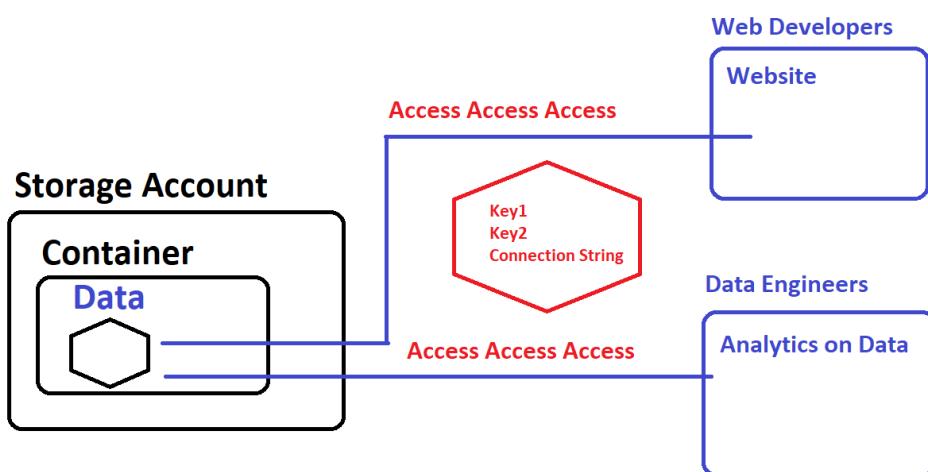
Can we encrypt the Storage with RSA Key and Encrypt the container (scope) with EC Key?

Is above not possible? If Yes - no further questions

Is this Possible? What changes have to be done, so that RSA and EC can co-exist.

Case Study:

The customer was happy to know about Encryption and how it can protect the data at rest. But the customer has some serious reservations on some aspects within the storage account. The storage account contains some more sensitive data like "Keys" and "Connection String" if anyone gets access to those details can be a big problem. Developers and Data Engineers keep on asking about these keys and connection string, the customer is confused, how to satisfy the needs without compromising the security aspect.



STAR

Situation = Case Study

Task: Protect the Keys and Connection String from the Storage

Key Vault - Feature (Secrets)

Action:

The screenshot shows the **Storage accounts** blade in the Azure portal. It lists four storage accounts:

Name	Type
stpriyankanilakhe	Storage
strahul2008	Storage
sttest41807	Storage

The screenshot shows the **Access keys** page for the storage account **strahul2008**. The page includes the following information:

- Storage account name:** strahul2008
- key1** (Rotated 8/20/2022): Key value (redacted), **Show** button
- Connection string**: (redacted), **Show** button
- key2** (Rotated 8/20/2022): Key value (redacted), **Show** button
- Connection string**: (redacted), **Show** button

A yellow arrow points from the top-left of the screenshot towards the **key1** section, and a yellow starburst highlights the **key1** row.

strahul2008 | Access keys

Storage account

Search (Ctrl+ /) Set rotation reminder Refresh

Tables

Networking + networking

Azure CDN

Access keys

Shared access signature

Encryption

Microsoft Defender for Cloud

a management

Geo-replication

Data protection

Object replication

Blob inventory

Static website

Lifecycle management

Azure search

Logs

Access keys authenticate your applications' requests to this storage account. Keep your keys in a secure location like Azure Key Vault, and replace them often with new keys. The two keys allow you to replace one while still using the other.

Remember to update the keys with any Azure resources and apps that use this storage account. [Learn more about managing storage account access keys](#)

Storage account name: strahul2008

key1 Rotate key
Last rotated: 8/20/2022 (0 days ago)
Key: NWpQcohY7CbPN66mQkCjbNHxWlfqxi05c0QCVpMm2YX3gTrafhfjjSonR41lfqa... Hide

Connection string
DefaultEndpointsProtocol=https;AccountName=strahul2008;AccountKey=NWpQ... Hide

key2 Rotate key
Last rotated: 8/20/2022 (0 days ago)
Key: ZXOezFubmL/E2NH0NlgSEvzWDBr4LFK+GFrccbU63rLV69TFO9KmX5faAyAgJhRz... Hide

Connection string
DefaultEndpointsProtocol=https;AccountName=strahul2008;AccountKey=ZXOez... Hide

This is actually Username and password to access storage account.

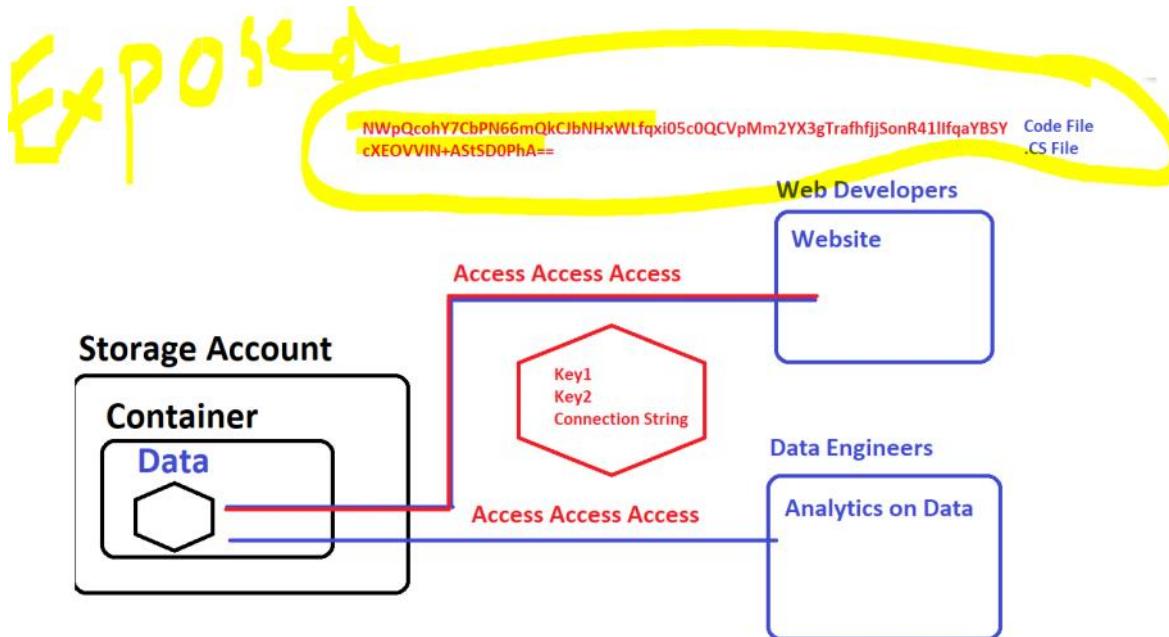
username = storage account name
password: key 1 or key 2

Storage Account: strahul2008

Key1: NWpQcohY7CbPN66mQkCjbNHxWlfqxi05c0QCVpMm2YX3gTrafhfjjSonR41lfqaYBSYcXEOVVIN+ASTSD0PhA==

WARNING!!!!

if anyone gets the key, they have full control over the storage account. They can do anything and everything in the storage account, no questions asked. this is like Full Admin permission on the storage account.



