API Engineering

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Week#1 2018 Fall

Topic: AWS EC2

AWS EC2

- Virtual machine: a software computer, like a physical computer, runs an operating system and applications
- AWS EC2 is a compute service that provides on-demand and scalable computing service in the cloud
- AWS EC2 allows you to create and run virtual machines on AWS infrastructure
- Choose a VM that fits your needs and gain the performance of AWS's worldwide network

EC2 Features

- Virtual computing environments in the cloud, known as instances.
- Preconfigured templates for instances, known as AMIs, that package the bits needed for server(including OS and additional software)
- Various configurations of CPU, memory, storage, and networking capacity of instances, known as instance types
- Secure login information for instances using key pairs (AWS stores the public key, and the private key is provided to the who provisions the server instance)
- Storage volumes for temporary data that's deleted when the instance are stopped or terminated
- Persistent storage volumes for the data using Amazon Elastic Block Store(Amazon EBS)
- Multiple physical locations for the resources
- A firewall that enables user to specify the protocols, ports, and source IP ranges
- Static IPv4 address for dynamic could computing
- Etc…

public key shared b/t many parties.
using public key of receiver, sender encrypts the data
only the receiver can decrypt the data (using the private key); no one else can decrypt the data

Amazon Machine Images(AMI) (1/2)

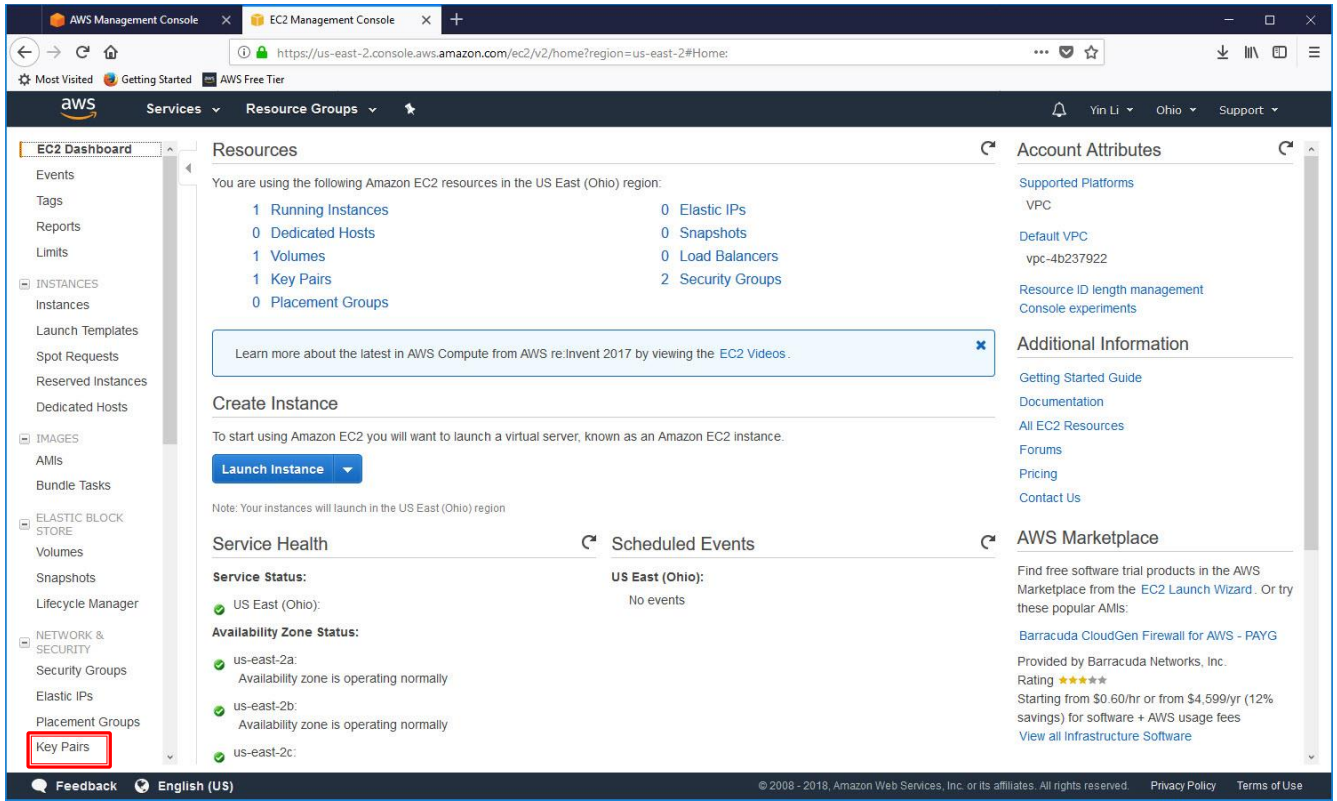
- An AMI provides the information required to launch an instance, which is a virtual server in the cloud
- A source AMI must be specified when you launch an instance
- Multiple instances can be launched from a single AMI when multiple instances with the same configuration are needed.
- Different AMIs can be used to launch instances with different configurations

