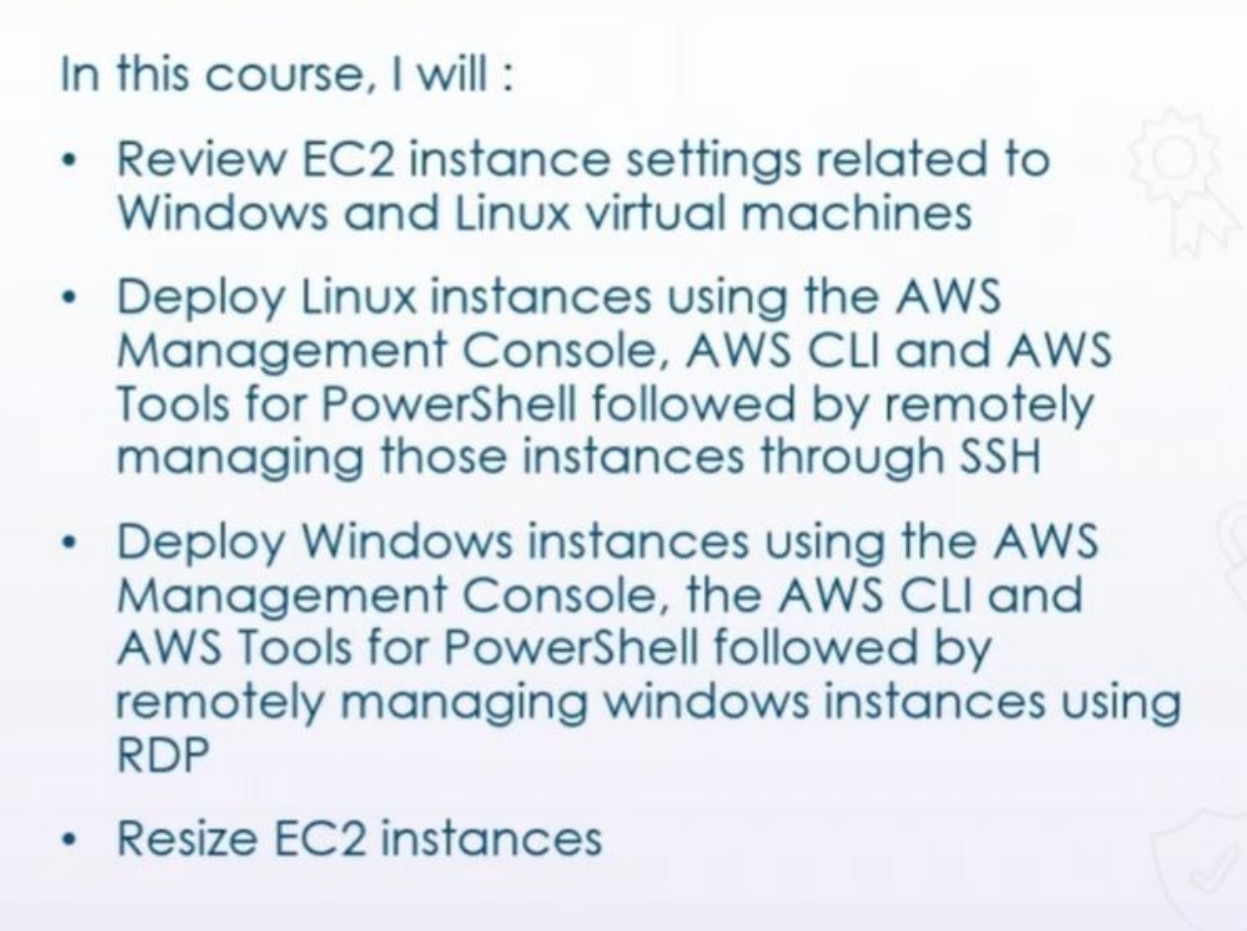
1.2 Understanding EC2



AWS EC2 Instances

- Cloud based VM (Virtual Machine)

Amazon Machine Image (AMI)

- EC2 instance template
- Required when launching an EC2 instance

EC2 AMI Categories

- Windows server
- Linux variants: Ubuntu or CentOS
- MacOS

You can also specify the underlying horsepower for your virtual machine, for your instance.

