Terraform
Terraform - A more versatile tool than you thought

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2019-10-16
Motivation

We need n-resources ...now. They have to meet following criteria ...
Terraforming - General description

Terraform - Short introduction

- Infrastructure-as-code
- Hashicorp (Vagrant, Vault, Packer)
Terraform - Short introduction

- Codified API-calls in declarative configuration files
- Open-Source
Terraform - Short introduction

Marketing promises

▶ Safely and predictable
▶ Create, change or improve infrastructure
▶ Combine different provider

General advantages of working with code

▶ Share code, version control and review possibilities
▶ Modular
▶ Easy to automate

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Schema

Code → Provider

Infrastructure:
- resource 2
- resource 1
- resource 3
- resource ...

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Abstract of the possibilities

Provider-groups:

- Management of Cloud-Services
- Management of Container-Platforms
- Network Provider
- Version Control Systems
- Monitoring & System Management
- Databases

⇒ If there is an API, you can most likely manage it with Terraform.
Abstract of the possibilities

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Workflow

- **Code**
  - `terraform init`
  - `terraform plan`
- **Check**
  - `terraform apply`
- **done**
  - `(terraform destroy)`

▸ Syntax check and loading of required plugins
▸ Creation of an overview
  ▸ What does exist already?
  ▸ What will be changed?
  ▸ How are the changes applied?
▸ Provider communication (API)
▸ (resource removal)

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Workflow

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- Provider communication (API)
- (resource removal)
variables.tf:

```
variable "region" {
  description = "Region to be used"
}
```

terraform.tfvars:

```
region = "eu-central-1"
```

Code:

```
region = var.region
```

⇒ Can be combined with modules

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A module is a container for multiple resources that are used together.

tree minimal-module
  .
  |-- README.md
  |-- main.tf
  |-- variables.tf
  |-- outputs.tf
A module is a container for multiple resources that are used together.

tree minimal-module
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|-- README.md
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module "name" {
    source = "/path/to/folder"
    variable1 = "foo"
    variable2 = "bar"
}

module "frontend" {
    source = "git::git@github.com:user/module.git/m-name?ref=v0.1"
    variable1 = 8
    variable2 = 20
}
module "name" {
    source = "/path/to/folder"
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module "frontend" {
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}
Working together - Backends

User 2

User 3

User N

Backend
Example AWS  The Reason I love it …

Just create a VM with a static NGINX
Example AWS
Abstract of the possibilities

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Abstract of the possibilities

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Terraform k8s - Schema

- Code
- k8s-API
- k8s cluster
  - NGINX 1
  - NGINX 2
  - NGINX ...

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Terraform and Gitlab
Terraform and Gitlab - Example
Terraform, Gitlab and k8s
Terraform - It is worth a try!

Start with something familiar
Terraform - It is worth a try!

We need n-resources …now. They have to meet following criteria …
Terraform - It is worth a try!

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