Amazon Machine Images(AMI) (2/2)

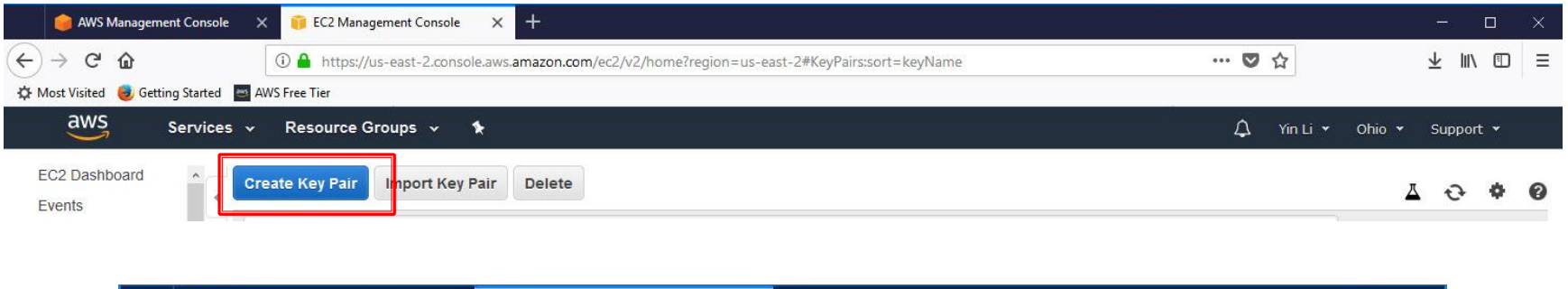
- An AMI includes the following:
  - A template for the root volume for the instance(e.g., an operating system, an application server, and applications)
  - Launch permissions that control which AWS accounts can use the AMI to launch instances
  - A block device mapping that specifies the volumes to attach to the instance when it's launched