If you key is exposed, that become a threat, immediately, "Re-Generate" the key



key1 Rotate key

Last rotated: 8/20/2022 (0 days ago)

Key Hide

Connection string Hide

[View details](#)

Regenerate access key

The current key will become immediately invalid and is not recoverable. Do you want to regenerate access key 'key1'?

Yes No

Remember to update the keys with any Azure resources and apps that use this storage account.

How can this be turned around? What is the best practice that has to be followed?

rg-rahulvjoshi-training

Resource group

Search (Ctrl+ /) Create Delete resource group Export to CSV

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Events

Settings

- Deployments
- Security
- Policies
- Properties
- Locks
- Cost Management
- Cost analysis

Resources Recommendations

Filter for any field... Type equals all Location equals all Add filter

Showing 1 to 2 of 2 records. Show hidden types

Name	Type
kvrahul2008	Key vault
strahul2008	Storage account

kvrahul2008 | Secrets

Key vault

Search (Ctrl+ /) Generate/import Restore Backup

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Events

Settings

- Keys
- Secrets **Selected**
- Certificates

Create a secret

Upload options

Name *

Value *

Content type (optional)

Set activation date

Set expiration date

Enabled Yes No

Tags 0 tags

```
*Untitled - Notepad
File Edit Format View Help

EjwdrpNH5GnT4M/N9EQek5AB5zMu2D/Fgwc
DefaultEndpointsProtocol=https;Acco
K+MBTrHxxe8ABzmTn602xTodUQN+s+ASTiD
```

Create a secret

Upload options

Name *

Value *

Content type (optional)

Set activation date

Set expiration date

Enabled Yes No

Tags 0 tags

Create

kvhrahul2008 | Secrets

Key vault

Search (Ctrl+/)

+ Generate/Import Refresh Restore Backup

The secret 'storagekey' has been successfully created.

Name	Type
storagekey	

storagekey

Versions

[+ New Version](#) [Refresh](#) [Delete](#) [Download Backup](#)

Version	Status
CURRENT VERSION	
af8fc7aa7c9c4a028528d23994a1d60d	✓ Enabled

 af8fc7aa7c9c4a028528d23994a1d60d ⚡ ...

Secret Version

Save Discard changes

Properties

Created	8/20/2022, 1:01:13 PM
Updated	8/20/2022, 1:01:13 PM
Secret Identifier	https://kvrahul2008.vault.azure.net/secrets/storagekey... ⓘ

Settings

Set activation date ⓘ

Set expiration date ⓘ

Enabled Yes No

Tags 0 tags

Secret

Content type (optional)

Secret value

```
EjwdrpNH5GnT4M/N9EQek5AB5zMu2D/FgwqHPH763Q0pB9K+MBTrHxxe8ABzmTn602xTodUQN+s+ASTiDt4+A==;Endp
```

 kvrahul2008 | Secrets ...

Key vault

Search (Ctrl+ /) Generate/Import Refresh Restore Backup

Overview

The secret 'storagekey' has been successfully created.

Name	Type
storagekey	

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Create a secret ...

Upload options Manual

Name * storageconnectionstring

Value * Enter the secret.

Content type (optional)

Set activation date ⓘ

Set expiration date ⓘ

Expiration date 08/20/2024 10:54:45 AM
(UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi

Enabled Yes No

*Untitled - Notepad

```
File Edit Format View Help
```

```
EjwdrpNH5GnT4M/N9EQek5AB5zMu2D/FgwqHPH763Q0pB9K+MBTrHxxe8ABzmTn602xTodUQN+s+ASTiDt4+A==;Endp
```

DefaultEndpointsProtocol=https;AccountName=storageconnectionstring;EndpointSuffix=core.windows.net;ContainerName=contname;BlobType=BlockBlob

Create a secret ...

Upload options

Name * ✓

Value * ✓

Content type (optional)

Set activation date

Set expiration date

Expiration date 10:54:45 AM

Enabled Yes No

Tags 0 tags

Create

kvrahul2008 | Secrets ...

Key vault [Ra]

Search (Ctrl+/
)

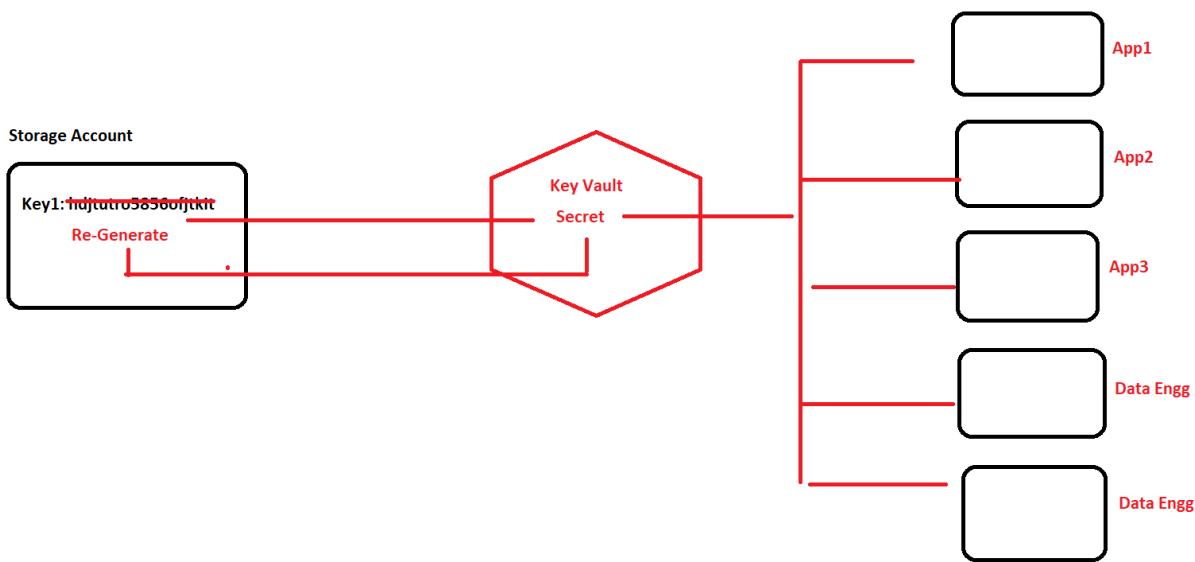
+ Generate/Import ↻ Refresh Restore Backup Manage deleted secrets

The secret 'storageconnectionstring' has been successfully created.

Name	Type	Status	Expiration
storageconnectionstring		✓ Enabled	8/20/2024
storagekey		✓ Enabled	

Overview Activity log Access control (IAM) Tags Diagnose and solve problems Events

Settings Keys Secrets Certificates Access policies Networking Security



storagekey ...

