Terraform Day 2 Operations – This is the way

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Public

Hi, I’m Christian

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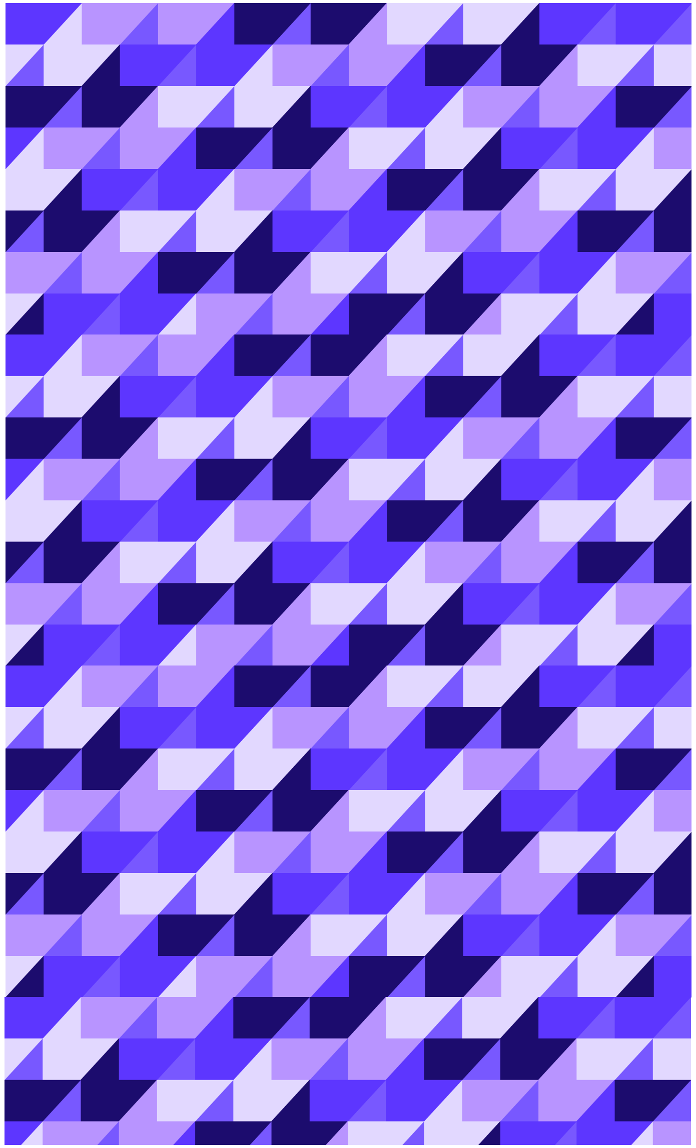
Agenda

Where do we start?

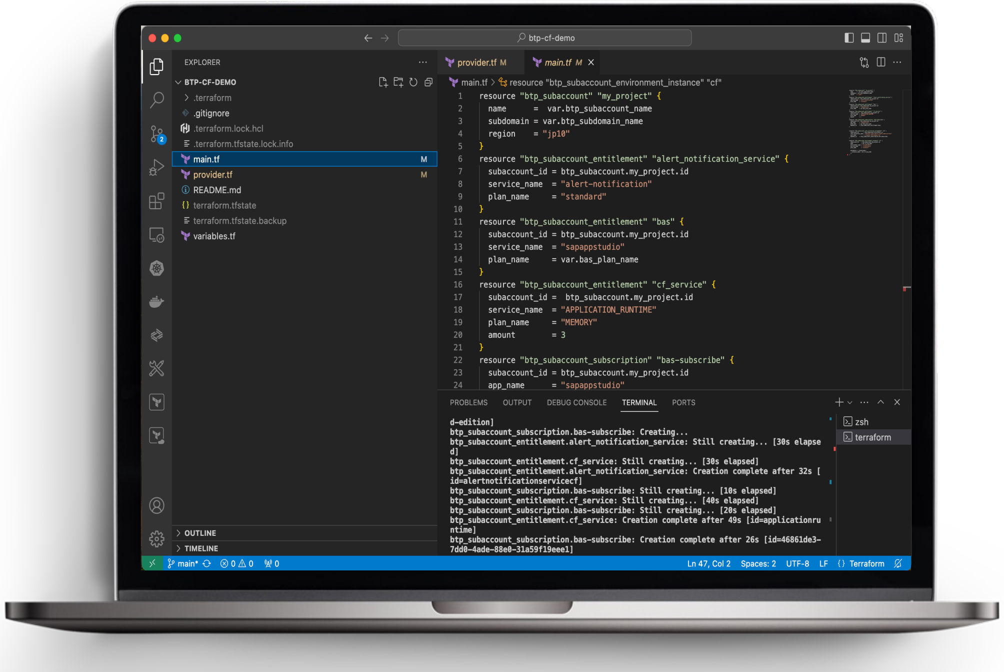
Ensure Quality aka take “as Code” seriously