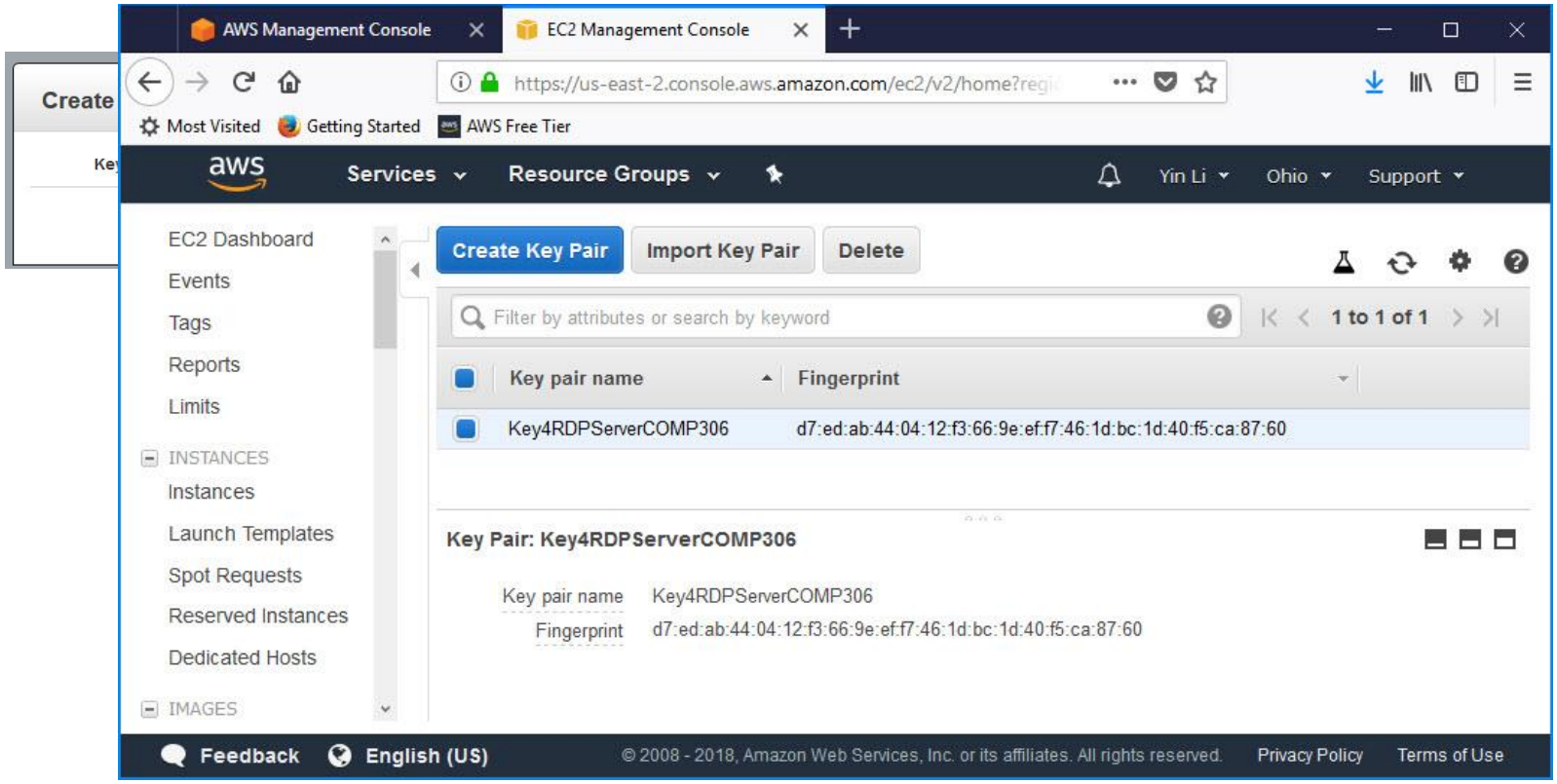
Create Amazon EC2 Key Pairs(1/2)

- Amazon EC2 uses public-key cryptography to encrypt and decrypt login information. Public-key cryptography uses a public key to encrypt a piece of data, such as a password, then the recipient uses the private key to decrypt the data. The public key and private keys are known as a key pair

