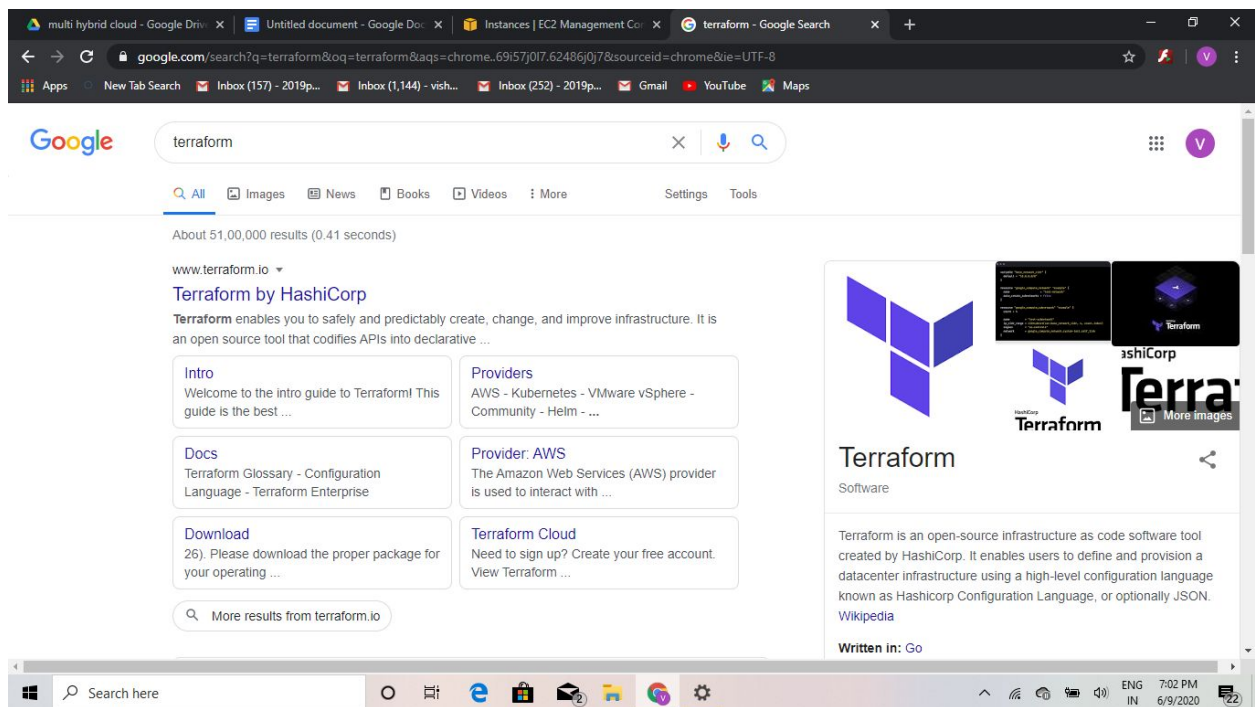


9th june:

Cloud computing:

1. Public cloud
 - a. AWS
 - > service
 - > CLI
 - > WEBUI
 - > API
 - > mobile app
 - b. GCP
 - c. AZURE
2. Private cloud:
 - a. openstack
 - I CLI
 - I SDK
 - I WEB
 - I MOB
3. Multi-cloud
 - a. Terraform



terraform used HCL language

multi hybrid cloud - Google D... X | Untitled document - Google D... X | Hybrid Multi Cloud Computin... X | Terraform - Google Docs X | Download Terraform - Terrafor... X

terraform.io/downloads.html

Apps | New Tab Search | Inbox (157) - 2019p... | Inbox (1,144) - vish... | Inbox (252) - 2019p... | Gmail | YouTube | Maps

HashiCorp

Learn how Terraform fits into the HashiCorp Stack

Terraform

Intro | Learn | Docs | Community | Enterprise | Download | GitHub | Sign In | Create Account

Downloads

JUMP TO SECTION

- Download Terraform
- Upgrade Guides

Other Docs

- Terraform CLI
- Terraform Cloud
- Terraform Enterprise
- Provider References
- Terraform Glossary
- Introduction to Terraform

Download Terraform

Below are the available downloads for the latest version of Terraform (0.12.26). Please download the proper package for your operating system and architecture.

Terraform is distributed as a single binary. Install Terraform by unzipping it and moving it to a directory included in your system's [PATH](#).

You can find the [SHA256 checksums](#) for Terraform 0.12.26 online and you can [verify the checksums signature](#) file which has been signed using HashiCorp's GPG key. You can also [download older versions](#) of Terraform from the releases service.

Check out the [v0.12.26 CHANGELOG](#) for information on the latest release.

Search here

ENG IN 7:05 PM 6/9/2020

multi hybrid cloud - Google D... X | Untitled document - Google D... X | Hybrid Multi Cloud Computin... X | Terraform - Google Docs X | Providers - Terraform by Hashi... X

terraform.io/docs/providers/index.html

Apps | New Tab Search | Inbox (157) - 2019p... | Inbox (1,144) - vish... | Inbox (252) - 2019p... | Gmail | YouTube | Maps

HashiCorp

Learn how Terraform fits into the HashiCorp Stack

Terraform

Intro | Learn | Docs | Community | Enterprise | Download | GitHub | Sign In | Create Account

Providers

Terraform CLI

EXPAND ALL | FILTER

- Configuration Language
- Commands (CLI)
- Import
- State
- Providers
 - Major Cloud
 - Cloud
 - Infrastructure Software

Terraform is used to create, manage, and update infrastructure resources such as physical machines, VMs, network switches, containers, and more. Almost any infrastructure type can be represented as a resource in Terraform.

A provider is responsible for understanding API interactions and exposing resources. Providers generally are an IaaS (e.g. Alibaba Cloud, AWS, GCP, Microsoft Azure, OpenStack), PaaS (e.g. Heroku), or SaaS services (e.g. Terraform Cloud, DNSimple, Cloudflare).

