

```
Модуль 5 x | Study - Ar x | app.landin x | devaccou x | Azure Dev x | Manage lil x | The Best / x | ChatGPT x | devaccou x | +
portal.azure.com/#@dmytroslovinskyygmail.onmicrosoft.com/resource/subscriptions/9a6ae428-d8c3-44fe-bdf2-4e08593901a0/r...
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Switch to PowerShell Restart Manage files New session Editor Web preview Settings Help
stanislav [ ~ ]$ azcopy copy "https://devaccount20250119.file.core.windows.net/devfileshare/What Is Cloud Computing_ Definition, Benefits, Types, and Trends - Spiceworks.pdf?sv=2022-11-02&ss=bfqt&srt=sco&sp=rwdlacupiytfx&se=2025-01-23T02:04:36Z&st=2025-01-22T18:04:36Z&spr=https&sig=GoYI7TQNr9ra0gSG8wm%2FQrWHwzPRSRjXJzqKVbmUgIA%3D" "downloaded_testfile.pdf"
INFO: Scanning...
INFO: Any empty folders will not be processed, because --recursive was not specified

Job ec5ffc09-6fa3-214a-5e50-cb1d9f541150 has started
Log file is located at: /home/stanislav/.azcopy/ec5ffc09-6fa3-214a-5e50-cb1d9f541150.log

INFO: Trying 4 concurrent connections (initial starting point)
100.0 %, 1 Done, 0 Failed, 0 Pending, 0 Skipped, 1 Total, 2-sec Throughput (Mb/s): 4.1929

Job ec5ffc09-6fa3-214a-5e50-cb1d9f541150 summary
Elapsed Time (Minutes): 0.0334
Number of File Transfers: 1
Number of Folder Property Transfers: 0
Number of Symlink Transfers: 0
Total Number of Transfers: 1
Number of File Transfers Completed: 1
Number of Folder Transfers Completed: 0
Number of File Transfers Failed: 0
Number of Folder Transfers Failed: 0
Number of File Transfers Skipped: 0
Number of Folder Transfers Skipped: 0
Total Number of Bytes Transferred: 1050044
Final Job Status: Completed

stanislav [ ~ ]$
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stanislav [ ~ ]$ az storage blob download --container-name my-container \
--name 'What Are Distributed Systems_ Architecture Types, Key Components, and Examples - Spiceworks.pdf' \
--file 'What Are Distributed Systems_ Architecture Types, Key Components, and Examples - Spiceworks.pdf' \
--sas-token "sv=2022-11-02&ss=bfqt&srt=sco&sp=rwdlacupiytfx&se=2025-01-23T02:00:11Z&st=2025-01-22T18:00:11Z&spr=https&sig=JVRcSPLm4Dd%2FP1in%2FQiGV
3%2BdpIawTAh8Az9bLojN1w4%3D" \
--account-name devaccount20250119
Finished[#####] 100.0000%
{
  "container": "my-container",
  "content": "",
  "contentMd5": null,
  "deleted": false,
  "encryptedMetadata": null,
  "encryptionKeySha256": null,
  "encryptionScope": null,
  "hasLegalHold": null,
  "hasVersionsOnly": null,
  "immutabilityPolicy": {
    "expiryTime": null,
    "policyMode": null
  },
  "isAppendBlobSealed": null,
  "isCurrentVersion": null,
  "lastAccessedOn": null,
  "metadata": {},
  "name": "What Are Distributed Systems_ Architecture Types, Key Components, and Examples - Spiceworks.pdf",
  "objectReplicationDestinationPolicy": null,
  "objectReplicationSourceProperties": [],
  "properties": {
    "appendBlobCommittedBlockCount": null,
    "blobTier": null,
```

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Switch to PowerShell Restart Manage files New session Editor Web preview Settings Help
stanislaw [ ~ ]$ az storage message put --queue-name devqueue --content "Test message" --sas-token "sv=2022-11-02&ss=q&srt=sco&sp=rwlacup&se=2025-01-23T01:51:23Z&st=2025-01-22T17:51:23Z&spr=https&sig=SM%2BuSCxzh5cmMrRr%2BLbxDc904J4ReMYVhRrln9kylnI%3D" --account-name devaccount20250119
Command group 'storage message' is in preview and under development. Reference and support levels: https://aka.ms/CLI_refstatus
{
  "content": "Test message",
  "dequeueCount": null,
  "expirationTime": "2025-01-29T17:57:38+00:00",
  "id": "af0e3a5d-da9b-4f5b-aa00-f51051cacf17",
  "insertionTime": "2025-01-22T17:57:38+00:00",
  "popReceipt": "AgAAAAAAAAAAAAVWbrH/ds2wE=",
  "timeNextVisible": "2025-01-22T17:57:38+00:00"
}
stanislaw [ ~ ]$
```

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For example, 100.1.3.0/24 or 100.1.3.0/24-100.1.3.70

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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

key1

Generate SAS and connection string

Connection string

BlobEndpoint=https://devaccount20250119.blob.core.windows.net/QueueEndpoint=https://devaccount20250119.queue.core.windows.net/FileEndpoint=https://devaccount20250119.file.core.windows.net/

SAS token

sv=2022-11-02&ss=q&srt=sco&sp=rwlacup&se=2025-01-23T01:51:23Z&st=2025-01-22T17:51:23Z&spr=https&sig=SM%2BuSCxzh5cmMrR%2BLbxDc904J4ReMYVhRrIn9kylNI...