Versions

+ New Version Refresh Delete Download Backup

Version	Status
CURRENT VERSION	af8fc7aa7c9c4a028528d23994a1d60d
	✓ Enabled

key1 Rotate key

Last rotated: 8/20/2022 (0 days ago)

Key

EjwdrpNH5GnT4M/N9EQek5AB5zMu2D/FgwqPH763QOpB9wK+MBTrHxxeBABz...

Connection string

key1 Rotate key

Last rotated: 8/20/2022 (0 days ago)

Key

KWxj2W/JIY3Q2wZqfvI91CIOEPLHDU3Hs9fjGBmCb9GGYEpDcc1M+Tn5FjAkivLe5...

Connection string

Create a secret ...

Upload options	Manual
Name	storagekey
Value *	*****
Content type (optional)	
Set activation date	<input type="checkbox"/>
Set expiration date	<input type="checkbox"/>
Enabled	<input checked="" type="radio"/> Yes <input type="radio"/> No
Tags	0 tags



Create

So, if you feel, if you copy the key or Regenerate the key, no one is watching you, you are wrong.

Monitor | Activity log

Microsoft

Activity log

Search (Ctrl+ /)

Activity Edit columns Refresh Export Activity Logs Download as CSV Insights Pin current filters Reset filters

Overview

Activity log

Alerts Metrics Logs Change Analysis Service Health Workbooks

Insights Applications Virtual Machines Storage accounts Containers Networks SQL (preview) Azure Cosmos DB

Looking for Log Analytics? In Log Analytics you can search for performance, diagnostics, health logs, and more. Visit Log Analytics

Search Quick Insights

Management Group : None Subscription : 2 selected Event severity : All Timespan : Last 6 hours Add Filter

46 items.

Operation name	Status	Time	Time stamp	Subscription	Event initiated by
> List Storage Account Keys	Succeeded	3 minutes ago	Sat Aug 20 ...	MSDN Platforms	talktorahuljoshi@outlook...
> List Storage Account Keys	Succeeded	3 minutes ago	Sat Aug 20 ...	MSDN Platforms	talktorahuljoshi@outlook...
> Regenerate Storage Account Keys	Succeeded	3 minutes ago	Sat Aug 20 ...	MSDN Platforms	talktorahuljoshi@outlook...
> List Storage Account Keys	Succeeded	4 minutes ago	Sat Aug 20 ...	MSDN Platforms	talktorahuljoshi@outlook...
> Generate Recommendations	Accepted	4 minutes ago	Sat Aug 20 ...	MSDN Platforms	talktorahuljoshi@outlook...
> List Storage Account Keys	Succeeded	17 minutes ago	Sat Aug 20 ...	MSDN Platforms	talktorahuljoshi@outlook...
> List Storage Account Keys	Succeeded	17 minutes ago	Sat Aug 20 ...	MSDN Platforms	talktorahuljoshi@outlook...
> Regenerate Storage Account Keys	Succeeded	17 minutes ago	Sat Aug 20 ...	MSDN Platforms	talktorahuljoshi@outlook...
> Generate Recommendations	Accepted	25 minutes ago	Sat Aug 20 ...	MSDN Platforms	talktorahuljoshi@outlook...

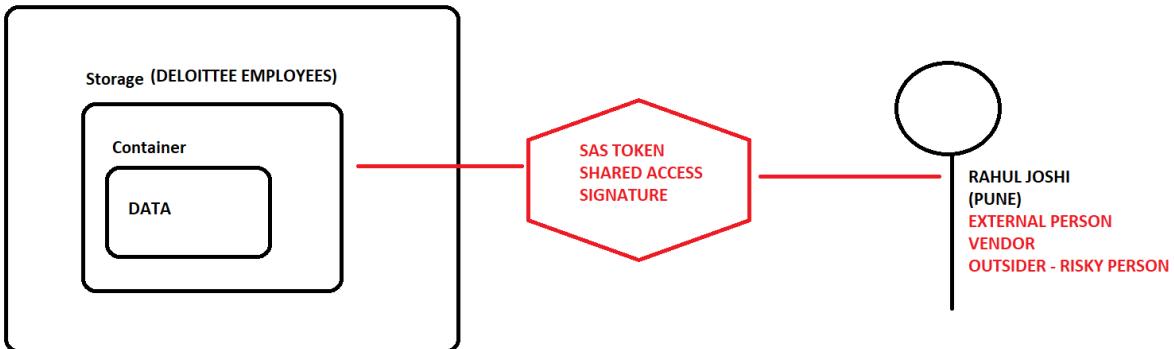
Case Study:

The customer was very happy to know the best practice used under Keys and Connection String, How Secrets can be used in Key vault is understood. The customer some days, contacted Mr. Rahul Joshi, he is an external consultant and works on Azure and AWS Projects. The company offered Rahul To join, but he rejected the offer. Finally, Rahul did sign an agreement and is going to work as "External Consultant" but not as a employee of the organization. One Day, Rahul Joshi contacted one of the employee and asked for Access to Storage Account, he was telling the employee, please give access to the storage account, but the employee was hesitant, he said to Rahul Joshi, "Sorry Rahul, you are not part of our company, you are external Vendor and as external vendor, we cannot give you permission to access storage" So Sorry!!

Exam Question:

SAS Signature (SAS Token)

Deloitte



strahlul2008 | Shared access signature

Storage account

Search (Ctrl+ /)

Tables

Security + networking

Networking

Azure CDN

Access keys

Shared access signature

Encryption

A shared access signature (SAS) is a URI that grants restricted access rights to Azure Storage resources. You can provide a shared access signature to clients who should not be trusted with your storage account key but whom you wish to delegate access to certain storage account resources. By distributing a shared access signature URI to these clients, you grant them access to a resource for a specified period of time.

An account-level SAS can delegate access to multiple storage services (i.e. blob, file, queue, table). Note that stored access policies are currently not supported for an account-level SAS.

Learn more about creating an account SAS

Allowed services: Blob File Queue Table

strahul2008 | Shared access signature ⚡ ...

Storage account

Search (Ctrl+ /) Tables

Security + networking

- Networking
- Azure CDN
- Access keys
- Shared access signature**
- Encryption
- Microsoft Defender for Cloud

Data management

- Geo-replication
- Data protection
- Object replication
- Blob inventory
- Static website

A shared access signature (SAS) is a URI that grants restricted access rights to Azure Storage resources. You can provide a shared access signature URI to these clients, you grant them access to a resource for a specified period of time.

An account-level SAS can delegate access to multiple storage services (i.e. blob, file, queue, table). Note that stored access policies are account-level SAS.