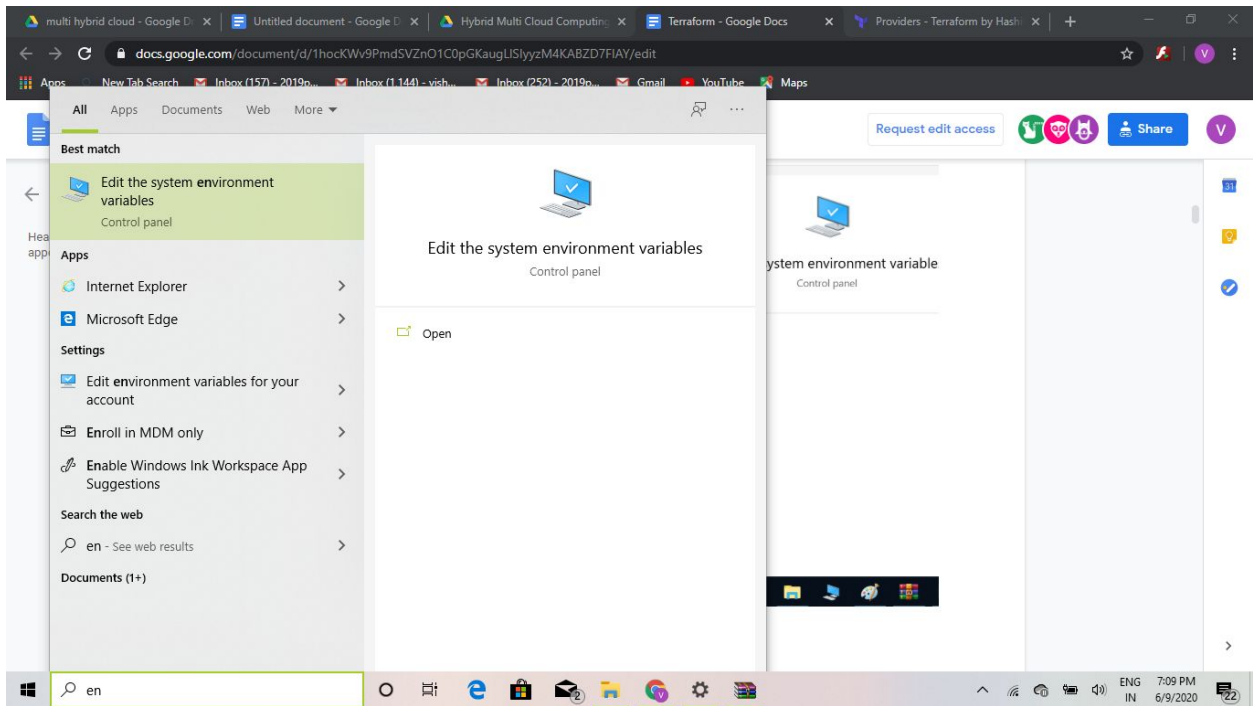
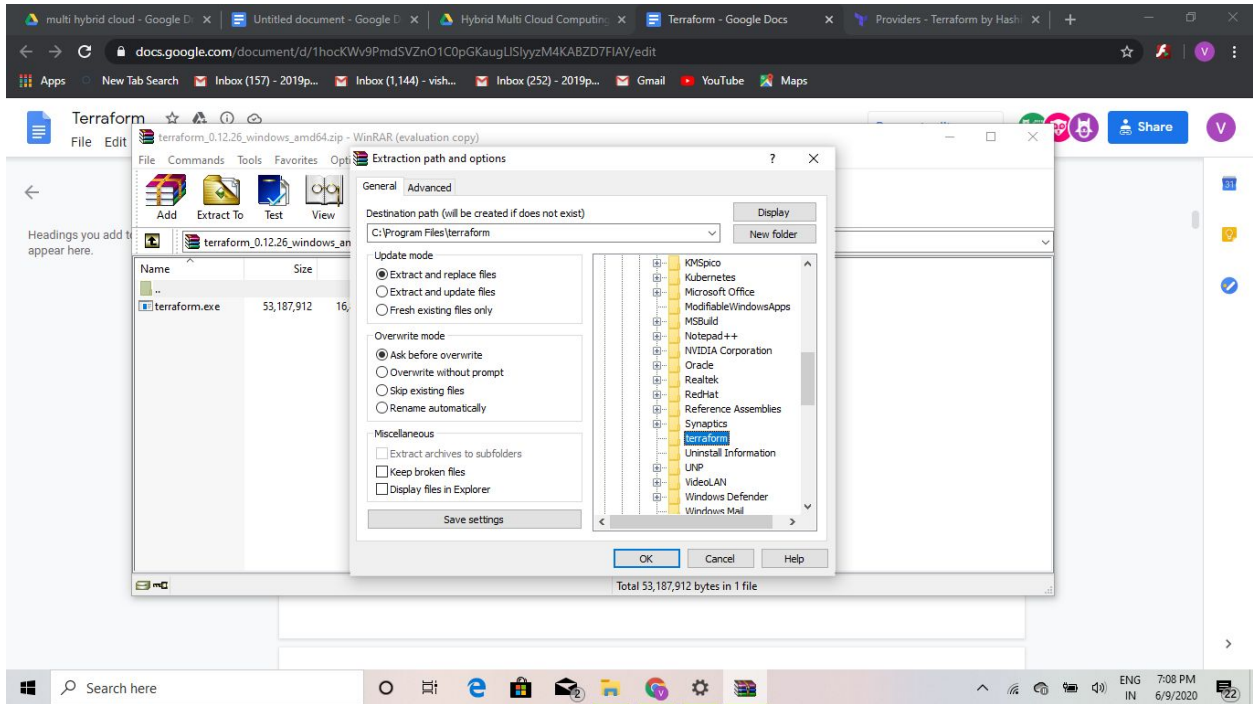
Use the navigation to the left to find available providers by type or scroll down to see all providers.

