

Diplomatura en DevOps

Edición 2403

Informe Práctico Integrador N-2 (PIN-2) *“GH Actions - apache – AWS”*

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Repositorio de GitHub Público:

- <https://github.com/hdbarrios/devops-g6-pin2>

Objetivos:

- Instalar terraform
- Configurar usuario programático en AWS IAM
- Desarrollar código terraform para crear una instancia EC2 aprovisionada con apache
- Utilizar github actions para desplegar un apache
 - Plus - destruir toda la infra desde github actions.

Pre- Requisitos:

Instalar terraform

<https://developer.hashicorp.com/terraform/tutorials/aws-get-started/install-cli>

```
$ sudo apt-get update && sudo apt-get install -y gnupg  
software-properties-common
```

```
$ wget -O- https://apt.releases.hashicorp.com/gpg | \  
gpg --dearmor | \  
sudo tee /usr/share/keyrings/hashicorp-archive-keyring.gpg > /dev/null
```

```
$ gpg --no-default-keyring \  
--keyring /usr/share/keyrings/hashicorp-archive-keyring.gpg \  
--fingerprint
```

```
$ echo "deb [signed-by=/usr/share/keyrings/hashicorp-archive-keyring.gpg] \  
https://apt.releases.hashicorp.com $(lsb_release -cs) main" | \  
sudo tee /etc/apt/sources.list.d/hashicorp.list
```

```
$ sudo apt update && sudo apt-get install terraform -y
```

```
$ terraform -version  
Terraform v1.10.2  
on linux_amd64
```

Adicional puedes instalar tfenv para tener varias versiones de Terraform:

<https://github.com/tfutils/tfenv>

```
$ export PATH="$HOME/.tfenv/bin:$PATH"    #INCLUIR EN ~/.bash_profile  
$ tfenv  
tfenv 3.0.0  
Usage: tfenv <command> [<options>]
```

Commands:

install	Install a specific version of Terraform
use	Switch a version to use
uninstall	Uninstall a specific version of Terraform
list	List all installed versions

```
list-remote    List all installable versions
version-name   Print current version
init          Update environment to use tfenv correctly.
pin           Write the current active version to ./terraform-version
```

```
$ tfenv use 1.10.2
```

```
No installed versions of terraform matched '1.10.2:^1.10.2$'. Trying to
install a matching version since TFENV_AUTO_INSTALL=true
```

```
Installing Terraform v1.10.2
```

```
Downloading          release          tarball          from
https://releases.hashicorp.com/terraform/1.10.2/terraform_1.10.2_linux_amd6
4.zip
```

```
#####
#####
##### 100.0%
```

```
Downloading          SHA          hash          file          from
https://releases.hashicorp.com/terraform/1.10.2/terraform_1.10.2_SHA256SUMS
```

```
Not instructed to use Local PGP (/home/hbarrios/.tfenv/use-{gpgv,gnupg}) &
No keybase install found, skipping OpenPGP signature verification
```

```
Archive: /tmp/tfenv_download.Yfp59d/terraform_1.10.2_linux_amd64.zip
```

```
  inflating: /home/hbarrios/.tfenv/versions/1.10.2/LICENSE.txt
```

```
  inflating: /home/hbarrios/.tfenv/versions/1.10.2/terraform
```

```
Installation of terraform v1.10.2 successful. To make this your default
version, run 'tfenv use 1.10.2'
```

```
Switching default version to v1.10.2
```

```
Default version (when not overridden by ./terraform-version or
TFENV_TERRAFORM_VERSION) is now: 1.10.2
```

Crear el backend:

Usando **create_backend.sh**, si no tienes el archivo `~/aws/config` creado, ejecuta **aws configure --profile terraform-admin** (se aconseja si tienes más de una cuenta por administrar usar profiles)

```
hbarrios@nubiral: ~/workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 14:31:47 (master 8d395cd) $ tree
├── backend.tf
├── create_backend.sh
├── ec2.tf
├── outputs.tf
├── profiles
│   ├── apache-key.pem
│   ├── apache-key.pub
│   ├── pin2.tfvars
│   └── provision.sh
├── variables.tf
└── vpc.tf

2 directories, 10 files
hbarrios@nubiral: ~/workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 14:31:49 (master 8d395cd) $
```

```
hbarrios@nubiral: ~/workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 14:35:38 (master 8d395cd) $ ./create_backend.sh
/usr/local/bin/aws
{
  "Location": "/tf-state-apache-bucket"
}
{
  "TableDescription": {
    "AttributeDefinitions": [
      {
        "AttributeName": "LockID",
        "AttributeType": "S"
      }
    ],
    "TableName": "tf-apache-locks",
    "KeySchema": [
      {
        "AttributeName": "LockID",
        "KeyType": "HASH"
      }
    ],
    "TableStatus": "CREATING",
    "CreationDateTime": "2024-12-17T14:35:48.078000-03:00",
    "ProvisionedThroughput": {
      "NumberOfDecreasesToday": 0,
      "ReadCapacityUnits": 0,
      "WriteCapacityUnits": 0
    },
    "TableSizeBytes": 0,
    "ItemCount": 0,
    "TableArn": "arn:aws:dynamodb:us-east-1:536697232168:table/tf-apache-locks",
    "TableId": "157da151-dd71-4327-879f-b78396685163",
    "BillingModeSummary": {
      "BillingMode": "PAY_PER_REQUEST"
    }
  }
}
}

{
  "Table": {
    "AttributeDefinitions": [
      {
        "AttributeName": "LockID",
        "AttributeType": "S"
      }
    ],
    "TableName": "tf-apache-locks",
    "KeySchema": [
      {
        "AttributeName": "LockID",
        "KeyType": "HASH"
      }
    ],
    "TableStatus": "CREATING",
    "CreationDateTime": "2024-12-17T14:35:48.078000-03:00",
    "ProvisionedThroughput": {
      "NumberOfDecreasesToday": 0,
      "ReadCapacityUnits": 0,
      "WriteCapacityUnits": 0
    },
    "TableSizeBytes": 0,
    "ItemCount": 0,
    "TableArn": "arn:aws:dynamodb:us-east-1:536697232168:table/tf-apache-locks",
    "TableId": "157da151-dd71-4327-879f-b78396685163",
    "BillingModeSummary": {
      "BillingMode": "PAY_PER_REQUEST"
    }
  }
}
}

hbarrios@nubiral: ~/workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 15:12:49 (master 8d395cd) $ aws configure --profile terraform-admin
AWS Access Key ID [*****@KEL]: 
AWS Secret Access Key [*****@zic]: 
Default region name [None]: us-east-1
Default output format [None]: json
hbarrios@nubiral: ~/workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 15:13:00 (master 8d395cd) $
```