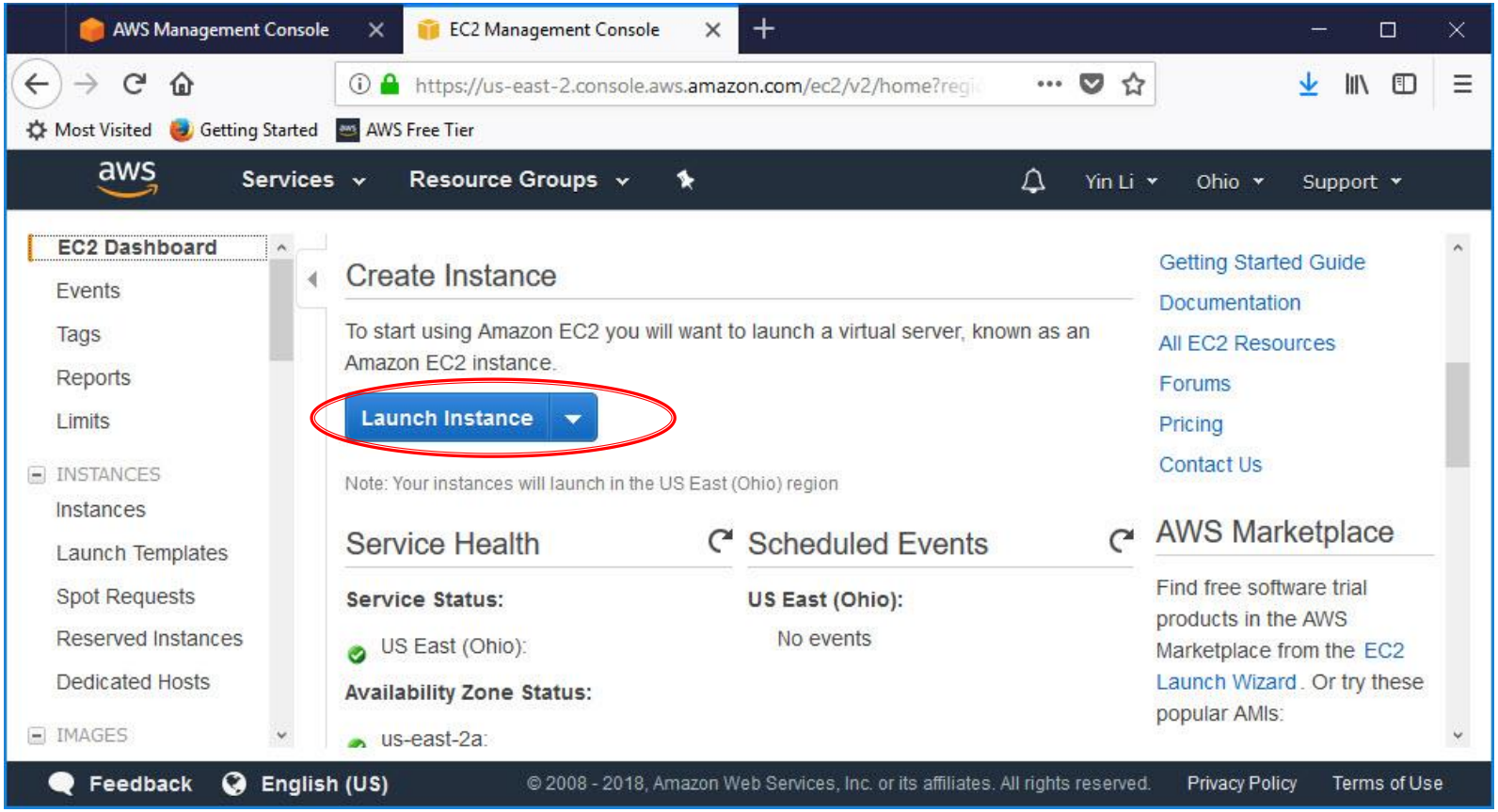


Create Amazon EC2 Key Pairs(2/2)