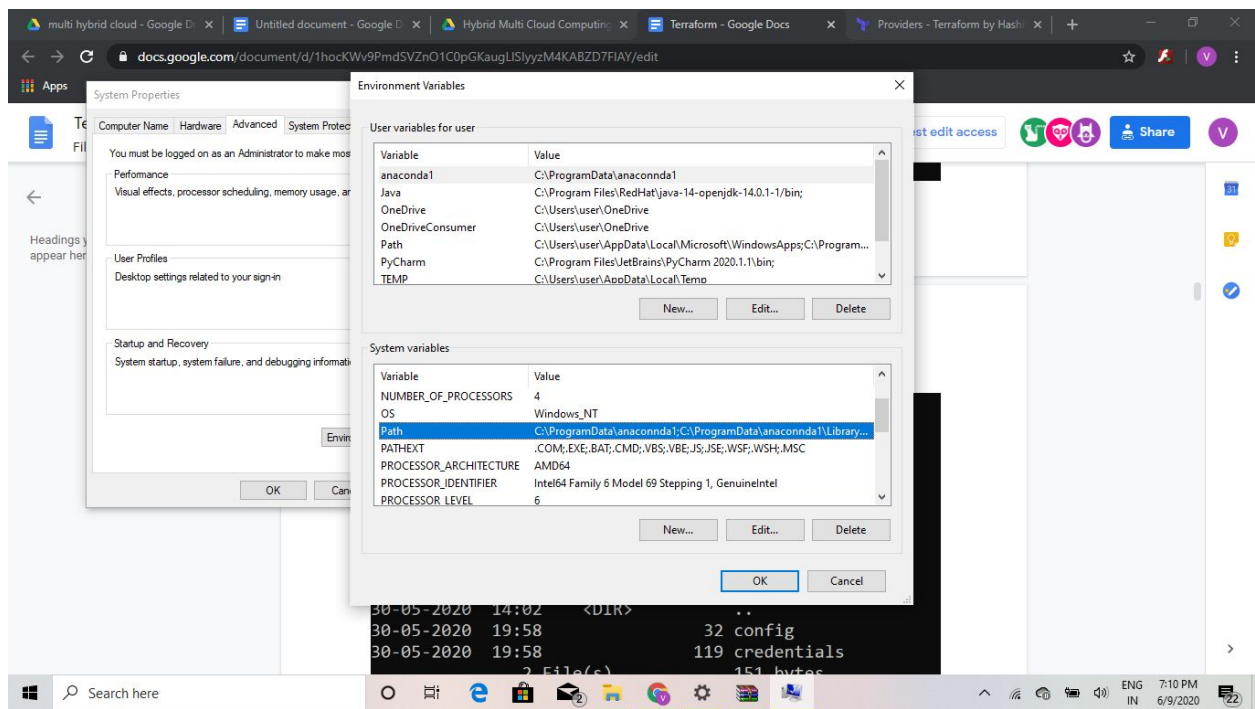
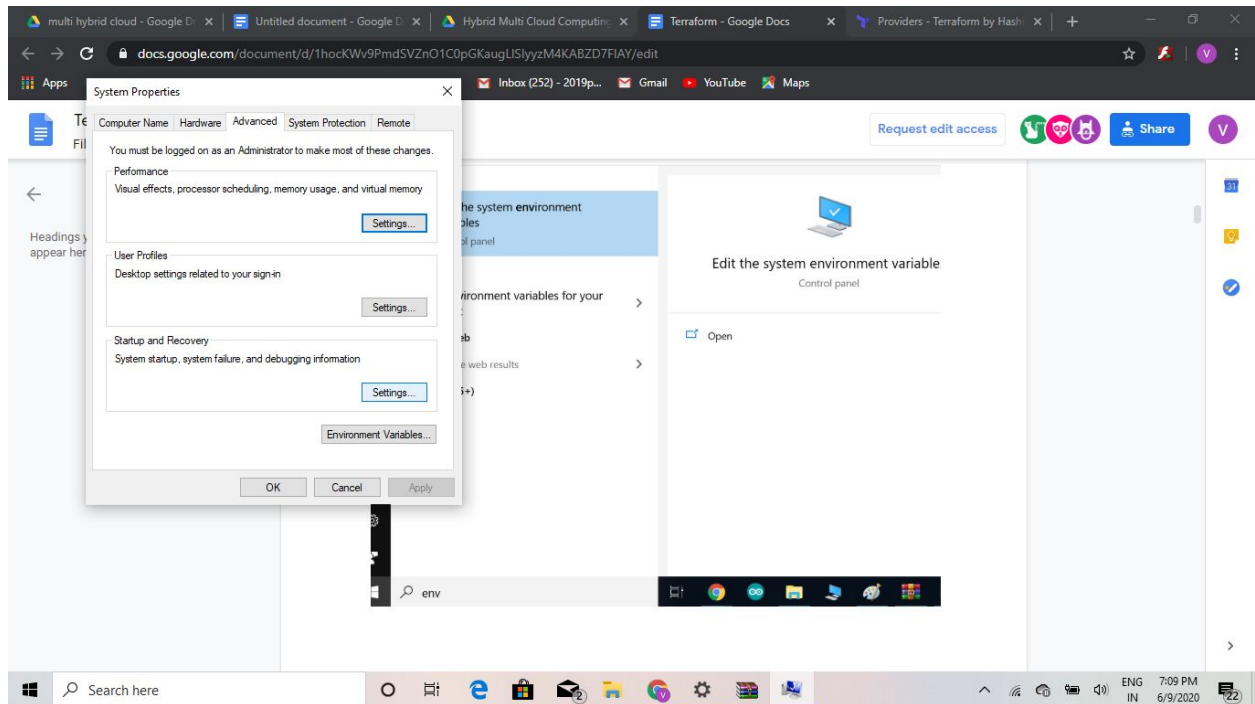
terraform_0.12.26_...zip

