Final Project - TERRAFORM

Cloud Systems

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# Terraform Script – main.tf

terraform {

  required\_providers {

    aws = {

      source  = "hashicorp/aws"

      version = "~> 3.0"

    }

  }

}

# Configure the AWS Provider

provider "aws" {

  region = var.usregion

  access\_key = var.accesskey

  secret\_key = var.secretkey

  token = var.token

}

# Creation of VPC

resource "aws\_vpc" "VPC-A" {

    cidr\_block = var.vpc\_cidr\_blockA

    enable\_dns\_hostnames = true

    enable\_dns\_support = true

    tags = { Name = "vpc-${var.vpc\_name[0]}"}

}

# Creation of Internet Gateway

resource "aws\_internet\_gateway" "IGW-A" {

    vpc\_id = aws\_vpc.VPC-A.id

    tags   = { Name = var.igw\_name}

}

# Configuration of public routing table 1

resource "aws\_route\_table" "RT-public1A" {

    vpc\_id = aws\_vpc.VPC-A.id

    route {

        cidr\_block = var.cidr\_block

        gateway\_id = aws\_internet\_gateway.IGW-A.id

    }

    tags = { Name = "${var.prt\_name[0]}" }

}

# Configuration of public routing table 2

resource "aws\_route\_table" "RT-public2A" {

    vpc\_id = aws\_vpc.VPC-A.id

    route {

        cidr\_block = var.cidr\_block

        gateway\_id = aws\_internet\_gateway.IGW-A.id

    }

    tags = { Name = "${var.prt\_name[1]}" }

}

# Association of public subnet 1 with public routing table 1

resource "aws\_route\_table\_association" "public1A" {

    subnet\_id      = aws\_subnet.SN-public-1A.id

    route\_table\_id = aws\_route\_table.RT-public1A.id

}

# Association of public subnet 2 with public routing table 2

resource "aws\_route\_table\_association" "public2A" {

    subnet\_id      = aws\_subnet.SN-public-2A.id

    route\_table\_id = aws\_route\_table.RT-public2A.id

}

# AWS EC2 Instance 1

resource "aws\_instance" "terraformed" {

  ami = var.ami-id

  instance\_type = var.instance\_name

  subnet\_id = aws\_subnet.SN-public-1A.id

  tags = { "name" = "${var.ws\_name[0]}" }

}

# AWS EC2 Instance 2

resource "aws\_instance" "terraformed2" {

  ami = var.ami-id

  instance\_type = var.instance\_name

  subnet\_id = aws\_subnet.SN-public-2A.id

  tags = { "name" = "${var.ws\_name[1]}" }

}

# Creation of public subnet 1

resource "aws\_subnet" "SN-public-1A" {

    vpc\_id = aws\_vpc.VPC-A.id

    cidr\_block = var.subnet\_prefixA[0]

    map\_public\_ip\_on\_launch = true

    availability\_zone = var.azone[0]

    tags = { Name = "${var.psubnet\_name[0]}" }

}

# Creation of public subnet 2

resource "aws\_subnet" "SN-public-2A" {

    vpc\_id = aws\_vpc.VPC-A.id

    cidr\_block = var.subnet\_prefixA[1]

    map\_public\_ip\_on\_launch = true

    availability\_zone = var.azone[1]

    tags = { Name = "${var.psubnet\_name[1]}" }

}

# Creation of private subnet 1

resource "aws\_subnet" "SN-private-1A" {

    vpc\_id = aws\_vpc.VPC-A.id

    cidr\_block = var.subnet\_prefixA[2]

    map\_public\_ip\_on\_launch = true

    availability\_zone = var.azone[2]

    tags = { Name = "${var.prvsubnet\_name[0]}" }

}

# Creation of private subnet 2

resource "aws\_subnet" "SN-private-2A" {

    vpc\_id = aws\_vpc.VPC-A.id

    cidr\_block = var.subnet\_prefixA[3]

    map\_public\_ip\_on\_launch = true

    availability\_zone = var.azone[3]