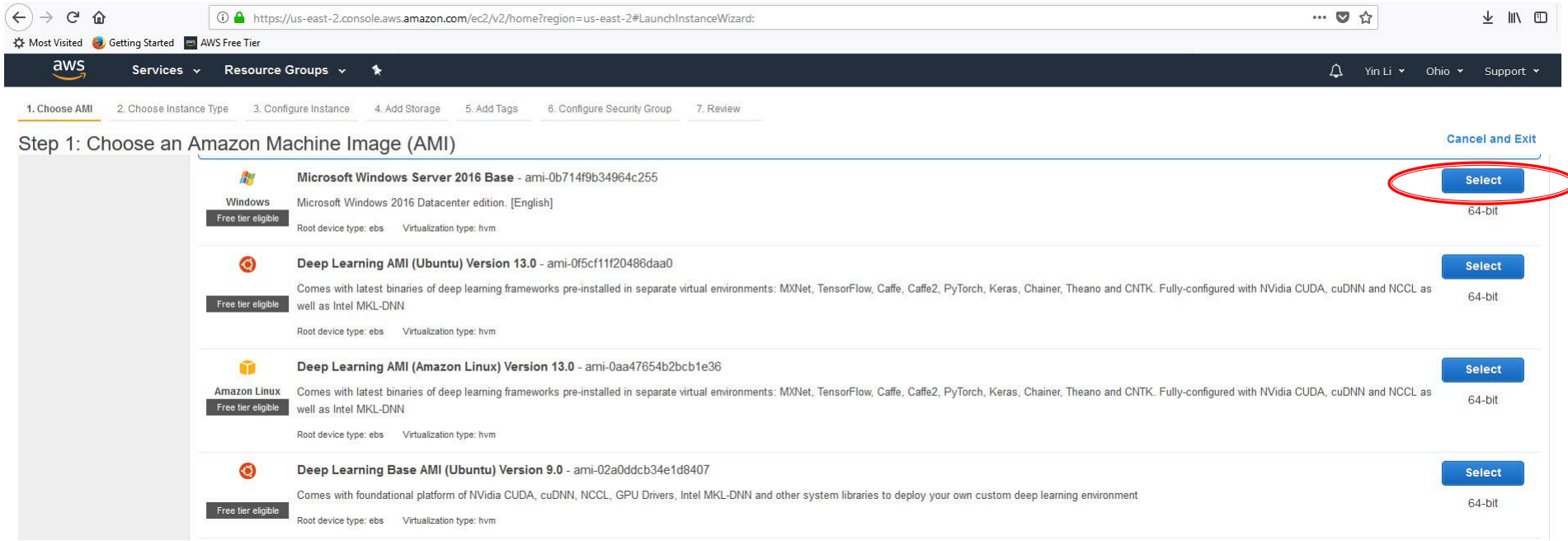




Launch EC2 Instance(1/9)

