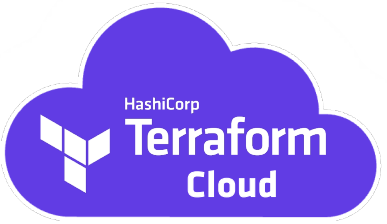
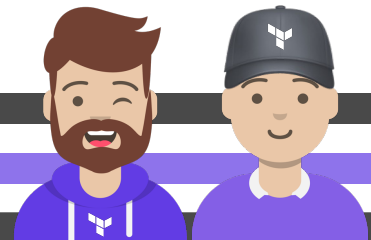
Terraform Cloud Workspaces

What are Workspaces?

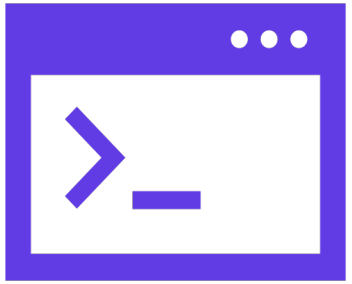


- Workspaces are how Terraform Cloud tracks infrastructure
- Workspaces contain:
  - Linked VCS repository with Terraform code
  - Variables and values used by the configuration
  - The current Terraform state file
  - Historical states and run logs

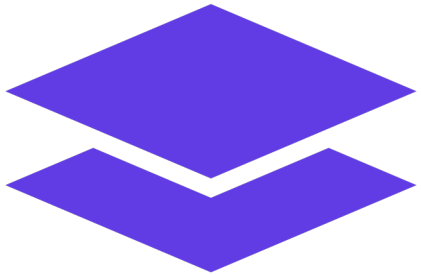


Workspace Components

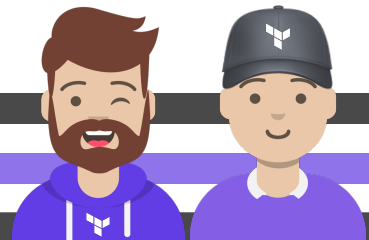
State Data



Variables

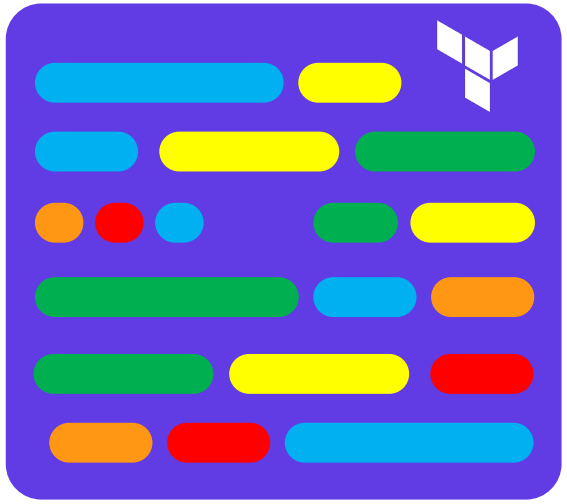


Operations & Logs

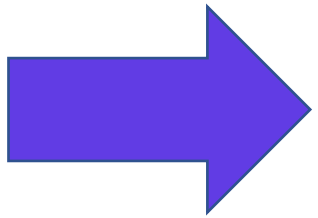


Units of Isolation

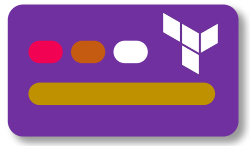
Workspaces are the unit of isolation in Terraform containing a configuration file, variables, settings, and state. Similar to how monolithic applications are decomposed into microservices, monolithic infrastructure is decomposed into workspaces.



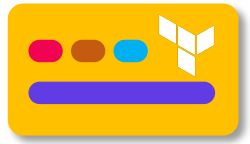
Monolithic State File
(Terraform OSS)