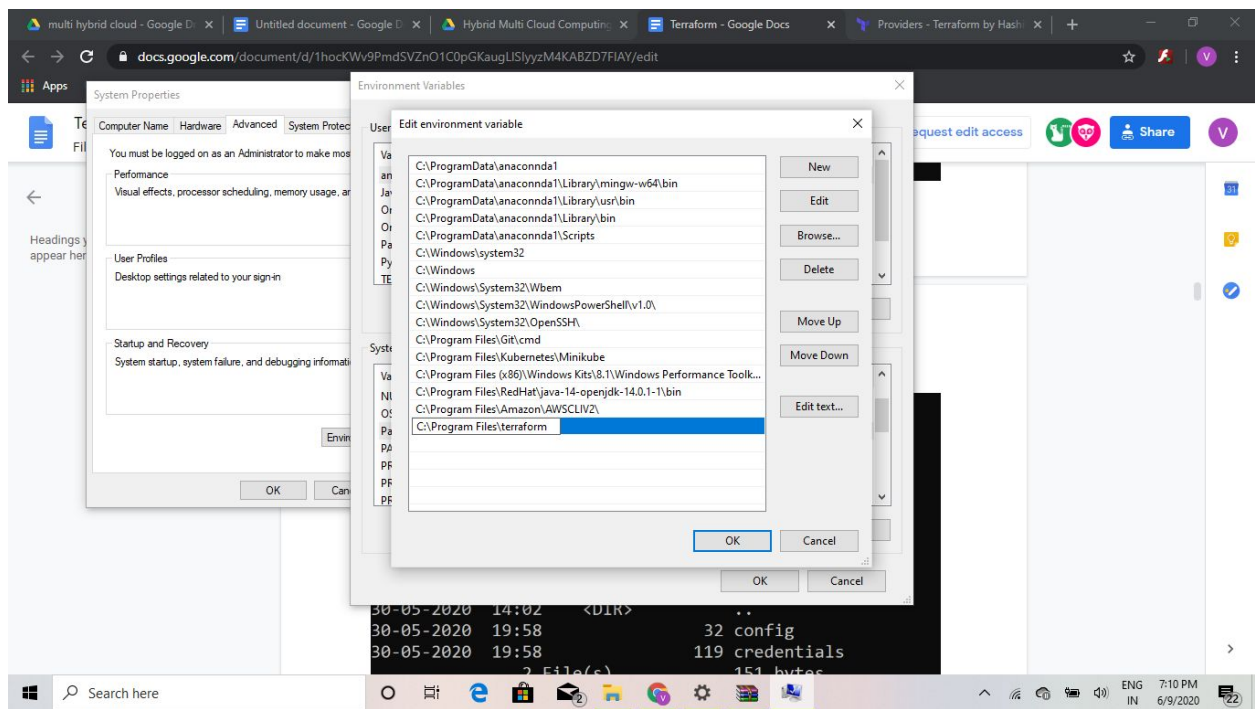
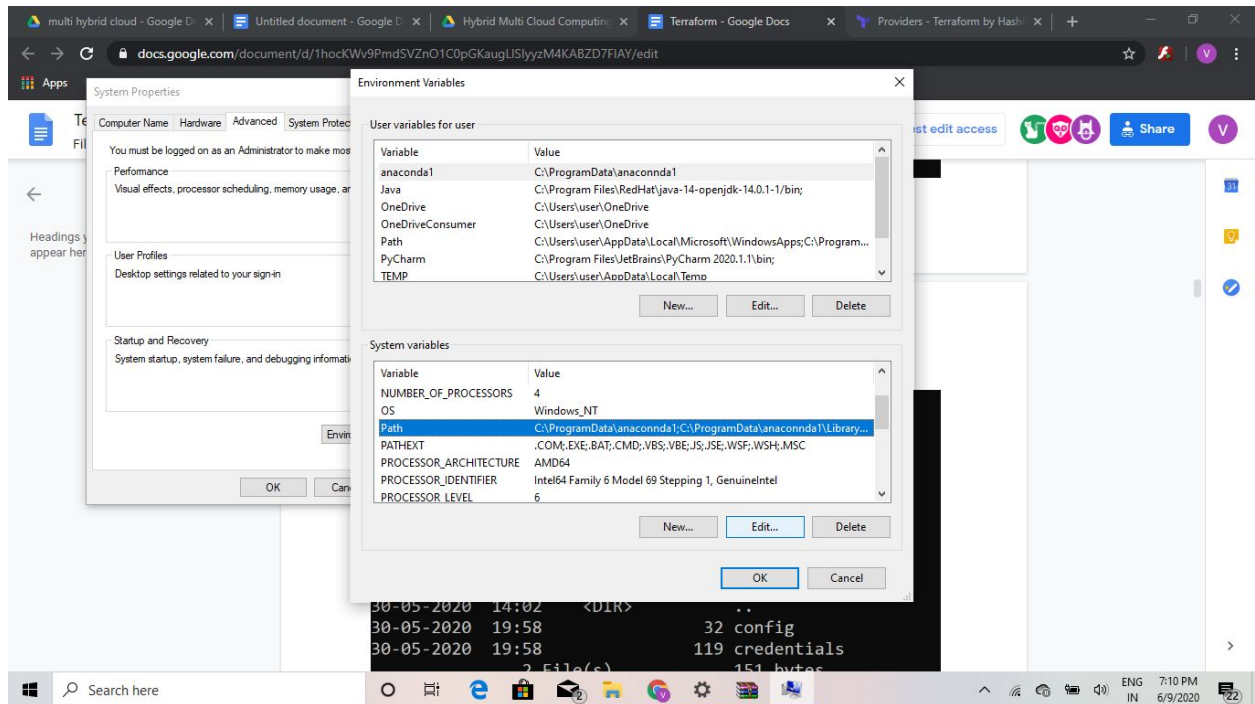
Show all