    tags = { Name = "${var.prvsubnet\_name[1]}" }

}

################ VPC-B Resources ########################

# Creation of VPC

resource "aws\_vpc" "VPC-B" {

    cidr\_block = var.vpc\_cidr\_blockB

    enable\_dns\_hostnames = true

    enable\_dns\_support = true

    tags = { Name = "vpc-${var.vpc\_name[1]}"}

}

# Creation of Internet Gateway

resource "aws\_internet\_gateway" "IGW-B" {

    vpc\_id = aws\_vpc.VPC-B.id

    tags   = { Name = var.igw\_name}

}

# Configuration of public routing table 1

resource "aws\_route\_table" "RT-public1B" {

    vpc\_id = aws\_vpc.VPC-B.id

    route {

        cidr\_block = var.cidr\_block

        gateway\_id = aws\_internet\_gateway.IGW-B.id

    }

    tags = { Name = "${var.prt\_name[0]}" }

}

# Configuration of public routing table 2

resource "aws\_route\_table" "RT-public2B" {

    vpc\_id = aws\_vpc.VPC-B.id

    route {

        cidr\_block = var.cidr\_block

        gateway\_id = aws\_internet\_gateway.IGW-B.id

    }

    tags = { Name = "${var.prt\_name[1]}"}

}

# Association of public subnet 1B with public routing table 1B

resource "aws\_route\_table\_association" "public1B" {

    subnet\_id      = aws\_subnet.SN-public-1B.id

    route\_table\_id = aws\_route\_table.RT-public1B.id

}

# Association of public subnet 2B with public routing table 2B

resource "aws\_route\_table\_association" "public2B" {

    subnet\_id      = aws\_subnet.SN-public-2B.id

    route\_table\_id = aws\_route\_table.RT-public2B.id

}

# AWS EC2 Instance 3

resource "aws\_instance" "terraformed3" {

  ami = var.ami-id

  instance\_type = var.instance\_name

  subnet\_id = aws\_subnet.SN-public-1B.id

  tags = { "name" = "${var.ws\_name[0]}" }

}

# AWS EC2 Instance 4

resource "aws\_instance" "terraformed4" {

  ami = var.ami-id

  instance\_type = var.instance\_name

  subnet\_id = aws\_subnet.SN-public-2B.id

  tags = { "name" = "${var.ws\_name[1]}"}

}

# Creation of public subnet 1 - B

resource "aws\_subnet" "SN-public-1B" {

    vpc\_id = aws\_vpc.VPC-B.id

    cidr\_block = var.subnet\_prefixB[0]

    map\_public\_ip\_on\_launch = true

    availability\_zone = var.azone[0]

    tags = { Name = "${var.psubnet\_name[0]}" }

}

# Creation of public subnet 2 - B

resource "aws\_subnet" "SN-public-2B" {

    vpc\_id = aws\_vpc.VPC-B.id

    cidr\_block = var.subnet\_prefixB[1]

    map\_public\_ip\_on\_launch = true

    availability\_zone = var.azone[1]

    tags = { Name = "${var.psubnet\_name[1]}"}

}

# Creation of private subnet 1 - B

resource "aws\_subnet" "SN-private-1B" {

    vpc\_id = aws\_vpc.VPC-B.id

    cidr\_block = var.subnet\_prefixB[2]

    map\_public\_ip\_on\_launch = true

    availability\_zone = var.azone[2]

    tags = { Name = "${var.prvsubnet\_name[0]}" }

}

# Creation of private subnet 2 - B

resource "aws\_subnet" "SN-private-2B" {

    vpc\_id = aws\_vpc.VPC-B.id

    cidr\_block = var.subnet\_prefixB[3]

    map\_public\_ip\_on\_launch = true

    availability\_zone = var.azone[3]

    tags = { Name = "${var.prvsubnet\_name[1]}" }

}

# Terraform Script – terraform.tfvars

usregion = "us-east-1"

accesskey = "ASIARCNRYJADPL44K5PI"

secretkey = "VJg/ly6DFmhedUXBgcrdr7KSO4QXGNeMo0JyaqjA"

token = "FwoGZXIvYXdzEMH//////////wEaDO7OQbaHFSSgdYgHHCLMASs5aWVW3xzLgx8phx94nvs1X4fo9U3KZDlrMD1T+8VucMmKiKU6x/pmdgoMAWtFvC9spbdT7CBKDZTGeblHZDohS93EiOYDHsIlmjeT/ccZZWYdVLvMQFLWpwc32OdXohQpLRvJlc+FIS9womyj/SEfa/y73jX+CIUenOETG2nVRO4ui/xT5irF64fp1CsnZKMuDp8b5aTcMO/iIjD9x1DpHIUmGO/R/XVMkKAI/NWtaV5FM+ST3qNkeChcjee8sPms9EN9q+EP9zoj1CjjkO+NBjItFC8UNJch/4HsELHIFJM0CmEVs98qoZlgSJigBTWfTf4l8cQTPPsfmkIg5Omq"

#Names of resources

instance\_name = "t2.micro"

vpc\_name = ["A","B"]

igw\_name = "Internet Gateway"

prt\_name = ["Public Access Routing Table 1","Public Access Routing Table 2"]

ws\_name = ["webserver-01","webserver-02"]

psubnet\_name = ["subnet-public-1","subnet-public-2"]

prvsubnet\_name = ["subnet-private-1","subnet-private-2"]

