



Terraform

Oracle Cloud

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Abstract

- Introduction to Terraform
- Demo
 - Create instance in Oracle Public Cloud
 - Import instance from Oracle Public Cloud
- Comparison of popular infrastructure-as-code tools



What is Terraform?

Building
Updating
Versioning



Safely
Efficiently

Terraform Providers





Create instance in Oracle Public Cloud



Terraform scripts

- terraform.tfvars
 - variables.tf
 - main.tf
 - remote-exec.sh
- Files to upload:
 - SSH key
 - Docker image
 - dc.yml

terraform.tfvars

```
user = "username"  
password = "P4$$w0rd"  
identity_domain = "domain"  
endpoint = "https://myendpoint.oraclecloud.com/"
```

<https://www.terraform.io/docs/providers/opc/>

variables.tf

```
variable "image" {  
    default = "bitnami-lampstack-7.1.16-0-linux-ubuntu-16.04-x86_64"  
}  
  
variable "shape" {  
    default = "oc3"  
}  
  
variable "ssh_key_file" {  
    default = "c:\\Terraform\\demo\\ssh-keys\\terraform-key.pem"  
}  
  
variable "ssh_user_name" {  
    default = "bitnami"  
}
```


main.tf

- Provider opc
- Resources
 - opc_compute_ssh_key
 - opc_compute_ip_reservation
 - opc_compute_security_list
 - opc_compute_sec_rule
 - opc_compute_instance
- Provisioner
 - file
 - remote exec

main.tf (opc provider)

```
variable user {}  
variable password {}  
variable identity_domain {}  
variable endpoint {}  
  
provider "opc" {  
    user = "${var.user}"  
    password = "${var.password}"  
    identity_domain = "${var.identity_domain}"  
    endpoint = "${var.endpoint}"  
}
```

<https://www.terraform.io/docs/providers/opc/>

main.tf (sec_rule)

```
resource "opc_compute_sec_rule" "ssh_rule" {  
  name          = "ssh_rule"  
  source_list   = "seclist:/oracle/public/public-internet"  
  destination_list = "seclist:${opc_compute_security_list.terraform_sec_list.name}"  
  action        = "permit"  
  application    = "/oracle/public/ssh"  
}
```

```
resource "opc_compute_sec_rule" "https_rule" {  
  name          = "https_rule"  
  source_list   = "seclist:/oracle/public/public-internet"  
  destination_list = "seclist:${opc_compute_security_list.terraform_sec_list.name}"  
  action        = "permit"  
  application    = "/oracle/public/https"  
}
```

https://www.terraform.io/docs/providers/opc/r/opc_compute_sec_rule.html

main.tf (opc_compute_instance)

```
resource "opc_compute_instance" "terraform-instance1" {  
  name = "terraform-instance1"  
  label = "${var.image}"  
  image_list = "/Compute-${var.domain}/${var.user}/${var.image}"  
  shape = "${var.shape}"  
  ssh_keys = [ "${opc_compute_ssh_key.sshkey.name}" ]  
  
  networking_info {  
    index = 0  
    shared_network = true  
    nat = [ "${opc_compute_ip_reservation.ipreservation1.name}" ]  
    sec_lists = [ "${opc_compute_security_list.terraform_sec_list.name}" ]  
  }  
}
```

https://www.terraform.io/docs/providers/opc/r/opc_compute_instance.html

main.tf (opc_compute_instance & provisioner)

```
provisioner "file" {  
    source      = "${var.upload_dir}\\dc.yml"  
    destination = "/home/${var.ssh_user_name}/deconv/conf/dc.yml"  
}  
  
provisioner "remote-exec" {  
    inline = [  
        "sudo docker load -i energy",  
        "sudo /opt/${var.ssh_user_name}/apache2/bin/apachectl stop",  
        "sudo docker-compose -p energy-deconv -f ./deconv/conf/dc.yml up -d",  
    ]  
}  
}
```


