Terraform

- Objectives:
  - Introduction to IAC
  - Different IAC tools
  - Why Terraform

Terraform

- Objectives:
  - HCL Basics
  - Terraform Configuration
  - Providers
  - Input Variables
  - Output variables

Terraform

- Objectives:
  - Resource Attributes
  - Resource Dependencies
  - Terraform State
  - Mutable vs Immutable Infrastructure
  - Terraform Lifecycle rules

Terraform

- Objectives:
  - Datasources
  - Meta-arguments
  - Count
  - For each
  - Version Constraints

Terraform

- Objectives:
  - Terraform commands
  - Terraform State
  - Terraform State Commands
  - Terraform state locking
  - Terraform with AWS

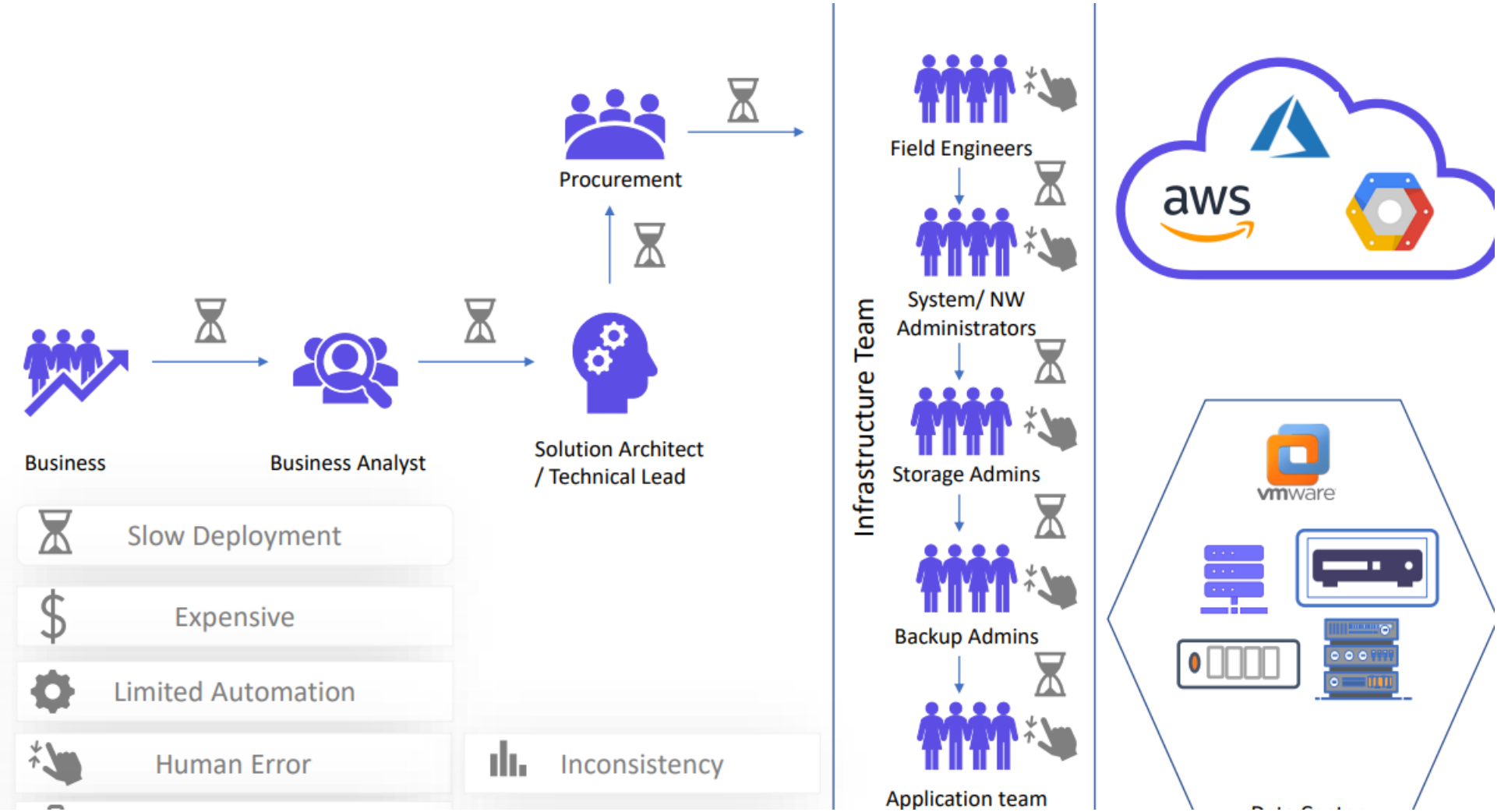
Terraform

- Objectives:
  - Terraform Remote State
  - Terraform tainting and untainting
  - Terraform Provisioners
  - Terraform import
  - Terraform with AWS