Account snapshot - updated every 24 hours

All AWS Regions

View Storage Lens dashb

Storage lens provides visibility into storage usage and activity trends. Metrics don't include directory buckets. [Learn more](#)

General purpose buckets

Directory buckets

General purpose buckets (1)

Info

All AWS Regions

Copy ARN

Empty

Delete

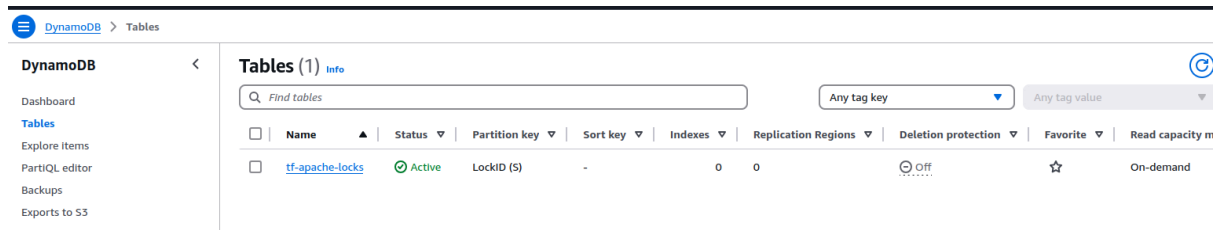
Create bucket

Buckets are containers for data stored in S3.

Find buckets by name

< 1 >

Name	Region	IAM Access Analyzer	Creation date
tf-state-apache-bucket	US East (N. Virginia) us-east-1	View analyzer for us-east-1	December 17, 2024, 14:35:46 (UTC-03:00)



The screenshot shows the AWS DynamoDB console. On the left is a navigation menu with options like Dashboard, Tables, Explore items, PartiQL editor, Backups, and Exports to S3. The main area is titled 'Tables (1) Info' and contains a table with one entry: 'tf-apache-locks'. The table's status is 'Active', its partition key is 'LockID (S)', and it has 0 indexes and 0 replication regions. It also shows deletion protection is off and read capacity is on-demand.

Name	Status	Partition key	Sort key	Indexes	Replication Regions	Deletion protection	Favorite	Read capacity m
tf-apache-locks	Active	LockID (S)	-	0	0	Off	☆	On-demand

Evaluar código terraform y credenciales aws:

Lista de comandos de Terraform que puedes usar para probar y luego aplicar tu configuración en los archivos de Terraform:

1. Inicializar Terraform

Primero, se debe inicializar el entorno de Terraform. Esto instalará los proveedores necesarios y configurará tu backend (si lo estás usando).

```
terraform init -backend-config="profile=terraform-admin"
```

Este comando se ejecuta una sola vez cuando configuras un nuevo proyecto Terraform o cuando haces cambios en los proveedores y módulos.

```
hbarrios@nubiral: /workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 15:30:09 (master 8d395cd) $ terraform init -backend-config="profile=terraform-admin"
Initializing the backend...
Initializing provider plugins...
- Finding latest version of hashicorp/aws...
- Installing hashicorp/aws v5.81.0...
- Installed hashicorp/aws v5.81.0 (signed by HashiCorp)
Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when
you run "terraform init" in the future.

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
```

2. Verificar la configuración (Planificación)

Para revisar qué cambios realizará Terraform en tu infraestructura, se puede ejecutar el comando `terraform plan`. Este comando no realizará ningún cambio, solo mostrará una descripción detallada de lo que se va a hacer.

```
terraform plan -var-file=profiles/pin2.tfvars -out=tfplan
```

```
hbarrios@nubiral: /workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 15:37:33 (master 8d395cd) $ terraform plan -var-file=profiles/pin2.tfvars
Acquiring state lock. This may take a few moments...
data.aws_availability_zones.azs: Reading...
data.aws_availability_zones.azs: Read complete after 1s [id=us-east-1]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:
```

...

```
Plan: 9 to add, 0 to change, 0 to destroy.

Changes to Outputs:
+ apache_instance_id      = (known after apply)
+ apache_instance_ip      = (known after apply)
+ apache_instance_private_dns = (known after apply)
+ apache_instance_private_ip = (known after apply)
+ apache_instance_public_dns = (known after apply)
+ apache_instance_state    = (known after apply)
+ apache_instance_type     = "t2.micro"
+ availability_zone        = "us-east-1a"
+ instance_ip             = (known after apply)
+ instance_key_name        = "apache-key"
+ internet_gateway_id     = (known after apply)
+ route_table_id          = (known after apply)
+ security_group_id       = (known after apply)
+ subnet_id               = (known after apply)
+ vpc_id                  = (known after apply)

Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.
```

Para este proyecto se debe especificar el archivo de variables `pin2.tfvars` con la opción `-var-file` para que Terraform use las configuraciones definidas en ese archivo.