Sorry, but I just destroyed production ...

Keep it rolling out ... is copy & paste the way?



What is Infrastructure as Code?



```
resource "btp_subaccount" "my_project" {
  name      =  var.btp_subaccount_name
  subdomain = var.btp_subdomain_name
  region    = "jp10"
}
resource "btp_subaccount_entitlement" "alert_notification_service" {
  subaccount_id = btp_subaccount.my_project.id
  service_name  = "alert-notification"
  plan_name     = "standard"
}
resource "btp_subaccount_entitlement" "bas" {
  subaccount_id = btp_subaccount.my_project.id
  service_name  = "sapappstudio"
  plan_name     = var.bas_plan_name
}
resource "btp_subaccount_entitlement" "cf_service" {
  subaccount_id =  btp_subaccount.my_project.id
  service_name  = "APPLICATION_RUNTIME"
  plan_name     = "MEMORY"
  amount        = 3
}
resource "btp_subaccount_subscription" "bas-subscribe" {
  subaccount_id = btp_subaccount.my_project.id
  app_name      = "sapappstudio"
```

```
d-edition]
btp_subaccount_subscription.bas-subscribe: Creating...
btp_subaccount_entitlement.alert_notification_service: Still creating... [30s elapse
d]
btp_subaccount_entitlement.cf_service: Still creating... [30s elapsed]
btp_subaccount_entitlement.alert_notification_service: Creation complete after 32s [
id=alertnotificationservicecf]
btp_subaccount_subscription.bas-subscribe: Still creating... [10s elapsed]
btp_subaccount_entitlement.cf_service: Still creating... [40s elapsed]
btp_subaccount_subscription.bas-subscribe: Still creating... [20s elapsed]
btp_subaccount_entitlement.cf_service: Creation complete after 49s [id=applicationru
ntime]
btp_subaccount_subscription.bas-subscribe: Creation complete after 26s [id=46861de3-
7dd0-4ade-88e0-31a59f19eee1]
```

Infrastructure as Code (IaC) is the ***provisioning*** and ***managing*** of infrastructure ***through code*** instead of through manual processes.