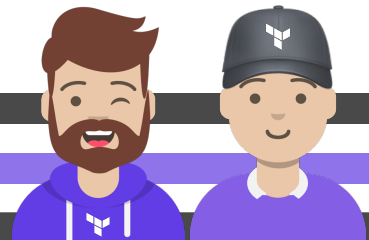
App Workspace - State File



Network Workspace - State File

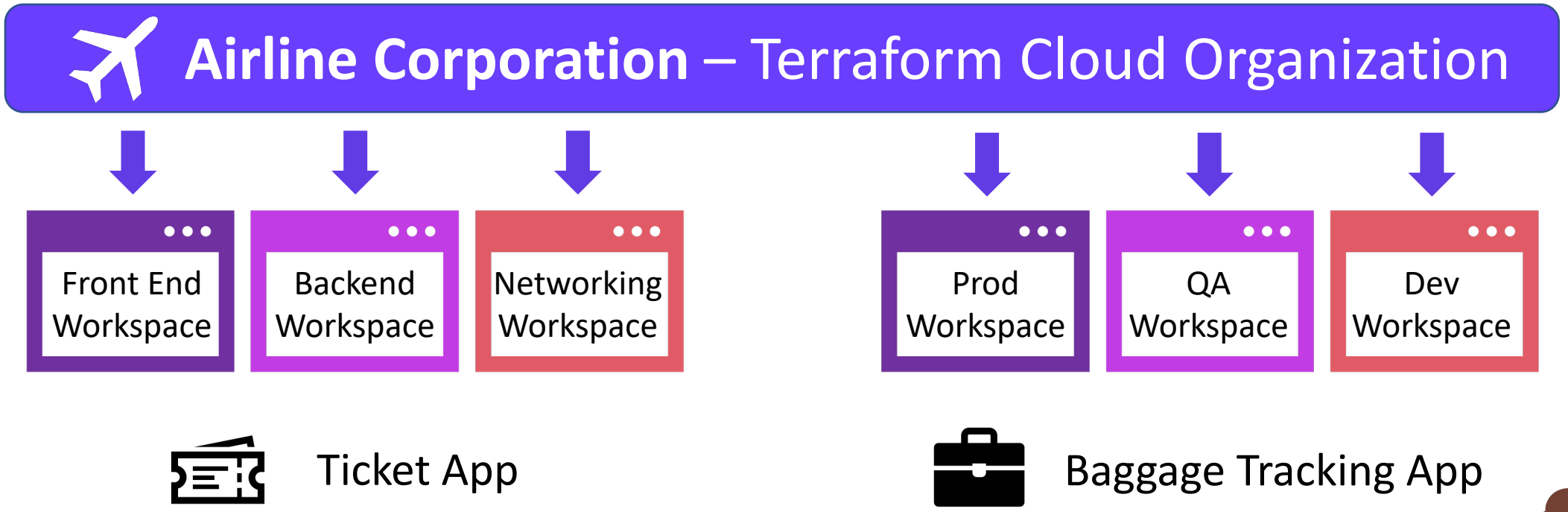


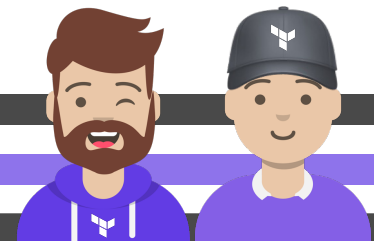
Database Workspace - State File



Workspace Per Application

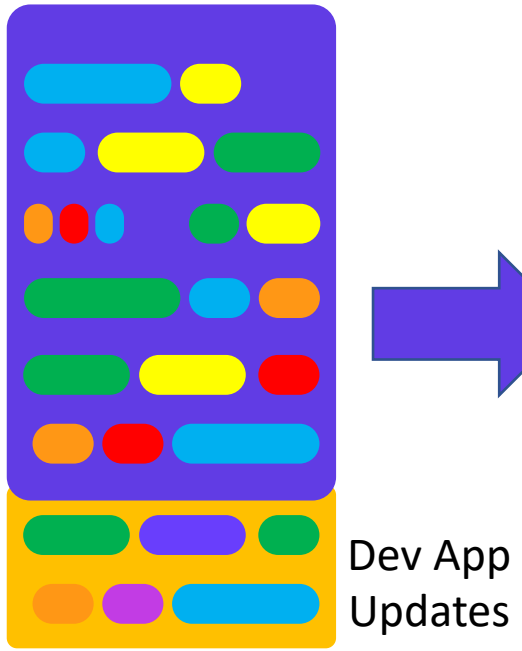
Workspaces have separate owners, release frequencies, access controls, and scope.





