AWS_VPC_CLI SavitaNalawade

1)Create VPC as “MyVpc01”

```
C:\Users\HP>aws ec2 create-vpc --cidr-block 10.0.0.0/16 --tag-specifications ResourceType=vpc,Tags=[{Key=Name,Value=MyVpc01}]
{
    "Vpc": {
        "CidrBlock": "10.0.0.0/16",
        "DhcpOptionsId": "dopt-017e8a8ec5714d780",
        "State": "pending",
        "VpcId": "vpc-0bbe8eb312e0f1eef",
        "OwnerId": "664418982701",
        "InstanceTenancy": "default",
        "Ipv6CidrBlockAssociationSet": [],
        "CidrBlockAssociationSet": [
            {
                "AssociationId": "vpc-cidr-assoc-0bb86afe4e1883459",
                "CidrBlock": "10.0.0.0/16",
                "CidrBlockState": {
                    "State": "associated"
                }
            }
        ],
        "IsDefault": false,
        "Tags": [
            {
                "Key": "Name",
                "Value": "MyVpc01"
            }
        ]
    }
}
```

2) Create two subnet in different zone(Public_Subnet_1a & Private_Subnet_1b)

```
C:\Users\HP>aws ec2 create-subnet --vpc-id vpc-0bbe8eb312e0f1eef --cidr-block 10.0.1.0/25 --availability-zone ap-south-1a --ta
cations ResourceType=subnet,Tags=[{Key=Name,Value=Public_Subnet_1a}]
{
    "Subnet": {
        "AvailabilityZone": "ap-south-1a",
        "AvailabilityZoneId": "aps1-az1",
        "AvailableIpAddressCount": 123,
        "CidrBlock": "10.0.1.0/25",
        "DefaultForAz": false,
        "MapPublicIpOnLaunch": false,
        "State": "available",
        "SubnetId": "subnet-06d3a7345128af1ea",
        "VpcId": "vpc-0bbe8eb312e0f1eef",
        "OwnerId": "664418982701",
        "AssignIpv6AddressOnCreation": false,
        "Ipv6CidrBlockAssociationSet": [],
        "Tags": [
            {
                "Key": "Name",
                "Value": "Public_Subnet_1a"
            }
        ],
        "SubnetArn": "arn:aws:ec2:ap-south-1:664418982701:subnet/subnet-06d3a7345128af1ea",
        "EnableDns64": false,
        "Ipv6Native": false,
        "PrivateDnsNameOptionsOnLaunch": {
            "HostnameType": "ip-name",
            "EnableResourceNameDnsARecord": false,
```

```
C:\Users\HP>aws ec2 create-subnet --vpc-id vpc-0bbe8eb312e0f1eef --cidr-block 10.0.2.0/25 --availability-zone ap-south-1b --tag-specifi
cations ResourceType=subnet,Tags=[{Key=Name,Value=Private_Subnet_1b}]
{
    "Subnet": {
        "AvailabilityZone": "ap-south-1b",
        "AvailabilityZoneId": "aps1-az3",
        "AvailableIpAddressCount": 123,
        "CidrBlock": "10.0.2.0/25",
        "DefaultForAz": false,
        "MapPublicIpOnLaunch": false,
        "State": "available",
        "SubnetId": "subnet-03db2a120a58b38d8",
        "VpcId": "vpc-0bbe8eb312e0f1eef",
        "OwnerId": "664418982701",
        "AssignIpv6AddressOnCreation": false,
        "Ipv6CidrBlockAssociationSet": [],
        "Tags": [
            {
                "Key": "Name",
                "Value": "Private_Subnet_1b"
            }
        ],
        "SubnetArn": "arn:aws:ec2:ap-south-1:664418982701:subnet/subnet-03db2a120a58b38d8",
        "EnableDns64": false,
        "Ipv6Native": false,
        "PrivateDnsNameOptionsOnLaunch": {
            "HostnameType": "ip-name",
            "EnableResourceNameDnsARecord": false,
            "EnableResourceNameDnsAAAARecord": false
        }
    }
}
```

3) Create Internet Gateway as “MyIGW01”

```
C:\Users\HP>aws ec2 create-internet-gateway --tag-specifications ResourceType=internet-gateway,Tags=[{Key=Name,Value=MYIGW01}]
{
    "InternetGateway": {
        "Attachments": [],
        "InternetGatewayId": "igw-04999fc13ab135229",
        "OwnerId": "664418982701",
        "Tags": [
            {
                "Key": "Name",
                "Value": "MYIGW01"
            }
        ]
    }
}


C:\Users\HP>
```