Salida esperada: Terraform mostrará un resumen de los recursos que se van a crear, modificar o destruir.

Nota:

- se puede ejecutar para validar sintaxis: `terraform validate`

Permite tener código de salida si se quiere implementar CI/CD:

```
terraform plan -var-file=profiles/pin2.tfvars -out=tfplan
-detailed-exitcode && echo $?
```

Código de salida 0: No hay cambios

Código de salida 1: Ocurrió un error

Código de salida 2: Se detectaron cambios

3. Aplicar la configuración (Ejecutar cambios)

Si todo está bien con el plan y se puede aplicar los cambios, ejecuta:

```
terraform apply -var-file=profiles/pin2.tfvars
```

Terraform pedirá confirmación antes de proceder. Al estar seguro de que los cambios son correctos, se escribe `yes` para confirmar.

```
hbarrios@nubtral: /workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 15:47:25 (pin2_v1 a3fb2b9) $ terraform apply -var-file=profiles/pin2.tfvars
Acquiring state lock. This may take a few moments...
data.aws_availability_zones.azs: Reading...
data.aws_availability_zones.azs: Read complete after 1s [id=us-east-1]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:
```

...

Plan: 9 to add, 0 to change, 0 to destroy.

Changes to Outputs:

```
+ apache_instance_id      = (known after apply)
+ apache_instance_ip      = (known after apply)
+ apache_instance_private_dns = (known after apply)
+ apache_instance_private_ip = (known after apply)
+ apache_instance_public_dns = (known after apply)
+ apache_instance_state    = (known after apply)
+ apache_instance_type     = "t2.micro"
+ availability_zone        = "us-east-1a"
+ instance_ip              = (known after apply)
+ instance_key_name         = "apache-key"
+ internet_gateway_id      = (known after apply)
+ route_table_id           = (known after apply)
+ security_group_id        = (known after apply)
+ subnet_id                = (known after apply)
+ vpc_id                   = (known after apply)
```

Do you want to perform these actions?

Terraform will perform the actions described above.
Only 'yes' will be accepted to approve.

Enter a value:

Enter a value: yes

```
aws_key_pair.apache_key: Creating...
aws_vpc.vpc: Creating...
aws_key_pair.apache_key: Creation complete after 2s [id=apache-key]
aws_vpc.vpc: Still creating... [10s elapsed]
aws_vpc.vpc: Creation complete after 15s [id=vpc-0f9d40af618b4fafa]
aws_internet_gateway.igw: Creating...
aws_route_table.route_table: Creating...
aws_subnet.subnet_public: Creating...
aws_security_group.sg: Creating...
aws_internet_gateway.igw: Creation complete after 1s [id=igw-09f19e220215208c3]
aws_route_table.route_table: Creation complete after 2s [id=rtb-0e5009baced2cf730]
aws_route.route: Creating...
aws_route.route: Creation complete after 1s [id=r-rtb-0e5009baced2cf7301080289494]
aws_security_group.sg: Creation complete after 5s [id=sg-01068Faf4d07ded5a]
aws_subnet.subnet_public: Still creating... [10s elapsed]
aws_subnet.subnet_public: Creation complete after 12s [id=subnet-040b27741e9732ab6]
aws_route_table_association.subnet_association_public: Creating...
aws_instance.apache_server: Creating...
aws_route_table_association.subnet_association_public: Creation complete after 2s [id=rtbassoc-06efd632373e8986b]
aws_instance.apache_server: Still creating... [10s elapsed]
aws_instance.apache_server: Creation complete after 15s [id=i-0cc7c34358d149039]
Releasing state lock. This may take a few moments...
```

Apply complete! Resources: 9 added, 0 changed, 0 destroyed.

Outputs:

```
apache_instance_id = "i-09402c46f21e474d8"
apache_instance_ip = "54.86.170.232"
apache_instance_private_dns = "ip-10-11-1-93.ec2.internal"
apache_instance_private_ip = "10.11.1.93"
apache_instance_public_dns = "ec2-54-86-170-232.compute-1.amazonaws.com"
apache_instance_state = "running"
apache_instance_type = "t2.micro"
availability_zone = "us-east-1a"
instance_ip = "54.86.170.232"
instance_key_name = "apache-key"
internet_gateway_id = "igw-0bf33492afe92fa21"
route_table_id = "rtb-0134c2c0b302752ac"
security_group_id = "sg-05c31ceef628a23dc"
subnet_id = "subnet-036017f22ad2969e7"
vpc_id = "vpc-0560dd0aa099949bd"
hbarrios@nubiral: /workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 16:52:52 (pin2_v1 e6f7e12) $
```

```
hbarrios@nubiral: /workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 16:52:52 (pin2_v1 e0f7e12) $ ssh -i profiles/apache-key.pem ubuntu@54.86.170.232
The authenticity of host '54.86.170.232 (54.86.170.232)' can't be established.
ED25519 key fingerprint is SHA256:lncvW/f9etBq+arPHSaxACAS0wLYI3zh7ozd1CMVQ6I.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '54.86.170.232' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 6.8.0-1018-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/pro

System information as of Tue Dec 17 17:07:18 -03 2024

System load:  0.08          Processes:      110
Usage of /:   5.1% of 37.7GB Users logged in:   0
Memory usage: 23%          IPv4 address for enx0: 10.11.1.93
Swap usage:   0%

 * Ubuntu Pro delivers the most comprehensive open source security and
   compliance features.

   https://ubuntu.com/aws/pro

Expanded Security Maintenance for Applications is not enabled.

54 updates can be applied immediately.
26 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
```

4. Ver los resultados de la aplicación

Después de aplicar la configuración, Terraform mostrará la salida definida en tu archivo **outputs.tf**, si has configurado algún bloque **output**.

