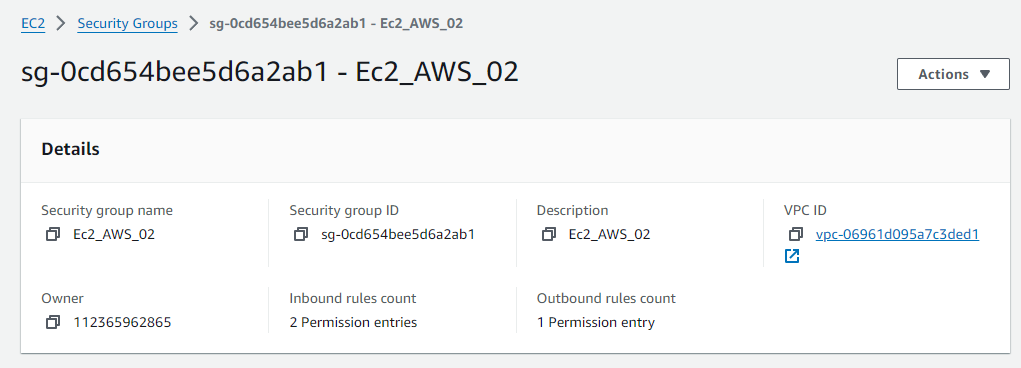
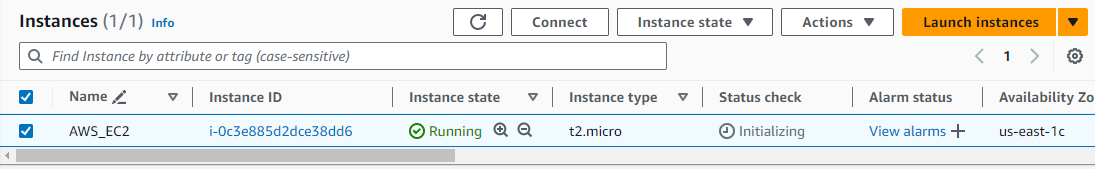
**AWS**

**Q 01.**

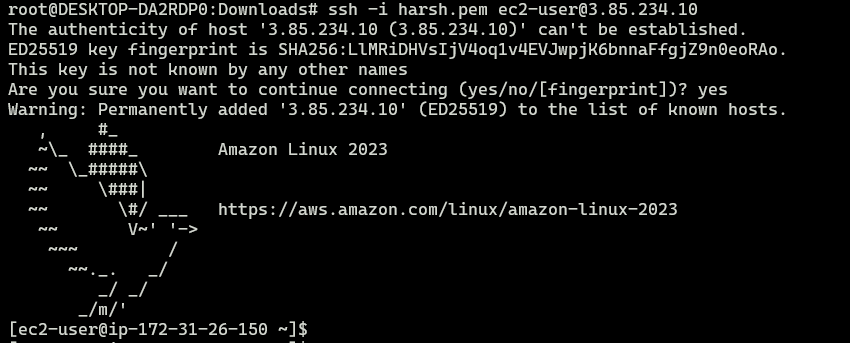
**1. Create Security Group:**  
   - Create one security group for the web server.  
   - Configure inbound rules for the web server security group to allow HTTP traffic (port 80) and SSH traffic (port 22) from any source.