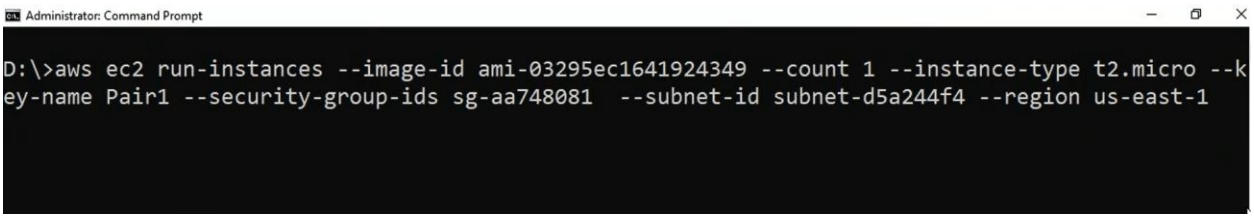
EC2 Instance Type

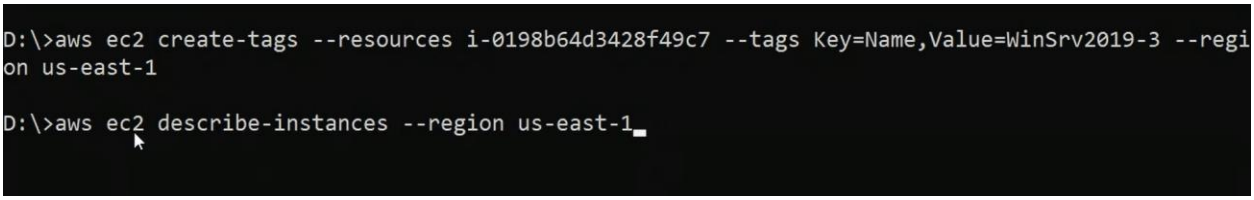
- vCPUs: can have number of virtual CPU to balance the workload
- RAM: additional to match your workload
- Architecture: x86, x64
- Network Performance

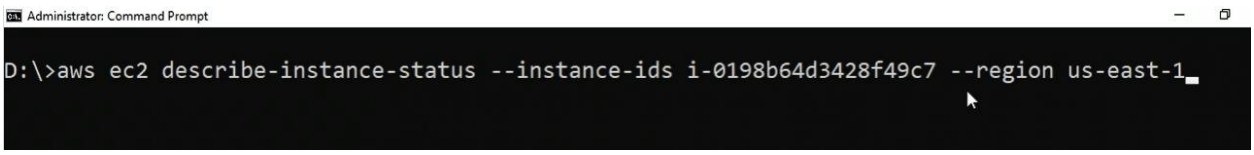
Launching EC2 instance

- Security group: which traffic is allowed
- Storage: we can add disks to VM to add the extra storage required
- Network interfaces: multi-homed VM. Can add one or two networks to match the workload
- Tags: specifies key – value pairs. Metadata. Optional, don't have to define them