#vpcA\_name = "VPC-A"

vpc\_cidr\_blockA = "10.0.0.0/16"

subnet\_prefixA = ["10.0.1.0/24", "10.0.3.0/24", "10.0.2.0/24", "10.0.4.0/24"]

#vpcB\_name = "VPC-B"

vpc\_cidr\_blockB = "192.168.0.0/16"

subnet\_prefixB = ["192.168.1.0/24", "192.168.3.0/24", "192.168.2.0/24", "192.168.4.0/24"]

azone = ["us-east-1a", "us-east-1b", "us-east-1c", "us-east-1d"]

ami-id = "ami-0ed9277fb7eb570c9"

cidr\_block = "0.0.0.0/0"

# Terraform Script – variables.tf

# Define variables

variable "usregion" {

    description = "AWS region"

    type = string

}

variable "accesskey" {

    description = "Access key"

    type = string

}

variable "secretkey" {

    description = "Secret key"

    type = string

}

variable "token" {

    description = "Token"

    type = string

}

variable "vpc\_cidr\_blockA" {

    description = "vpc address space for VPC-A"

    type = string

}

variable "subnet\_prefixA" {

    description = "subnet prefixes for VPC-A"

    type = list

}

variable "vpc\_cidr\_blockB" {

    description = "vpc address space for VPC-B"

    type = string

}

variable "subnet\_prefixB" {

    description = "subnet prefixes for VPC-B"

    type = list

}

variable "azone" {

    description = "availability zones"

    type = list

}

variable "ami-id" {

    description = "id of AWS AMI"

    type = string

}

variable "vpc\_name" {

    description = "VPC name"

    type = list(string)

}

variable "igw\_name" {

    description = "Internet Gateway Name"

    type = string

}

variable "prt\_name" {

    description = "Public Routing Table Names"

    type = list(string)

}

variable "ws\_name" {

    description = "Names of Web-Servers"

    type = list(string)

}

variable "psubnet\_name" {

    description = "Public Subnet Name"

    type = list(string)

}

variable "prvsubnet\_name" {

    description = "Private Subnet Name"

    type = list(string)

}

variable "instance\_name" {

    description = "Instance Name"

    type = string

}

variable "cidr\_block" {

    description = "Default CIDR block"

    type = string

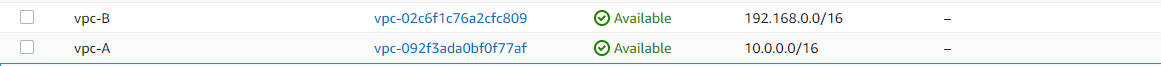
}

Text

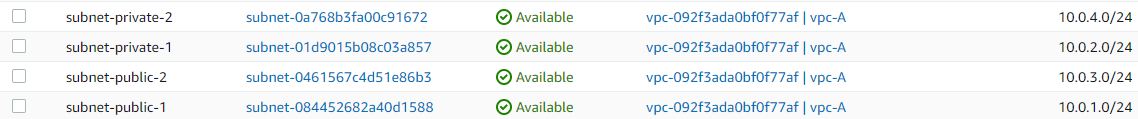
Description automatically generated

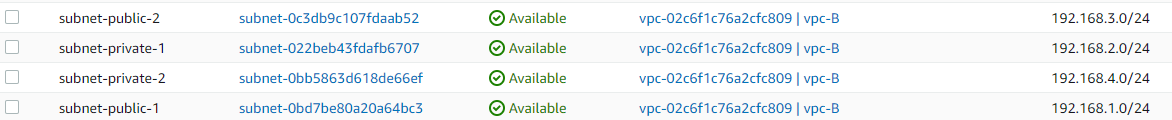
# Snippet of Components

## a) Two VPCs

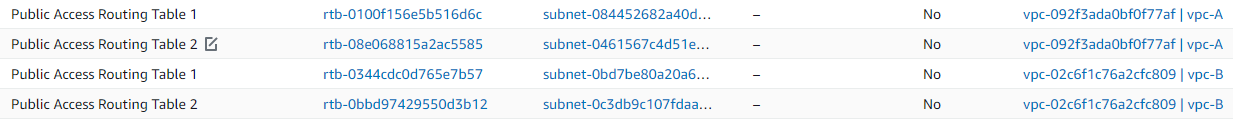


## b) Four subnets per VPC





## c) Route tables



## d) Four EC2s in their VPCs

Table

Description automatically generated

Graphical user interface, text, application, chat or text message

Description automatically generated

Graphical user interface, text, application

Description automatically generated

Graphical user interface, text, application

Description automatically generated

Graphical user interface, text, application, chat or text message

Description automatically generated

## e) 2 Internet Gateways