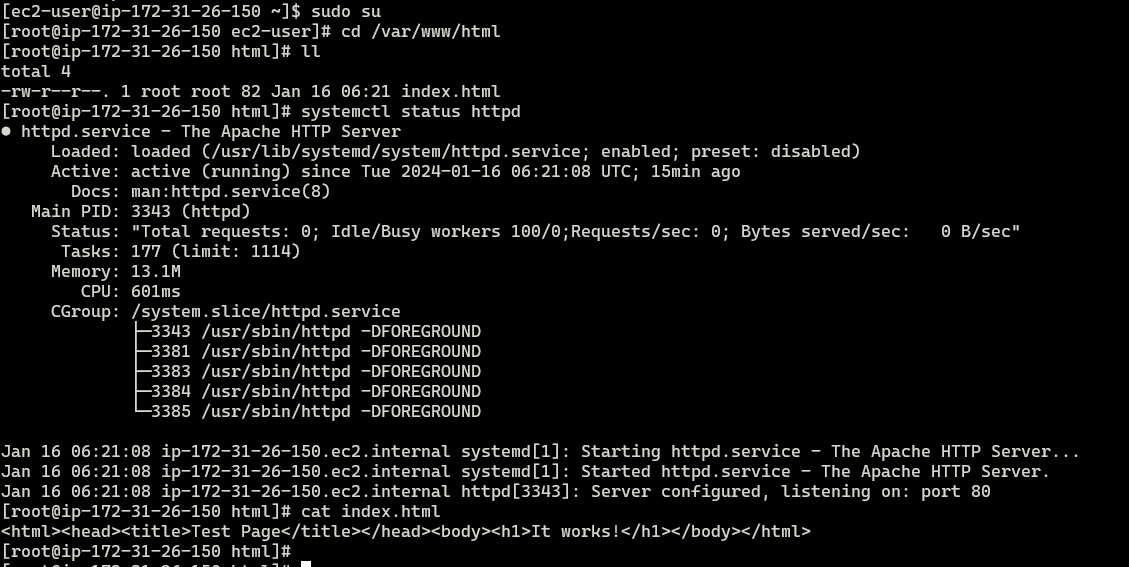
**2. Launch EC2 Instance:**  
   - Launch an EC2 instance for the web server using Amazon Linux 2 AMI.  
     - Associate the web server security group created earlier with this instance.  
     - Use an appropriate instance type for a web server.  
     - Ensure the instance has a public IP address.

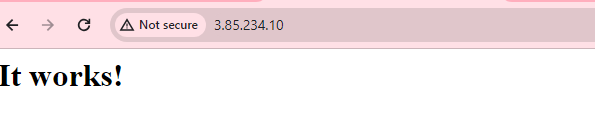


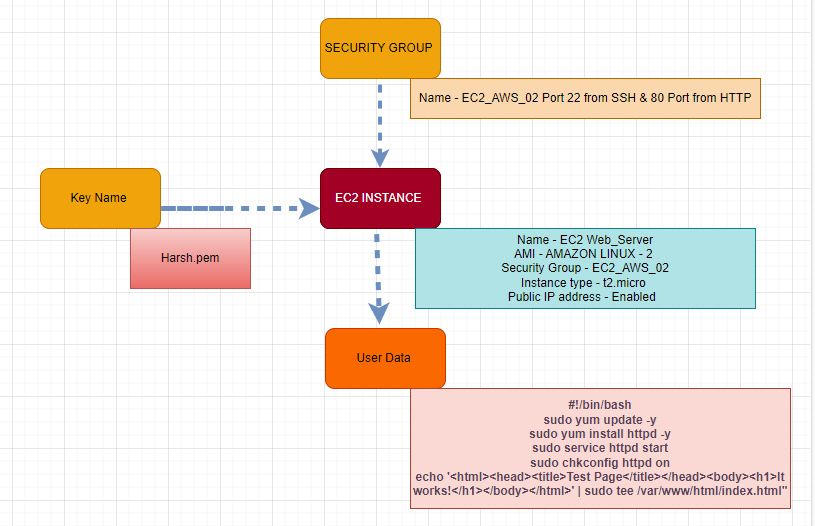
**3. SSH Access:**  
   - Generate an SSH key pair for secure access to the instances.  
   - Configure the web server instance to accept SSH connections using the generated key pair.  
   - Attempt to SSH into the web server instance to verify successful access.



**4. Web Application Setup:**  
   - Install a web server (e.g., Apache or Nginx) on the web server instance.  
   - Create a simple HTML page to confirm the web server is working.  
   - Test accessing the web server's public IP address in a web browser.







