Terragrunt Terraform orchestration

START HERE

`terragrunt run plan`
Plan this unit

`terragrunt run apply`
Apply this unit

`terragrunt run --all plan`
Plan every unit

`terragrunt run --all apply`
Apply in DAG order

`terragrunt run --all destroy`
Destroy in reverse order

`terragrunt find`
List units found

`terragrunt hcl fmt`
Format HCL files

`terragrunt render --json`
Show resolved config

Discover find units in tree → `filter` → **Order** DAG from dependencies → `per unit` → **Init + run** auto-init, then tofu cmd → `state` → **Result** summary of all units

CONCEPTS

Terragrunt is a wrapper around OpenTofu/Terraform. A unit is a directory with a terragrunt.hcl; a stack is a tree of units run together. Unknown commands such as plan pass through to tofu/terraform.

Use -- to separate Terragrunt flags from tofu/terraform arguments: terragrunt run -- plan -no-color. The old run-all and hclfmt forms are deprecated in favour of run -- all and hcl fmt.

--all adds -auto-approve to apply and destroy automatically. Add --no-auto-approve if you want the prompt back.

RUN

`terragrunt run plan`
Plan the unit in this directory

`terragrunt run apply`
Apply the unit in this directory

`terragrunt run init`
Initialise the unit

`terragrunt run destroy`
Destroy the unit

`terragrunt run output`
Show unit outputs

`terragrunt plan`
Shortcut for run plan

`terragrunt run --all plan`
Plan all units below here

`terragrunt run --all apply`
Apply all units in order

`terragrunt run --all destroy`
Destroy all, dependents first

`terragrunt run --graph plan`
Plan this unit and its dependents
Dependents run in graph order; for destroy the order is reversed.

`terragrunt run --all --parallelism <n> plan`
Cap concurrent units

`terragrunt run --all --no-auto-approve apply`
Keep the apply prompt

RUN (cont.)

`terragrunt run --all --out-dir <dir> plan`
Save a plan file per unit
Run apply with the same --out-dir and filters.

`terragrunt run --source <path> plan`
Override the module source

`terragrunt run --tf-path <bin> plan`
Pick tofu or terraform binary

`terragrunt exec -- <cmd>`
Run any command in the unit

SELECT UNITS

`--filter '<glob>'`
Only units matching the path
Repeat the flag to OR several filters. Quote globs so the shell leaves them alone.

`--filter '!<glob>'`
Exclude matching units

`--filter 'name=<unit>...'`
A unit plus its dependencies
Graph expressions: ...name adds dependents, name... adds dependencies.

`--working-dir <dir>`
Run as if in another directory

CONFIG BLOCKS

Parent terragrunt.hcl: backend and shared code

```
remote_state {
  backend = "s3"
  generate = { path =
"backend.tf", if_exists =
"overwrite_terragrunt" }
  config = {
    bucket = "my-state"
    key    =
"${path_relative_to_include()}/
tofu.tfstate"
    region = "eu-central-1"
  }
}
```

Child unit: include, source, inputs

```
include "root" {
  path = find_in_parent_folders(
"root.hcl")
}
terraform {
  source = "git::https://
example.com/modules.git//vpc?
ref=v1.2.0"
}
inputs = {
  cidr = "10.0.0.0/16"
}
```

CONFIG BLOCKS (cont.)

dependency: read another unit's outputs

```
dependency "vpc" {
  config_path = "../vpc"
  mock_outputs = { vpc_id =
"fake" }
}
inputs = { vpc_id =
dependency.vpc.outputs.vpc_id }
```

dependencies and locals: order only, shared values

```
dependencies { paths = ["../
vpc", "../iam"] }
locals {
  env =
basename(get_terragrunt_dir())
}
```

generate: write a file before each run

```
generate "provider" {
  path      = "provider.tf"
  if_exists =
"overwrite_terragrunt"
  contents  = "provider \"aws\"
{ region = \"eu-central-1\" }"
}
```

Block purpose

Block	Use
`include`	Inherit a parent file
`inputs`	Variables passed to the module
`dependency`	Outputs of another unit
`dependencies`	Ordering without outputs
`remote_state`	Backend setup
`generate`	Write helper files
`locals`	Named values in the file
`feature`	Flags set with -- feature

include supports one level of nesting only. merge_strategy is no_merge, shallow or deep; with deep, lists concatenate and maps merge.

mock_outputs let plan work before the dependency has been applied. Without them, plan on a fresh stack fails on missing outputs.

FUNCTIONS

`find_in_parent_folders()`
Nearest parent terragrunt file

`path_relative_to_include()`
Unit path relative to parent

`get_terragrunt_dir()`
Directory of this terragrunt.hcl

`get_env("<NAME>", "<default>")`
Read an environment variable

DISCOVER

`terragrunt find`
List units and stacks

`terragrunt find --json`
Machine-readable list

`terragrunt find --dag`
Sort by dependency order

`terragrunt list`
List configurations

`terragrunt dag graph`
Print the DAG as DOT

`terragrunt render --json`
Resolved config, includes merged

FORMAT AND VALIDATE

`terragrunt hcl fmt`
Format HCL files in place

`terragrunt hcl fmt --check`
Fail if formatting differs

`terragrunt hcl validate`
Validate HCL files

STACKS AND BACKEND

`terragrunt stack generate`
Create units from stack.hcl

`terragrunt stack run <cmd>`
Run a command on a stack

`terragrunt backend bootstrap`
Create the state backend

RECIPES

Plan only a subset

```
terragrunt run --all --filter
'prod/**' -- plan
terragrunt run --all --filter '!
prod/legacy/**' -- plan
terragrunt run --all --
parallelism 4 -- plan -no-color
```

Reviewed plan, then apply the same plans

```
terragrunt run --all --out-dir /
tmp/plans plan
terragrunt run --all --out-dir /
tmp/plans apply
```

CI format and validate gate

```
terragrunt hcl fmt --check
terragrunt hcl validate
terragrunt run --all --non-
interactive -- validate
```

Test a local module against a unit

```
cd live/dev/vpc
terragrunt run --source ~/code/
modules//vpc -- plan
```