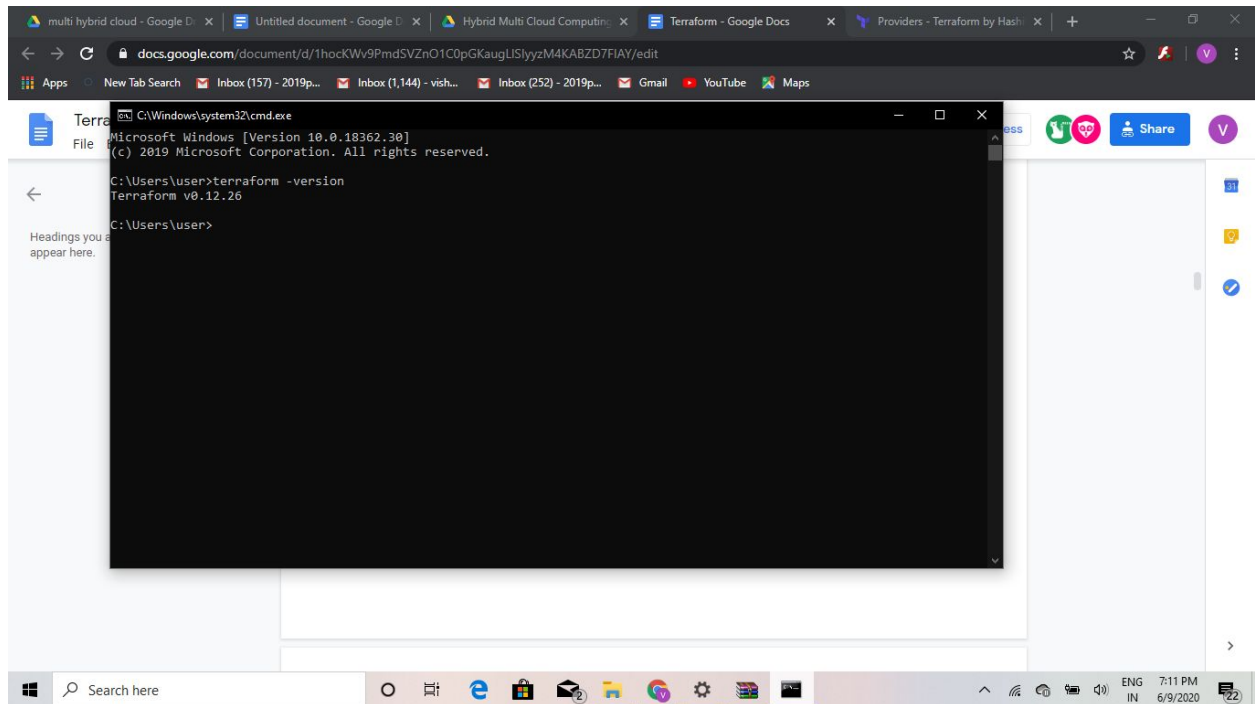
Search here

ENG IN 7:05 PM 6/9/2020

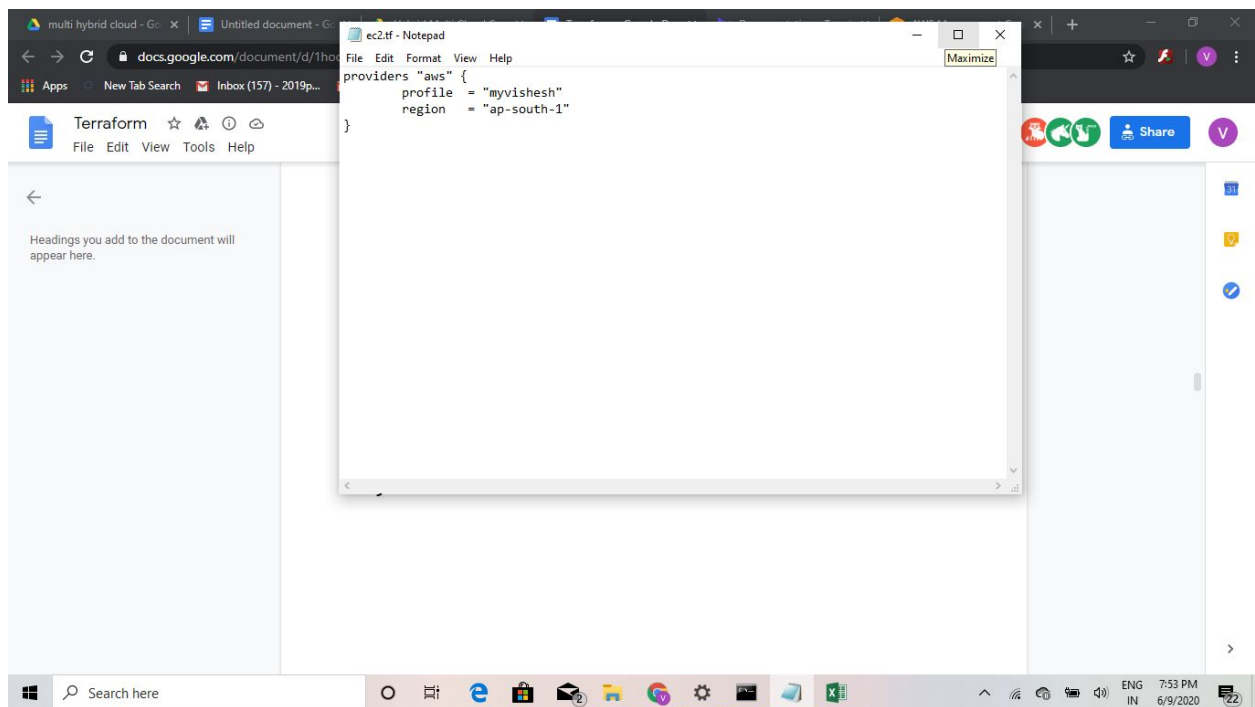








IAC: infrastructure as a code



```
C:\Users\user>terraform -version  
Terraform v0.12.26
```

```
C:\Users\user>cd Desktop/terraform  
C:\Users\user\Desktop\terraform>dir  
Volume in drive C is vishesh
```

Volume Serial Number is 1CF6-F84B

Directory of C:\Users\user\Desktop\terraform

```
06/09/2020 07:35 PM <DIR>      .
06/09/2020 07:35 PM <DIR>      ..
                0 File(s)      0 bytes
                2 Dir(s) 181,858,136,064 bytes free
```

C:\Users\user\Desktop\terraform>notepad ec2.tf

C:\Users\user\Desktop\terraform>cd ../../

```
C:\Users\user>aws configure --profile myvishesh
AWS Access Key ID [None]: AKIAV7LD
Default region name [None]: ap-south-1
Default output format [None]: json
```

```
C:\Users\user>aws configure list-profiles
default
myvishesh
```

```
C:\Users\user>cd Desktop/terraform
C:\Users\user\Desktop\terraform>dir
Volume in drive C is vishesh
Volume Serial Number is 1CF6-F84B
Directory of C:\Users\user\Desktop\terraform
```

```
06/09/2020 07:37 PM <DIR>      .
06/09/2020 07:37 PM <DIR>      ..
06/09/2020 07:37 PM                0 ec2.tf
                1 File(s)      0 bytes
                2 Dir(s) 181,857,353,728 bytes free
```

```
C:\Users\user\Desktop\terraform>dir
Volume in drive C is vishesh
Volume Serial Number is 1CF6-F84B
```

Directory of C:\Users\user\Desktop\terraform

```
06/09/2020 07:37 PM <DIR>      .
06/09/2020 07:37 PM <DIR>      ..
06/09/2020 07:53 PM                86 ec2.tf
```

1 File(s) 86 bytes
2 Dir(s) 181,855,338,496 bytes free

```
C:\Users\user\Desktop\terraform>terraform init
```

Warning: Skipping backend initialization pending configuration upgrade

The root module configuration contains errors that may be fixed by running the configuration upgrade tool, so Terraform is skipping backend initialization. See below for more information.