**------------------------------------------------------------------------------------------------------------------------------------------**

**(ON CLI)**

**Q 02.**

**1. Create Security Group for Web Server Using AWS CLI:**  
   - Use the AWS CLI to create a security group for the web server.

root@DESKTOP-DA2RDP0:harsh#

root@DESKTOP-DA2RDP0:harsh# aws ec2 help

root@DESKTOP-DA2RDP0:harsh# aws ec2 create-security-group help

root@DESKTOP-DA2RDP0:harsh# aws ec2 create-security-group --description AWS\_EC2\_03 --group-name AWS\_03

{

"GroupId": "sg-086b550f7e39e3e04"

}

root@DESKTOP-DA2RDP0:harsh#

---------------------------------------------------  
   - Configure inbound rules to allow HTTP traffic (port 80) and SSH traffic (port 22) from any source.

**root@DESKTOP-DA2RDP0:harsh#**

**root@DESKTOP-DA2RDP0:harsh# aws ec2 create-security-group help**

**root@DESKTOP-DA2RDP0:harsh# aws ec2 help**

**root@DESKTOP-DA2RDP0:harsh# aws ec2 authorize-security-group-ingress help**

**root@DESKTOP-DA2RDP0:harsh# aws ec2 authorize-security-group-ingress --group-id sg-086b550f7e39e3e04 --protocol tcp --port 22 --cidr 0.0.0.0/0**

**{**

**"Return": true,**

**"SecurityGroupRules": [**

**{**

**"SecurityGroupRuleId": "sgr-0747c860fd6cb3d66",**

**"GroupId": "sg-086b550f7e39e3e04",**

**"GroupOwnerId": "112365962865",**

**"IsEgress": false,**

**"IpProtocol": "tcp",**

**"FromPort": 22,**

**"ToPort": 22,**

**"CidrIpv4": "0.0.0.0/0"**

**}**

**]**

**}**

**root@DESKTOP-DA2RDP0:harsh#**

**root@DESKTOP-DA2RDP0:harsh# aws ec2 authorize-security-group-ingress --group-id sg-086b550f7e39e3e04 --protocol tcp --port 80 --cidr**

**0.0.0.0/0**

**{**

**"Return": true,**

**"SecurityGroupRules": [**

**{**

**"SecurityGroupRuleId": "sgr-0fab355be5c002b37",**

**"GroupId": "sg-086b550f7e39e3e04",**

**"GroupOwnerId": "112365962865",**

**"IsEgress": false,**

**"IpProtocol": "tcp",**

**"FromPort": 80,**

**"ToPort": 80,**

**"CidrIpv4": "0.0.0.0/0"**

**}**

**]**

**}**

**root@DESKTOP-DA2RDP0:harsh#**

**2. Launch EC2 Instance for Web Server Using AWS CLI:**  
   - Use the AWS CLI to launch an EC2 instance for the web server using Amazon Linux 2 AMI.

     - Associate the security group created earlier with this instance.  
     - Use an appropriate instance type for a web server.  
     - Ensure the instance has a public IP address.

**root@DESKTOP-DA2RDP0:harsh# aws ec2 run-instances --image-id ami-0005e0cfe09cc9050 --key-name harsh --instance-type t2.micro --security-group-ids sg-086b550f7e39e3e04 --associate-public-ip-address --tag-specifications 'ResourceType=instance,Tags=[{Key=Name,Value=Ec2**