Learn more about creating an account SAS

Allowed services: Blob File Queue Table

Allowed resource types: Service Container Object

Allowed permissions: Read Write Delete List Add Create Update Process immutable storage Per

Blob versioning permissions: Enables deletion of versions

Allowed blob index permissions: Read/Write Filter

Start and expiry date/time

Start: 08/21/2022 9:00:00 AM

End: 08/21/2022 11:00:00 AM

(UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi

strahul2008 | Shared access signature ⚡ ...

Storage account

Search (Ctrl+ /) Tables

Security + networking

- Networking
- Azure CDN
- Access keys
- Shared access signature**
- Encryption
- Microsoft Defender for Cloud

Data management

- Geo-replication
- Data protection
- Object replication
- Blob inventory
- Static website
- Lifecycle management
- Azure search

Blob versioning permissions: Enables deletion of versions

Allowed blob index permissions: Read/Write Filter

Start and expiry date/time

Start: 08/21/2022 9:00:00 AM

End: 08/21/2022 11:00:00 AM

(UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi

Allowed IP addresses: 103.96.43.35

Allowed protocols: HTTPS only HTTPS and HTTP

Preferred routing tier: Basic (default) Microsoft network routing Internet routing

Some routing options are disabled because the endpoints are not published.

Signing key: key2

Generate SAS and connection string

Key1 - Used Within Organization - Re-Generated every 15 day
Key2 - External Vendors - Re-Generated every day

Blob versioning permissions ⓘ
 Enables deletion of versions

Allowed blob index permissions ⓘ
 Read/Write Filter

Start and expiry date/time ⓘ
 Start: 08/21/2022 9:00:00 AM
 End: 08/21/2022 11:00:00 AM
 (UTC +05:30) Chennai, Kolkata, Mumbai, New Delhi

Allowed IP addresses ⓘ
 103.96.43.35

Allowed protocols ⓘ
 HTTPS only HTTPS and HTTP

Preferred routing tier ⓘ
 Basic (default) Microsoft network routing Internet routing

i Some routing options are disabled because the endpoints are not published.

Signing key ⓘ
 key2

Generate SAS and connection string



Connection string
 BlobEndpoint=https://strahul2008.blob.core.windows.net/QueueEndpoint=https://strahul2008.queue.core.windows.net/FileEndpoint=https://strahul2008.file

SAS token ⓘ
 ?sv=2021-06-08&ss=b&srt=o&sp=r<fx&se=2022-08-21T05:30:00Z&st=2022-08-21T03:30:00Z&sig=103.96.43.35&spr=https&sig=vjnU68RGKiEORV1TP%2f

Blob service SAS URL
 https://strahul2008.blob.core.windows.net/?sv=2021-06-08&ss=b&srt=o&sp=r<fx&se=2022-08-21T05:30:00Z&st=2022-08-21T03:30:00Z&sig=103.96.43.35

Some people Argue, Rahul, you gave complete access to the storage account to the external vendor, this is very bad, can we limit this to specific container?

Storage accounts > strahul2008

strahul2008 | Containers

Storage account

Search (Ctrl+ /) Container Change access level Restore containers Refresh

Name	Last modified
\$logs	8/20/2022, 10:50
criticaldata	8/20/2022, 11:54
data	8/20/2022, 11:51
importantdata	8/20/2022, 12:16

Overview Activity log Tags Diagnose and solve problems Access Control (IAM) Data migration Events Storage browser

data | Shared access tokens

A shared access signature (SAS) is a URI that grants restricted access to an Azure Storage container. Use it when you need to grant access to your storage account for a specific time range without sharing your storage account key. [Learn more about creating an account SAS](#)

Container:

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

- Shared access tokens** (Selected)
- Access policy**
- Properties**
- Metadata**

Signing method Account key User delegation key

Signing key

Stored access policy None

Permissions *

Start and expiry date/time
 1:37:26 PM

Expiry
 9:37:26 PM

Allowed IP addresses

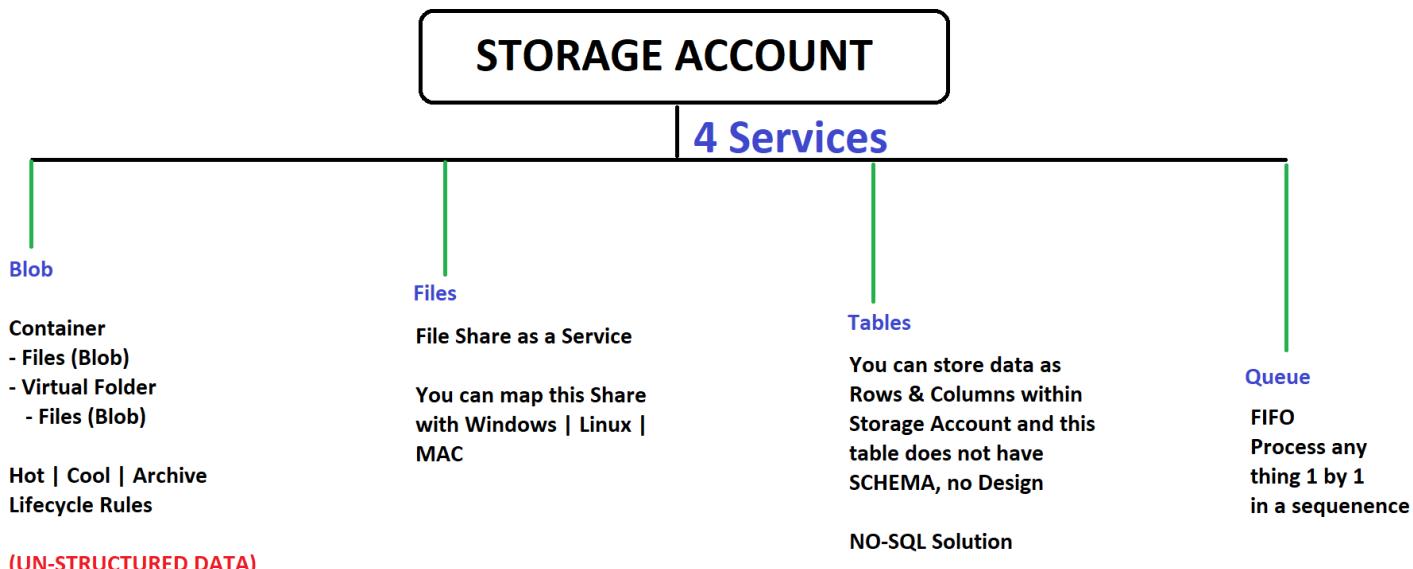
Allowed protocols HTTPS only HTTPS and HTTP



Case Study: 100% Exam question AZ-204 (Developing solution on Azure, Architect)

The customer is now equipped to handle data within the Storage Account. The customer also is aware of Storage Account, Containers and how data can be stored. But, now has a situation in hand and wants help on how to strategies the usage of Storage Account.