Para obtener información adicional sobre los recursos creados (por ejemplo, la dirección IP pública de una instancia EC2), se puede usar:

terraform output -var-file=profiles/pin2.tfvar

```
hbarrios@nubiral: /workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 19:14:35 (master 3afe2c5) $ terraform refresh -var-file=profiles/pin2.tfvars
Acquiring state lock. This may take a few moments...
data.aws_availability_zones.azs: Reading...
aws_key_pair.apache_key: Refreshing state... [id=apache-key]
aws_vpc.vpc: Refreshing state... [id=vpc-0a6eb61445da5bf5f]
data.aws_availability_zones.azs: Read complete after 0s [id=us-east-1]
aws_route_table.route_table: Refreshing state... [id=rtb-02795a42cd4b90eb5]
aws_internet_gateway.igw: Refreshing state... [id=igw-0a5f7d6d962e3fa4a]
aws_subnet.subnet_public: Refreshing state... [id=subnet-016fee934d2f9e6b]
aws_security_group.sg: Refreshing state... [id=sg-03c8b260575f840df]
aws_route.route: Refreshing state... [id=r-rtb-02795a42cd4b90eb51080289494]
aws_route_table_association.subnet_association_public: Refreshing state... [id=rtbassoc-0d486a22874110511]
aws_instance.apache_server: Refreshing state... [id=i-044e2415a3a2cc9b7]
Releasing state lock. This may take a few moments...

Outputs:

apache_instance_id = "i-044e2415a3a2cc9b7"
apache_instance_ip = "52.23.198.175"
apache_instance_private_dns = "ip-10-11-1-187.ec2.internal"
apache_instance_private_ip = "10.11.1.187"
apache_instance_public_dns = "ec2-52-23-198-175.compute-1.amazonaws.com"
apache_instance_state = "running"
apache_instance_type = "t2.micro"
availability_zone = "us-east-1a"
instance_ip = "52.23.198.175"
instance_key_name = "apache-key"
internet_gateway_id = "igw-0a5f7d6d962e3fa4a"
route_table_id = "rtb-02795a42cd4b90eb5"
security_group_id = "sg-03c8b260575f840df"
subnet_id = "subnet-016fee934d2f9e6b"
vpc_id = "vpc-0a6eb61445da5bf5f"
hbarrios@nubiral: /workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 19:14:59 (master 3afe2c5) $
```

5. Comprobar el estado actual de Terraform

Si se requiere ver el estado actual de la infraestructura gestionada por Terraform, ejecutar:

terraform show


```
hbarrios@nubiral: /workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 19:14:59 (master 3afe2c5) $ terraform show
# data.aws_availability_zones.azs:
data "aws_availability_zones" "azs" {
  group_names = [
    "us-east-1",
  ]
  id           = "us-east-1"
  names       = [
    "us-east-1a",
    "us-east-1b",
    "us-east-1c",
    "us-east-1d",
    "us-east-1e",
    "us-east-1f",
  ]
  state       = "available"
  zone_ids    = [
    "use1-az1",
    "use1-az2",
    "use1-az4",
    "use1-az6",
    "use1-az3",
    "use1-az5",
  ]
}

Outputs:
apache_instance_id = "i-044e2415a3a2cc9b7"
apache_instance_ip = "52.23.198.175"
apache_instance_private_dns = "ip-10-11-1-187.ec2.internal"
apache_instance_private_ip = "10.11.1.187"
apache_instance_public_dns = "ec2-52-23-198-175.compute-1.amazonaws.com"
apache_instance_state = "running"
apache_instance_type = "t2.micro"
availability_zone = "us-east-1a"
instance_ip = "52.23.198.175"
instance_key_name = "apache-key"
internet_gateway_id = "igw-0a5f7d6d962e3fa4a"
route_table_id = "rtb-02795a42cd4b90eb5"
security_group_id = "sg-03c8b260575f840df"
subnet_id = "subnet-016fee934d2f9e6b"
vpc_id = "vpc-0a6eb61445da5bf5f"
hbarrios@nubiral: /workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 19:15:38 (master 3afe2c5) $
```

Salida en yaml

(

instalación:

```
export VERSION=v4.2.0 && export BINARY=yq_linux_amd64 && wget
https://github.com/mikefarah/yq/releases/download/${VERSION}/${
{BINARY}.tar.gz -O - | tar xz && sudo mv ${BINARY}
/usr/bin/yq
```

)

```
terraform show -json | jq . | yq eval -P
```

6. Destruir la infraestructura (opcional)

Si se necesita destruir todos los recursos que has creado (por ejemplo, para probar la limpieza), puedes usar:

```
terraform destroy -var-file=profiles/pin2.tfvars
```

