

Terraform

Characteristics

- Infrastructure as Code
 - Declarative config files to create readable blueprints.
- Execution Plans
 - Possibility to review changes before creating, updating or destroying infrastructure.
- Resource Graph
 - Possibility to modify non-dependable resources in parallel.
- Change Automation
 - Incremental execution plans that respect dependencies.

Installation

- `choco install terraform` in PowerShell as admin.

main.tf

```
terraform {
  required_providers {
    docker = {
      source  = "kreuzwerker/docker"
      version = ">= 2.13.0"
    }
  }
}

provider "docker" {
  host = "npipe:////.//pipe//docker_engine"
}

resource "docker_image" "nginx" {
  name          = "nginx:latest"
  keep_locally = false
}

resource "docker_container" "nginx" {
  image = docker_image.nginx.latest
  name   = "tutorial"
  ports {
    internal = 80
    external = 8000
  }
}
```

Quickstart commands

- `terraform init`
- `terraform fmt`
- `terraform validate`
- `terraform plan`
- `terraform apply`

Quickstart commands (cont.)

- `terraform apply -auto-approve`
- `terraform show`
- `terraform state list`
- `terraform destroy`

Changing infrastructure

- Change external port to 8080 in the previous `main.tf`.
- Apply the changes with `terraform apply`.

Defining input variables

- Create a `variables.tf` file.

```
variable "container_name" {  
  description = "Value of the name for the Docker container"  
  type        = string  
  default     = "ExampleNginxContainer"  
}
```


Defining input variables (cont.)

- Replace the hard-coded container name by `var.container_name`.
- Apply the configuration.
- You can pass another value with `terraform apply -var "container_name=AnotherName"`

Defining Outputs

- Create an `outputs.tf` file.

```
output "container_id" {  
  description = "ID of the Docker container"  
  value       = docker_container.nginx.id  
}  
  
output "image_id" {  
  description = "ID of the Docker image"  
  value       = docker_image.nginx.id  
}
```

Defining Outputs (cont.)

- `terraform output`
- `terraform output -raw var`
- `terraform output -json`
- Add the `sensitive=true` configuration for protecting (sometimes) sensitive information.

Using Terraform outside of cloud

- [Terraform vSphere Provider](#)
- [Terraform Official Tutorials](#)