**\_Instance}]'**

**{**

**"Groups": [],**

**"Instances": [**

**{**

**"AmiLaunchIndex": 0,**

**"ImageId": "ami-0005e0cfe09cc9050",**

**"InstanceId": "i-009771879a3919e3f",**

**"InstanceType": "t2.micro",**

**"KeyName": "harsh",**

**"LaunchTime": "2024-01-16T08:12:37.000Z",**

**"Monitoring": {**

**"State": "disabled"**

**},**

**"Placement": {**

**"AvailabilityZone": "us-east-1b",**

**"GroupName": "",**

**"Tenancy": "default"**

**},**

**"PrivateDnsName": "ip-172-31-80-42.ec2.internal",**

**"PrivateIpAddress": "172.31.80.42",**

**"ProductCodes": [],**

**"PublicDnsName": "",**

**"State": {**

**"Code": 0,**

**"Name": "pending"**

**},**

**"StateTransitionReason": "",**

**"SubnetId": "subnet-0be61cf088b9bce21",**

**"VpcId": "vpc-06961d095a7c3ded1",**

**"Architecture": "x86\_64",**

**"BlockDeviceMappings": [],**

**"ClientToken": "dcf7944e-3122-49ce-aff3-2f0426173624",**

**"EbsOptimized": false,**

**"EnaSupport": true,**

**"Hypervisor": "xen",**

**"NetworkInterfaces": [**

**{**

**"Attachment": {**

**"AttachTime": "2024-01-16T08:12:37.000Z",**

**"AttachmentId": "eni-attach-0911c8553b7464d50",**

**"DeleteOnTermination": true,**

**"DeviceIndex": 0,**

**"Status": "attaching",**

**"NetworkCardIndex": 0**

**},**

**"Description": "",**

**"Groups": [**

**{**

**"GroupName": "AWS\_03",**

**"GroupId": "sg-086b550f7e39e3e04"**

**}**

**],**

**"Ipv6Addresses": [],**

**"MacAddress": "12:ec:fa:d9:ea:ed",**

**"NetworkInterfaceId": "eni-05ed505156da27fe8",**

**"OwnerId": "112365962865",**

**"PrivateDnsName": "ip-172-31-80-42.ec2.internal",**

**"PrivateIpAddress": "172.31.80.42",**

**"PrivateIpAddresses": [**

**{**

**"Primary": true,**

**"PrivateDnsName": "ip-172-31-80-42.ec2.internal",**

**"PrivateIpAddress": "172.31.80.42"**

**}**

**],**

**"SourceDestCheck": true,**

**"Status": "in-use",**

**"SubnetId": "subnet-0be61cf088b9bce21",**

**"VpcId": "vpc-06961d095a7c3ded1",**

**"InterfaceType": "interface"**

**}**

**],**

**"RootDeviceName": "/dev/xvda",**

**"RootDeviceType": "ebs",**

**"SecurityGroups": [**

**{**

**"GroupName": "AWS\_03",**

**"GroupId": "sg-086b550f7e39e3e04"**

**}**

**],**

**"SourceDestCheck": true,**

**"StateReason": {**

**"Code": "pending",**

**"Message": "pending"**

**},**

**"Tags": [**

**{**

**"Key": "Name",**

**"Value": "Ec2\_Instance"**

**}**

**],**

**"VirtualizationType": "hvm",**

**"CpuOptions": {**

**"CoreCount": 1,**

**"ThreadsPerCore": 1**

**},**

**"CapacityReservationSpecification": {**

**"CapacityReservationPreference": "open"**

**},**

**"MetadataOptions": {**

**"State": "pending",**

**"HttpTokens": "required",**

**"HttpPutResponseHopLimit": 2,**

**"HttpEndpoint": "enabled",**

**"HttpProtocolIpv6": "disabled",**

**"InstanceMetadataTags": "disabled"**

**},**

**"EnclaveOptions": {**

**"Enabled": false**

**},**

**"BootMode": "uefi-preferred",**

**"PrivateDnsNameOptions": {**

**"HostnameType": "ip-name",**

**"EnableResourceNameDnsARecord": false,**

**"EnableResourceNameDnsAAAARecord": false**

**}**

**}**

**],**

**"OwnerId": "112365962865",**

**"ReservationId": "r-03d04b6586c49ce53"**

**}**

**root@DESKTOP-DA2RDP0:harsh#**

**root@DESKTOP-DA2RDP0:harsh#**

**3. SSH Access Using AWS CLI:**  
   - Use the AWS CLI to generate an SSH key pair for secure access to the web server instance.  
   - Configure the web server instance to accept SSH connections using the generated key pair.  
   - Use the AWS CLI to attempt to SSH into the web server instance to verify successful access.

