

Easily deploy and maintain your Azure infrastructure using Terraform

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A virtual event for the BC tech. people

bctechtalk.com

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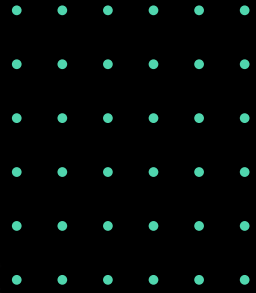


COSMO CONSULT

Business-Software for People



Session agenda:



What is IaC and why does it matter?

What is Terraform?

Using the Terraform Azure provider

What is IaC and why does it matter?

- What is the problem?
 - Infrastructure is growing more complex → Handling it manually takes too long and is too error prone but at the same time, larger teams are working on infrastructure
 - How the infrastructure changes over time must be tracked and you might have to go back
 - Development and operations (the teams creating infrastructure for software created by development) need to work together more closely → DevOps! But how to do that?
 - New infrastructure needs to be created quickly, maintenance must be done without interruption while at the same time needing less human interaction

Growing complexity, working in teams, tracking changes. Sounds **familiar?**

- Adopt **best practices of development** for infrastructure as well
 - **Source control management** including version history
 - Changes are done through **pull request with reviews**
 - **Automated builds** and **automated tests**
- Conclusion: **Treat your infrastructure as code!** → IaC
- My preferred flavor: **Declarative** IaC
 - Describe **what you want**, not how you get there
 - PowerShell (or other) traditional scripts describe how you set it up, not the result

Basic idea: What does it look like?

I need a VM

- The VM needs to have 4 CPU cores and 8 GB of memory

- The VM needs to have 2 disks with 500 GB storage each

- The VM needs to have Windows Server 2019 Core installed

- The VM needs to have Containers enabled and Docker installed

I need a firewall setup

- The firewall needs to open port 443 and 22

The VM needs to be secured by the firewall

What is Terraform?



- IaC tool by HashiCorp
- Support for multiple cloud providers (including Azure) and onprem
- Declarative IaC
- Extremely easy to understand and use
- Has own cloud service for automation and storage
- Manages state as well for easier maintenance

What is Terraform?



- Important concepts:
 - **Execution plan** allows you to see **in advance** what will happen
 - **Resource graph** allows Terraform to **parallelize** all non-dependent steps → deployment is **as quick as possible**, but you need to describe the non-detectable dependencies
 - Change automation becomes **easy** as Terraform always know **what needs to change and in which order**
- One drawback of the resource graph and parallelization: You might **run into issues mid-deployment** which e.g. ARM or Bicep might find out before starting, like hitting resource limits

Using the Terraform Azure provider

- Providers integrate upstream APIs
- Deploy IaaS, PaaS and SaaS Azure components
- Fully automated and aware of Azure specifics
- Integrated into Azure Cloud shell → very easy to set up and use



FILTERS

[Clear Filters](#)

Tier ⓘ

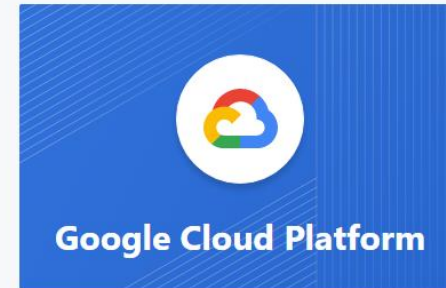
☒ Official☒ Verified☒ Community

Category

☐ HashiCorp Platform☐ Public Cloud☐ Asset Management☐ Cloud Automation☐ Communication & Messaging☐ Container Orchestration☐ Continuous Integration/Deployment (CI/CD)☐ Data Management☐ Database☐ Infrastructure (IaaS)☐ Logging & Monitoring☐ Networking☐ Platform (PaaS)☐ Security & Authentication☐ Utility☐ VCS (Version Control)☐ Web Services

Providers

Providers are a logical abstraction of an upstream API. They are responsible for understanding API interactions and exposing resources.



Active Directory

by: hashicorp



Archive

by: hashicorp



Azure Active Directory

by: hashicorp



Azure Stack

by: hashicorp



Boundary

by: hashicorp



Cisco ASA

by: hashicorp



Cloudinit



Consul



DNS



Demo time!

Basic Azure setup



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MINAL PROBLEMS OUTPUT DEBUG CONSOLE 1: terraform
azurerm_resource_group.main: Creation complete after 1s [id=/subscriptions/4420d4cc-95ac-4f72-a166-3b630f92f3af/resourceGroups/test123-demo2]
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```


Demo time!

First Terraform deployment:
A Docker container running
as Azure Container Instance
(ACI)

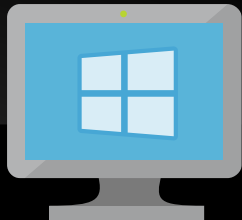


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Demo time!

Second Terraform deployment:

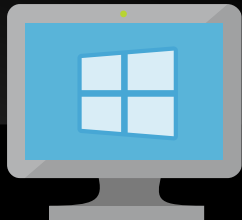
A virtual machine with a generated admin password and networks security setup



```
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Demo time!

Third Terraform deployment:
An Azure Function with an
App Service plan and a
storage account



```
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Demo time!

Testing your Terraform
deployment with Terratest
by Gruntwork.io



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<BC TechTalk />

Thank You!

We look forward to working with you on making
this a great event for the community!