4) Attach Internet Gateway to VPC

```
C:\Users\HP>aws ec2 attach-internet-gateway --vpc-id vpc-0bbe8eb312e0f1eef --internet-gateway-id igw-04999fc13ab135229

C:\Users\HP>
```

5) Create two Route Table (Private_Route_Table & Public_Route_Table)

```
C:\Users\HP>aws ec2 create-route-table --vpc-id vpc-0bbe8eb312e0f1eef --tag-specifications ResourceType=route-table,Tags=[{Key=Name,Val
ue=Private_Route_Table}]
{
    "RouteTable": {
        "Associations": [],
        "PropagatingVgws": [],
        "RouteTableId": "rtb-0faf23c68e9bdbab1",
        "Routes": [
            {
                "DestinationCidrBlock": "10.0.0.0/16",
                "GatewayId": "local",
                "Origin": "CreateRouteTable",
                "State": "active"
            }
        ],
        "Tags": [
            {
                "Key": "Name",
                "Value": "Private_Route_Table"
            }
        ],
        "VpcId": "vpc-0bbe8eb312e0f1eef",
        "OwnerId": "664418982701"
    },
    "ClientToken": "aece0e8e-b416-468e-839b-d54c146ff75e"
}


C:\Users\HP>
```

```
C:\Users\HP>aws ec2 create-route-table --vpc-id vpc-0bbe8eb312e0f1eef --tag-specifications ResourceType=route-table,Tags=[{Key=Name,Val
ue=Public_Route_Table}]
{
    "RouteTable": {
        "Associations": [],
        "PropagatingVgws": [],
        "RouteTableId": "rtb-0229f8807f54d3889",
        "Routes": [
            {
                "DestinationCidrBlock": "10.0.0.0/16",
                "GatewayId": "local",
                "Origin": "CreateRouteTable",
                "State": "active"
            }
        ],
        "Tags": [
            {
                "Key": "Name",
                "Value": "Public_Route_Table"
            }
        ],
        "VpcId": "vpc-0bbe8eb312e0f1eef",
        "OwnerId": "664418982701"
    },
    "ClientToken": "9068f38d-49a3-4dce-88a6-c916159c1e48"
}


C:\Users\HP>
```


6)In Public_Route_Table add 1 Route-rule

```
C:\Users\HP>aws ec2 create-route --route-table-id rtb-0229f8807f54d3889 --destination-cidr-block 0.0.0.0/0 --gateway-id igw-04999fc13ab
135229
{
    "Return": true
}


C:\Users\HP>
```

7) Add subnet association rule in Public_Route_Table

```
C:\Users\HP>aws ec2 associate-route-table --route-table-id rtb-0229f8807f54d3889 --subnet-id subnet-06d3a7345128af1ea
{
    "AssociationId": "rtbassoc-0c44d4e12aa597061",
    "AssociationState": {
        "State": "associated"
    }
}


C:\Users\HP>
```

8) Allocate one Elastic IP

```
C:\Users\HP>aws ec2 allocate-address --domain vpc --query AllocationId --output text
eipalloc-050e9eb5e20bb08a3


C:\Users\HP>
```

9)Create NAT Gateway asselect Public subnet and assigned elastic IP

```
C:\Users\HP>aws ec2 create-nat-gateway --subnet-id subnet-06d3a7345128af1ea --allocation-id eipalloc-050e9eb5e20bb08a3
{
    "ClientToken": "d63b4b7c-ec32-4f70-9e57-543afceb8b69",
    "NatGateway": {
        "CreateTime": "2024-09-22T20:27:44+00:00",
        "NatGatewayAddresses": [
            {
                "AllocationId": "eipalloc-050e9eb5e20bb08a3",
                "IsPrimary": true,
                "Status": "associating"
            }
        ],
        "NatGatewayId": "nat-014b6107b63b02104",
        "State": "pending",
        "SubnetId": "subnet-06d3a7345128af1ea",
        "VpcId": "vpc-0bbe8eb312e0f1eef",
        "ConnectivityType": "public"
    }
}


C:\Users\HP>
```