Terraform solicitará confirmación. Escribe **yes** para proceder.

```
hbarrios@nubiral: /workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 16:00:03 (pin2_v1 a3fb2b9) $ terraform destroy -var.file=profiles/pin2.tfvars
Acquiring state lock. This may take a few moments...
data.aws_availability_zones.azs: Reading...
aws_key_pair.apache_key: Refreshing state... [id=apache-key]
aws_vpc.vpc: Refreshing state... [id=vpc-0141420a8020eb0ab]
data.aws_availability_zones.azs: Read complete after 0s [id=us-east-1]
aws_internet_gateway.igw: Refreshing state... [id=igw-0f7ad5d8608604952]
aws_route_table.route_table: Refreshing state... [id=rtb-0c75dee3bf37de848]
aws_subnet.subnet_public: Refreshing state... [id=subnet-0d5a7331fc3305f2e]
aws_security_group.sg: Refreshing state... [id=sg-0225273c5153035b3]
aws_route.route: Refreshing state... [id=rtr-0c75dee3bf37de848080289494]
aws_route_table_association.subnet_association_public: Refreshing state... [id=rtbassoc-0d18cd54d3b1d7728]
aws_instance.apache_server: Refreshing state... [id=i-037e4e3c229a4113b]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
- destroy

Terraform will perform the following actions:

# aws_instance.apache_server will be destroyed
- resource "aws_instance" "apache_server" {
  ami           = "ami-0e2c8caa4b6378d8c" -> null
  arn           = "arn:aws:ec2:us-east-1:536697232168:instance/i-037e4e3c229a4113b" -> null
  associate_public_ip_address = true -> null
  availability_zone           = "us-east-1a" -> null
  cpu_core_count              = 1 -> null
  ...
}
```

```
...

Plan: 0 to add, 0 to change, 9 to destroy.

Changes to Outputs:
- apache_instance_id      = "i-037e4e3c229a4113b" -> null
- apache_instance_ip      = "3.88.201.241" -> null
- apache_instance_private_dns = "ip-10-11-1-12.ec2.internal" -> null
- apache_instance_private_ip = "10.11.1.12" -> null
- apache_instance_public_dns = "ec2-3-88-201-241.compute-1.amazonaws.com" -> null
- apache_instance_state    = "running" -> null
- apache_instance_type     = "t2.micro" -> null
- availability_zone        = "us-east-1a" -> null
- instance_ip              = "3.88.201.241" -> null
- instance_key_name        = "apache-key" -> null
- internet_gateway_id      = "igw-0f7ad5d8608604952" -> null
- route_table_id           = "rtb-0c75dee3bf37de848" -> null
- security_group_id        = "sg-0225273c5153035b3" -> null
- subnet_id                 = "subnet-0d5a7331fc3305f2e" -> null
- vpc_id                    = "vpc-0141420a8020eb0ab" -> null

Do you really want to destroy all resources?
Terraform will destroy all your managed infrastructure, as shown above.
There is no undo. Only 'yes' will be accepted to confirm.

Enter a value: yes
```

```
...

Enter a value: yes

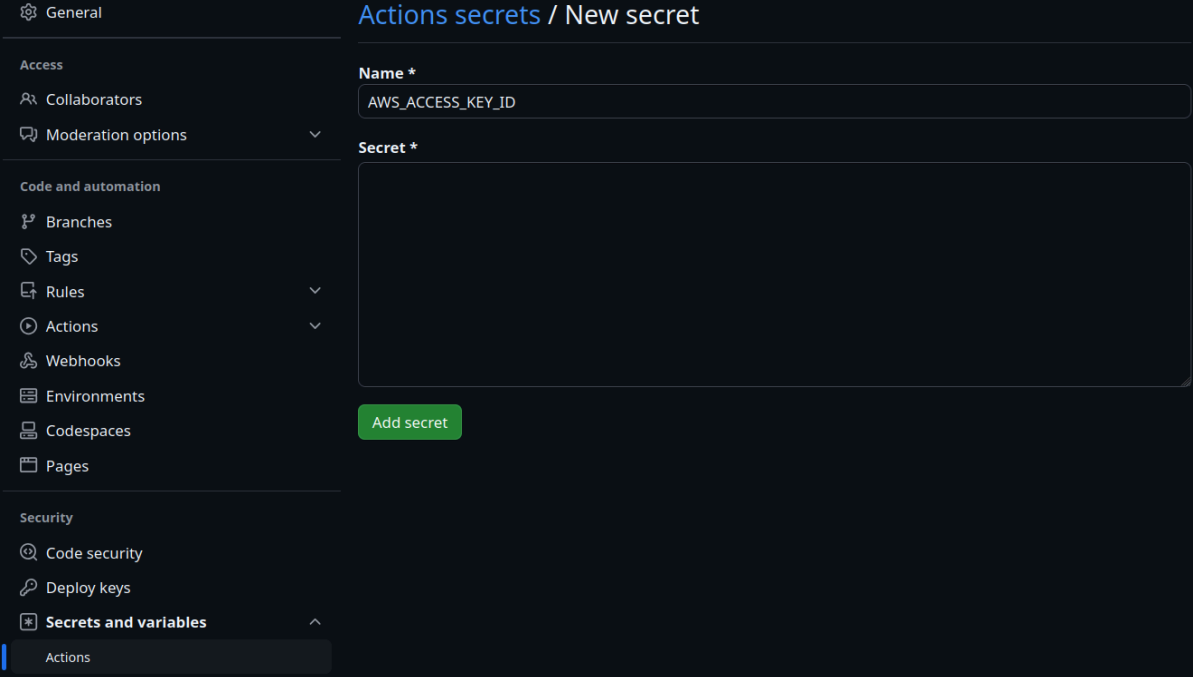
aws_route_table_association.subnet_association_public: Destroying... [id=rtbassoc-06efd63273e0866b]
aws_route.route: Destroying... [id=rtr-0e5009baced2cf7301080289494]
aws_instance.apache_server: Destroying... [id=i-0cc7c34358d149039]
aws_route_table_association.subnet_association_public: Destruction complete after 2s
aws_route.route: Destruction complete after 2s
aws_internet_gateway.igw: Destroying... [id=igw-09f19e228215208c3]
aws_route_table.route_table: Destroying... [id=rtb-0e5009baced2cf730]
aws_route_table.route_table: Destruction complete after 2s
aws_instance.apache_server: Still destroying... [id=i-0cc7c34358d149039, 10s elapsed]
aws_internet_gateway.igw: Still destroying... [id=igw-09f19e228215208c3, 10s elapsed]
aws_instance.apache_server: Still destroying... [id=i-0cc7c34358d149039, 20s elapsed]
aws_internet_gateway.igw: Still destroying... [id=igw-09f19e228215208c3, 20s elapsed]
aws_instance.apache_server: Still destroying... [id=i-0cc7c34358d149039, 30s elapsed]
aws_internet_gateway.igw: Still destroying... [id=igw-09f19e228215208c3, 30s elapsed]
aws_instance.apache_server: Still destroying... [id=i-0cc7c34358d149039, 40s elapsed]
aws_internet_gateway.igw: Still destroying... [id=igw-09f19e228215208c3, 40s elapsed]
aws_instance.apache_server: Still destroying... [id=i-0cc7c34358d149039, 50s elapsed]
aws_internet_gateway.igw: Still destroying... [id=igw-09f19e228215208c3, 50s elapsed]
aws_instance.apache_server: Still destroying... [id=i-0cc7c34358d149039, 1m0s elapsed]
aws_internet_gateway.igw: Still destroying... [id=igw-09f19e228215208c3, 1m0s elapsed]
aws_internet_gateway.igw: Destruction complete after 1m1s
aws_instance.apache_server: Destruction complete after 1m6s
aws_key_pair.apache_key: Destroying... [id=apache-key]
aws_subnet.subnet_public: Destroying... [id=subnet-040b27741e9732ab6]
aws_security_group.sg: Destroying... [id=sg-01068faf4d07ded5a]
aws_key_pair.apache_key: Destruction complete after 0s
aws_subnet.subnet_public: Destruction complete after 1s
aws_security_group.sg: Destruction complete after 2s
aws_vpc.vpc: Destroying... [id=vpc-0f9d40af618b4fafa]
aws_vpc.vpc: Destruction complete after 1s

Destroy complete! Resources: 9 destroyed.
hbarrios@nubiral: /workspace/space/repos/hdbarrios/devops-g6-pin2/terraform-apache 16:12:49 (pin2_v1 e6f7e12) $
```

