Mounting Volumes

Mark Heath
MICROSOFT MVP

@mark_heath https://markheath.net

Persisting data with containers

Avoid saving data directly into containers. Instead persist data to a **volume**.

Containers are disposable; volumes can be re-attached.

Overview

Azure File Share Volumes

- Azure Storage Explorer

Git Repositories

- e.g. implementing CI build

Secret Volumes

- Secure storage of secrets

Empty Volumes

- Share data between containers in a container group

Mounting Azure File Share Volumes

Azure File Shares

- Created in a storage account

Volume mounting CLI arguments

- --azure-file-volume-account-name
- --azure-file-volume-account-key
- --azure-file-volume-name
- --azure-file-volume-mount-path
  - e.g. “/mnt/azfile”

Azure File Share Limitations

Whole share must be mounted

Read-only not supported

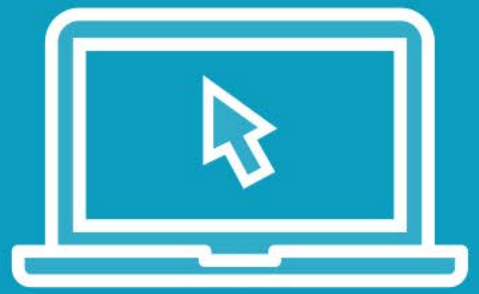
Can't create multiple volumes with Azure CLI

- Use ARM templates instead

Not yet supported on Windows

... but things are moving fast!

Demo



- Extract a video thumbnail using FFMPEG
- Use an FFMPEG container from Docker Hub
- Upload the input video into the file share
- Mount the file share as a volume
- Write the output image into the file share
- Override the startup command
- Specify the restart policy to not retry

Mounting Git Repository Volumes

Mount a Git repository

- Clones the repository at creation time
- Get latest or specific commit

Use cases?

- Static website
- CI builds

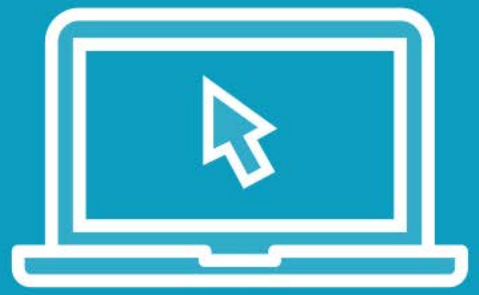
Azure CLI arguments

- --gitrepo-url
- --gitrepo-mount-path

Current limitations

- Private repositories
- Windows support

Demo



CI build ASP.NET Core website

- Container image has build tools
- Code mounted as a Git repository volume
- Code is built and then deployed to Azure Websites
- Deployment credentials stored as environment variables

Secret Volumes

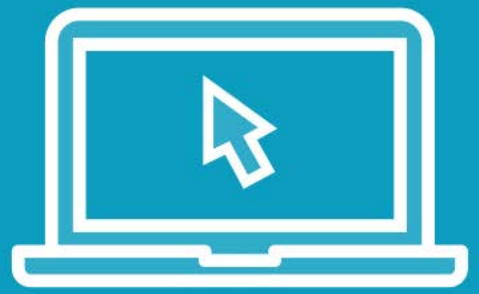
Stored in a RAM-backed file system

- Never written to disk

Azure CLI arguments

- --secrets key=value
- --secrets-mount-path /mnt/mysecrets

Demo



Using secret volumes

- Store a secret in the volume
- Access the secret

Empty Volumes

Can be shared between containers in a container group

Enables the “sidecar” pattern

- e.g. sidecar container calls configuration service and writes config into shared volume

Lifetime is tied to the container group

Current limitations

- Not yet supported in Azure CLI
- Not supported on Windows

Service quotas and limits

Resource	Default Limit
Container groups per subscription	20[1]
Number of containers per container group	60
Number of volumes per container group	20
Ports per IP	5
Container creates per hour	60[1]
Container creates per 5 minutes	20[1]
Container deletes per hour	150[1]
Container deletes per 5 minutes	50[1]
Multiple containers per container group	Linux only[2]
Azure Files volumes	Linux only[2]
GitRepo volumes	Linux only[2]
Secret volumes	Linux only[2]

https://docs.microsoft.com/en-us/azure/container-instances/container-instances-quotas

Summary

Azure File Share volumes

- Store data independently of the container
- --command-line

Git repository volumes

- Environment variables (-e)

Secret volumes

- Never written to disk

Empty volumes

- Share data within a container group

Up next ...

Container Groups