1. The customer has many developers and admin team members, they all want to store data and this data should be like a common repository, anyone who wants to store the data, they will upload to one single place and people who want data, will download it from that one. So, one single repository of data. In the on-premise world, they used a "File Server" and this server was used to host files and folders. The organization also used "SharePoint" a software from Microsoft to keep the files in one location. The customer wants to know, if Storage Account can be used for the same purpose, this will help reduce cost and management overheads.
2. The customer has 3 types of data (Un-Structured Data, Semi-Structured Data, Structured Data), This data comes from various sources and needs to reside may be for few hours, few days, few weeks, and then the data can be deleted. Example, Currency Data, every day the currency data is downloaded from the internet and has to be stored for further processing, The customer does not want to use SQL Server, MySQL, Oracle or any database for this purpose, because there is no Schema (no structure) to the data, in-short it is "NO-SQL" data.
3. The customer processes a lot of data, sometimes the end service where data has to be stored is not available due to network issues or downtime, in such case the application throws an error "Please try after sometime", this is leading to customer satisfaction issues, because backend service is down, customer are affected, The customer is looking for a solution where the data can be captured on a temporary basis and when used, can be flushed and thrown away. This should ensure customer satisfaction.



1. The customer has many developers and admin team members, they all want to store data and this data should be like a common repository, anyone who wants to store the data, they will upload to one single place and people who want data, will download it from that

one. So, one single repository of data. In the on-premise world, they used a "File Server" and this server was used to host files and folders. The organization also used "SharePoint" a software from Microsoft to keep the files in one location. The customer wants to know, if Storage Account can be used for the same purpose, this will help reduce cost and management overheads.

The screenshot shows the Azure Storage accounts page. At the top, there are filters for 'Subscription equals all' and 'Resource group equals all'. Below the header, there is a table with columns for Name, Type, and Kind. The table contains four rows:

Name	Type	Kind
stpriyankanilakhe	Storage account	Storage
strahul2008	Storage account	Storage
sttest41807	Storage account	Storage

The screenshot shows the details page for the storage account 'strahul2008'. On the left, there is a sidebar with navigation links: 'Diagnose and solve problems', 'Access Control (IAM)', 'Data migration', 'Events', 'Storage browser', 'Containers', 'File shares' (which is highlighted), 'Queues', and 'Tables'. The main content area shows the account's properties:

- Resource group:** rg-rahulvijoshi-training
- Location:** East US
- Subscription:** MSDN Platforms
- Subscription ID:** ee7bab70-0709-4f4f-9829-790225dc5be4
- Disk state:** Available
- Performance:** Standard
- Replication:** Local
- Account kind:** Storage
- Provisioning state:** Success
- Created:** 8/20/2018

Below the properties, there are sections for 'Tags' and 'Blob service' (Hierarchical namespace: Disabled, Default access tier: Hot, Blob public access: Enabled). There is also a 'Security' section with options for secure transport operations, storage account key, and minimum TLS version.

The screenshot shows the 'File shares' page for the 'strahul2008' storage account. The sidebar includes 'File share settings' (Active Directory: Not configured, Soft delete: Disabled, Maximum capacity: 5 TiB, Security: Maximum compatibility) and a search bar. The main content area shows a table with columns for Name, Modified, Tier, and Quota. A message at the bottom says 'You don't have any file shares yet. Click '+ File share' to get started.'

Is 5TB, maximum, can we have more than 5TB also? Is it possible? YES

Create a storage account

Basics Advanced Networking Data protection Encryption Tags Review

Manage your storage account together with other resources.

Subscription *

Resource group * [Create new](#)

Instance details

If you need to create a legacy storage account type, please click [here](#).

Storage account name *

Region *

Performance * Standard: Recommended for most scenarios (general-purpose v2 account)

Premium: Recommended for scenarios that require low latency.

Redundancy *

Provides file share support up to a maximum of **100 TiB**. Large file share storage accounts do not have the ability to convert to geo-redundant storage

[Home](#) > [Storage accounts](#) >

Create a storage account

Basics **Advanced** Networking Data protection Encryption Tags Review

Blob storage

Enable SFTP (preview)

To enable SFTP, 'hierarchical namespace' must be enabled.

Enable network file system v3

To enable NFS v3 'hierarchical namespace' must be enabled. [Learn more about NFS v3](#)

Allow cross-tenant replication

Access tier Hot: Frequently accessed data and day-to-day usage scenarios

Cool: Infrequently accessed data and backup scenarios

Azure Files

Enable large file shares

[Review](#)

[< Previous](#)

[Next : Networking >](#)

If you storage is already created, you can change it to 100TB, from the option given below, this is only possible if you have LRS - Locally Redundant Storage, GRS is not supported in Large File Share.

DEFAULT DIRECTORY (TALKTOA...)

Maximum capacity

Current storage account redundancy: Locally-redundant storage (LRS)

Maximum file share capacity * 100 TiB 5 TiB

A large file share upgrade is permanent and prohibits the selection of any variant of geo-redundant storage (GRS) for the storage account.

Enabled Maximum capacity: 5 TiB Security: Maximum

Modified Tier

to get started.

strahul2008 | File shares

Storage account

Search (Ctrl + /) File share Refresh

- Diagnose and solve problems
- Access Control (IAM)
- Data migration
- Events
- Storage browser
- Data storage**
- Containers
- File shares**
- Overview

File share settings

Active Directory: Not configured Soft delete: Disabled M.

Search file shares by prefix (case-sensitive)

Name	Model
You don't have any file shares yet. Click '+ File share' to get started.	

If you need to create a legacy storage account type, please click here.

Storage account name *

Region * (US) East US

Performance * Standard: Recommended for most scenarios (general-purpose v2 account)

Premium: Recommended for scenarios that require low latency.

New file share

Name * developersdocument

Tier Transaction optimized

Premium Premium file shares are only available for premium file storage accounts.

Transaction optimized

Enable transaction-heavy workloads that don't need premium-level latency. Great for applications that require file storage as a backend store.

Alternative, Store files, that can be written and read quickly without premium storage

New file share

Name * developersdocument

Tier Hot

Performance

Maximum IO/s 1000

Egress Rate 60 MB / s

Ingress Rate 60 MB / s

Maximum capacity 5 TiB

Large file shares Disabled

You can improve performance and maximum share capacity by enabling large file sharing for this storage account. [Learn more](#)

To use the SMB protocol with this share, check if you can communicate over port 445. Scripts for [Windows clients](#) and [Linux clients](#) can help. Learn how to [circumvent port issues](#).