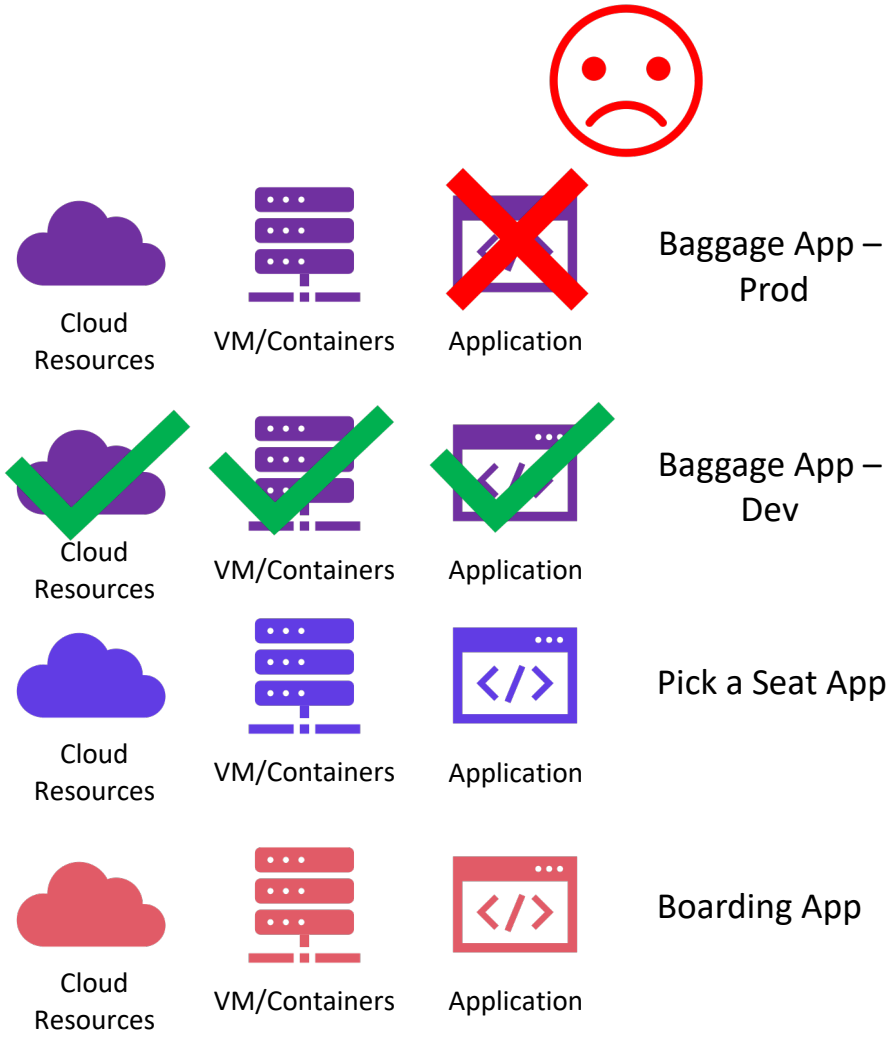
Using a Single State File

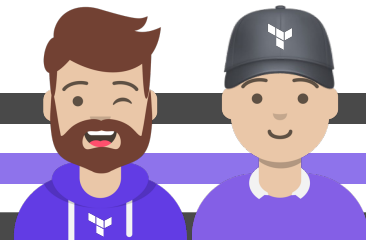
- What is the impact of a change?
- One big state file seems simple, but every change can impact different resources in your environment.
- Sometimes not intentionally
- Deployment to Dev shouldn't impact resources associated with Prod