GitHub Actions:

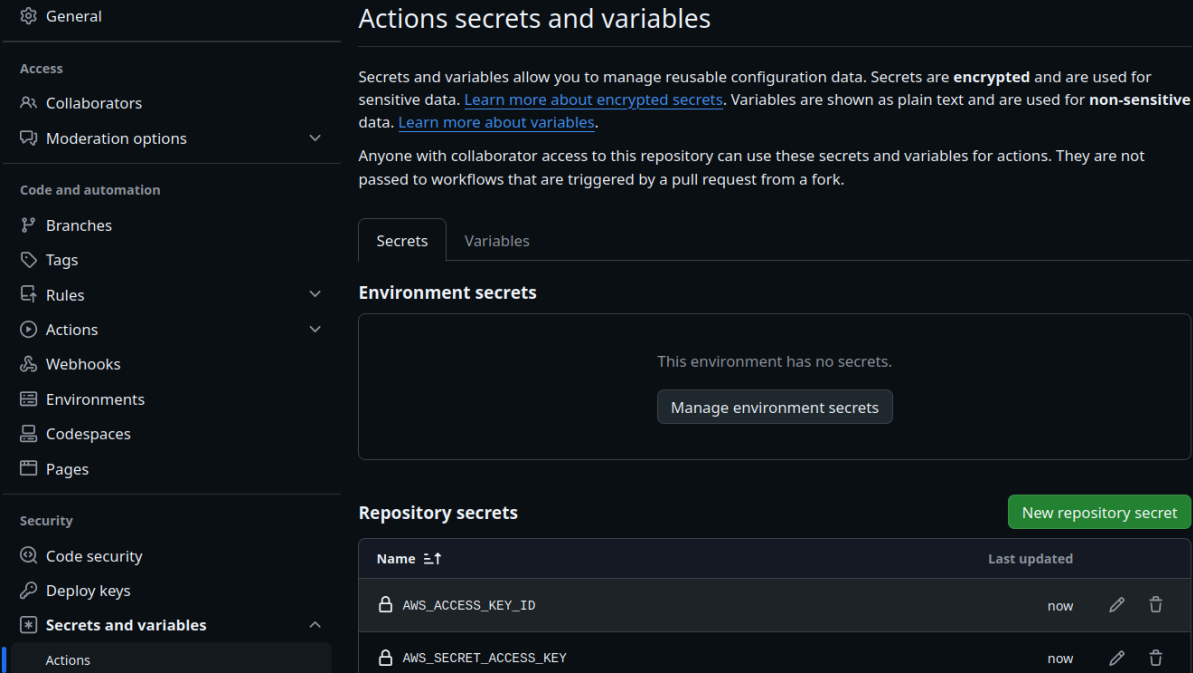
Se procede a configurar los secrets de acceso a la cuenta AWS, los nombres deben de coincidir luego en los workflows de las actions de github que se diseñaron.

AWS_ACCESS_KEY_ID



The screenshot shows the GitHub Actions 'Actions secrets / New secret' page. On the left is a sidebar with navigation links: General, Access (Collaborators, Moderation options), Code and automation (Branches, Tags, Rules, Actions, Webhooks, Environments, Codespaces, Pages), Security (Code security, Deploy keys, Secrets and variables, Actions), and Codespaces. The main content area is titled 'Actions secrets / New secret'. It has a 'Name *' field containing 'AWS_ACCESS_KEY_ID' and a 'Secret *' text area. Below the text area is a green 'Add secret' button.

AWS_SECRET_ACCESS_KEY



The screenshot shows the GitHub Actions 'Actions secrets and variables' page. The left sidebar is identical to the previous screenshot. The main content area is titled 'Actions secrets and variables' and contains explanatory text about secrets and variables. Below the text are tabs for 'Secrets' and 'Variables'. The 'Secrets' tab is active, showing 'Environment secrets' (which is empty) and 'Repository secrets'. The 'Repository secrets' section has a 'New repository secret' button and a table listing secrets.