Create **Cancel**

File / Storage accounts / strahul2008

strahul2008 | File shares

Storage account

Search (Ctrl+ /) + File share Refresh

Diagnose and solve problems Access Control (IAM) Data migration Events Storage browser

Data storage

Containers File shares Queues

File share settings

Active Directory: Not configured Soft delete: Disabled Maximum capacity: 5 TiB

Search file shares by prefix (case-sensitive)

Name	Modified
developersdocument	8/20/2022, 3:34:22 PM

developersdocument

File share

Search (Ctrl+ /) Connect Upload + Add directory Refresh Delete share

Overview Diagnose and solve problems Access Control (IAM)

Settings Properties

.NET Java Python

developersdocument

File share

Search (Ctrl+ /) Connect Upload + Add directory Refresh Delete share Change tier E

Overview Diagnose and solve problems Access Control (IAM)

Settings Properties

Operations Snapshots

Name	Type
dotnet	Directory
Java	Directory
Python	Directory

developersdocument

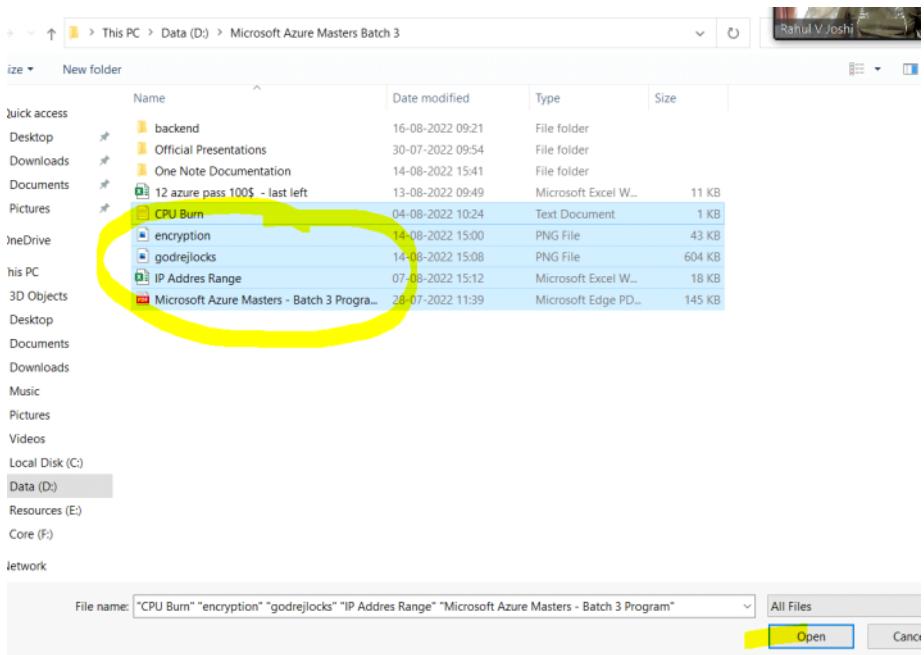
File share

Search (Ctrl+ /) Upload + Add directory Refresh

Overview Diagnose and solve problems Access Control (IAM)

Settings Properties

Operations



Home > Storage accounts > strahul2008 | File shares >

developersdocument File share

Search (Ctrl+ /) Upload Add directory Refresh Delete directory Properties

Overview Diagnose and solve problems Access Control (IAM)

Settings Properties Operations Snapshots Backup

Name	Type
[...]	File
CPU Burn.txt	File
encryption.png	File
godrejlocks.png	File
IP Addres Range.xlsx	File
Microsoft Azure Masters - Batch 3 Program.pdf	File

There are 35 Developers in your organization, all the 35 developers need access to these files, they don't want to login to Azure and get the files, instead they want the files be visible in "My Computer".

Home > Storage accounts > strahul2008 | File shares >

developersdocument File share

Search (Ctrl+ /) Connect Upload Add directory Refresh Delete share Change tier

Overview Diagnose and solve problems Access Control (IAM)

Settings Properties Operations Snapshots Backup

Name	Type
dotnet	Directory
Java	Directory
Python	Directory

Connect

developersdocument

- e ⚠ 'Secure transfer required' is enabled on the storage account. SMB clients connecting to this share must support SMB protocol version 3 or higher in order to handle the encryption requirement. Click here to learn more.

[Windows](#) [Linux](#) [macOS](#)

To connect to this Azure file share from Windows, choose from the following authentication methods and run the PowerShell commands from a normal (not elevated) PowerShell terminal:

Drive letter

Z ▼

Authentication method

- Active Directory
 Storage account key

ℹ Connecting to a share using the storage account key is only appropriate for admin access. Mounting the Azure file share with the Active Directory identity of the user is preferred.

[Learn more](#)

Show Script

This script will check to see if this storage account is accessible via TCP port 445, which is the port SMB uses. If port 445 is available, your Azure file share will be persistently mounted. Your organization or internet service provider (ISP) may block port 445, however you may use Azure Point-to-Site (P2S) VPN, Azure Site-to-Site (S2S) VPN, or ExpressRoute to tunnel SMB traffic to your Azure file share over a different port.

This script has to be executed on all 35 computers, and immediately they will Z:\dive on your computers and within that drive, they will DotNet, Java and Python and also the files, they drag drop and add new file, which can see by others.

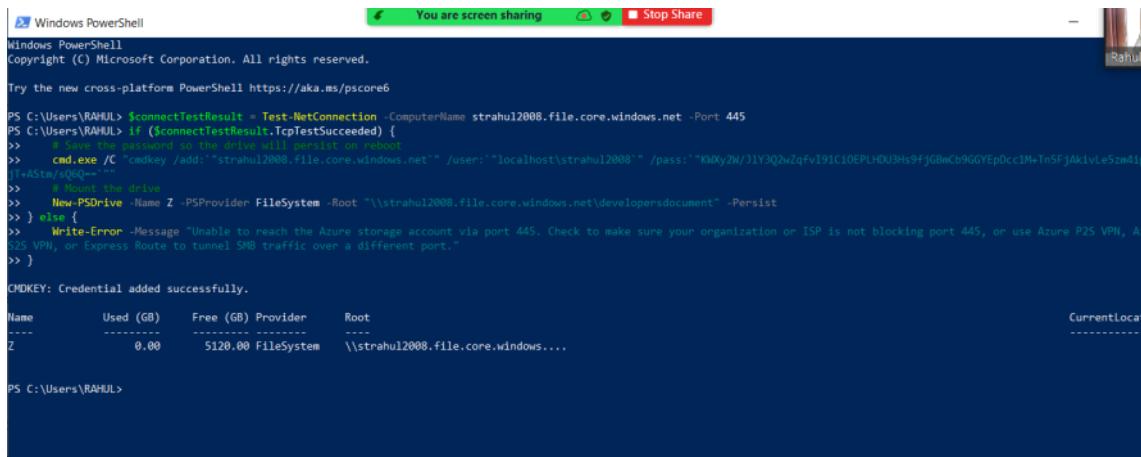
This has helped save cost, earlier the company was using a computer (File Server), not no more computer required.

```
File Edit Format View Help
$connectTestResult = Test-NetConnection -ComputerName strahul2008.file.core.windows.net -Port 445
if ($connectTestResult.TcpTestSucceeded) {
    # Save the password so the drive will persist on reboot
    cmd.exe /C "cmdkey /add:`"strahul2008.file.core.windows.net`" /user:`"localhost\strahul2008`" "
    /pass:`"KWXy2W/J1Y3Q2wZqfvI91Ci0EPLHDU3Hs9fjGBmCb9GGYEpDcc1M+Tn5FjAkivLe5zm4ipSIIujT+AStm/sQ6Q==`""
    # Mount the drive
    New-PSDrive -Name Z -PSProvider FileSystem -Root "\\\strahul2008.file.core.windows.net\"
    \developersdocument" -Persist
} else {
    Write-Error -Message "Unable to reach the Azure storage account via port 445. Check to make
    sure your organization or ISP is not blocking port 445, or use Azure P2S VPN, Azure S2S VPN, or
    Express Route to tunnel SMB traffic over a different port."
}
```

Persist means, even after reboot, the Z Drive should stay.