Queue service SAS URL

https://devaccount20250119.queue.core.windows.net/?sv=2022-11-02&ss=q&srt=sco&sp=rwlacup&se=2025-01-23T01:51:23Z&st=2025-01-22T17:51:23Z&spr=https&sig=SM...

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Allowed services ⓘ

☐ Blob

☐ File

☒ Queue

☐ Table

Allowed resource types ⓘ

☐ Service

☐ Container

☐ Object

Allowed permissions ⓘ

☒ Read

☒ Write

☐ Delete

☒ List

☒ Add

☒ Create

☒ Update

☒ Process

☐ Immutable storage

☐ Permanent delete

Blob versioning permissions ⓘ

☐ Enables deletion of versions

Allowed blob index permissions ⓘ

☐ Read/Write

☐ Filter

Start and expiry date/time ⓘ

Start

01/22/2025

7:51:23 PM

End

01/23/2025

3:51:23 AM

(UTC+02:00) Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius

Allowed IP addresses ⓘ

For example, 168.1.5.65 or 168.1.5.65-168.1.5.70

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For example, 168.13.63 or 168.13.63-168.13.70

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 ⓘ

key1

Generate SAS and connection string

Connection string

BlobEndpoint=https://devaccount20250119.blob.core.windows.net;/QueueEndpoint=https://devaccount20250119.queue.core.windows.net;/FileEndpoint=https://devaccount20250119.file.core.windows.net/

SAS token ⓘ

sv=2022-11-02&ss=b&srt=sco&sp=rtfx&se=2025-01-23T01:30:53Z&st=2025-01-22T17:30:53Z&spr=https&sig=lzTLaPgo1Z8WNpwgExNQ7SqDhiaD%2By4sJLvdXPJJs%2Bt%3D

Blob service SAS URL

https://devaccount20250119.blob.core.windows.net/?sv=2022-11-02&ss=b&srt=sco&sp=rtfx&se=2025-01-23T01:30:53Z&st=2025-01-22T17:30:53Z&spr=https&sig=lzTLaPgo1Z8WNpwgExNQ7SqDhiaD%2By4sJLvdXPJJs%2Bt%3D

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☒ Read/Write

☒ Filter

Start and expiry date/time

Start

01/22/2025

7:30:53 PM

End

01/23/2025

3:30:53 AM

(UTC+02:00) Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius

Allowed IP addresses

For example, 168.1.5.65 or 168.1.5.65-168.1.5.70

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

key1

Generate SAS and connection string

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Allowed services ⓘ

☒ Blob ☐ File ☐ Queue ☐ Table

Allowed resource types ⓘ

☒ Service ☒ Container ☒ Object

Allowed permissions ⓘ

☒ Read ☐ Write ☐ Delete ☐ List ☐ Add ☐ Create ☐ Update ☐ Process ☐ Immutable storage ☐ Permanent delete

Blob versioning permissions ⓘ

☒ Enables deletion of versions

Allowed blob index permissions ⓘ

☒ Read/Write ☒ Filter

Start and expiry date/time ⓘ

Start

01/22/2025

7:30:53 PM

End

01/23/2025

3:30:53 AM

(UTC+02:00) Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius

Allowed IP addresses ⓘ

For example, 168.1.5.65 or 168.1.5.65-168.1.5.70

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devqueueView all

Tables

+ Add messageDequeue messageClear queueRefreshEdit columns

Queues > devqueue

Authentication method: Access key (Switch to Microsoft Entra user account)

Showing all 1 items

Message text	Id	Insertion time	Expiration time	Dequeue count
message1	2af14b97-6205-4719-a8...	22/01/2025, 19:29:51	29/01/2025, 19:29:51	0

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 - View all

+ Add entity Refresh Delete Edit columns

Tables > devtable

Authentication method: Access key (Switch to Microsoft Entra user account)

Add filter Advanced filters

Showing all 1 items

PartitionKey	RowKey	Timestamp	name
1	1	2025-01-22T17:28:39.45...	Name

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Add directory

Refresh

Delete

Copy

Paste

Rename

Edit columns

File shares > devfileshare

Authentication method: Access key (Switch to Microsoft Entra user account)

Search files by prefix

Showing all 1 items

	Name	Type	Size	
	What Is Cloud Computing_ Definition, Benefits, Types, and Trends - ...	File	1 MiB	...