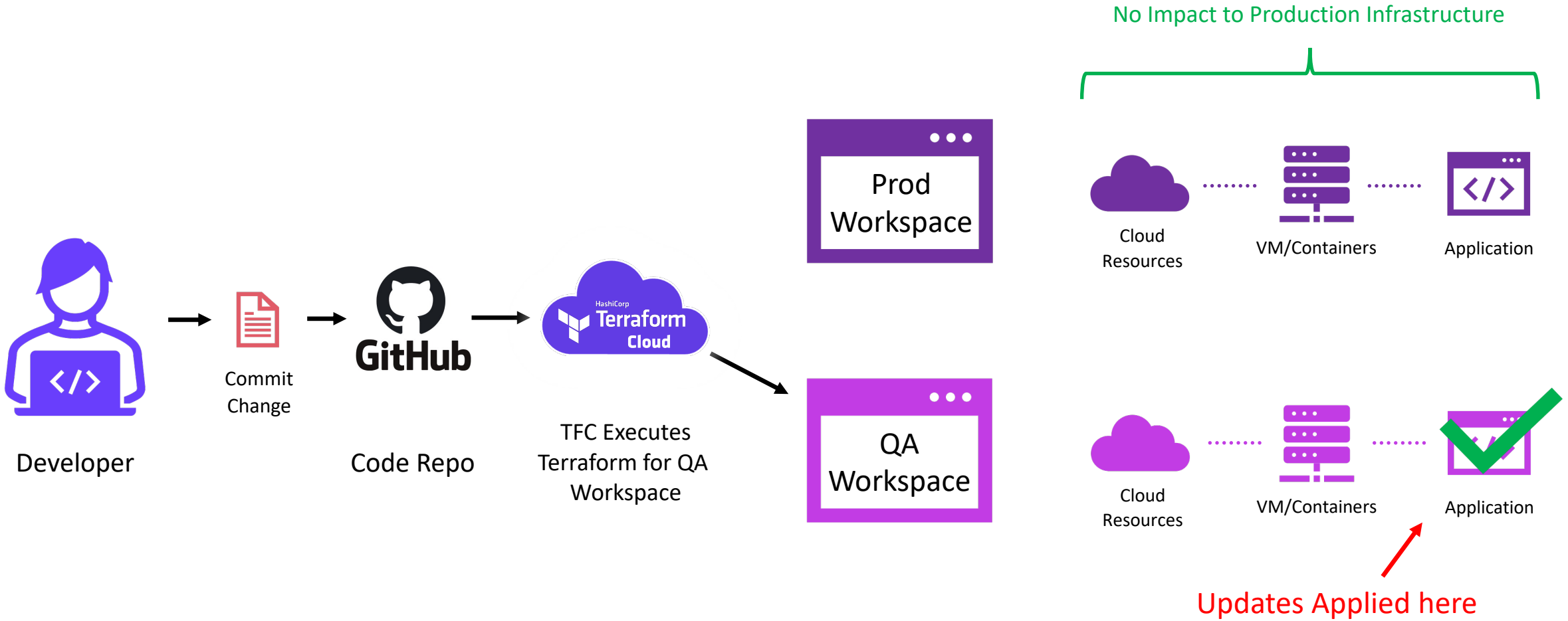
Single State File For Everything

Dev App Updates





Reducing Blast Radius



Workspace Naming

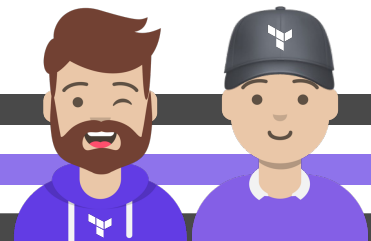
Names are important for organization, filtering, & permissions

Follow a naming standard that makes sense to your organization:

- <app> - <tier> - <region> - <environment>
- <team> - <environment> - <app> - <tier> - <region> - <#>

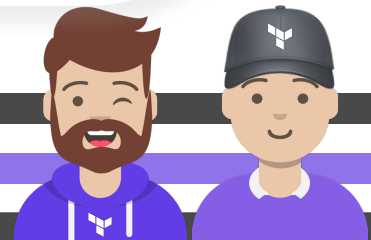
Examples:

- eCommerce-web-us-west-1-prod
- adt-qa-mobile-prod-us-east-2-002



Workspace Components

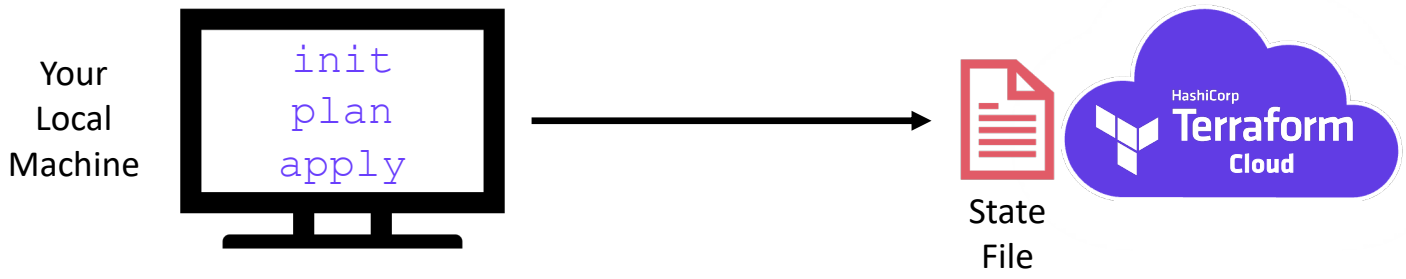
- Terraform Configurations
- State File
- Terraform Version
- Terraform Variables
- Run History
- Permissions
- Notifications
- Policy Enforcement
- Cost Estimation