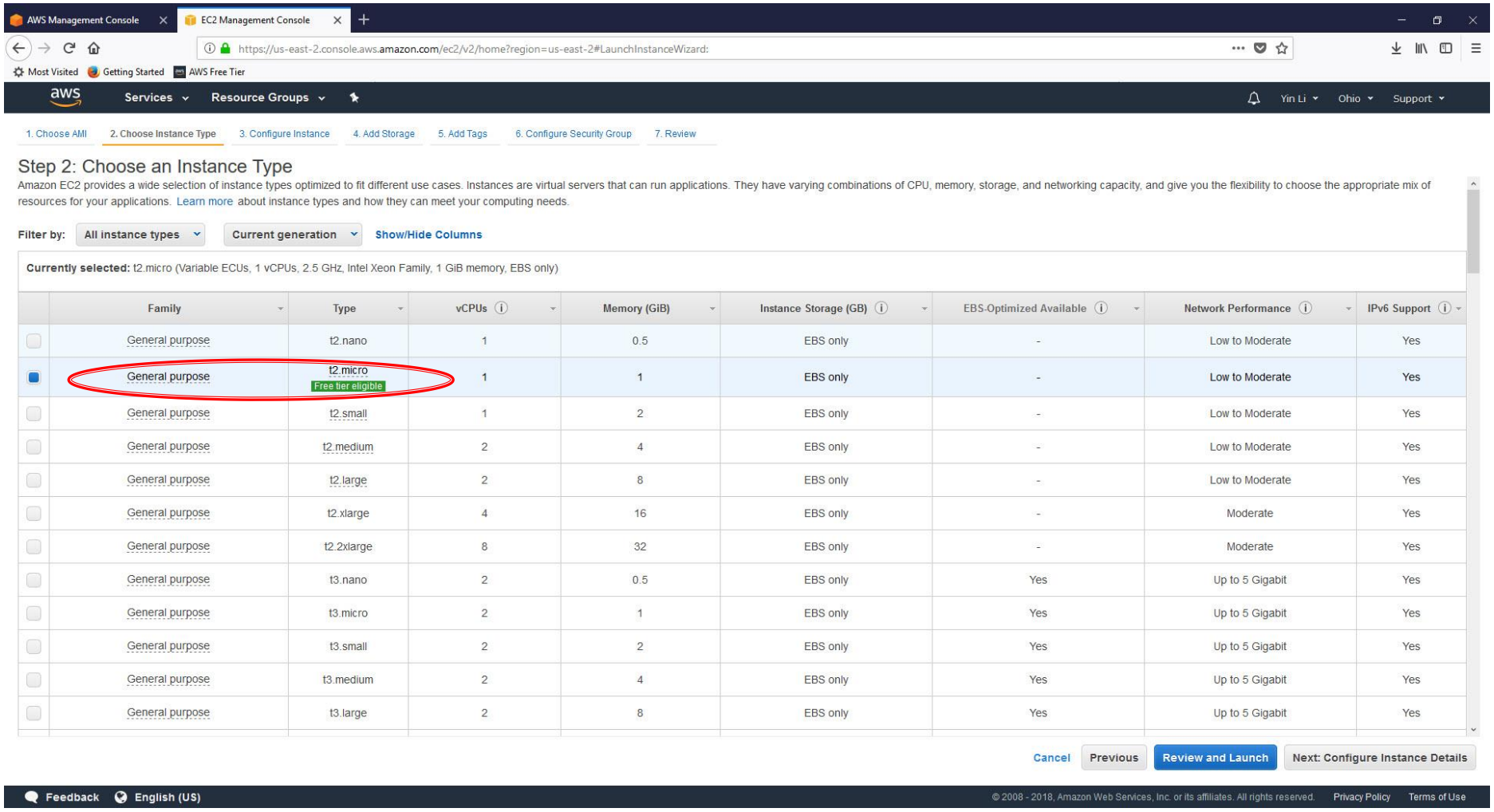


Launch EC2 Instance(2/9)

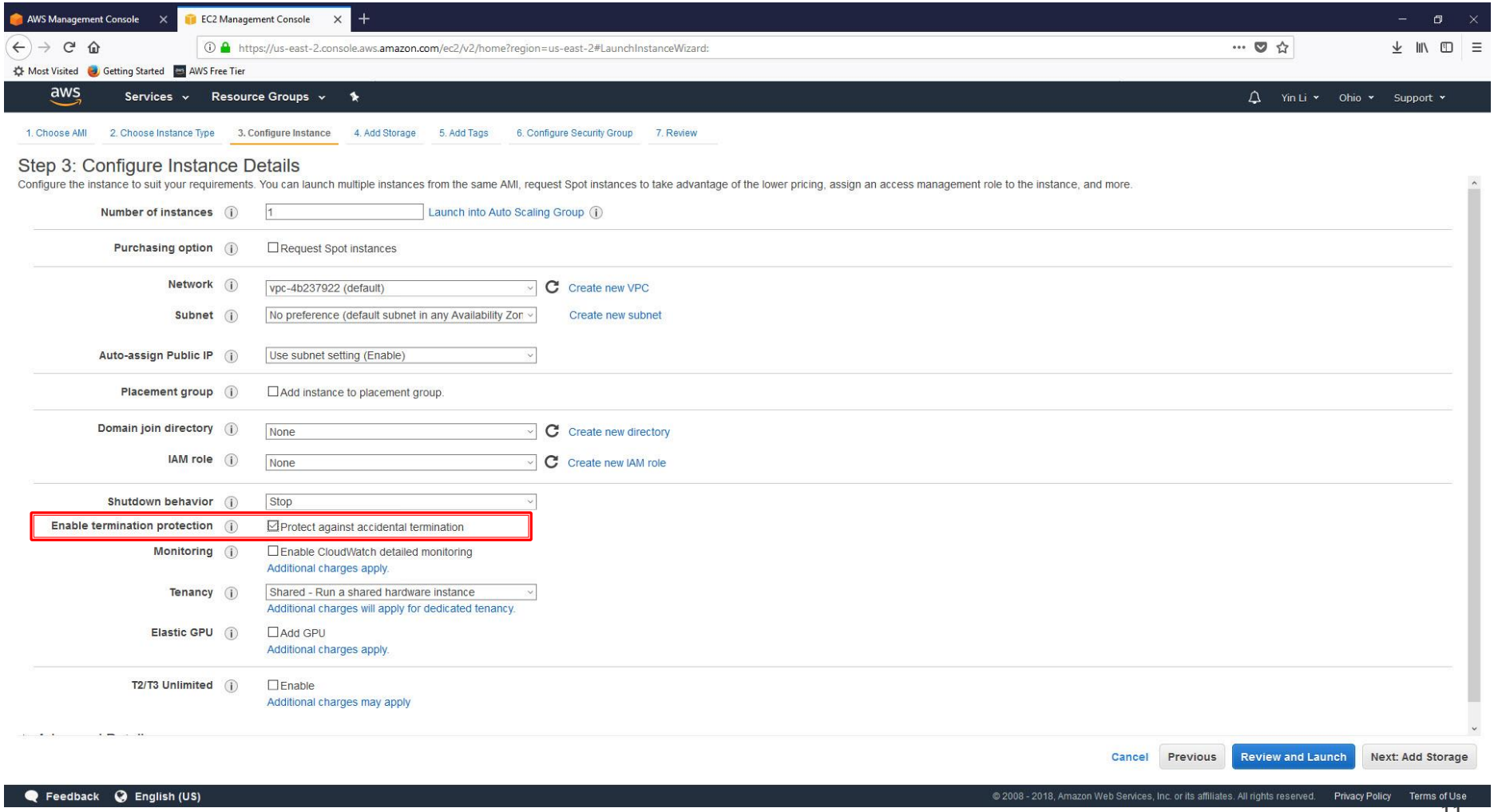


All services that offer a free tier have limits on what you can use without being charged. Many services have multiple types of limits. EC2 has limits on both the type of instance you can use and how many hours you can use in one month.

