AWS FSx ONTAP and EC2 Provision

NetApp Solutions

NetApp
October 20, 2023

This PDF was generated from https://docs.netapp.com/us-en/netapp-solutions/databases/automation_fsx_ec2_provision.html on October 20, 2023. Always check docs.netapp.com for the latest.

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AWS FSx ONTAP Cluster and EC2 Instance Provision

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Purpose

This toolkit automates the tasks of provisioning of an AWS FSx ONTAP storage cluster and an EC2 compute instance, which can be subsequently used for database deployment.

This solution addresses the following use cases:

- Provision an EC2 compute instance in AWS cloud in a predefined VPC subnet and set ssh key for EC2 instance access as ec2-user.
- Provision an AWS FSx ONTAP storage cluster in desired availability zones and configure a storage SVM and set cluster admin user fsxadmin password.

Audience

This solution is intended for the following people:

- A DBA who manages databases in AWS EC2 environment.
- A database solution architect who is interested in database deployment in AWS EC2 ecosystem.
- A storage administrator who manages AWS FSx ONTAP storage that supports databases.
- An application owner who likes to standup database in AWS EC2 ecosystem.

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Solution deployment

Prerequisites for deployment

Deployment requires the following prerequisites.

```
An Organization and AWS account has been setup in AWS public cloud
  An user to run the deployment has been created
  IAM roles has been configured
  IAM roles granted to user to permit provisioning the resources
```

```
VPC and security configuration
  A VPC has been created to host the resources to be provisioned
  A security group has been configured for the VPC
  A ssh key pair has been created for EC2 instance access
```

```
Network configuration
  Subnets has been created for VPC with network segments assigned
  Route tables and network ACL configured
  NAT gateways or internet gateways configured for internet access
```

Download the toolkit

```
git clone https://github.com/NetApp/na_aws_fsx_ec2_deploy.git
```

Connectivity and authentication

The toolkit is supposed to be executed from an AWS cloud shell. AWS cloud shell is a browser-based shell that makes it easy to securely manage, explore, and interact with your AWS resources. CloudShell is pre-authenticated with your console credentials. Common development and operations tools are pre-installed, so no local installation or configuration is required.

Terraform provider.tf and main.tf files configuration

The provider.tf defines the provider that Terraform is provisioning resources from via API calls. The main.tf defines the resources and attributes of resources that are to be provisioned. Following are some details:

```
provider.tf:
  terraform {
    required_providers {
      aws = {
        source  = "hashicorp/aws"
        version = "~> 4.54.0"
      }
    }
  }
```

```
main.tf:
  resource "aws_instance" "ora_01" {
    ami                           = var.ami
    instance_type                 = var.instance_type
    subnet_id                     = var.subnet_id
    key_name                      = var.ssh_key_name
    root_block_device {
      volume_type                 = "gp3"
      volume_size                 = var.root_volume_size
    }
    tags = {
      Name                        = var.ec2_tag
    }
  }
  ....
```

Terraform variables.tf and terraform.tfvars configuration

The variables.tf declares the variables to be used in main.tf. The terraform.tfvars contains the actual values for the variables. Following are some examples:

```
variables.tf:
  ### EC2 instance variables ###
```

```
variable "ami" {
  type        = string
  description = "EC2 AMI image to be deployed"
}
```

```
variable "instance_type" {
  type        = string
  description = "EC2 instance type"
}
....
```

```
terraform.tfvars:
  # EC2 instance variables
```

```
ami                     = "ami-06640050dc3f556bb" //RedHat 8.6  AMI
instance_type           = "t2.micro"
ec2_tag                 = "ora_01"
subnet_id               = "subnet-04f5fe7073ff514fb"
ssh_key_name            = "sufi_new"
root_volume_size        = 30
....
```

Step by step procedures - executed in sequence

1. Install Terraform in AWS cloud shell.

```
git clone https://github.com/tfutils/tfenv.git ~/.tfenv
```

```
mkdir ~/bin
```

```
ln -s ~/.tfenv/bin/* ~/bin/
```

```
tfenv install
```

```
tfenv use 1.3.9
```

2. Download the toolkit from NetApp GitHub public site

```
git clone https://github.com/NetApp-
Automation/na_aws_fsx_ec2_deploy.git
```

3. Run init to initialize terraform

```
terraform init
```

4. Output the execution plan

```
terraform plan -out=main.plan
```

5. Apply the execution plan

```
terraform apply "main.plan"
```

6. Run destroy to remove the resources when done

```
terraform destroy
```

Where to find additional information

To learn more about the NetApp solution automation, review the following website NetApp Solution Automation

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