Name	Last updated
AWS_ACCESS_KEY_ID	now
AWS_SECRET_ACCESS_KEY	now

Los Workflows diseñados fueron:

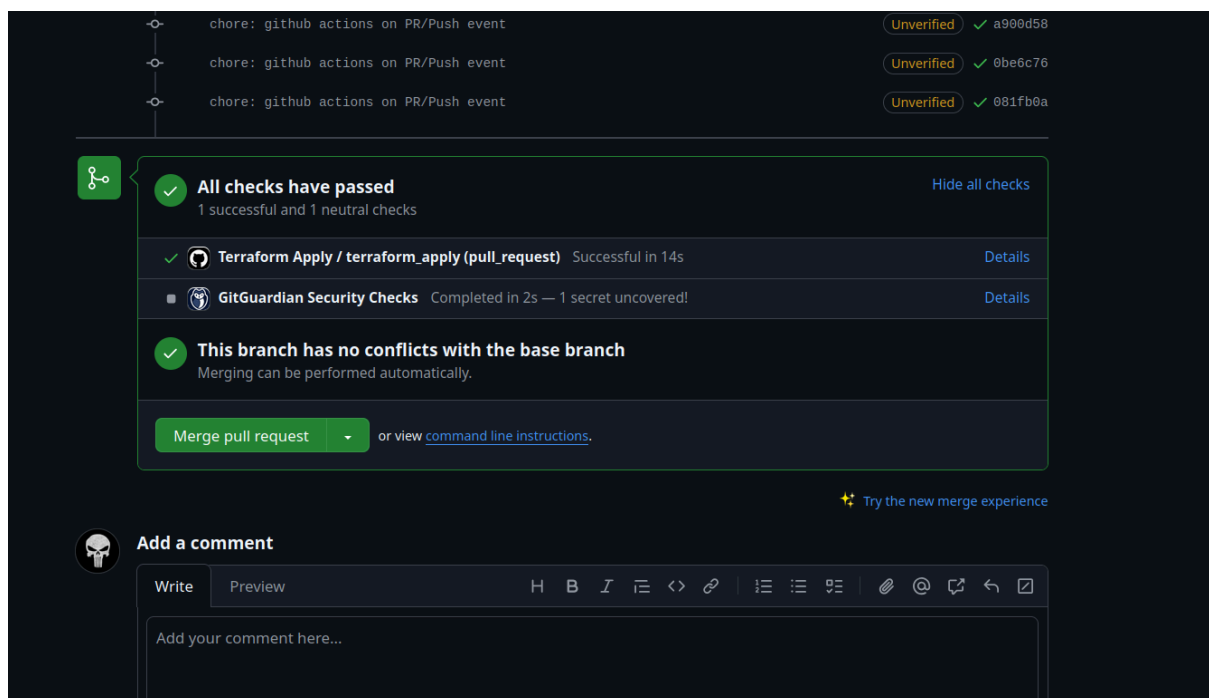
Terraform Apply, solo se ejecuta en condiciones;

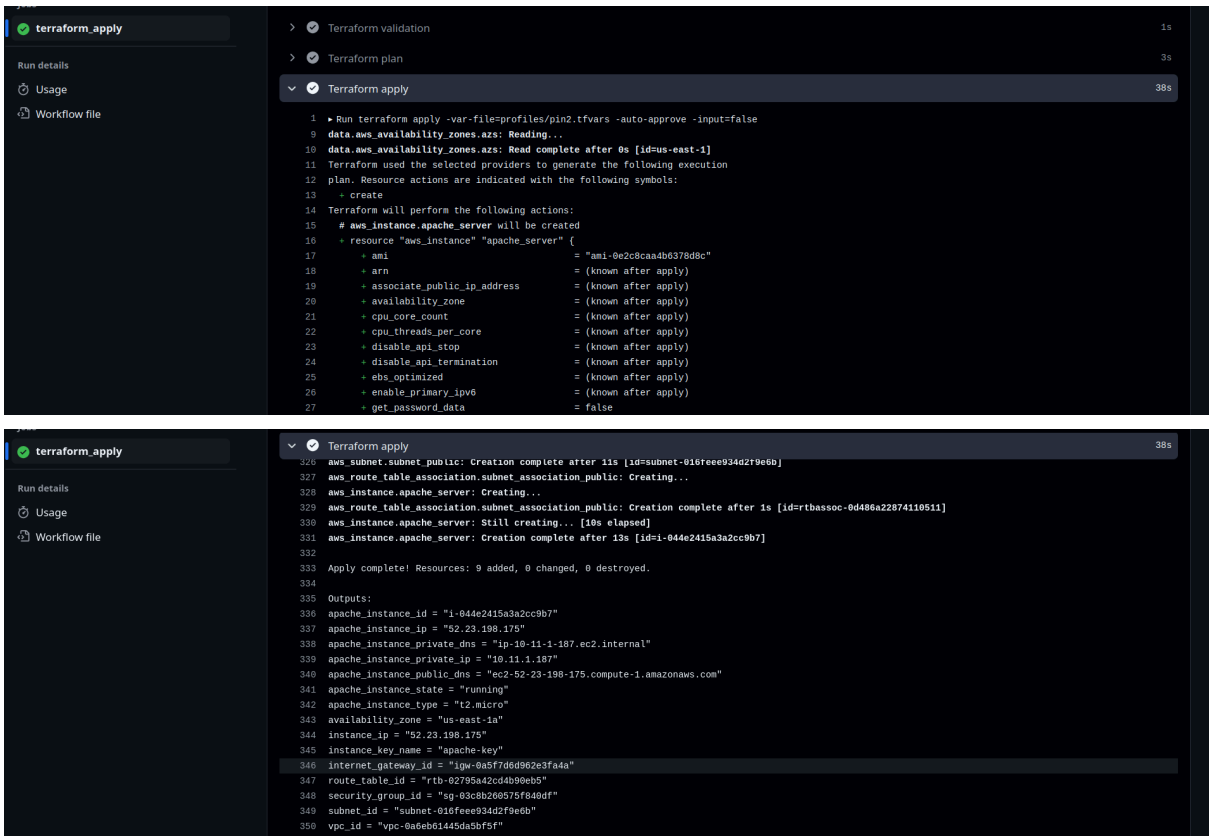
```
on:
  push:
    branches:
      - master
  pull_request:
    branches:
      - master
  workflow_dispatch:
    branches:
      - master
```

