

INFRASTRUCTURE AS CODE AND DEVOPS

Infrastructure as Code
Git
DevOps

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PORTAL, POWERSHELL AND CLI

- Why are we bothering with IaC?
- We have great options to create resources
 - Portal
 - PowerShell with Az module
 - [Az cli](#)
- All are imperative and all cross-platform!
- Hard to check what is deployed matches the script
- [Cloud Shell](#) easy access

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DECLARATIVE!



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DECLARATIVE

- We state only the desired end state
- Easy to detect drift
- Easy to modify, just change the desired state
- Full version control compatibility
- Can be used for Azure fabric (ARM) and solutions for within resource

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ARM TEMPLATES

- Under the [covers](#) in Azure everything is store in ARM JSON
- When provisioning in the portal the option to export template is available and for existing resources
- Huge library of starter templates at <https://github.com/Azure/azure-quickstart-templates>
- ARM extension for VS Code
- Incremental vs Complete
- Can link and nest for more advanced, modular configuration

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BICEP

- ARM can be intimidating
- [Bicep](#) is an alternate language which compiles to ARM JSON
- [Easy](#) to create and understand

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VERSION CONTROL SYSTEM (VCS) - GIT

- Enables different versions of projects to be stored and tracked via snapshots at points in time
- Concepts such as branches enable multiple teams to work on the same code then merge changes once ready
- Used by many online repositories but can start locally and always have full local copy
- Git tool downloaded from <https://git-scm.com/> and can be integrated with VS Code
- <https://git-scm.com/book/en/v2> is great and free

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GITHUB REPOSITORIES

- If collaborating with others or simply want copy of repo elsewhere use a Git server
- GitHub, Azure DevOps and more provide Git compatible servers
- Can be private or public
- Create a GitHub account (free)
- Create a repo then clone or populate with push

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DEVOPS WITH GITHUB ACTIONS

- Need a service principal for GitHub Actions to use
- Store as a secret in the repo

```
#!/bin/bash
set -e

# Create a service principal for GitHub Actions
# Store the client ID and secret as secrets in the repo
# This script will create a service principal and store the client ID and secret as secrets in the repo

# Create a service principal
CLIENT_ID=$(az ad app create --display-name "GitHub Actions Service Principal" --web-url "https://github.com")

# Get the client ID
CLIENT_ID=$(az ad app show --id $CLIENT_ID --query id --output tsv)

# Create a secret for the client ID
az keyvault secret set --name "CLIENT_ID" --value $CLIENT_ID --vault-name "keyvault"

# Create a secret for the client secret
az keyvault secret set --name "CLIENT_SECRET" --value "secret" --vault-name "keyvault"
```

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GITHUB ACTIONS TO AZURE

- Use the [Azure GitHub Actions](#)
- We will need to
 - Authenticate (use the secret)
 - Get the repo content
 - Deploy the template
 - Do other things!

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QUESTIONS?

ASK IN THE
COMMENTS

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