Error: Unsupported block type

on ec2.tf line 1:
1: providers "aws" {

Blocks of type "providers" are not expected here. Did you mean "provider"?

Terraform has initialized, but configuration upgrades may be needed.

Terraform found syntax errors in the configuration that prevented full initialization. If you've recently upgraded to Terraform v0.12, this may be because your configuration uses syntax constructs that are no longer valid, and so must be updated before full initialization is possible.

Terraform has installed the required providers to support the configuration upgrade process. To begin upgrading your configuration, run the following:
terraform 0.12upgrade

To see the full set of errors that led to this message, run:
terraform validate

```
C:\Users\user\Desktop\terraform>mkdir mytest
```

```
C:\Users\user\Desktop\terraform>cd mytest
```

```
C:\Users\user\Desktop\terraform\mytest>dir  
Volume in drive C is vishesh  
Volume Serial Number is 1CF6-F84B
```

Directory of C:\Users\user\Desktop\terraform\mytest


```
06/09/2020 07:54 PM <DIR>      .
06/09/2020 07:54 PM <DIR>      ..
06/09/2020 07:54 PM          85 ec2.tf
      1 File(s)          85 bytes
      2 Dir(s) 181,858,664,448 bytes free
```

```
C:\Users\user\Desktop\terraform\mytest>terraform init
```

Initializing the backend...

Initializing provider plugins...

- Checking for available provider plugins...
- Downloading plugin for provider "aws" (hashicorp/aws) 2.65.0...

The following providers do not have any version constraints in configuration, so the latest version was installed.

To prevent automatic upgrades to new major versions that may contain breaking changes, it is recommended to add version = "..." constraints to the corresponding provider blocks in configuration, with the constraint strings suggested below.

```
* provider.aws: version = "~> 2.65"
```

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.

Declarative sentence

Untitled document - Google Doc x AWS: aws_instance - Terraform b x +

terraform.io/docs/providers/aws/r/instance.html

HashiCorp Terraform

Intro Learn Docs Community Enterprise Download GitHub Sign In Create Account

Resource: aws_instance

EXPAND ALL FILTER

- All Providers
- AWS Provider
- Guides
 - AWS Provider Version 2 Upgrade
 - AWS Provider Version 3 Upgrade
 - Custom Service Endpoints
 - AWS Provider Track on HashiCorp Learn
- Provider Data Sources

Provides an EC2 instance resource. This allows instances to be created, updated, and deleted. Instances also support [provisioning](#).

Example Usage

```
# Create a new instance of the latest Ubuntu 14.04 on an
# t2.micro node with an AWS Tag naming it "HelloWorld"
provider "aws" {
  region = "us-west-2"
}
```

Search here

Untitled document - Google Doc x AWS: aws_instance - Terraform b x EC2 Management Console x +

ap-south-1.console.aws.amazon.com/ec2/v2/home?region=ap-south-1#ModifyInboundSecurityGroupRules:securityGroupId=sg-03ed3f459fa911a7d

Services Resource Groups

visheshgargavi Mumbai Support

EC2 > Security Groups > sg-03ed3f459fa911a7d - launch-wizard-1 > Edit inbound rules

Edit inbound rules

Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules

Type	Protocol	Port range	Source	Description - optional
SSH	TCP	22	Custom 0.0.0.0/0	Delete
HTTP	TCP	80	Custom 0.0.0.0/0	Delete
HTTPS	TCP	443	Custom 0.0.0.0/0	Delete

Feedback English (US)

© 2008 - 2020, Amazon Internet Services Private Ltd. or its affiliates. All rights reserved. Privacy Policy Terms of Use

Search here

C:\Users\user\Desktop\terraform\mytest>dir

Volume in drive C is vishesh

Volume Serial Number is 1CF6-F84B

Directory of C:\Users\user\Desktop\terraform\mytest

06/09/2020 07:55 PM <DIR> .

```
06/09/2020 07:55 PM <DIR>      ..
06/09/2020 07:55 PM <DIR>      .terraform
06/09/2020 07:54 PM      85 ec2.tf
      1 File(s)      85 bytes
      3 Dir(s) 181,706,633,216 bytes free
```

```
C:\Users\user\Desktop\terraform\mytest>cd .terraform
```

```
C:\Users\user\Desktop\terraform\mytest\.terraform>dir
Volume in drive C is vishesh
Volume Serial Number is 1CF6-F84B
```

Directory of C:\Users\user\Desktop\terraform\mytest\.terraform

```
06/09/2020 07:55 PM <DIR>      .
06/09/2020 07:55 PM <DIR>      ..
06/09/2020 07:55 PM <DIR>      plugins
      0 File(s)      0 bytes
      3 Dir(s) 181,706,633,216 bytes free
```

```
C:\Users\user\Desktop\terraform\mytest\.terraform>cd plugins
```

```
C:\Users\user\Desktop\terraform\mytest\.terraform\plugins>dir
Volume in drive C is vishesh
Volume Serial Number is 1CF6-F84B
```