Terraform Destroy, solo se ejecuta con la condicion;

```
on:
  workflow_dispatch:
    branches:
      - master
```

Ejemplo de ejecución con PR:





Si todo sale bien, se podrá observar la IP pública de la instancia y si la usamos para navegar en un browser podremos ver la ejecución del apache:

edu.mundose.com - PIN2

Integrantes	Email
Juan Pablo Heyda	juanpabloh.123@gmail.com
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Johanna Dominguez	johisd9@hotmail.com
Lucas Bufano	lucas.bufano2@gmail.com
Hector Barrios	hdbarrios@gmail.com



Si se ejecuta de nuevo el workflow Terraform Apply indicará que no existen cambios por aplicar.

```

  Terraform validation
  Terraform plan

1  ▶ Run terraform plan -var-file=profiles/pin2.tfvars -out=tfplan -detailed-exitcode
15
16 data.aws_availability_zones.azs: Reading...
17 aws_key_pair.apache_key: Refreshing state... [id=apache-key]
18 data.aws_availability_zones.azs: Refreshing state... [id=vpc-0560dd0aa099949bd]
19 data.aws_availability_zones.azs: Read complete after 0s [id=us-east-1]
20 aws_route_table.route_table: Refreshing state... [id=rtb-0134c2c0b302752ac]
21 aws_internet_gateway.igw: Refreshing state... [id=igw-0bf33492afe92fa21]
22 aws_subnet.subnet_public: Refreshing state... [id=subnet-036017f22ad2969e7]
23 aws_security_group.sg: Refreshing state... [id=sg-05c31ceef628a23dc]
24 aws_route_table_association.subnet_association_public: Refreshing state... [id=rtbassoc-0833cf1ffd9f9a376]
25 aws_route.route: Refreshing state... [id=r-rtb-0134c2c0b302752ac1080289494]
26 aws_instance.apache_server: Refreshing state... [id=i-09402c46f21e474d8]
27 No changes. Your infrastructure matches the configuration.
28 Terraform has compared your real infrastructure against your configuration
29 and found no differences, so no changes are needed.
30 0 exitcode
31 Exitcode Help:
32 0: No hay cambios
33 1: Ocurrió un error
34 2: Se detectaron cambios
35 datiled-exitcode: 0

  Terraform apply
  Post Run actions/checkout@v4
```

Estatus del Workflow sobre el commit-merge:

Issues Pull requests Actions Projects Wiki Security Insights Settings

devops-g6-pin2 Public Pin Unwatch 1 Fork

master 1 Branch 0 Tags Go to file Add file Code

hdbarrios	Merge pull request #1 from hdbarrios/pin2_v1	5678316 · now	12 Commits
.github/workflows	chore: github actions on PR/Push event	2 minutes ago	pending
docs	chore: initial commit	7 hours ago	
terraform-apache	chore: github actions on PR/Push event	1 minute ago	
.gitignore	chore: terraform code completed	2 hours ago	
README.md	Initial commit	7 hours ago	

README

devops-g6-pin2

EducacionMundose/PIN2

About EducacionMundo

- Readme
- Activity
- 0 stars
- 1 watching
- 0 forks

Releases

No releases published
[Create a new release](#)

Packages

No packages published
[Publish your first package](#)

The screenshot shows the GitHub repository page for 'devops-g6-pin2' (Public). The repository is owned by 'EducacionMundose'. The main content area displays a file tree with folders like '.github/workflows', 'docs', and 'terraform-apache', and files like '.gitignore' and 'README.md'. A prominent message states 'All checks have passed' with '1 successful check'. Below this, a job for 'Terraform Apply / terraform_apply (push)' is shown as 'Successful in 18s'. The right sidebar contains sections for 'About' (0 stars, 1 watching, 0 forks), 'Releases' (No releases published), and 'Packages' (No packages published).

Al finalizar se observa failed o successful dependiendo el estado del job, para el ejemplo “Sucessful”

This screenshot shows the same repository page, but with a list of workflow jobs displayed. The jobs are as follows:

File	Job Name	Status	Time
.github/workflows	chore: github actions on PR/Push event	Successful	3 minutes ago
docs	chore: initial commit	Successful	7 hours ago
terraform-apache	chore: github actions on PR/Push event	Successful	2 minutes ago
.gitignore	chore: terraform code completed	Successful	2 hours ago
README.md	Initial commit	Successful	7 hours ago

The right sidebar now includes a 'Languages' section showing 'HCL 72.6%' and 'Shell 27.4%'. The 'About' section remains the same.

The screenshot shows the GitHub Actions interface for a repository named 'devops-g6-pin2' by user 'hdbarrios'. The 'Actions' tab is selected, displaying the 'Terraform Destroy' workflow (tf-destroy.yml). The left sidebar shows the 'Actions' section with 'Terraform Destroy' highlighted. The main panel shows '10 workflow runs' with a table header including 'Event', 'Status', 'Branch', and 'Actor'. A message states 'This workflow has a workflow_dispatch event trigger.' with a 'Run workflow' button. Below, a single workflow run is shown with a green status icon, labeled 'Terraform Destroy', triggered by 'Terraform Destroy #10: Manually run by hdbarrios' on the 'master' branch. The run duration is listed as '2 minutes ago' and '1m 35s'.