Deploying windows instance using CLI



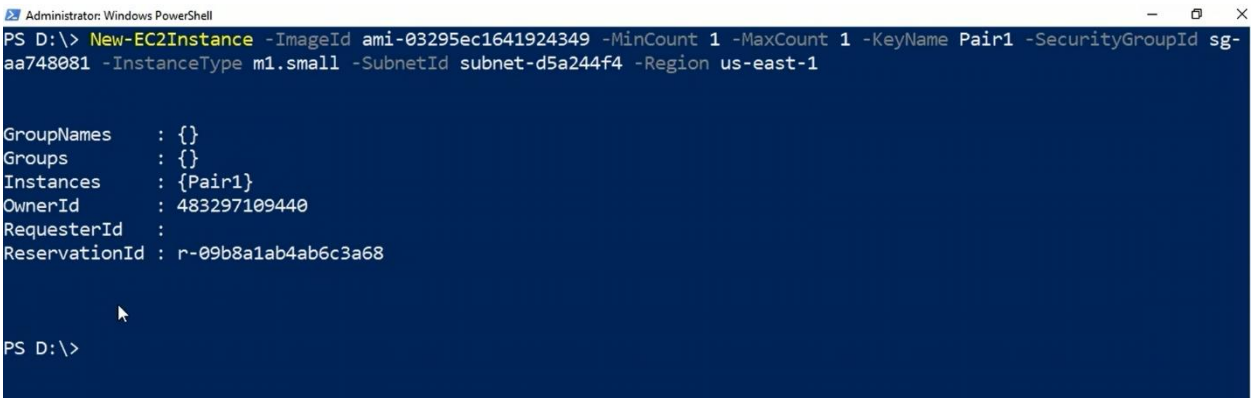


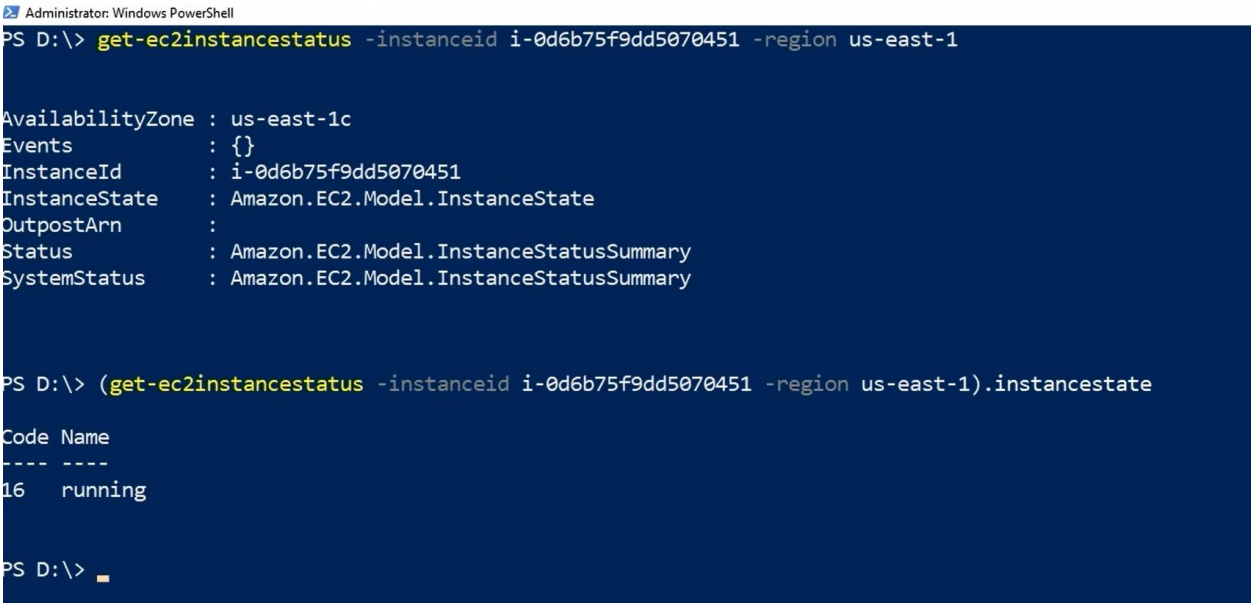


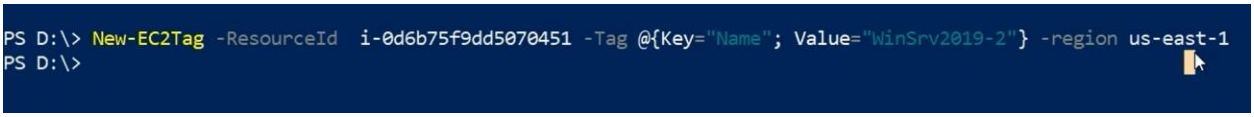
```
D:\>aws ec2 stop-instances --instance-ids i-0198b64d3428f49c7 --region us-east-1
{
    "StoppingInstances": [
        {
            "CurrentState": {
                "Code": 64,
                "Name": "stopping"
            },
            "InstanceId": "i-0198b64d3428f49c7",
            "PreviousState": {
                "Code": 16,
                "Name": "running"
            }
        }
    ]
}

D:\>
```