9) Add NAT Gateway to Private_Route_Table

```
C:\Users\HP>aws ec2 create-route --route-table-id rtb-0faf23c68e9bdbab1 --destination-cidr-block 0.0.0.0/0 --gateway-id nat-014b6107b63
b02104
{
    "Return": true
}


C:\Users\HP>
```

10) Add association to private_route_table

```
C:\Users\HP>aws ec2 associate-route-table --route-table-id rtb-0faf23c68e9bdbab1 --subnet-id subnet-03db2a120a58b38d8
{
    "AssociationId": "rtbassoc-09d901b02fec830ea",
    "AssociationState": {
        "State": "associated"
    }
}
```

11)Enable Auto-Assign setting for Public_Subnet

```
C:\Users\HP>aws ec2 modify-subnet-attribute --subnet-id subnet-0db490591a784baf2 --map-public-ip-on-launch

C:\Users\HP>
```

12) Create two instances (Public_Instance_1a & Private_Instance_1b) and make sure you select custom VPC which is newly created. Also Select subnet accordingly.

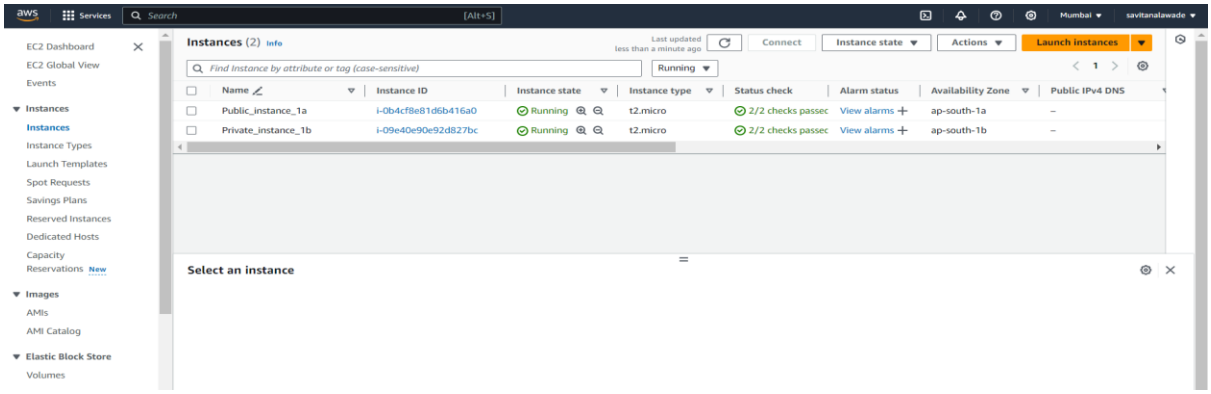
Public_Instance_1a

```
C:\Users\HP>aws ec2 run-instances --image-id ami-0522ab6e1ddcc7055 --count 1 --instance-type t2.micro --key-name AWSdevops --subnet-id
subnet-06d3a7345128af1ea --security-group-ids sg-02aa6e6bf52318e42 --tag-specifications ResourceType=instance,Tags=[{Key=Name,Value=Pub
lic_instance_1a}]
{
    "Groups": [],
    "Instances": [
        {
            "AmiLaunchIndex": 0,
            "ImageId": "ami-0522ab6e1ddcc7055",
            "InstanceId": "i-0b4cf8e81d6b416a0",
            "InstanceType": "t2.micro",
            "KeyName": "AWSdevops",
            "LaunchTime": "2024-09-22T20:44:25+00:00",
            "Monitoring": {
                "State": "disabled"
            },
            "Placement": {
                "AvailabilityZone": "ap-south-1a",
                "GroupName": "",
                "Tenancy": "default"
            },
            "PrivateDnsName": "ip-10-0-1-34.ap-south-1.compute.internal",
            "PrivateIpAddress": "10.0.1.34",
            "ProductCodes": [],
            "PublicDnsName": "",
            "State": {
                "Code": 0,
                "Name": "pending"
            },
            "StateTransitionReason": "",
            "SubnetId": "subnet-06d3a7345128af1ea",
            "VpcId": "vpc-0bbe8eb312e0f1eef",
```