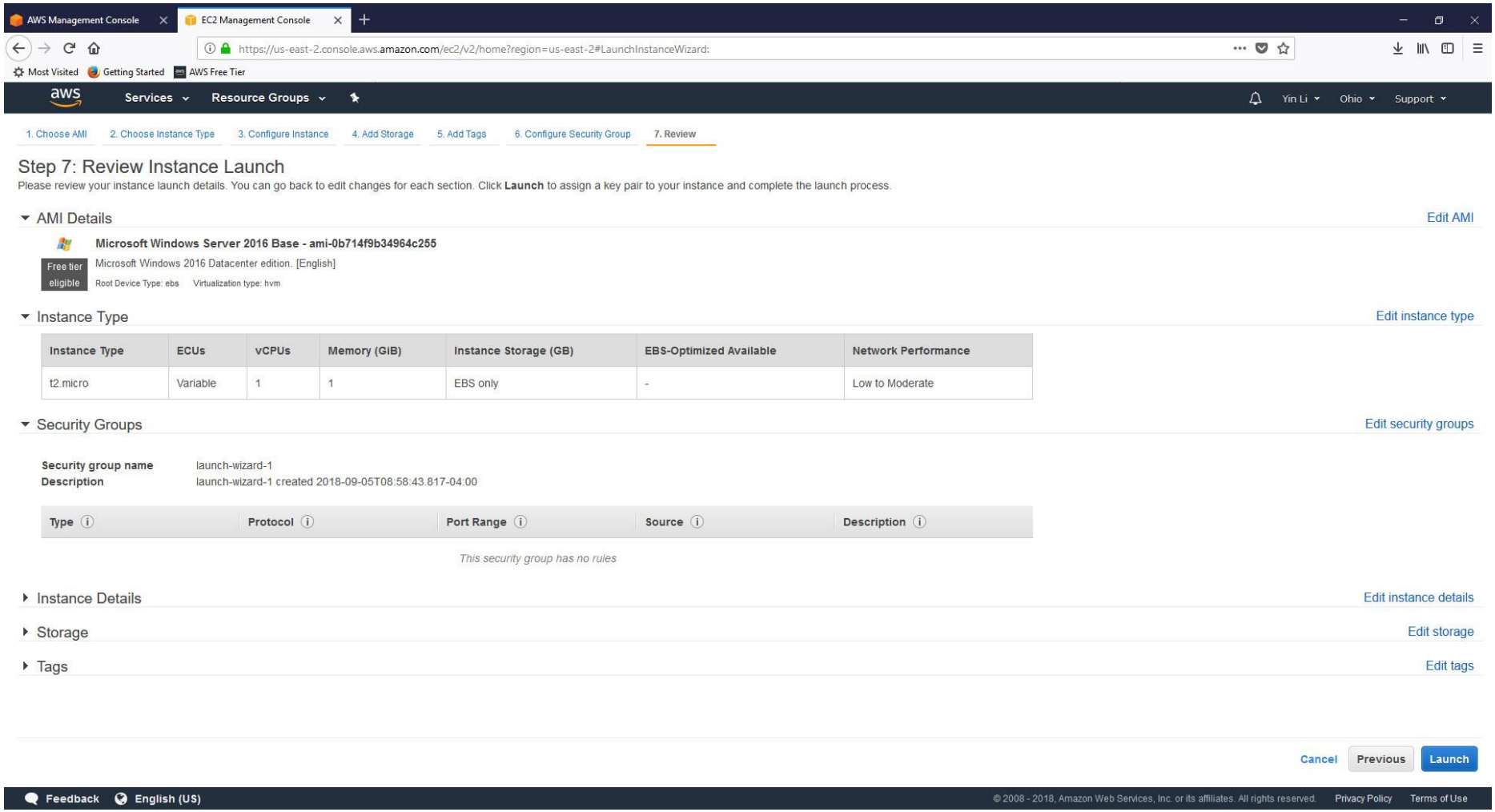
Launch EC2 Instance(3/9)