**root@DESKTOP-DA2RDP0:harsh#**

**root@DESKTOP-DA2RDP0:harsh# aws ec2 help**

**root@DESKTOP-DA2RDP0:harsh# aws ec2 create-key-pair help**

**root@DESKTOP-DA2RDP0:harsh# aws ec2 create-key-pair --key-name harsh.pem**

**{**

**"KeyFingerprint": "72:0d:0a:34:5b:38:eb:1e:42:83:78:8a:b2:57:a9:73:89:d9:36:a1",**

**"KeyMaterial": "-----BEGIN RSA PRIVATE KEY-----\nMIIEowIBAAKCAQEA6pdyxMfN+l2M+bbnW8HlKP8RsckCdtyu+jz3sCd9mf9wJ2hx\nPNa+tPw6prceNNrp4/LBIRS8p0uHj4upx4+UiqjUfoRNIMYV9KsBX61uFKKCYlu2\nvWgSYlKOBpch5GTjLbhhcDmSrrHuLmT3Av+Uik3DP+X/50My/sgGUOT8RAEMX7uW\nRkdy36Me5dtxkoTRIQGZXG26GBwaCv5BH5L8j38nAcuZH8Qe9L7KO+9z0qcBT1r0\nokKN1aV0UD8AwbVOiE/dlNOcdRoIbOocNTaQuwIJAJX9cMC97Z/yLVDyHpsrsBXA\naXgkV5WdxkhOPGIIUAXlfyuSzqWuOelXtprZYQIDAQABAoIBAG8DDh+KwbFZtc2x\nvRgR0ESvN4tfKNhgpDjswvVMKsbGNyee5/83S/XPal3cR+IROh9RkAz8iC3Osy69\nk7FJA6z+KdhY+TqqIleu2K6THoWLRZIP/pDw/8ohcO4zdKllCJBpMUrvI7ehoam4\nw59anMs580x4pbmlditVMo/zXGE9CcWRF1ACAef8STZio9X0pDC+9CuhcjBAlIYc\nc2BoxMn5Q4GmX5QoGG0NJ40djBDLDz+e9OFWhWxDk2NlN/hpRXfXI+BTEGjKI3xo\neGp01GmDmk3bcm3GUgz5KqlFQq7qAEnohWij9o6/u3famBGZHPcnUdtGjS/i4Fyo\nU3vEDfECgYEA+lr80rGgSqQYPUcQXBbOQjBZSgcRZihYAhWUNyn/mEyGat7v9Zpu\nzo4KGoStQ465nQ45uieUaY7MyzDmQFejFMdLUWTBdQHhtJ2jjY8PZXQy8Olmjc8y\nrLetKaeUPAW8DJIJkOiTXqAm5LmtrBa/cO+JTSq8Yrb1jNlvvWBHurUCgYEA7+F5\ncV0wCSM28EqbFv9Hf+4UsYq4uR++X//GIajOhqcEWF0NzNKOyTsZptcFfa61M8Lh\n2G/WsLbNs453E3Vtcr4qNzgk9/IwFCmD6kaWYmgAJxf4tsR1HXEOy08RS+7qgMMG\nkd9MaECFxrKP89uU4k9bJbWx5+94l2N1HpVcU30CgYAvdeBH8PR6MfGGbFplms0v\nLws+RWi+/RbyDjUy3/tcW+V/jRPgc45eCf9QV6ahEAWQCIpZB/fSqweX3YVI3VRF\nNCLLI1apX9nx65B93YkFqqmdkiGm8IiixY9GPkaTumKT33uAxRZq8eFtquWJoiZY\nupBE2L0t2ZFjSjUsqXvvoQKBgEivV28EP5PlObZhxNCZFX8sEtUhJYvilHreM5jr\nX3jpjqV/vLi9bEqJP+KP8Lf+giVm/avpZ3IwUfAAURByWnGUMZJ9zqXamrrhQXlx\nXgv/W1x9JP2sVZhQM51jHeiWQjQ14/27XZmRQ3fLj1biyCAyz3mDrp6Kr02f81ML\nCui5AoGBAM4dt6TZHB/pioKk09YCZdqAsqByt3assYRRP8742cA/3s8uYEzf70kO\nzrw6eOnH+el4SDEWPgJJMHGgNdMMMcrFNgR63emvnbTO16/THPdlfuZykAnZz2FV\nXGx6xY0bzi8Qk7Zd7HoFS/gw/tyURI3IJl/EJ2K+s5RDEo58yTnt\n-----END RSA PRIVATE KEY-----",**