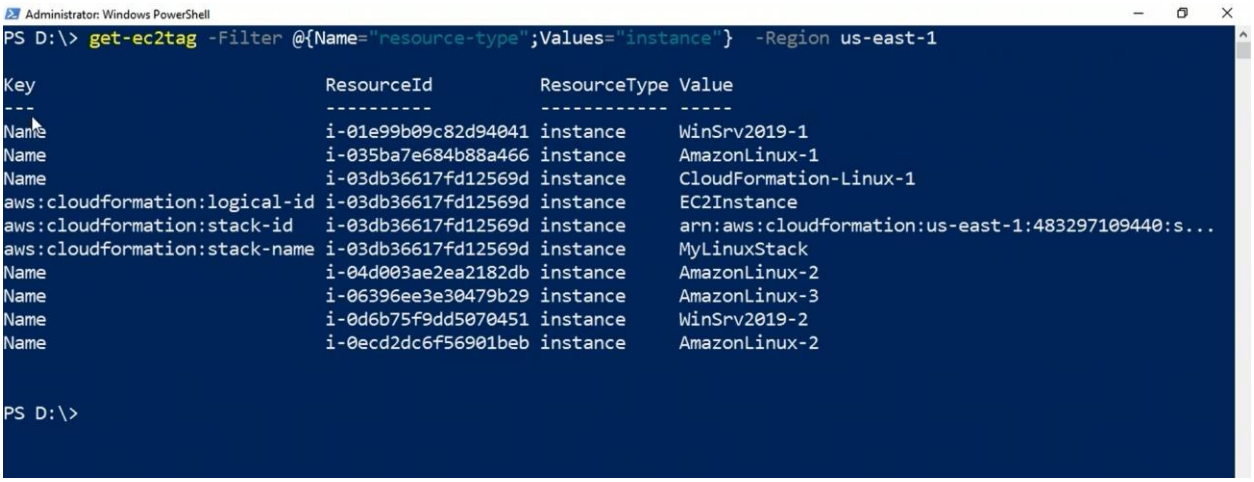
```
D:\>aws ec2 terminate-instances --instance-ids i-0198b64d3428f49c7 --region us-east-1
{
    "TerminatingInstances": [
        {
            "CurrentState": {
                "Code": 48,
                "Name": "terminated"
            },
            "InstanceId": "i-0198b64d3428f49c7",
            "PreviousState": {
                "Code": 80,
                "Name": "stopped"
            }
        }
    ]
}

D:\>
```

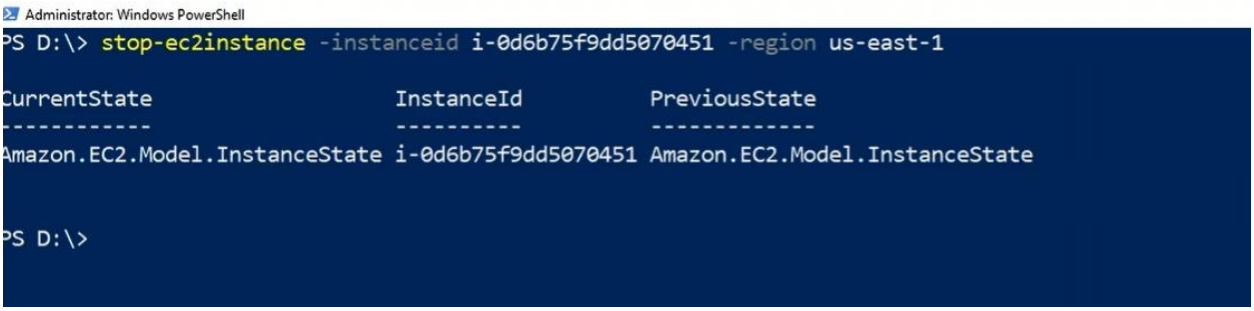
Deploying windows instance using PowerShell


Administrator: Windows PowerShell
PS D:\> New-EC2Instance -ImageId ami-03295ec1641924349 -MinCount 1 -MaxCount 1 -KeyName Pair1 -SecurityGroupId sg-aa748081 -InstanceType m1.small -SubnetId subnet-d5a244f4 -Region us-east-1
GroupNames : {}
Groups : {}
Instances : {Pair1}
OwnerId : 483297109440
RequesterId :
ReservationId : r-09b8a1ab4ab6c3a68
PS D:\>