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- Recently viewed
- Blob containers
 - \$logs
 - my-containerView all
- File shares
- Queues
- Tables

+ Add Directory↑ Upload🔒 Change access level🔄 Refresh🗑 Delete📄 Copy📋 Paste⋮

Blob containers > my-container

Authentication method: Access key (Switch to Microsoft Entra user account)

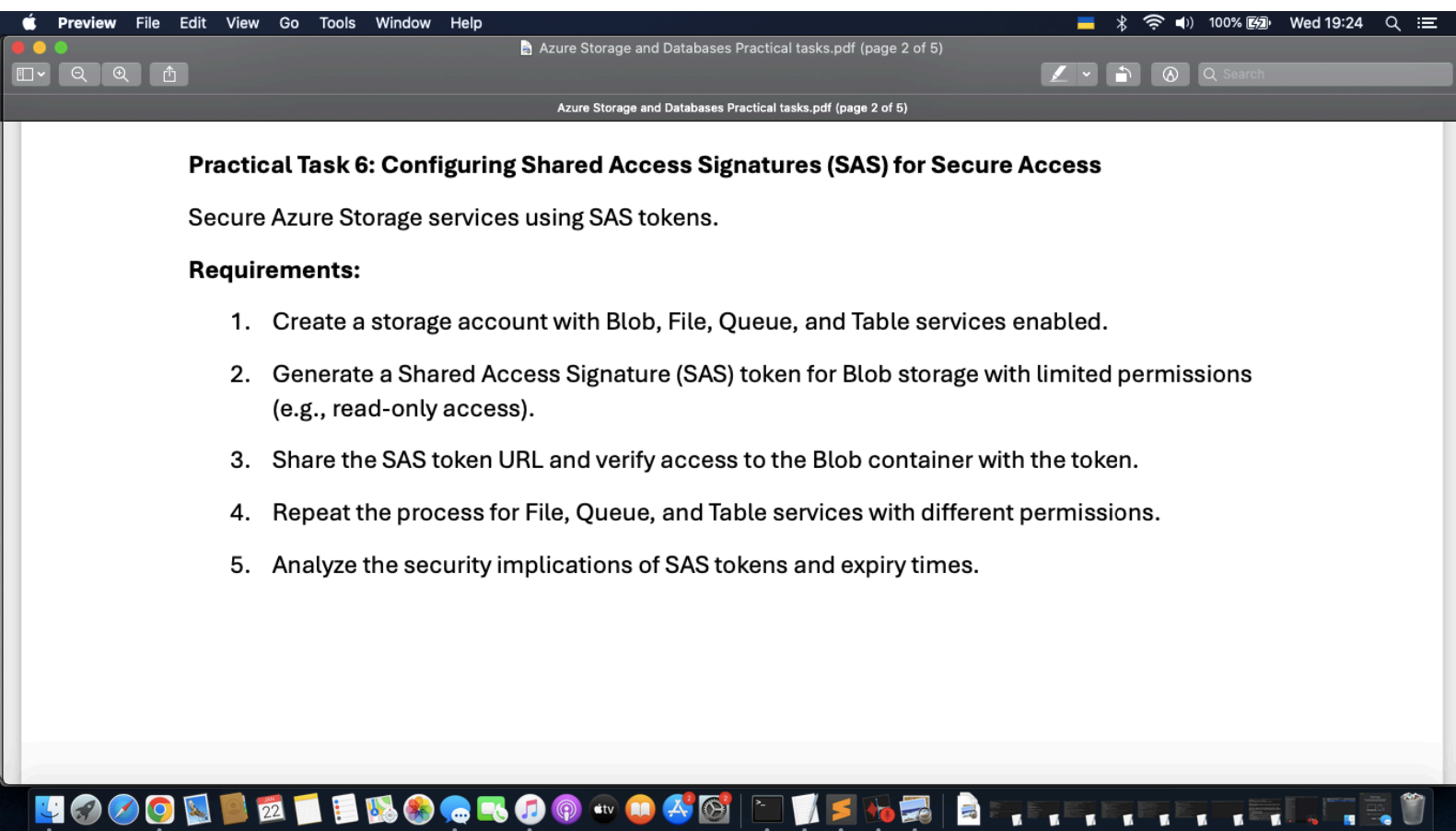
Add filter

Search blobs by prefix (case-sensitive)

Only show active blobs

Showing all 1 items

<input checked="" type="checkbox"/>	Name	Last modified	Access tier	Blob type	Size
<input checked="" type="checkbox"/>	What Are D...	22/01/2025, 19:26:27	Hot (Inferred)	Block blob	636.28 KiB



Practical Task 6: Configuring Shared Access Signatures (SAS) for Secure Access

Secure Azure Storage services using SAS tokens.

Requirements:

1. Create a storage account with Blob, File, Queue, and Table services enabled.
2. Generate a Shared Access Signature (SAS) token for Blob storage with limited permissions (e.g., read-only access).
3. Share the SAS token URL and verify access to the Blob container with the token.
4. Repeat the process for File, Queue, and Table services with different permissions.
5. Analyze the security implications of SAS tokens and expiry times.