Oracle cloud console

Instances > terraform-instance



Overview

Logs

Screen Captures

Instance terraform-instance

As of 12:11:59 PM

Name: /Compute-588762397-terraform-instance/9e6b072b-ee14-42dd-8210-a899af53605a
Label: terraform-instance
Status: Running (Since 44 days ago.)
Tags:
Shape: oc3
Image: /Compute-588762397-bitnami-lampstack-7.1.16-0-linux-ubuntu-16.04-x86_64
Orchestration: /Compute-588762397-terraform-instance
OCPUs: 1
Memory: 7,5 GB
DNS Name:
Public IP Address: 144.21.72.65
Private IP Address:
Availability Domain:

Storage Volumes

[Attach Storage Volume](#)

Name	Description	Status	Size	Disk #	
terraform-instance_storage		Online	20 GB	1	

Security Lists

[Add to Security List](#)

Name	Description	Inbound Policy	Outbound Policy	
default		Deny	Permit	
terraform-sec-list		Deny	Permit	

https://144.21.72.65/DataExchangeConverter/

Sign In | Oracle Cloud x Compute Classic - Instan x Converter x Zsanett

Nem biztonságos | https://144.21.72.65/DataExchangeConverter/

Gázipari Adatcsere Konverter

Üzenetek:

Nincs üzenet

Törés

Feltöltés:

+ Feltölt

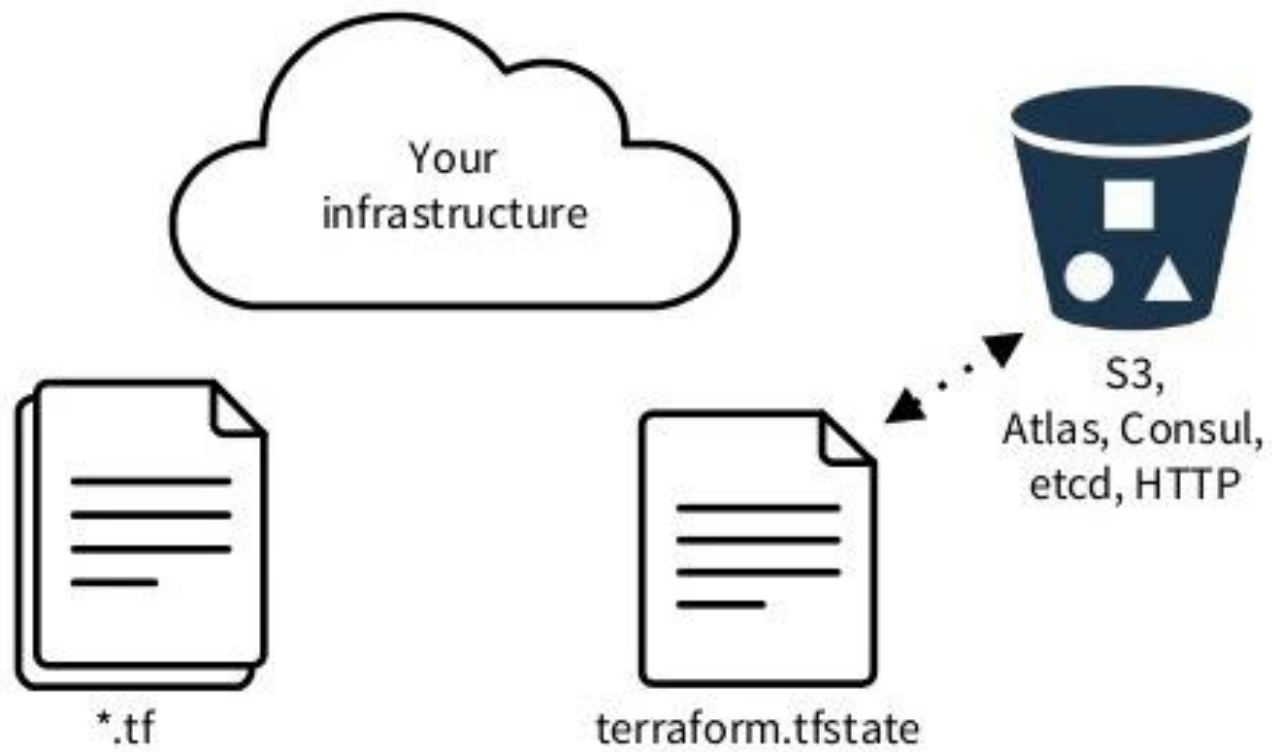
Fájlok törlése

Funkciók:

