# Terraform Infrastructure as code

**START HERE**

`terraform` **`init`**
Download providers and modules

`terraform` **`fmt`**
Format the files

`terraform` **`validate`**
Check the configuration

`terraform` **`plan -out=`***`<file>`*
Preview and save changes

`terraform` **`apply`** *`<file>`*
Apply the saved plan

`terraform` **`output`**
Show output values

`terraform` **`state list`**
List tracked resources

`terraform` **`destroy`**
Remove everything managed

**Config** .tf files → `init` → **Working dir** providers, modules → `plan` → **Plan** diff vs. state → `apply` → **Infrastructure** state updated

## CONCEPTS

> Terraform compares your configuration with its state file, not with the real world alone. Lose the state and it forgets what it manages.

> Always read the plan before applying. Saving it with -out guarantees apply does exactly what you reviewed.

> Never edit the state file by hand and keep it out of git; use a remote backend for teams.

## WORKFLOW

`terraform` **`init`**
Prepare the working directory
*Run again after adding a provider, module or backend.*

`terraform` **`init -upgrade`**
Update providers and modules

`terraform` **`init -reconfigure`**
Ignore saved backend setup

`terraform` **`init -migrate-state`**
Move state to a new backend

`terraform` **`validate`**
Check syntax and consistency

`terraform` **`plan`**
Preview changes

`terraform` **`plan -out=`***`<file>`*
Save the plan to a file

`terraform` **`apply`**
Plan, confirm, then apply

`terraform` **`apply`** *`<planfile>`*
Apply a saved plan

`terraform` **`apply -auto-approve`**
Skip the confirmation prompt
*Meant for CI; never use it without a reviewed plan.*

`terraform` **`destroy`**
Destroy all managed resources

`terraform` **`plan -destroy`**
Preview a destroy

`terraform` **`apply -refresh-only`**
Sync state with reality

`terraform` **`fmt`**
Rewrite files in canonical style

## WORKFLOW (cont.)

`terraform` **`fmt -recursive -check`**
Check formatting incl. subdirs

## TARGETING & PLANS

`terraform` **`plan -target=`***`<addr>`*
Limit to one resource
*For exceptions only; it can leave the rest out of sync.*

`terraform` **`apply -replace=`***`<addr>`*
Force recreating a resource

`terraform` **`plan -refresh=false`**
Skip reading real state

`terraform` **`plan -parallelism=`***`<n>`*
Limit concurrent operations

`terraform` **`plan -detailed-exitcode`**
Exit 2 when changes exist

`terraform` **`show`** *`<planfile>`*
Display a saved plan

`terraform` **`show -json`** *`<planfile>`*
Plan as JSON

`terraform` **`graph`**
Dependency graph (DOT)

## VARIABLES & OUTPUTS

`terraform` **`plan -var`** *`'<name>=<value>'`*
Set one variable

`terraform` **`plan -var-file=`***`<file>`*
Load variables from a file

**`TF_VAR_`***`<name>`***`=`***`<value>`*
Set a variable via environment

**`terraform.tfvars`**
Loaded automatically
**.auto.tfvars files are also loaded automatically.*

`terraform` **`output`**
Show all outputs

`terraform` **`output`** *`<name>`*
Show a single output

`terraform` **`output -raw`** *`<name>`*
Plain value, no quotes

## VARIABLES & OUTPUTS (cont.)

`terraform` **`output -json`**
Outputs as JSON

`terraform` **`console`**
Try expressions interactively

## STATE

`terraform` **`state list`**
List tracked resources

`terraform` **`state show`** *`<addr>`*
Show one resource's attributes

`terraform` **`state mv`** *`<src>`* *`<dst>`*
Rename or move in state

`terraform` **`state rm`** *`<addr>`*
Forget a resource, keep it real

`terraform` **`state pull`**
Print the state as JSON

`terraform` **`state push`** *`<file>`*
Upload a state file

`terraform` **`import`** *`<addr>`* *`<id>`*
Adopt an existing resource
*The resource block must exist in the config first; an import block is the declarative alternative.*

`terraform` **`taint`** *`<addr>`*
Mark for replacement
*Superseded by apply -replace.*

`terraform` **`untaint`** *`<addr>`*
Clear the taint mark

`terraform` **`force-unlock`** *`<id>`*
Release a stuck state lock

`terraform` **`refresh`**
Update state from reality
*Deprecated; use apply -refresh-only.*

## WORKSPACES

`terraform` **`workspace list`**
List workspaces

`terraform` **`workspace show`**
Show the current one

`terraform` **`workspace new`** *`<name>`*
Create and switch

`terraform` **`workspace select`** *`<name>`*
Switch workspace

## WORKSPACES (cont.)

`terraform` **`workspace delete`** *`<name>`*
Delete a workspace

> Each workspace has its own state under the same configuration. Use ${terraform.workspace} to vary names.

## PROVIDERS & MODULES

`terraform` **`providers`**
List required providers

`terraform` **`providers lock`**
Write the dependency lock file

`terraform` **`get`**
Download modules

`terraform` **`modules`**
List declared modules

`terraform` **`version`**
Show Terraform version

`terraform` **`login`**
Save a remote host token

`terraform` **`-chdir=`***`<dir>`* *`<cmd>`*
Run in another directory

## RECIPES

**Reviewed deploy**

```
terraform init
terraform fmt -check
terraform validate
terraform plan -out=tfplan
terraform apply tfplan
```

**Per-environment variables**

```
terraform workspace select prod
terraform plan -var-file=prod.tfvars -out=tfplan
terraform apply tfplan
```

**Rename without recreating**

```
terraform state mv aws_instance.old aws_instance.new
# update the resource name in the .tf file
terraform plan   # expect no changes
```

**Replace one broken resource**

```
terraform plan -replace=aws_instance.web
terraform apply -replace=aws_instance.web
```