Private_Instance_1b

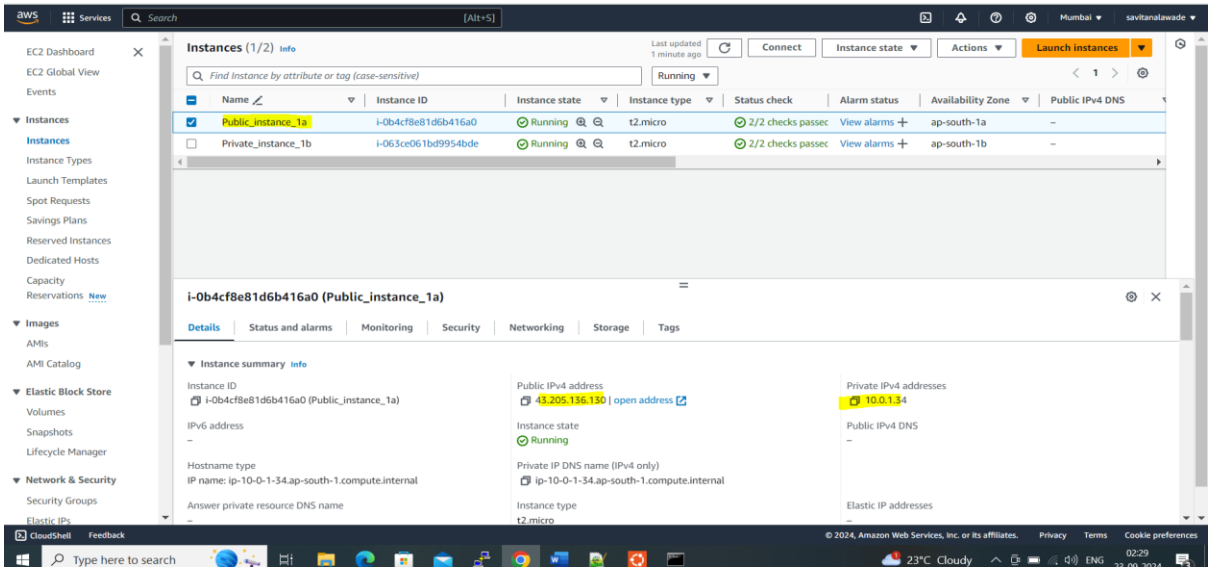
```
C:\Users\HP>aws ec2 run-instances --image-id ami-0522ab6e1ddcc7055 --count 1 --instance-type t2.micro --key-name VPC-Demo --subnet-id s
ubnet-03db2a120a58b38d8 --security-group-ids sg-02aa6e6bf52318e42 --tag-specifications ResourceType=instance,Tags=[{Key=Name,Value=Priv
ate_instance_1b}]
{
    "Groups": [],
    "Instances": [
        {
            "AmiLaunchIndex": 0,
            "ImageId": "ami-0522ab6e1ddcc7055",
            "InstanceId": "i-063ce061bd9954bde",
            "InstanceType": "t2.micro",
            "KeyName": "VPC-Demo",
            "LaunchTime": "2024-09-22T20:56:25+00:00",
            "Monitoring": {
                "State": "disabled"
            },
            "Placement": {
                "AvailabilityZone": "ap-south-1b",
                "GroupName": "",
                "Tenancy": "default"
            },
            "PrivateDnsName": "ip-10-0-2-31.ap-south-1.compute.internal",
            "PrivateIpAddress": "10.0.2.31",
            "ProductCodes": [],
            "PublicDnsName": "",
            "State": {
                "Code": 0,
                "Name": "pending"
            },
            "StateTransitionReason": "",
            "SubnetId": "subnet-03db2a120a58b38d8",
            "VpcId": "vpc-0bbe8eb312e0f1eef",
            "Architecture": "x86_64",
```