MMUTIL +

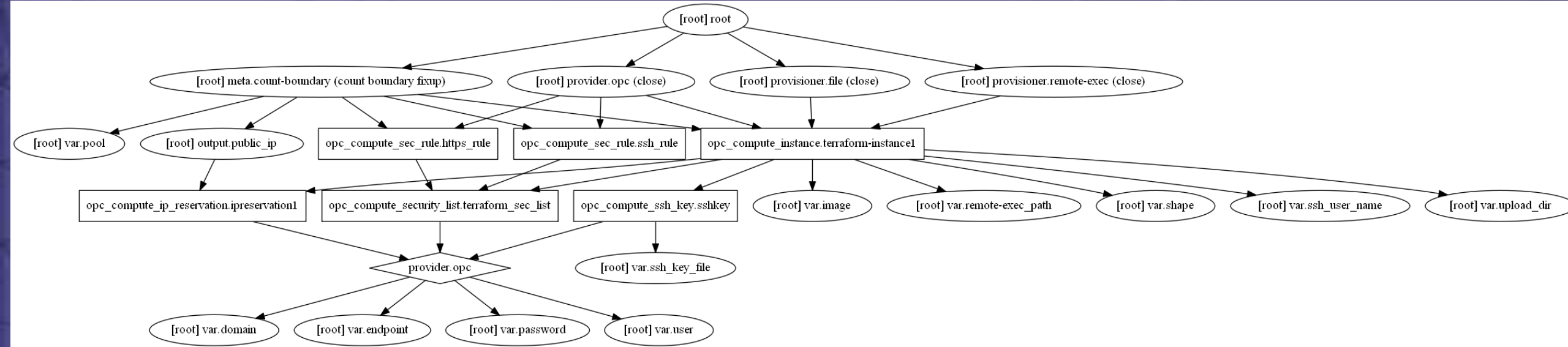
UTILMD +

.tfstate files



Terraform – Resource Graph - Visualization

- Terraform builds dependency graphs for planning state management and more.
- <http://www.graphviz.org/Download..php>
- `$ terraform graph | dot -Tpng > tgraph1.png`





Import from Oracle Public Cloud



Terraform import scripts

- terraform.tfvars
- import.tf
- import_opc.bat

import.tf

```
resource "opc_compute_ssh_key" "sshkey" {  
}  
  
resource "opc_compute_ip_reservation" "ipreservation1" {  
}  
  
resource "opc_compute_image_list" "bitnami-lampstack" {  
}  
  
resource "opc_compute_security_list" "terraform-sec-list" {  
}  
  
resource "opc_compute_sec_rule" "ssh_rule" {  
}  
  
resource "opc_compute_sec_rule" "https_rule" {  
}  
  
resource "opc_compute_instance" "terraform-instance1" {  
}
```

import_opc.bat

...

```
terraform import opc_compute_security_list.terraform-sec-list terraform-sec-list
```

```
terraform import opc_compute_sec_rule.ssh_rule ssh_rule
```

```
terraform import opc_compute_sec_rule.https_rule https_rule
```

```
terraform import opc_compute_instance.terraform-instance1 terraform-instance1/9496061d-7279-47b4-b334-4c4f0ef0b2c3
```



Terraform comparison of popular
infrastructure-as-code tools

	Terraform	Chef	Ansible	Puppet	SaltStack	CloudFormation
Code	Open source	Open source	Open source	Open source	Open source	Closed source
Cloud	All	All	All	All	All	AWS only
Type	Orchestration	Config Mgmt	Config Mgmt	Config Mgmt	Config Mgmt	Orchestration
Infrastructure	Immutable	Mutable	Mutable	Mutable	Mutable	Immutable
Language	Declarative	Procedural	Procedural	Declarative	Declarative	Declarative
Architecture	Client-Only	Client/Server	Client-Only	Client/Server	Client/Server	Client-Only

<https://blog.gruntwork.io/why-we-use-terraform-and-not-chef-puppet-ansible-saltstack-or-cloudformation-7989dad2865c>

Questions



<https://144.21.72.65/DataExchangeConverter/>