Local Computer - Start - Powershell

Ctrl + v (to paste)



```
Windows PowerShell
Copyright (c) Microsoft Corporation. All rights reserved.

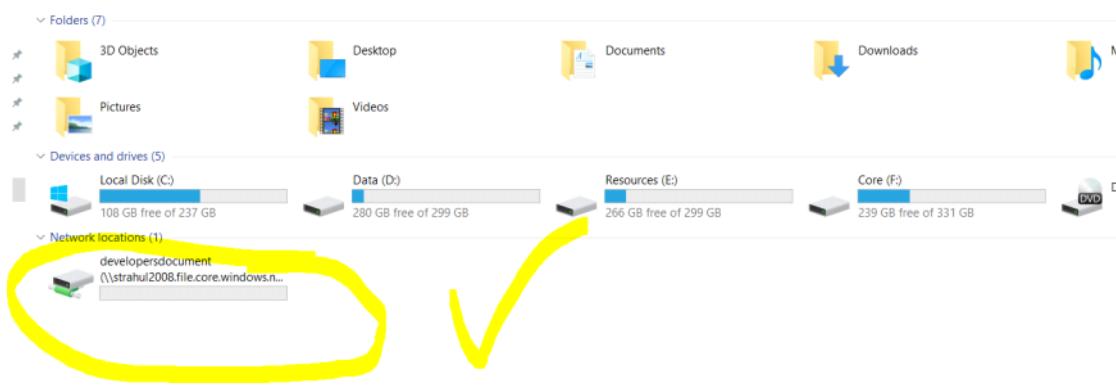
Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\RAHUL> $connectTestResult = Test-NetConnection -ComputerName strahul2008.file.core.windows.net -Port 445
PS C:\Users\RAHUL> if ($connectTestResult.TcpTestSucceeded) {
>>>     # Save the password so the drive will persist on reboot
>>>     cmd.exe /C "cmdkey /add:`"strahul2008.file.core.windows.net`" /user:`"localhost\strahul2008`" "
>>>     /pass:`"KWXy2W/J1Y3Q2wZqfvI91Ci0EPLHDU3Hs9fjGBmCb9GGYEpDcc1M+Tn5FjAkivLe5zm4ipSIIujT+AStm/sQ6Q==`""
>>>     # Mount the drive
>>>     New-PSDrive -Name Z -PSProvider FileSystem -Root "\\\strahul2008.file.core.windows.net\"
>>>     \developersdocument" -Persist
>>> } else {
>>>     Write-Error -Message "Unable to reach the Azure storage account via port 445. Check to make
>>>     sure your organization or ISP is not blocking port 445, or use Azure P2S VPN, Azure S2S VPN, or
>>>     Express Route to tunnel SMB traffic over a different port."
>>> }

CMDKEY: Credential added successfully.

Name      Used (GB)  Free (GB) Provider   Root
-----  -----  -----
Z        0.00  5120.00 FileSystem  \\strahul2008.file.core.windows...

PS C:\Users\RAHUL>
```



This PC > developersdocument (\\\strahul2008.file.core.windows.net) (Z) > dotnet

Name	Date modified	Type	Size
CPU Burn	20-08-2022 15:37	Text Document	1 KB
encryption	20-08-2022 15:37	PNG File	43 KB
godrejlocks	20-08-2022 15:37	PNG File	604 KB
IP Addres Range	20-08-2022 15:37	Microsoft Excel W...	18 KB
Microsoft Azure Masters - Batch 3 Progra...	20-08-2022 15:37	Microsoft Edge PD...	145 KB



Can we upload a file?

This PC > developersdocument (\\\strahul2008.file.core.windows.net) (Z) > dotnet

Name	Date modified	Type	Size
CPU Burn	20-08-2022 15:37	Text Document	1 KB
encryption	20-08-2022 15:37	PNG File	43 KB
godrejlocks	20-08-2022 15:37	PNG File	604 KB
IP Addres Range	20-08-2022 15:37	Microsoft Excel W...	18 KB
Microsoft Azure Masters - Batch 3 Progra...	20-08-2022 15:37	Microsoft Edge PD...	145 KB
Day 5	14-08-2022 15:42	Microsoft Edge PD...	3,302 KB

new

developersdocument

File share

Search (Ctrl+ /) < Upload + Add directory Refresh Delete directory Properties

Overview

Diagnose and solve problems

Access Control (IAM)

