



Terraform for Azure

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Agenda

- Let's talk IaC, Terraform, HCL
- "Hello, World" 101 and 102 demo
- Terraform state (103 demo)
- Bicep vs. Terraform
- Tooling (Microsoft)
 - VS Code
 - Terrafy
 - Azure Verified Modules



Getting to know each other

About Boston Trivia question

What is the name of the oldest public *pahk* in the United States?

Boston Common, 1634

About Nashville Trivia question

The Hermitage was the plantation home of which U.S. President?

Andrew Jackson, 7th U.S. President





Getting to know your speaker

- Cloud Solution Architect at Microsoft
 - Working with US Education customers
 - Since 2020
- Book author (SQL Server)
- Flight simulation enthusiast
- Mount Juliet, TN



Terraform update

- IBM recently bought HashiCorp, makers of Terraform.
- IBM owns Red Hat, makers of Ansible.
- There are clear synergies between Terraform and Ansible.
- IBM might combine the two...

... and call it **Terrible!**





Infrastructure-as-Code (IaC)

- A step towards automated and verifiable deployments
- Why?
 - Consistency
 - Repeatability
 - Version control
 - Efficiency



Terraform (and HCL)

- [Terraform](#) is the tool
- [HashiCorp Configuration Language](#) (HCL) is the language
- Terraform uses providers which translate HCL into instructions for the target platform, e.g., Azure
- `winget install -e -h -s winget --id Microsoft.AzureCLI`
- `winget install -e -h -s winget --id Hashicorp.Terraform`



Hello, World

- Define an Azure Resource Group in HCL
- `terraform init`
- `terraform validate`
- `terraform plan`
- `terraform apply`
- `terraform show`
- `terraform destroy`



Demo 101

Deploy a resource group



Demo 102

Add a storage account

Variables, outputs, references, resource organization

Terraform state

- Update state with
`terraform refresh` (legacy) or
`terraform [plan|apply] -refresh-only`
- Import new resources with
`terraform import`



Demo 103

Terraform state list, plan -refresh-only, ...

Terraform remote state

- Why?
- Sample remote state providers
 - [Azure Storage](#)



Terraform and Bicep comparison

	Terraform	Bicep
Deploy uses	All *.tf files in the folder	The specified .bicep file
Applies to	Many technologies and clouds	Azure
Syntax	HCL	Bicep
What's going to happen?	terraform plan	"What If" deployment
State	State file	Azure is the state
Destroy a deployment	terraform destroy	Use Deployment Stacks
New project, resource already exists	Error	Update properties



Azure Terrafy (a.k.a. aztfexport)

- Creates Terraform templates from existing Azure resources
- Expect to make some changes
 - Organize resources in separate .tf files
 - Add variables and locals
 - Loops for collections of resources
- Only supports resource group import



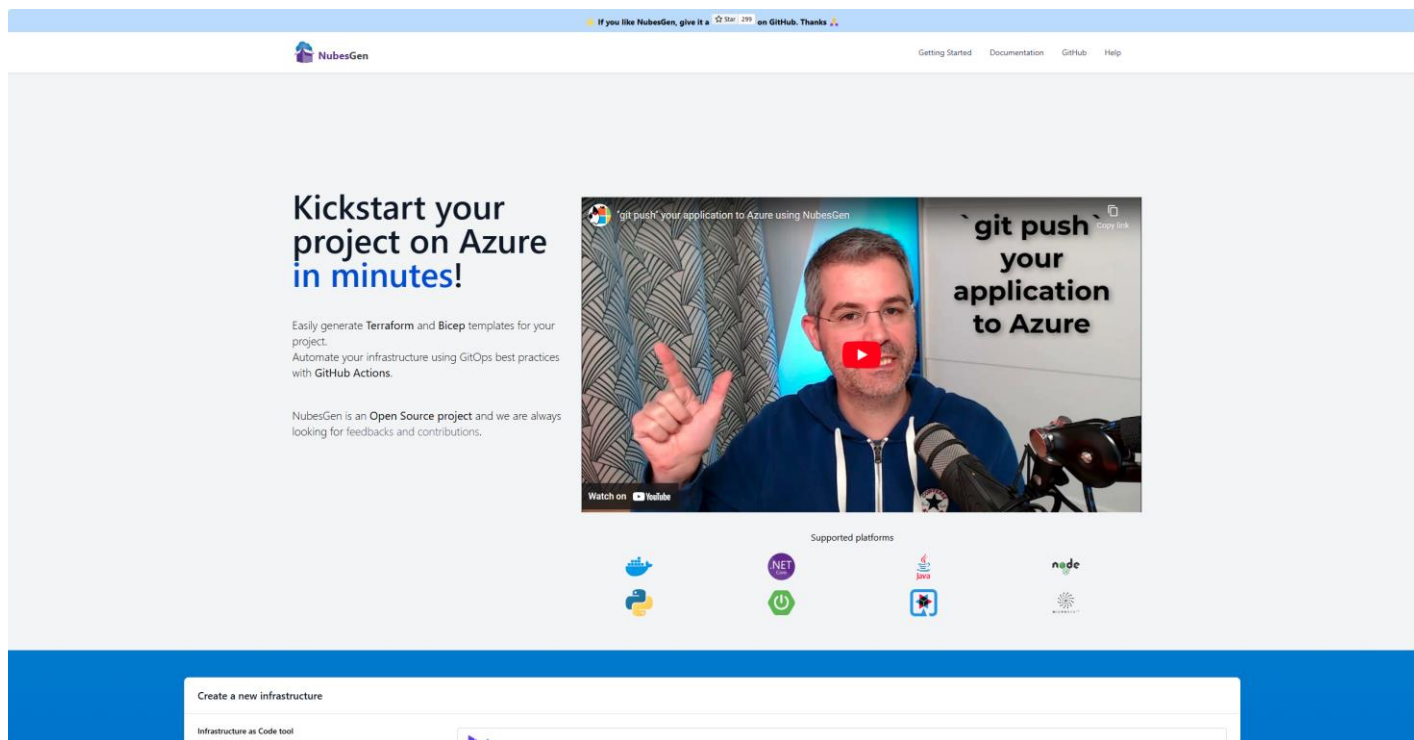
Azure Verified Modules (AVM)

- Officially supported Terraform (and Bicep) modules (in the Terraform registry)
 - Resource
 - Patterns
 - Utilities
- Deploys Azure resources following [Well Architected Framework](#) practices
- <https://aka.ms/AVM>



Honorable tool mention: NubesGen

- Generates starter Terraform (or Bicep) and GitOps templates for projects
- <https://nubesgen.com>





Some IaC Concepts You Should Know

- Declarative vs. imperative
- Idempotency
- "Day 1" vs. "Day 2"
- Secrets management



Q & A

and Thank You!



Resources

- GitHub repo with demo code
https://ltr.mn/tf_101