**"KeyName": "harsh.pem",**

**"KeyPairId": "key-04e8ce5ecd8ce17aa"**

**}**

**root@DESKTOP-DA2RDP0:harsh#**

**root@DESKTOP-DA2RDP0:harsh#**

**root@DESKTOP-DA2RDP0:harsh# aws ec2 describe-instances --instance-ids i-009771879a3919e3f --query 'Reservations[0].Instances[0].Publi**

**cIpAddress' --output text**

**54.221.95.148**

**root@DESKTOP-DA2RDP0:harsh#**

**root@DESKTOP-DA2RDP0:Desktop# cd /mnt/c/Users/bhikkhuni\ sumana/Downloads/**

**root@DESKTOP-DA2RDP0:Downloads# chmod 400 harsh.pem**

**root@DESKTOP-DA2RDP0:Downloads#**

**root@DESKTOP-DA2RDP0:Downloads# ssh -i harsh.pem ec2-user@54.221.95.148**

**The authenticity of host '54.221.95.148 (54.221.95.148)' can't be established.**

**ED25519 key fingerprint is SHA256:hARbDUVXLeUCvKkAczTB6vdeezMfj0svEvWM/r4YyZg.**

**This key is not known by any other names**

**Are you sure you want to continue connecting (yes/no/[fingerprint])? yes**

**Warning: Permanently added '54.221.95.148' (ED25519) to the list of known hosts.**

**, #\_**

**~\\_ ####\_ Amazon Linux 2023**

**~~ \\_#####\**

**~~ \###|**

**~~ \#/ \_\_\_ https://aws.amazon.com/linux/amazon-linux-2023**

**~~ V~' '->**

**~~~ /**

**~~.\_. \_/**

**\_/ \_/**

**\_/m/'**

**[ec2-user@ip-172-31-80-42 ~]$**

**[ec2-user@ip-172-31-80-42 ~]$**

**4. Web Application Setup Using AWS CLI:**  
   - Use the AWS CLI to install a web server (e.g., Apache or Nginx) on the web server instance.  
   - Create a simple HTML page using the AWS CLI to confirm the web server is working.  
   - Use the AWS CLI to test accessing the web server's public IP address in a web browser.

**root@DESKTOP-DA2RDP0:Downloads# vim USER\_DATA.sh**

**root@DESKTOP-DA2RDP0:Downloads# cat USER\_DATA.sh**

**#!/bin/bash**

**sudo yum update -y**

**sudo yum install httpd -y**

**sudo service httpd start**

**sudo chkconfig httpd on**

**echo '<html><head><title>Test Page</title></head><body><h1>It works!</h1></body></html>' | sudo tee /var/www/html/index.html"**

**root@DESKTOP-DA2RDP0:Downloads#**

**root@DESKTOP-DA2RDP0:Downloads# aws ec2 run-instances --image-id ami-0005e0cfe09cc9050 --key-name harsh --instance-type t2.micro --security-group-ids sg-086b550f7e39e3e04 --associate-public-ip-address --tag-specifications 'ResourceType=instance,Tags=[{Key=Name,Value=Ec2\_Instance}]' --user-data file://USER\_DATA.sh**