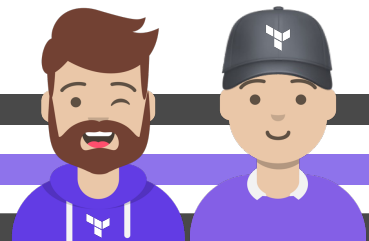


Local Execution

- Terraform will no longer write to the local `.tfstate` file
- Everything else about your local workflow remains the same

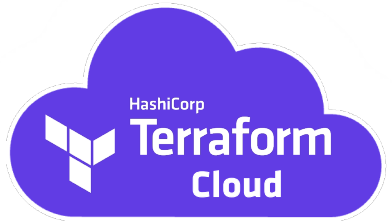
- If you've been using Terraform open-source, this is where most people get started because the workflow is identical
- Init, Plan, Apply is still the same, but now your state is stored on Terraform Cloud





What Components Can I Use?

Local Execution

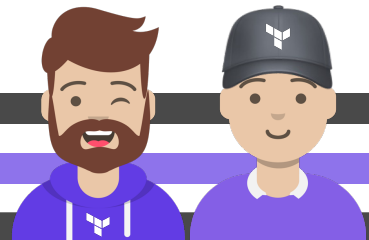


Terraform Configurations

Your Terraform configurations are still local

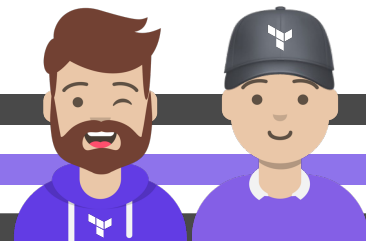
State File

Same state file but it is now stored on Terraform Cloud

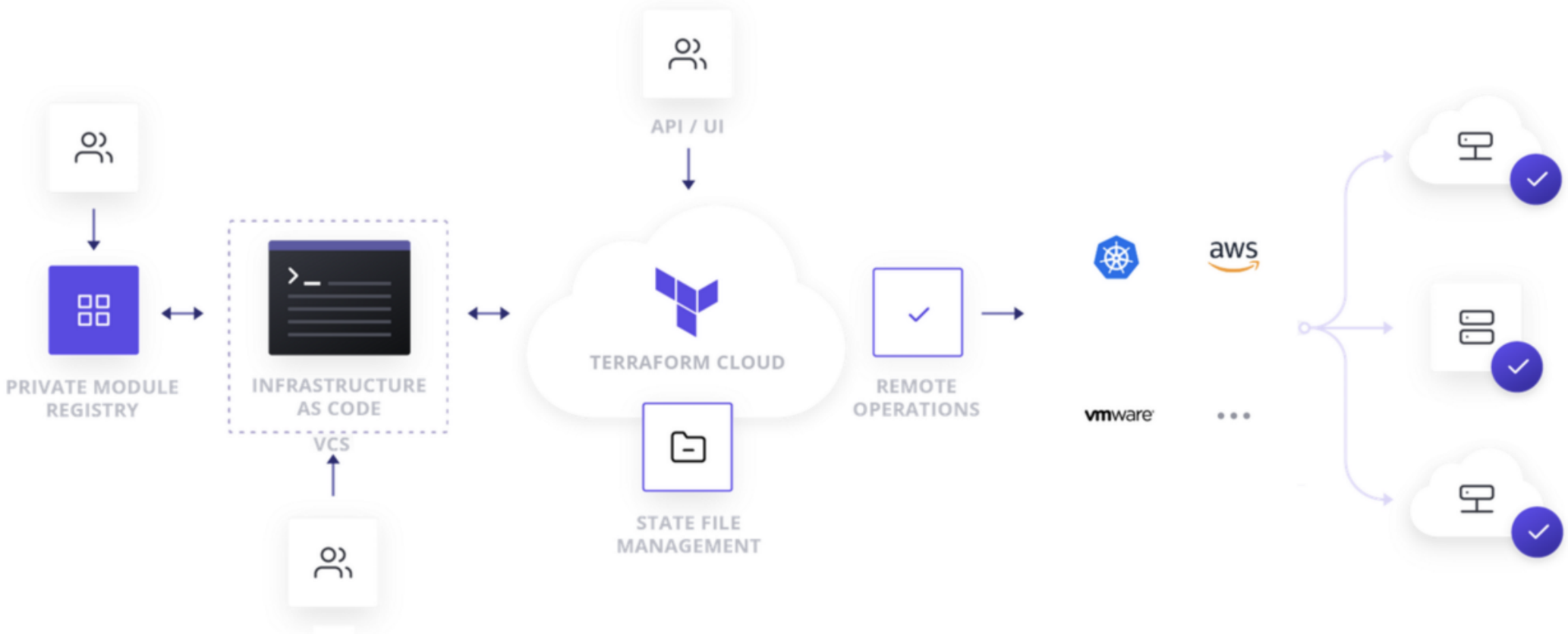


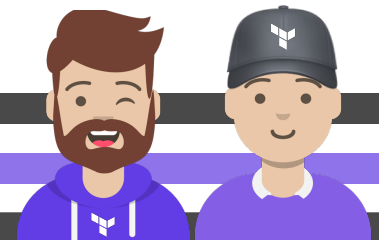
Remote Execution

- Init, Plan, Apply is still the same just your state is stored on TFC
- Now you have more control with variables, policies, permissions, notifications,
- Runs are happening IN Terraform Cloud
  - No longer dependable on local machine
- Historical view of all Runs are now available in a centralized location



Remote Execution



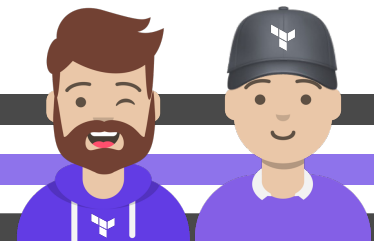


What Components Can I Use?

HashiCorp Terraform Cloud

Remote Execution

- Terraform Configurations
- Terraform Variables