Terraform

- Objectives:
  - Terraform Modules
  - Terraform functions
  - Terraform Workspace

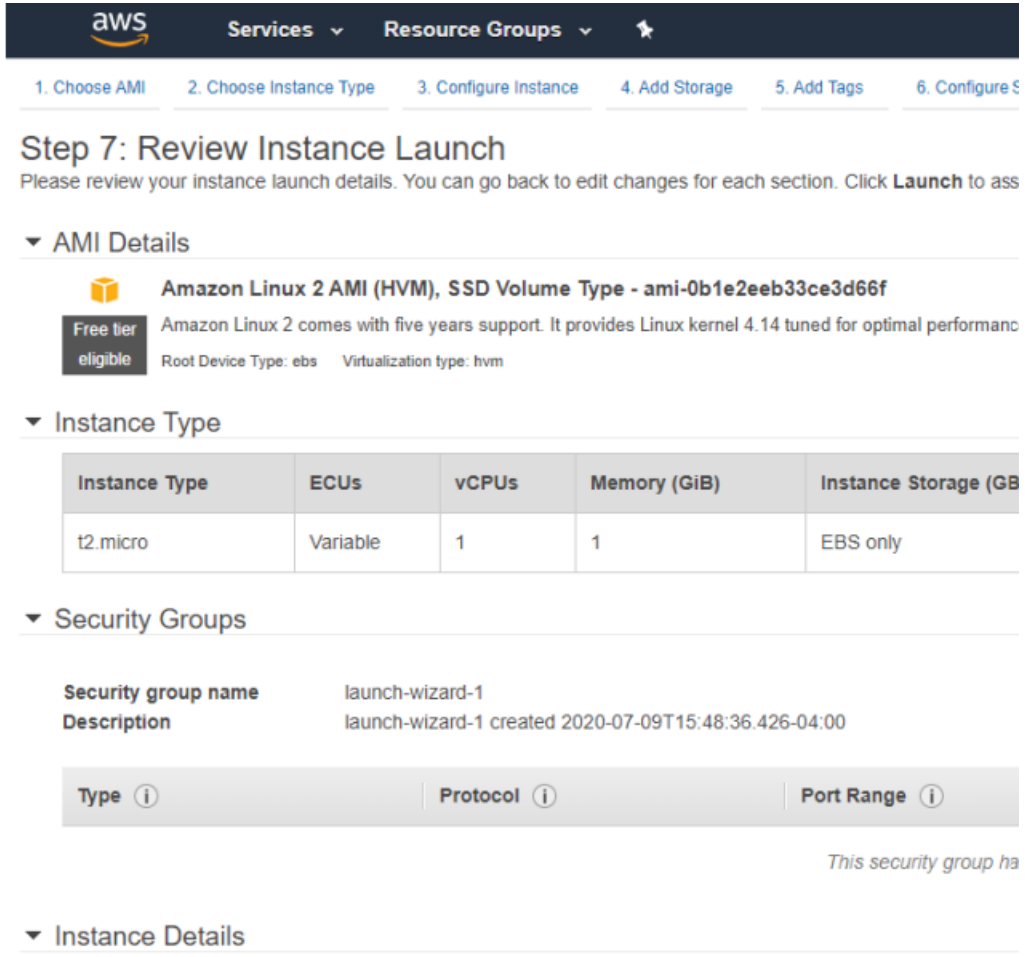
Traditional IT Challenges



Infrastructure as Code (IAC)

ec2.sh

```
#!/bin/bash

IP_ADDRESS="10.2.2.1"

EC2_INSTANCE=$(ec2-run-instances --instance-type
t2.micro ami-0edab43b6fa892279)

INSTANCE=$(echo ${EC2_INSTANCE} | sed 's/*INSTANCE //'
| sed 's/ .*//')

# Wait for instance to be ready
while ! ec2-describe-instances $INSTANCE | grep -q
"running"
do
  echo Waiting for $INSTANCE is to be ready...
done

# Check if instance is not provisioned and exit
if [ ! $(ec2-describe-instances $INSTANCE | grep -q
"running") ]; then
  echo Instance $INSTANCE is stopped.
  exit
fi

ec2-associate-address $IP_ADDRESS -i $INSTANCE

echo Instance $INSTANCE was created successfully!!!
```



