

What Is Terraform State?

Every time you run Terraform, it records information about what infrastructure it created in a *Terraform state file*. By default, when you run Terraform in the folder */foo/bar*, Terraform creates the file */foo/bar/terraform.tfstate*. This file contains a custom JSON format that records a mapping from the Terraform resources in your configuration files to the representation of those resources in the real world. For example, let's say your Terraform configuration contained the following:

```
resource "aws_instance" "example" {
  ami           = "ami-0fb653ca2d3203ac1"
  instance_type = "t2.micro"
}
```

After running `terraform apply`, here is a small snippet of the contents of the *terraform.tfstate* file (truncated for readability):

```
{
  "version": 4,
  "terraform_version": "1.2.3",
  "serial": 1,
  "lineage": "86545604-7463-4aa5-e9e8-a2a221de98d2",
  "outputs": {},
  "resources": [
    {
      "mode": "managed",
      "type": "aws_instance",
      "name": "example",
      "provider":
        "provider[\"registry.terraform.io/hashicorp/aws\"]",
      "instances": [
        {
          "schema_version": 1,
          "attributes": {
            "ami": "ami-0fb653ca2d3203ac1",
            "availability_zone": "us-east-2b",
            "id": "i-0bc4bbe5b84387543",
            "instance_state": "running",
            "instance_type": "t2.micro",
            "...": "(truncated)"
          }
        }
      ]
    }
  ]
}
```

```
    }  
  ]  
}  
]
```

Using this JSON format, Terraform knows that a resource with type `aws_instance` and name `example` corresponds to an EC2 Instance in your AWS account with ID `i-0bc4bbe5b84387543`. Every time you run Terraform, it can fetch the latest status of this EC2 Instance from AWS and compare that to what's in your Terraform configurations to determine what changes need to be applied. In other words, the output of the `plan` command is a diff between the code on your computer and the infrastructure deployed in the real world, as discovered via IDs in the state file.

THE STATE FILE IS A PRIVATE API

The state file format is a private API that is meant only for internal use within Terraform. You should never edit the Terraform state files by hand or write code that reads them directly.

If for some reason you need to manipulate the state file—which should be a relatively rare occurrence—use the `terraform import` or `terraform state` commands (you'll see examples of both in [Chapter 5](#)).

If you're using Terraform for a personal project, storing state in a single *terraform.tfstate* file that lives locally on your computer works just fine. But if you want to use Terraform as a team on a real product, you run into several problems:

Shared storage for state files

To be able to use Terraform to update your infrastructure, each of your team members needs access to the same Terraform state files. That means you need to store those files in a shared location.

Locking state files