Administrator: Windows PowerShell
PS D:\> get-ec2instancestatus -instanceid i-0d6b75f9dd5070451 -region us-east-1
AvailabilityZone : us-east-1c
Events : {}
InstanceId : i-0d6b75f9dd5070451
InstanceState : Amazon.EC2.Model.InstanceState
OutpostArn :
Status : Amazon.EC2.Model.InstanceStatusSummary
SystemStatus : Amazon.EC2.Model.InstanceStatusSummary
PS D:\> (get-ec2instancestatus -instanceid i-0d6b75f9dd5070451 -region us-east-1).instancestate
Code Name
---- ----
16 running
PS D:\>


PS D:\> New-EC2Tag -ResourceId i-0d6b75f9dd5070451 -Tag @{Key="Name"; Value="WinSrv2019-2"} -region us-east-1
PS D:\>


Administrator: Windows PowerShell
PS D:\> get-ec2tag -Filter @{Name="resource-type";Values="instance"} -Region us-east-1
Key ResourceId ResourceType Value
Name i-01e99b09c82d94041 instance WinSrv2019-1
Name i-035ba7e684b88a466 instance AmazonLinux-1
Name i-03db36617fd12569d instance CloudFormation-Linux-1
aws:cloudformation:logical-id i-03db36617fd12569d instance EC2Instance
aws:cloudformation:stack-id i-03db36617fd12569d instance arn:aws:cloudformation:us-east-1:483297109440:s...
aws:cloudformation:stack-name i-03db36617fd12569d instance MyLinuxStack
Name i-04d003ae2ea2182db instance AmazonLinux-2
Name i-06396ee3e30479b29 instance AmazonLinux-3
Name i-0d6b75f9dd5070451 instance WinSrv2019-2
Name i-0ecd2dc6f56901beb instance AmazonLinux-2
PS D:\>



Deploying windows instance using Template

```
Description: Basic Windows Server 2019 template.

Parameters:
  VpcId:
    Description: VPC id
    Type: AWS::EC2::VPC::Id
    Default: vpc-542e1a2e

  SubnetId1:
    Description: Subnet Id where instance will create
    Type: AWS::EC2::Subnet::Id
```

```
  KeyName:
    Description: Name of an existing EC2 KeyPair
    Type: AWS::EC2::KeyPair::KeyName
    ConstraintDescription: must be the name of an existing EC2
KeyPair.

  InstanceType:
    Description: EC2 instance type
    Type: String
    Default: t2.micro
    AllowedValues: [t2.micro]
    ConstraintDescription: Must be a valid EC2 instance type.

    RDPLocation:
      Description: The IP address range that can be used to RDP to
   the EC2 instances
      Type: String
      MinLength: 9
      MaxLength: 18
      Default: 0.0.0.0/0
      AllowedPattern:
   (\d{1,3})\.(\d{1,3})\.(\d{1,3})\.(\d{1,3})/(\d{1,2})
      ConstraintDescription: must be a valid IP CIDR range of the
   form x.x.x.x/x.

  LatestAmiId:
    Type:  'AWS::SSM::Parameter::Value<AWS::EC2::Image::Id>'
    Default: '/aws/service/ami-windows-
latest/Windows_Server-2019-English-Full-Base'

Resources:

  InstanceSecurityGroup:
    Type: AWS::EC2::SecurityGroup
    Properties:
      VpcId: !Ref VpcId
      GroupDescription: Enable RDP access
```

```
Resources:

  InstanceSecurityGroup:
    Type: AWS::EC2::SecurityGroup
    Properties:
      VpcId: !Ref VpcId
      GroupDescription: Enable RDP access
      SecurityGroupIngress:
      - IpProtocol: tcp
        FromPort: 3389
        ToPort: 3389
        CidrIp: !Ref 'RDPLocation'

  EC2Instance:
    Type: AWS::EC2::Instance
    Properties:
      InstanceType: !Ref InstanceType
      SecurityGroupIds:
        - !Ref InstanceSecurityGroup
      KeyName: !Ref KeyName
      ImageId: !Ref LatestAmiId
      SubnetId: !Ref SubnetId1

Outputs:
  InstanceId:
    Description: InstanceId of the newly created EC2 instance
    Value: !Ref 'EC2Instance'
  AZ:
    Description: Availability Zone of the newly created EC2
```