**{**

**"Groups": [],**

**"Instances": [**

**{**

**"AmiLaunchIndex": 0,**

**"ImageId": "ami-0005e0cfe09cc9050",**

**"InstanceId": "i-0c8006c9360642bc1",**

**"InstanceType": "t2.micro",**

**"KeyName": "harsh",**

**"LaunchTime": "2024-01-16T08:31:38.000Z",**

**"Monitoring": {**

**"State": "disabled"**

**},**

**"Placement": {**

**"AvailabilityZone": "us-east-1b",**

**"GroupName": "",**

**"Tenancy": "default"**

**},**

**"PrivateDnsName": "ip-172-31-83-1.ec2.internal",**

**"PrivateIpAddress": "172.31.83.1",**

**"ProductCodes": [],**

**"PublicDnsName": "",**

**"State": {**

**"Code": 0,**

**"Name": "pending"**

**},**

**"StateTransitionReason": "",**

**"SubnetId": "subnet-0be61cf088b9bce21",**

**"VpcId": "vpc-06961d095a7c3ded1",**

**"Architecture": "x86\_64",**

**"BlockDeviceMappings": [],**

**"ClientToken": "0d2c6691-87a2-4147-b676-635e5b223395",**

**"EbsOptimized": false,**

**"EnaSupport": true,**

**"Hypervisor": "xen",**

**"NetworkInterfaces": [**

**{**

**"Attachment": {**

**"AttachTime": "2024-01-16T08:31:38.000Z",**

**"AttachmentId": "eni-attach-0416207ae5b07a008",**

**"DeleteOnTermination": true,**

**"DeviceIndex": 0,**

**"Status": "attaching",**

**"NetworkCardIndex": 0**

**},**

**"Description": "",**

**"Groups": [**

**{**

**"GroupName": "AWS\_03",**

**"GroupId": "sg-086b550f7e39e3e04"**

**}**

**],**

**"Ipv6Addresses": [],**

**"MacAddress": "12:13:89:36:b2:41",**

**"NetworkInterfaceId": "eni-04def195638cc7799",**

**"OwnerId": "112365962865",**

**"PrivateDnsName": "ip-172-31-83-1.ec2.internal",**

**"PrivateIpAddress": "172.31.83.1",**

**"PrivateIpAddresses": [**

**{**

**"Primary": true,**

**"PrivateDnsName": "ip-172-31-83-1.ec2.internal",**

**"PrivateIpAddress": "172.31.83.1"**

**}**

**],**

**"SourceDestCheck": true,**

**"Status": "in-use",**

**"SubnetId": "subnet-0be61cf088b9bce21",**

**"VpcId": "vpc-06961d095a7c3ded1",**

**"InterfaceType": "interface"**

**}**

**],**

**"RootDeviceName": "/dev/xvda",**

**"RootDeviceType": "ebs",**

**"SecurityGroups": [**

**{**

**"GroupName": "AWS\_03",**

**"GroupId": "sg-086b550f7e39e3e04"**

**}**

**],**

**"SourceDestCheck": true,**

**"StateReason": {**

**"Code": "pending",**

**"Message": "pending"**

**},**

**"Tags": [**

**{**

**"Key": "Name",**

**"Value": "Ec2\_Instance"**

**}**

**],**

**"VirtualizationType": "hvm",**

**"CpuOptions": {**

**"CoreCount": 1,**

**"ThreadsPerCore": 1**

**},**

**"CapacityReservationSpecification": {**

**"CapacityReservationPreference": "open"**

**},**

**"MetadataOptions": {**

**"State": "pending",**

**"HttpTokens": "required",**

**"HttpPutResponseHopLimit": 2,**

**"HttpEndpoint": "enabled",**

**"HttpProtocolIpv6": "disabled",**

**"InstanceMetadataTags": "disabled"**

**},**

**"EnclaveOptions": {**

**"Enabled": false**

**},**

**"BootMode": "uefi-preferred",**

**"PrivateDnsNameOptions": {**

**"HostnameType": "ip-name",**

**"EnableResourceNameDnsARecord": false,**

**"EnableResourceNameDnsAAAARecord": false**

**}**

**}**

**],**

**"OwnerId": "112365962865",**

**"ReservationId": "r-0978da36442537aec"**

**}**

**=====================================================================================**