Domain 3 - Terraform Provisioners

Module 1: Understanding Provisioners in Terraform

1.1 Understanding the Challenge

Till now we have been working only on the creation and destruction of infrastructure scenarios.

Let's take an example:

We created a web-server EC2 instance with Terraform.

Problem: It is only an EC2 instance, it does not have any software installed.

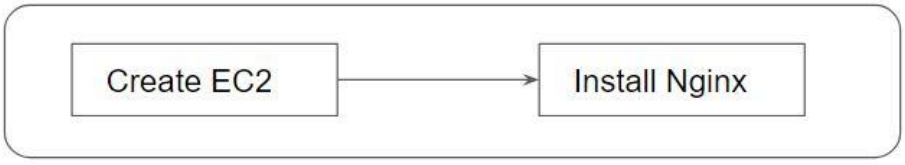
What if we want a complete end to end solution?

1.2 Introducing Terraform Provisioners

Provisioners are used to execute scripts on a local or remote machine as part of resource creation or destruction.

Let's take an example:

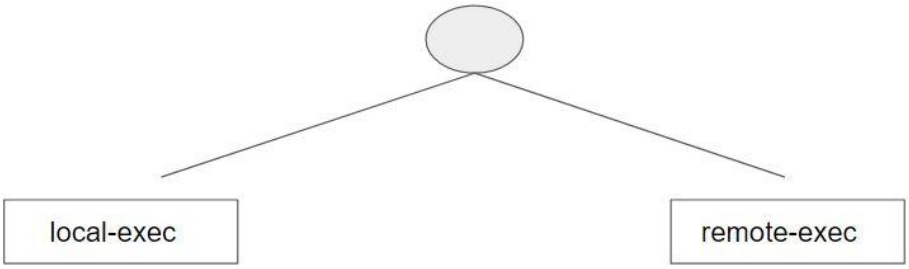
On creation of Web-Server, execute a script which installs Nginx web-server.



Module 2: Types of Provisioners

Terraform has the capability to turn provisioners both at the time of resource creation as well as destruction.

There are two main types of provisioners:



2.1 Local Exec Provisioners

local-exec provisioners allow us to invoke a local executable after the resource is created.

One of the most used approaches of local-exec is to run ansible-playbooks on the created server after the resource is created.

Let's take an example:

```
provisioner "local-exec" {
    command = "echo ${aws_instance.web.private_ip} >> private_ips.txt"
  }
```

2.2 Remote Exec Provisioners

Remote-exec provisioners allow invoking scripts directly on the remote server.

Let's take an example:

```
resource "aws_instance" "web" {
  # …

  provisioner "remote-exec" {
                        ……...
  }
}
```

Module 3: Provisioner Types

There are two primary types of provisioners:

Types of Provisioners	Description
Creation-Time Provisioner	Creation-time provisioners are only run during creation, not during updating or any other lifecycle If a creation-time provisioner fails, the resource is marked as tainted.
Destroy-Time Provisioner	Destroy provisioners are run before the resource is destroyed.

If when = destroy is specified, the provisioner will run when the resource it is defined within is destroyed.

```
resource "aws_instance" "web" {
  # ...

  provisioner "local-exec" {
    when    = destroy
    command = "echo 'Destroy-time provisioner'"
  }
}
```

Module 4: Failure Behavior

By default, provisioners that fail will also cause the terraform apply itself to fail.

The on_failure setting can be used to change this. The allowed values are:

Allowed Values	Description
continue	Ignore the error and continue with creation or destruction.
fail	Raise an error and stop applying (the default behavior). If this is a creation provisioner, taint the resource.

```
resource "aws_instance" "web" {
  # ...

  provisioner "local-exec" {
    command    = "echo The server's IP address is ${self.private_ip}"
    on_failure = continue
  }
}
```

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Module 5: Null Resource

The null_resource implements the standard resource lifecycle but takes no further action.