Successfully instances are created

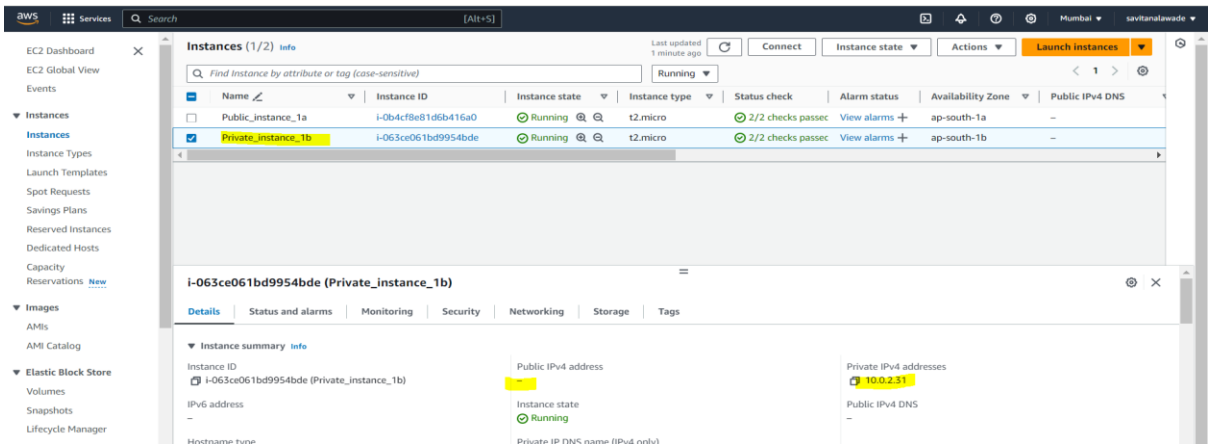


Validation

1) We can see in Public_Instance there are two IP's (Public & Private)



2) In Private_Instance there is only private IP



3)We can connect Public_Instance & checked hostname and internet conectivity

```
root@ip-10-0-1-34:~# hostname
ip-10-0-1-34
root@ip-10-0-1-34:~# ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=54 time=1.64 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=54 time=1.70 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=54 time=1.69 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=54 time=1.70 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=54 time=1.67 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=54 time=1.73 ms
^Z
[1]+  Stopped                 ping 8.8.8.8
root@ip-10-0-1-34:~#
```

4)Create one pem file and add contents of keypair file

```
root@ip-10-0-1-34:~# cat >vpc.pem
-----BEGIN RSA PRIVATE KEY-----
MIIEpAIBAAKCAQEA6biSt6pKEpRTsSjQWFrsMTMoDok1DabvIwxEKCm3Eo2Jfnic
vn8D9vUTyKFeADPDqe4IlkSG4ssmdpnC0OA4/SZHuXAQQBG55cMldOCnDWco6wZs
dxRDUeoFxuWCbemRk4NX/l6HnC2heIYFTOEJ42npreVlQjNXvh8qYXXEDkgagzcv
idr+X2C2hmlISReA2GK471kUueQLrbIAoy9KWNb7xo/seMpdSL0Kc+mXi8tNm8zh
wbDoCZ9cjXEBxM7VHNA8tucblV0X+70PF4/oMDp+8d+Xuy3MnB6R13aKzjzQmY5M
LR0LUAYcnrCiHRP1UAvpezF61vvQmA6QmPrwUwIDAQABAoIBAAfkYKftCyVHdvAD
hc2F/HXI2XBsN6tnWKnhTyfgCLuKpfrsTbatCVA8hFeBA3CUTuYdEJMqazebTogw
twBgoewCb+eWHiZbsuBMT6Z7s4hjVGFjTSRUPdW1Rk6qD1Zwzaaih8UiIggnDk3I
kMNA0hmoyOhDV8D9hNf5q2+xD1bADgVf5I4WPCofHe0uYt3jz8GDY5g//7y7tSXr
8a3M6QKTFhtVHx9ExNvsPRDMm0HYdgAmsZN96v+pHvxHKaDWfkT1O+/ZuQssDJTO
fsb8mnQOXjimyVFQ51uAtyvk5i/Wy0Rshb6C/Qhm5qdIDufc9Sf47PjjkGjm4Ik1
5fSqLAECgYEA/Y/kh+nD8KUDj9bwHVDpNKa3cbUMVVZuthBbvRNrvOYuWucgqasY
o3Ct8HX5vFxUtObHRmqKOnoeZ17B7xrhDfWFG2kF0rduUeltKIecqKBmt0A0qqCq
Gu9YpKGaj7KHC1yO3iBOXFc3u3O4BfdxKwyVtzVuIryqau3sr7YELgECgYEA6/fY
KGEvM6E6jqW4UtjeZ1ddLoOSgRFjw8jwDIcFDKPPw+AaLvogw5jFTIot2que3vhE
c98/1ug3bRiwAlpTrf+sMqV9O86m9wVY2yt+8FxBLmpoaekX6wFTrCCugl5YDqt/
HwleLfGGpslBPEHgrTxlUEFOICzoxY2f81SMBlMCgYEA8+DEU50Zool0RZLb27aI
tuVrJ2iVdjbtwRs2wUK+qy9RgokvN0GjLwAfrFosW2kK5/vXyviJ/viZ6Z6QNSPL
Npvg7J40xZk7+HjlTsgwe1fbs4GDpmFlewaeYao1eOSjUuAxYZ/8/n+80QTaCJMY
O+mczlwLlEmWN8ajkdUlbAECgYEAhTZoG3Ox+A2/RySbSHoSJHkXq9ivbpnonnDj
w869tQMNmeD8JyUiNgoa6Djh5h8ZE3tI+blBCwwRrk9PniRsNUCvb/ApIQhrDe1A
2opVoVATpCaCR7hFvnADUpsoqYSlZbK/kz/woTNG9wWLBH+UXXhJIeOcPWHdDxoD
AJXsbu0CgYB2I8I57AEsPykqSsJqreeCeHz1BW8lpqzwFZtMRaG38pX5LD8P0t52
afFrAYu96m6HKNCXxcdeP7H1yrikKCVK8dli0kHzyUrO6p4GSBYxVZws8xdJ4ouM
egNZ7+pnzFV3na3LtkUARO0MWTo1V+u5a6z3NlOYWs3W1+0V6nSPtA==
-----END RSA PRIVATE KEY-----
root@ip-10-0-1-34:~#
```

