### How to use Terraform Data sources? [Terraform](https://www.terraform.io/) data sources can be beneficial if you want to retrieve or fetch the data from the cloud service providers such as [AWS](https://aws.amazon.com/), [AZURE](https://azure.microsoft.com/en-us/), and [GCP](https://cloud.google.com/). Most of the time when we use Terraform along with AWS/AZURE/GCP then we always send data in terms of instructions or configuration.

### ***But what if you want to get the information(arn, tags, owner\_id, etc.) back from the cloud service provider AWS/AZURE/GCP?***

### **Answer** - We need to use the *data sources* to get the resource information back.

### So *Terraform Data Sources* are a kind of an API that fetches the data/information from the resources running under the cloud infra and sending it back to terraform configuration for further use.

### In this blog, we will look at the example in which we are going to create an aws\_instance resource and then create a data source to fetch some of the information associated with the aws\_instance.

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### 1. Create an *aws\_instance*

### The motive of this exercise is to create an aws\_instance and then create a *data source* to fetch all the possible [Data Source: aws\_instance attributes](https://registry.terraform.io/providers/hashicorp/aws/latest/docs/data-sources/instance).

### Let's first write the terraform configuration for starting a t2.mirco aws\_instance.

### *(\*Note- Replace the access\_key and secret\_key with your AWS account.*[*Click here to know how to generate the access\_key and secret\_key*](https://jhooq.com/terraform-ec2-instance-setup/#2generate-access-keys-access-key-id-and-secret-access-key)*)*

### provider "aws" {

### region = “ap-south-2"

### access\_key = "AKIATQ37NXB2JMXVGYPG"

### secret\_key = "ockvEN1DzYynDuKIh56BVQv/tMqmzvKnYB8FttSp"

### }

### resource "aws\_instance" "ec2\_example" {

### ami = "ami-0ce4e694de0a4848c" #hyderabad ami

### instance\_type = "t3.micro"

### tags = {

### Name = "Terraform EC2"

### }

### }

### 

### 2. Define a data source

### Now we have created our *aws\_instance* in [Step 1](https://jhooq.com/terraform-data-sources/#1-create-an-_aws_instance_), let's add the data source to the existing terraform configuration.

### Here is the data source configuration for fetching all the information of *aws\_instance* -

### data "aws\_instance" "myawsinstance" {

### filter {

### name = "tag:Name"

### values = ["Terraform EC2"]

### }

### depends\_on = [

### "aws\_instance.ec2\_example"

### ]

### }

### **Key points to pay attention for -**

### **filter**: Although we have created only one instance but still we have used filter because in a production-like environment you might have multiple *aws\_instance* running, so you need to filter the instance anyhow. And since we have tagged our *aws\_instance* with the name *Terraform EC2* so we are going to use the same name inside the filter also.

### **depends\_on**: The second important parameter is *depends\_on* because data source does not know by its own which resource it belongs to, so we are going to add the *depends\_on* parameter.

### 

### 3. Create Output variable for data source

### So far in [Step 1](https://jhooq.com/terraform-data-sources/#1-create-an-_aws_instance_) and [Step 2](https://jhooq.com/terraform-data-sources/#2-define-a-data-source) we have created the *aws\_instance* and *data source*, now let's create an output value so that we can see all the information fetched or retrieved by the data source.

### Here is the terraform configuration for the output value -

### output "fetched\_info\_from\_aws" {

### value = data.aws\_instance.myawsinstance

### }

### **Key points to pay attention for -**

### We have linked the output value to the data source which we have created in [Step 2](https://jhooq.com/terraform-data-sources/#2-define-a-data-source).

### To link the output value we are going to use the *data source* name .i.e. - data.aws\_instance.myawsinstance

### 

### 4. Apply the final terraform configuration along with *data source* and *output values*

### Alright now I am assuming you have gone through all the 3 steps([Step 1](https://jhooq.com/terraform-data-sources/#1-create-an-_aws_instance_),[Step 2](https://jhooq.com/terraform-data-sources/#2-define-a-data-source), and [Step 3](https://jhooq.com/terraform-data-sources/#3-create-output-variable-for-data-source)), so here is our final terraform configuration including *aws\_instance, data source, and output values*