Settings

Properties

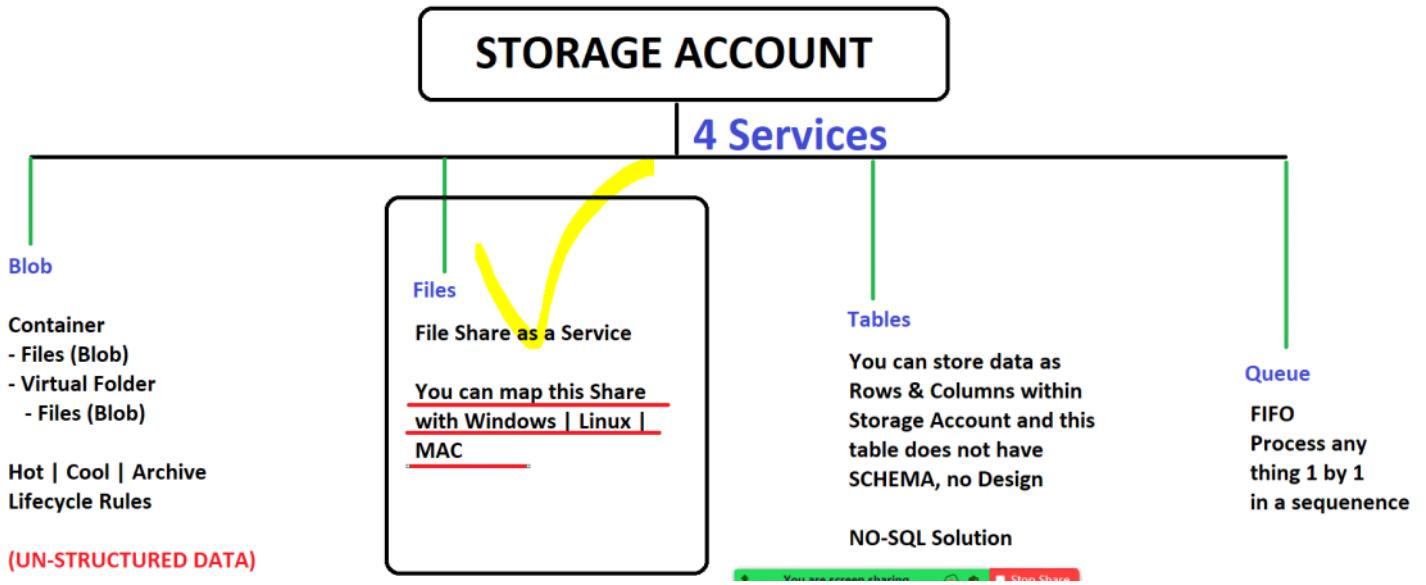
Operations

Snapshots

Backup

Search files by prefix

Name	Type	Size
(..)		
CPU Burn.txt	File	84 B
Day 5.pdf	File	3.22 MB
encryption.png	File	42.84 Kib
godrejlocks.png	File	603.71 Kib
IP Addres Range.xlsx	File	17.76 Kib
Microsoft Azure Masters - Batch 3 Program.pdf	File	144.11 Kib



<https://docs.microsoft.com/en-us/azure/architecture/aws-professional/services>

Storage

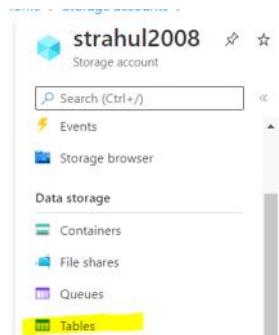
Several services provide different types of data storage for VM disks.

AWS service	Azure service	Description
Disk volumes on Amazon Elastic Block Store (EBS) ¹⁰	Data disks in Azure Blob Storage ¹¹ .	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 ¹²	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 ¹³	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) ¹⁴	Azure Files	Azure Files provides VMs with similar functionality to Amazon EFS.

- The customer has 3 types of data (Un-Structured Data, Semi-Structured Data, Structured Data). This data comes from various sources and needs to reside maybe for few hours, few days, few weeks, and then the data can be deleted. Example, Currency Data, every day the currency data is downloaded from the internet and has to be stored for further processing. The customer does not want to use SQL Server, MySQL, Oracle or any database for this purpose, because there is no Schema (no structure) to the data, in-short it is "NO-SQL" data.

<https://docs.microsoft.com/en-us/azure/storage/tables/table-storage-overview>

Azure Table storage is a service that stores non-relational structured data (also known as structured NoSQL data) in the cloud, providing a key/attribute store with a schemaless design. Because Table storage is schemaless, it's easy to adapt your data as the needs of your application evolve



The screenshot shows the 'Tables' blade for the storage account 'strahul2008'. The left sidebar includes 'Events', 'Storage browser', 'Data storage' (Containers, File shares, Queues, Tables), and 'Orchestrations'. The main area has a search bar, a 'Table' button, and a 'Delete' button. It displays the 'Authentication method: Azure AD User Account (Switch to)'. A search bar for 'Search tables by prefix' is present. Below it, a table section says 'You don't have any tables yet.'

This screenshot shows the 'Add table' dialog within the 'Tables' blade. The 'Table name *' field contains 'currency'. Below it are 'OK' and 'Cancel' buttons. The left sidebar is identical to the first screenshot.

The screenshot shows the 'Tables' blade again, now displaying the 'currency' table. The table row for 'currency' includes a checkbox checked, a 'Url' column with the value 'https://strahul2008.table.core.windows.net/currency', and a three-dot ellipsis menu icon. The left sidebar is identical to the previous screenshots.

How to insert data into this table?

1. Programmatic - .NET, Java code (Create Application) - Insert the data into the tables
2. ETL Tool (Extract Transform Load - Data Factory, SSIS, Informatica, Data Stage)
3. Powershell or Azure CLI (Manually)
4. Azure Portal - Manual Data Insertion

This screenshot shows the 'Storage browser' blade for the 'strahul2008' storage account. The left sidebar includes 'Overview', 'Activity log', 'Tags', 'Diagnose and solve problems', 'Access Control (IAM)', 'Data migration', 'Events', and 'Storage browser' (which is selected). The main area shows 'Storage account metrics' with a note about regular updates. It features four cards: 'Blob containers' (0 containers, 0 blobs, 0 total data stored), 'File shares' (0 file shares, 0 files, 0 total data stored), 'Tables' (0 tables, 0 entities, 0 total data stored), and 'Queues' (0 queues, 0 messages, 0 total data stored). A 'Recently viewed' section is at the bottom.

strahul2008

Add table Refresh Delete Edit columns

Tables

Authentication method: Access key (Switch to Azure AD User Account)

Search tables by prefix

Showing all 1 items

Name	Url
currency	https://strahul2008.table.core.windows.net/currency

strahul2008 | Storage browser

Storage account

Search (Ctrl+ /)

Overview

Activity log

Tags

Diagnose and solve problems

Access Control (IAM)

Data migration

Events

Storage browser

Add entity Refresh Delete Edit columns

Tables > currency

Authentication method: Access key (Switch to Azure AD User Account)

Add filter

Showing all 0 items

PartitionKey	RowKey	Timestamp
--------------	--------	-----------

No items found

Add entity

Property Name	Type	Value
PartitionKey	String	<input type="text" value="Enter identifier value"/>
RowKey	String	<input type="text" value="1"/>
currencyname	String	<input type="text" value="USD"/>
currencyrate	Int64	<input type="text" value="78"/>

Add property

Add entity

Property Name	Type	Value
PartitionKey	String	<input type="text" value="Enter identifier value"/>
RowKey	String	<input type="text" value="3"/>
currencyname	String	<input type="text" value="AED"/>
currencyrate	Int64	<input type="text" value="90"/>
premium	String	<input type="text" value="Yes"/>

Add property

Insert Cancel

The screenshot shows the Azure Storage Table browser interface. At the top, there are buttons for 'Add entity', 'Refresh', 'Delete', and 'Edit columns'. Below that, a breadcrumb navigation shows 'Tables > currency'. A note says 'Authentication method: Access key (Switch to Azure AD User Account)'. There's a 'Filter' button and a toggle switch. The table has columns: PartitionKey, RowKey, Timestamp, currencyname, currencyrate, and premium. The data rows are:

PartitionKey	RowKey	Timestamp	currencyname	currencyrate	premium
	1	2022-08-20T10:32:35.59...	USD	78	
	2	2022-08-20T10:32:52.40...	AUD	89	
	3	2022-08-20T10:33:25.43...	AED	90	Yes

Azure Storage Table = Baby

Azure CosmosDB = Father | Mother