Directory of C:\Users\user\Desktop\terraform\mytest\.terraform\plugins

```
06/09/2020 07:55 PM <DIR>      .
06/09/2020 07:55 PM <DIR>      ..
06/09/2020 07:55 PM <DIR>      windows_amd64
      0 File(s)      0 bytes
      3 Dir(s) 181,706,567,680 bytes free
```

```
C:\Users\user\Desktop\terraform\mytest\.terraform\plugins>cd windows_amd64
```

```
C:\Users\user\Desktop\terraform\mytest\.terraform\plugins\windows_amd64>dir
Volume in drive C is vishesh
Volume Serial Number is 1CF6-F84B
```

Directory of C:\Users\user\Desktop\terraform\mytest\.terraform\plugins\windows_amd64

```
06/09/2020 07:55 PM <DIR>      .
```

```
06/09/2020 07:55 PM <DIR>      ..
06/09/2020 07:55 PM          79 lock.json
06/09/2020 07:55 PM    156,011,008 terraform-provider-aws_v2.65.0_x4.exe
      2 File(s)  156,011,087 bytes
      2 Dir(s) 181,706,461,184 bytes free
```

```
C:\Users\user\Desktop\terraform\mytest\terraform\plugins\windows_amd64>cd ..
```

```
C:\Users\user\Desktop\terraform\mytest\terraform\plugins>cd ..
```

```
C:\Users\user\Desktop\terraform\mytest\terraform>cd ..
```

```
C:\Users\user\Desktop\terraform\mytest>dir
```

Volume in drive C is vishesh

Volume Serial Number is 1CF6-F84B

Directory of C:\Users\user\Desktop\terraform\mytest

```
06/09/2020 07:55 PM <DIR>      .
06/09/2020 07:55 PM <DIR>      ..
06/09/2020 07:55 PM <DIR>      .terraform
06/09/2020 07:54 PM      85 ec2.tf
      1 File(s)      85 bytes
      3 Dir(s) 181,706,018,816 bytes free
```

```
C:\Users\user\Desktop\terraform\mytest>terraform apply
```

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

```
C:\Users\user\Desktop\terraform\mytest>terraform apply
```

An execution plan has been generated and is shown below.

Resource actions are indicated with the following symbols:

+ create

Terraform will perform the following actions:

```
# aws_instance.myin will be created
+ resource "aws_instance" "myin" {
  + ami              = "ami-0440cd142cdf93c46"
  + arn              = (known after apply)
  + associate_public_ip_address = (known after apply)
  + availability_zone = (known after apply)
  + cpu_core_count    = (known after apply)
```

```

+ cpu_threads_per_core      = (known after apply)
+ get_password_data         = false
+ host_id                   = (known after apply)
+ id                        = (known after apply)
+ instance_state            = (known after apply)
+ instance_type             = "t2.micro"
+ ipv6_address_count        = (known after apply)
+ ipv6_addresses            = (known after apply)
+ key_name                  = "mykey1111"
+ network_interface_id      = (known after apply)
+ outpost_arn               = (known after apply)
+ password_data             = (known after apply)
+ placement_group           = (known after apply)
+ primary_network_interface_id = (known after apply)
+ private_dns               = (known after apply)
+ private_ip                = (known after apply)
+ public_dns                = (known after apply)
+ public_ip                 = (known after apply)
+ security_groups           = [
  + "launch-wizard-1",
]
+ source_dest_check         = true
+ subnet_id                 = (known after apply)
+ tags                      = {
  + "Name" = "LinuxWorldos1"
}
+ tenancy                   = (known after apply)
+ volume_tags               = (known after apply)
+ vpc_security_group_ids    = (known after apply)

+ ebs_block_device {
  + delete_on_termination = (known after apply)
  + device_name           = (known after apply)
  + encrypted              = (known after apply)
  + iops                   = (known after apply)
  + kms_key_id             = (known after apply)
  + snapshot_id           = (known after apply)
  + volume_id             = (known after apply)
  + volume_size           = (known after apply)
  + volume_type           = (known after apply)
}

+ ephemeral_block_device {

```

```

+ device_name = (known after apply)
+ no_device   = (known after apply)
+ virtual_name = (known after apply)
}

+ metadata_options {
+   http_endpoint           = (known after apply)
+   http_put_response_hop_limit = (known after apply)
+   http_tokens             = (known after apply)
}

+ network_interface {
+   delete_on_termination = (known after apply)
+   device_index          = (known after apply)
+   network_interface_id  = (known after apply)
}

+ root_block_device {
+   delete_on_termination = (known after apply)
+   device_name           = (known after apply)
+   encrypted             = (known after apply)
+   iops                  = (known after apply)
+   kms_key_id            = (known after apply)
+   volume_id             = (known after apply)
+   volume_size           = (known after apply)
+   volume_type           = (known after apply)
}
}

```

Plan: 1 to add, 0 to change, 0 to destroy.

Do you want to perform these actions?

Terraform will perform the actions described above.

Only 'yes' will be accepted to approve.

Enter a value: yes

aws_instance.myin: Creating...

aws_instance.myin: Still creating... [10s elapsed]

aws_instance.myin: Still creating... [20s elapsed]

aws_instance.myin: Creation complete after 29s [id=i-0f407a86f8da18d41]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.


```
C:\Users\user\Desktop\terraform\mytest>dir
```

Volume in drive C is vishesh

Volume Serial Number is 1CF6-F84B

Directory of C:\Users\user\Desktop\terraform\mytest

```
06/09/2020  11:42 PM  <DIR>      .
06/09/2020  11:42 PM  <DIR>      ..
06/09/2020  07:55 PM  <DIR>      .terraform
06/09/2020  10:27 PM              307 ec2.tf
06/09/2020  11:42 PM          3,250 terraform.tfstate
06/09/2020  11:42 PM          157 terraform.tfstate.backup
            3 File(s)      3,714 bytes
            3 Dir(s)  181,423,075,328 bytes free
```

```
C:\Users\user\Desktop\terraform\mytest>notepad terraform.tfstate
```

```
C:\Users\user\Desktop\terraform\mytest>terraform apply
aws_instance.myin: Refreshing state... [id=i-0f407a86f8da18d41]
```

An execution plan has been generated and is shown below.