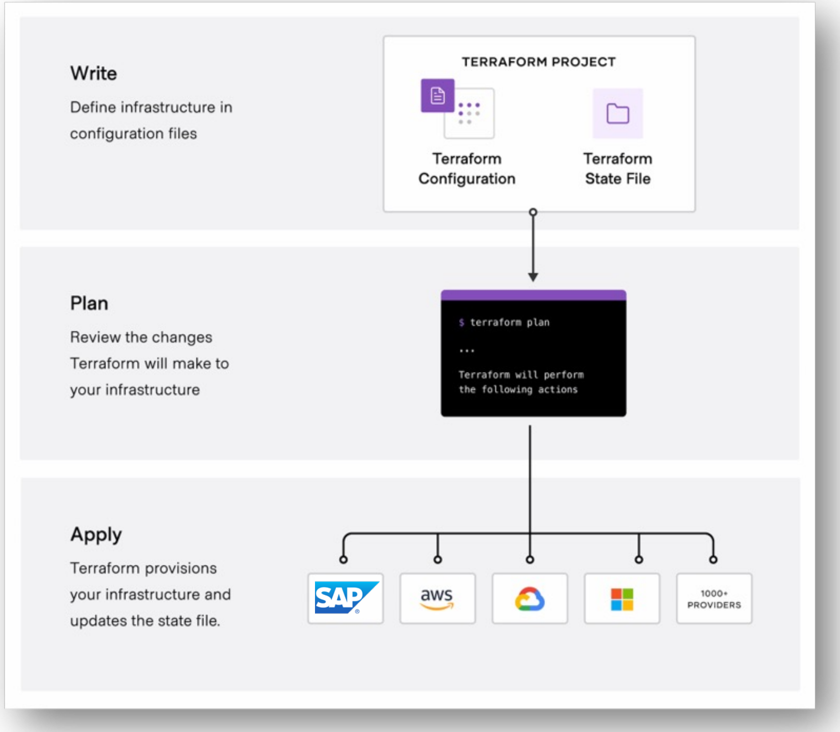
Infrastructure is (often) defined ***declaratively***

(Often) Central storage of ***state***

What is Terraform?

Terraform is an ***IaC tool*** that lets you define, provision and manage both cloud and on-prem infrastructure.

Terraform keeps track of your real infrastructure in a ***state file*** to determine the changes to make to your infrastructure so that it will match your configuration.



Write

Define infrastructure in configuration files

Plan

Review the changes Terraform will make to your infrastructure

```
$ terraform plan
...
Terraform will perform
the following actions
```

Apply

Terraform provisions your infrastructure and updates the state file.

Where do we start?

Terraform configuration for SAP BTP setup is in place ✓

Configuration is stored in GitHub ✓

Main branch is protected and Code Review is required ✓

Remote state backend is setup (Azure Blob Storage) ✓

GitHub Action for CI/CD is set up ✓

What happens now?

The first iteration of Terraform setup was done by few experts

The infrastructure is now maintained by a team with different knowledge levels of Terraform

How can we support this team in their journey, make them more productive and keep the quality up?

Let’s start the journey!

What’s cool when sticking to industry standards?

Somebody else most probably already had the same challenge …

… it might already be part of the tooling

… it might be solved by another project that can be integrated

Ensure Quality aka take “as Code” seriously

Goal: We want to ensure that with every change of the configuration (= PR)

- The code is properly ***formatted***
- The code is ***statically validated***
- ***Unit tests*** are executed

Sorry, but I just destroyed production ...

Goal: We want to safeguard the deployment (`terraform apply`) based on **rules** so that certain actions like destroy cannot be automatically applied to production.

Sorry, but I just destroyed production …

And the answer is:

Open Policy Agent

Keep it rolling out … is copy & paste the way?

Goal: We want to rollout the configuration to several stages (dev, test, prod) but we **do not** want to

- Have a **monolithic state** = (maximal blast radius)
- **Copy & Paste** configurations all over the place
- Extensively use functions and **“IFs” with control parameters** in our configuration

Keep it rolling out … is copy & paste the way?

And the answer is:

Terramate

Q & A

Thank you.

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SAP Bring out your best.

References

Sample repository: https://github.com/lechnerc77/terraform-at-sitmuc2024

My blog post series: https://dev.to/lechnerc77/series/26908

GitHub Org with samples from blog posts: https://github.com/btp-automation-scenarios

terraform fmt: https://developer.hashicorp.com/terraform/cli/commands/fmt

terraform validate: https://developer.hashicorp.com/terraform/cli/commands/validate

terraform test: https://developer.hashicorp.com/terraform/cli/test

Open Policy Agent: https://www.openpolicyagent.org/

Open Policy Agent and Terraform: https://www.openpolicyagent.org/docs/latest/terraform/

Terramate: https://terramate.io/