5)change the permission of vpc.pem file

```
root@ip-10-0-1-34:~# ls -ltr
total 62524
drwx------ 3 root root     4096 Sep 22 20:45 snap
-rw-r--r-- 1 root root 64014194 Sep 22 21:18 awscliv2.zip
-rw-r--r-- 1 root root     1679 Sep 22 21:21 vpc.pem
root@ip-10-0-1-34:~# chmod 400 vpc.pem
root@ip-10-0-1-34:~# ls -ltr
total 62524
drwx------ 3 root root     4096 Sep 22 20:45 snap
-rw-r--r-- 1 root root 64014194 Sep 22 21:18 awscliv2.zip
-r-------- 1 root root     1679 Sep 22 21:21 vpc.pem
root@ip-10-0-1-34:~#
```

6)Now login to the private_Instance_1b through IP

```
root@ip-10-0-1-34:~# ssh -i vpc.pem ubuntu@10.0.2.31
The authenticity of host '10.0.2.31 (10.0.2.31)' can't be established.
ED25519 key fingerprint is SHA256:kF851Qp2kkDyqoWG20ogwzLtvGALLD5iwYRJRZvCI/M.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? Y
Please type 'yes', 'no' or the fingerprint: yes
Warning: Permanently added '10.0.2.31' (ED25519) to the list of known hosts.
Welcome to Ubuntu 24.04 LTS (GNU/Linux 6.8.0-1012-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:     https://landscape.canonical.com
 * Support:        https://ubuntu.com/pro

 System information as of Sun Sep 22 21:25:04 UTC 2024

  System load:  0.0               Processes:             104
  Usage of /:   22.7% of 6.71GB   Users logged in:       0
  Memory usage: 20%               IPv4 address for enX0: 10.0.2.31
  Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status


The list of available updates is more than a week old.
To check for new updates run: sudo apt update


The programs included with the Ubuntu system are free software;
```

7) check the hostname and if network is there

```
ubuntu@ip-10-0-2-31:~$ hostname
ip-10-0-2-31
ubuntu@ip-10-0-2-31:~$ uname
Linux
ubuntu@ip-10-0-2-31:~$ ping google.com
PING google.com (142.250.70.78) 56(84) bytes of data.
64 bytes from pnbomb-ab-in-f14.1e100.net (142.250.70.78): icmp_seq=1 ttl=53 time=3.39 ms
64 bytes from pnbomb-ab-in-f14.1e100.net (142.250.70.78): icmp_seq=2 ttl=53 time=2.73 ms
64 bytes from pnbomb-ab-in-f14.1e100.net (142.250.70.78): icmp_seq=3 ttl=53 time=2.92 ms
64 bytes from pnbomb-ab-in-f14.1e100.net (142.250.70.78): icmp_seq=4 ttl=53 time=2.92 ms
64 bytes from pnbomb-ab-in-f14.1e100.net (142.250.70.78): icmp_seq=5 ttl=53 time=2.99 ms
64 bytes from pnbomb-ab-in-f14.1e100.net (142.250.70.78): icmp_seq=6 ttl=53 time=3.00 ms
^Z
[1]+  Stopped                 ping google.com
ubuntu@ip-10-0-2-31:~$
```

THANK YOU !!