Resource actions are indicated with the following symbols:

+ create

Terraform will perform the following actions:

```
# aws_instance.myin will be created
+ resource "aws_instance" "myin" {
  + ami              = "ami-0440cd142cdf93c46"
  + arn              = (known after apply)
  + associate_public_ip_address = (known after apply)
  + availability_zone = (known after apply)
  + cpu_core_count    = (known after apply)
  + cpu_threads_per_core = (known after apply)
  + get_password_data  = false
  + host_id            = (known after apply)
  + id                = (known after apply)
  + instance_state     = (known after apply)
  + instance_type      = "t2.micro"
  + ipv6_address_count  = (known after apply)
  + ipv6_addresses     = (known after apply)
  + key_name           = "mykey1111"
```

```

+ network_interface_id      = (known after apply)
+ outpost_arn               = (known after apply)
+ password_data             = (known after apply)
+ placement_group           = (known after apply)
+ primary_network_interface_id = (known after apply)
+ private_dns               = (known after apply)
+ private_ip                = (known after apply)
+ public_dns                = (known after apply)
+ public_ip                 = (known after apply)
+ security_groups           = [
  + "launch-wizard-1",
]
+ source_dest_check         = true
+ subnet_id                 = (known after apply)
+ tags                      = {
  + "Name" = "LinuxWorldos1"
}
+ tenancy                   = (known after apply)
+ volume_tags               = (known after apply)
+ vpc_security_group_ids    = (known after apply)

+ ebs_block_device {
  + delete_on_termination = (known after apply)
  + device_name           = (known after apply)
  + encrypted             = (known after apply)
  + iops                  = (known after apply)
  + kms_key_id            = (known after apply)
  + snapshot_id           = (known after apply)
  + volume_id             = (known after apply)
  + volume_size           = (known after apply)
  + volume_type           = (known after apply)
}

+ ephemeral_block_device {
  + device_name = (known after apply)
  + no_device   = (known after apply)
  + virtual_name = (known after apply)
}

+ metadata_options {
  + http_endpoint           = (known after apply)
  + http_put_response_hop_limit = (known after apply)
  + http_tokens             = (known after apply)
}

```

```

    }

+ network_interface {
  + delete_on_termination = (known after apply)
  + device_index          = (known after apply)
  + network_interface_id  = (known after apply)
}

+ root_block_device {
  + delete_on_termination = (known after apply)
  + device_name           = (known after apply)
  + encrypted             = (known after apply)
  + iops                  = (known after apply)
  + kms_key_id            = (known after apply)
  + volume_id             = (known after apply)
  + volume_size           = (known after apply)
  + volume_type           = (known after apply)
}
}

```

Plan: 1 to add, 0 to change, 0 to destroy.

Do you want to perform these actions?

Terraform will perform the actions described above.

Only 'yes' will be accepted to approve.

Enter a value: yes

aws_instance.myin: Creating...

aws_instance.myin: Still creating... [10s elapsed]

aws_instance.myin: Still creating... [20s elapsed]

aws_instance.myin: Creation complete after 20s [id=i-0bc51adb9236057cd]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.

C:\Users\user\Desktop\terraform\mytest>terraform apply

aws_instance.myin: Refreshing state... [id=i-0bc51adb9236057cd]

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

C:\Users\user\Desktop\terraform\mytest>terraform destroy

aws_instance.myin: Refreshing state... [id=i-0bc51adb9236057cd]

An execution plan has been generated and is shown below.

Resource actions are indicated with the following symbols:

- destroy

Terraform will perform the following actions:

```
# aws_instance.myin will be destroyed
- resource "aws_instance" "myin" {
  - ami                = "ami-0440cd142cdf93c46" -> null
  - arn                =
"arn:aws:ec2:ap-south-1:410914255776:instance/i-0bc51adb9236057cd" -> null
  - associate_public_ip_address = true -> null
  - availability_zone          = "ap-south-1a" -> null
  - cpu_core_count             = 1 -> null
  - cpu_threads_per_core       = 1 -> null
  - disable_api_termination    = false -> null
  - ebs_optimized              = false -> null
  - get_password_data          = false -> null
  - hibernation                 = false -> null
  - id                         = "i-0bc51adb9236057cd" -> null
  - instance_state             = "running" -> null
  - instance_type              = "t2.micro" -> null
  - ipv6_address_count         = 0 -> null
  - ipv6_addresses             = [] -> null
  - key_name                   = "mykey1111" -> null
  - monitoring                  = false -> null
  - primary_network_interface_id = "eni-02def9194e2e4d603" -> null
  - private_dns                 = "ip-172-31-38-209.ap-south-1.compute.internal" -> null
  - private_ip                 = "172.31.38.209" -> null
  - public_dns                  = "ec2-15-206-81-118.ap-south-1.compute.amazonaws.com" -> null
  - public_ip                   = "15.206.81.118" -> null
  - security_groups             = [
    - "launch-wizard-1",
  ] -> null
  - source_dest_check           = true -> null
  - subnet_id                   = "subnet-d7ead0bf" -> null
  - tags                        = {
    - "Name" = "LinuxWorldos1"
  } -> null
  - tenancy                     = "default" -> null
  - volume_tags                 = {} -> null
  - vpc_security_group_ids      = [
    - "sg-03ed3f459fa911a7d",
```

```

] -> null

- credit_specification {
  - cpu_credits = "standard" -> null
}

- metadata_options {
  - http_endpoint          = "enabled" -> null
  - http_put_response_hop_limit = 1 -> null
  - http_tokens             = "optional" -> null
}

- root_block_device {
  - delete_on_termination = true -> null
  - device_name           = "/dev/sda1" -> null
  - encrypted             = false -> null
  - iops                   = 100 -> null
  - volume_id             = "vol-03ae8894b7d0ce2c6" -> null
  - volume_size           = 1 -> null
  - volume_type           = "gp2" -> null
}
}

```

Plan: 0 to add, 0 to change, 1 to destroy.

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

```

aws_instance.myin: Destroying... [id=i-0bc51adb9236057cd]
aws_instance.myin: Still destroying... [id=i-0bc51adb9236057cd, 10s elapsed]
aws_instance.myin: Still destroying... [id=i-0bc51adb9236057cd, 20s elapsed]
aws_instance.myin: Destruction complete after 21s

```

Destroy complete! Resources: 1 destroyed.