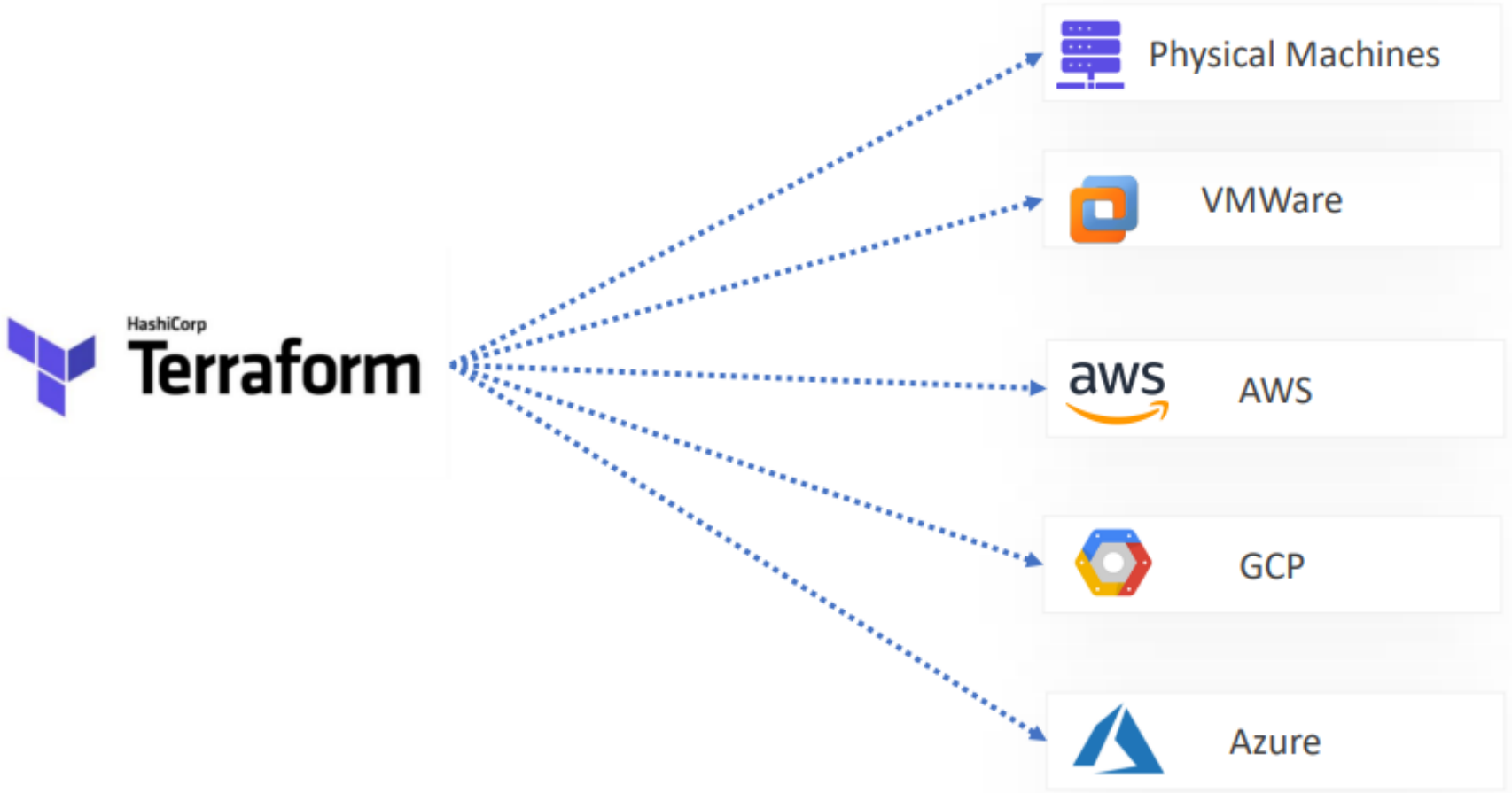
Types of IAC Tools

Configuration Management

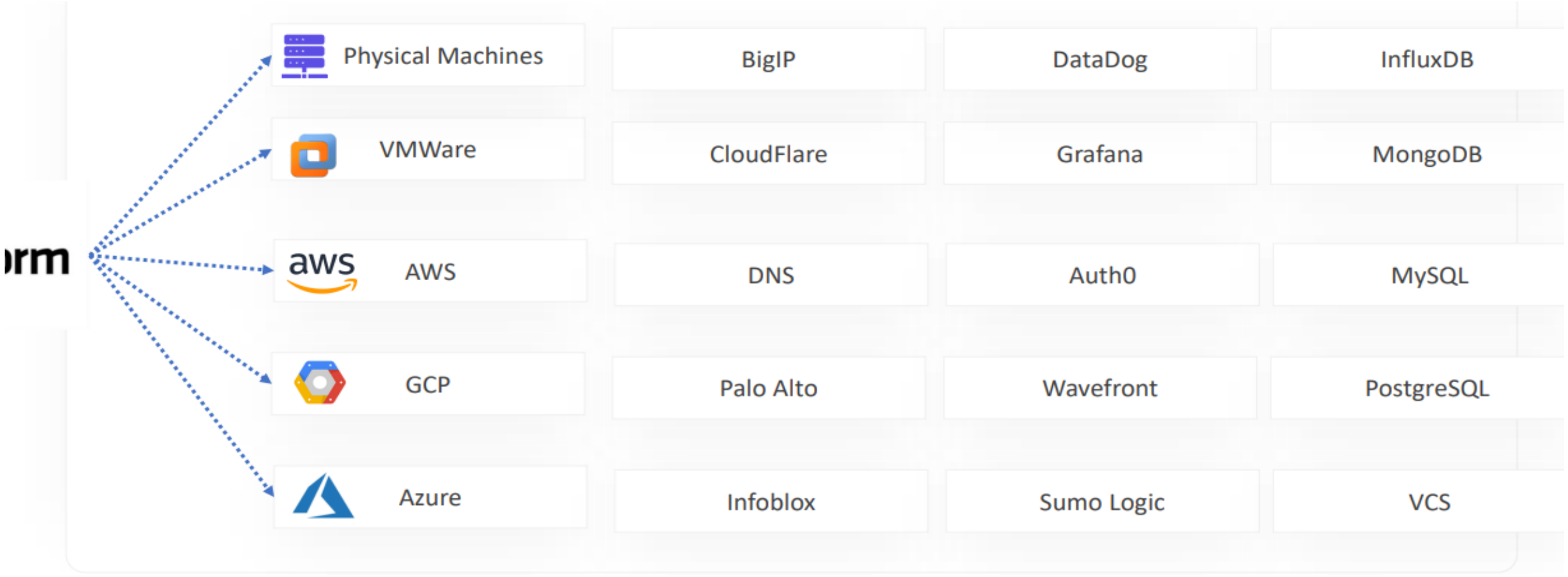
Server Templating

Provisioning Tools

Why Terraform



Why Terraform

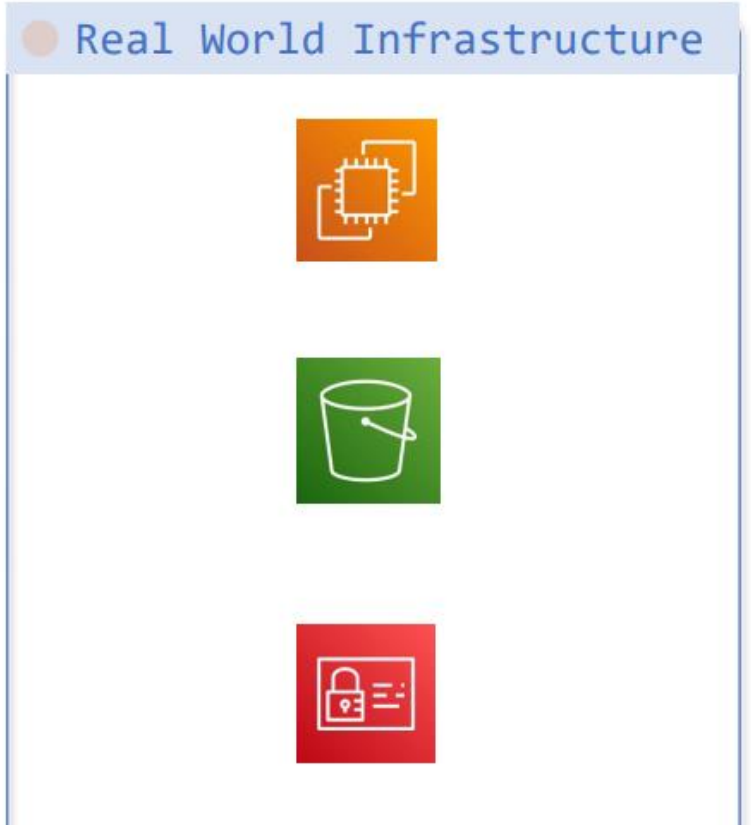


Hashicorp Configuration Language (HCL)

main.tf

```
resource "aws_instance" "webserver" {
  ami           = "ami-0edab43b6fa892279"
  instance_type = "t2.micro"
}

resource "aws_s3_bucket" "finance" {
    bucket = "finanace-21092020"
    tags   = {
        Description = "Finance and Payroll"
    }
}
 resource "aws_iam_user" "admin-user" {
     name = "lucy"
     tags = {
       Description = "Team Leader"
     }
```

Init

Plan

Apply