### provider "aws" {

### region = "ap-south-2"

### access\_key = "XXXXXXXXXXXXXXXX"

### secret\_key = "XXXXXXXXXXXXXXXXXXXXXXXXXXXX"

### }

### resource "aws\_instance" "ec2\_example" {

### ami = "ami-0ce4e694de0a4848c"

### instance\_type = "t3.micro"

### tags = {

### Name = "Terraform EC2"

### }

### }

### data "aws\_instance" "myawsinstance" {

### filter {

### name = "tag:Name"

### values = ["Terraform EC2"]

### }

### depends\_on = [

### "aws\_instance.ec2\_example"

### ]

### }

### output "fetched\_info\_from\_aws" {

### value = data.aws\_instance.myawsinstance.public\_ip

### }

### 

### You can simply run the following terraform command to create your *aws\_instance* -

### terraform init

### terraform plan

### terraform apply

### **Here is the output after applying to terraform configuration -**

### Outputs:

### fetched\_info\_from\_aws = {

### "ami" = "ami-0767046d1677be5a0"

### "arn" = "arn:aws:ec2:eu-central-1:242396018804:instance/i-0eda1c6a59790eb7d"

### "associate\_public\_ip\_address" = true

### "availability\_zone" = "eu-central-1c"

### "credit\_specification" = tolist([

### {

### "cpu\_credits" = "standard"

### },

### ])

### "disable\_api\_termination" = false

### "ebs\_block\_device" = toset([])

### "ebs\_optimized" = false

### "enclave\_options" = tolist([

### {

### "enabled" = false

### },

### ])

### "ephemeral\_block\_device" = tolist([])

### "filter" = toset([

### {

### "name" = "tag:Name"

### "values" = tolist([

### "Terraform EC2",

### ])

### },

### ])

### "get\_password\_data" = false

### "get\_user\_data" = false

### "host\_id" = tostring(null)

### "iam\_instance\_profile" = ""

### "id" = "i-0eda1c6a59790eb7d"

### "instance\_id" = tostring(null)

### "instance\_state" = "running"

### "instance\_tags" = tomap(null) /\* of string \*/

### "instance\_type" = "t2.micro"

### "key\_name" = ""

### "metadata\_options" = tolist([

### {

### "http\_endpoint" = "enabled"

### "http\_put\_response\_hop\_limit" = 1

### "http\_tokens" = "optional"

### },

### ])

### "monitoring" = false

### "network\_interface\_id" = "eni-0ffc9d62eafcafcbc"

### "outpost\_arn" = ""

### "password\_data" = tostring(null)

### "placement\_group" = ""

### "private\_dns" = "ip-172-31-9-122.eu-central-1.compute.internal"

### "private\_ip" = "172.31.9.122"

### "public\_dns" = "ec2-3-122-249-219.eu-central-1.compute.amazonaws.com"

### "public\_ip" = "3.122.249.219"

### "root\_block\_device" = toset([

### {

### "delete\_on\_termination" = true

### "device\_name" = "/dev/sda1"

### "encrypted" = false

### "iops" = 100

### "kms\_key\_id" = ""

### "tags" = tomap({})

### "throughput" = 0

### "volume\_id" = "vol-0fce01580b0175da8"

### "volume\_size" = 8

### "volume\_type" = "gp2"

### },

### ])

### "secondary\_private\_ips" = toset([])

### "security\_groups" = toset([

### "default",

### ])

### "source\_dest\_check" = true

### "subnet\_id" = "subnet-2183316d"

### "tags" = tomap({

### "Name" = "Terraform EC2"

### })

### "tenancy" = "default"

### "user\_data" = tostring(null)

### "user\_data\_base64" = tostring(null)

### "vpc\_security\_group\_ids" = toset([

### "sg-272bd157",

### ])

### }

### provider "aws" {

### region  = "ap-south-2"

### profile = "mr-cloud-book"

### }

### resource "aws\_instance" "ec2\_example" {

### ami           = "ami-0ce4e694de0a4848c"

### instance\_type = "t3.micro"

### tags = {

### Name = "Terraform EC2"

### }

### }

### data "aws\_instance" "myawsinstance" {

### filter {

### name   = "tag:Name"

### values = ["Terraform EC2"]

### }

### filter {

### name   = "instance-state-name"

### values = ["running"]

### }

### depends\_on = [

### aws\_instance.ec2\_example

### ]

### }

### output "fetched\_info\_from\_aws" {

### value = data.aws\_instance.myawsinstance

### }

### provider "aws" {

### region  = "ap-south-2"

### profile = "mr-cloud-book"

### }

### resource "aws\_instance" "ec2\_example" {

### ami           = "ami-0ce4e694de0a4848c"

### instance\_type = "t3.micro"

### tags = {

### Name = "Terraform EC2"

### }

### }

### data "aws\_instance" "myawsinstance" {

### filter {

### name   = "tag:Name"

### values = ["Terraform EC2"]

### }

### depends\_on = [

### aws\_instance.ec2\_example

### ]

### }

### output "fetched\_info\_from\_aws" {

### value = data.aws\_instance.myawsinstance.public\_ip

### }

### *script for AMI\_id :*

### provider "aws" {

### region  = "ap-south-2"

### profile = "mr-cloud-book"

### }

### data "aws\_ami" "amazon" {

### most\_recent = true

### owners      = ["amazon"]

### filter {

### name   = "name"

### values = ["amzn2-ami-hvm-\*-gp2"]

### }

### filter {

### name   = "virtualization-type"

### values = ["hvm"]

### }

### filter {

### name   = "architecture"

### values = ["x86\_64"]

### }

### }

### resource "aws\_instance" "ec2\_example" {

### ami           = data.aws\_ami.amazon.id

### instance\_type = "t3.micro"

### tags = {

### Name = "Terraform EC2"

### }

### }

### data "aws\_instance" "myawsinstance" {

### filter {

### name   = "tag:Name"

### values = ["Terraform EC2"]

### }

### filter {

### name   = "instance-state-name"

### values = ["running"]

### }

### hyderabad

### depends\_on = [

### aws\_instance.ec2\_example

### ]

### }

### output "fetched\_info\_from\_aws" {

### value = data.aws\_instance.myawsinstance.public\_ip

### }

### *Script for Aws Management console:*

### provider "aws" {

### region  = "ap-south-2"

### profile = "mr-cloud-book"

### }

### data "aws\_instance" "foo" {

### instance\_id = "i-05b43e21844c37720"

### filter {

### name   = "tag:Name"

### values = ["Test"]

### }

### }

### output "fetched-data" {

### value = data.aws\_instance.foo

### }