- State File
- Run History
- Notifications
- Terraform Version

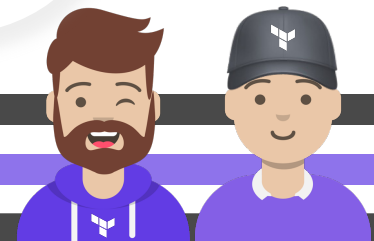


Need More Features?

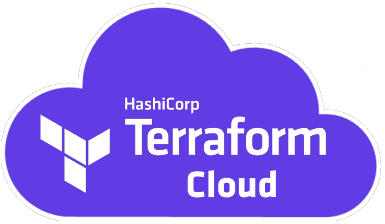
HashiCorp Terraform Cloud

You Can Upgrade Your Terraform Cloud Plan

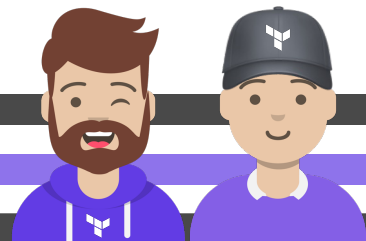
- Terraform Configurations
- State File
- Policies ✓
- Terraform Variables
- Run History
- Permissions ✓
- Notifications
- Terraform Version
- Cost Estimation ✓



Backend Initialization



- Remote State backends must be initialized before use
- Initialization prepares the remote backend for storage
- Initialization will prompt for any missing values and cache them locally in .terraform (which should be ignored from source)
- Initialization will also optionally migrate state



Terraform Cloud Backend

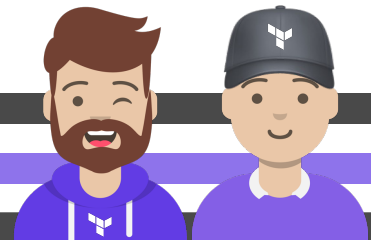
backend.tf

```
# Terraform 1.0 and Previous Versions

terraform {
  backend "remote" {
    hostname = "app.terraform.io"
    organization = "my-organization"
    workspaces { name | prefix }
  }
}
```

cloud.tf

```
# Terraform 1.1 and Later

terraform {
  cloud {
    hostname = "app.terraform.io"
    organization = "my-organization"
    workspaces { name | tags }
  }
}
```

`cloud` block is the new standard



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