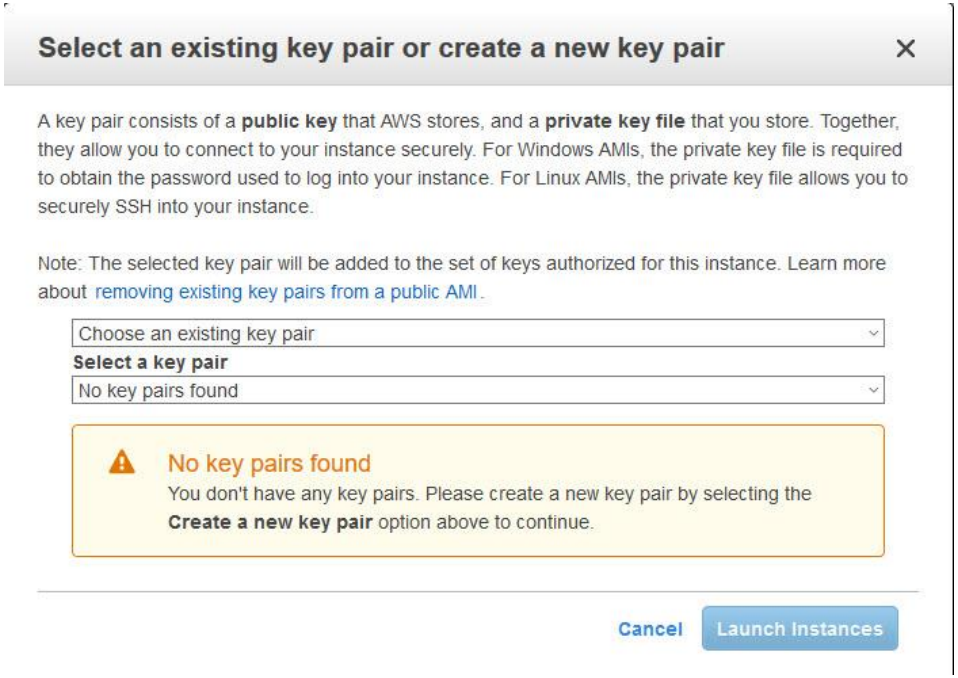
Launch EC2 Instance(4/9)

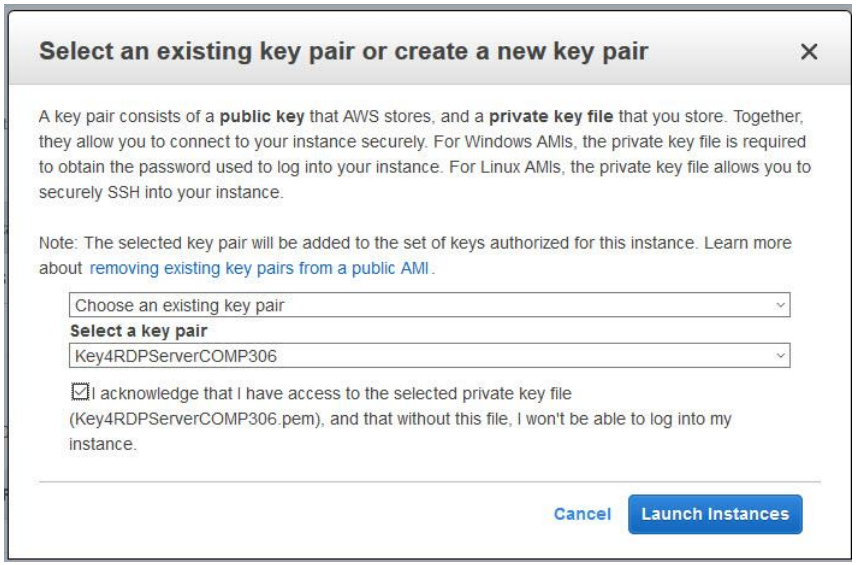


Launch EC2 Instance(5/9)

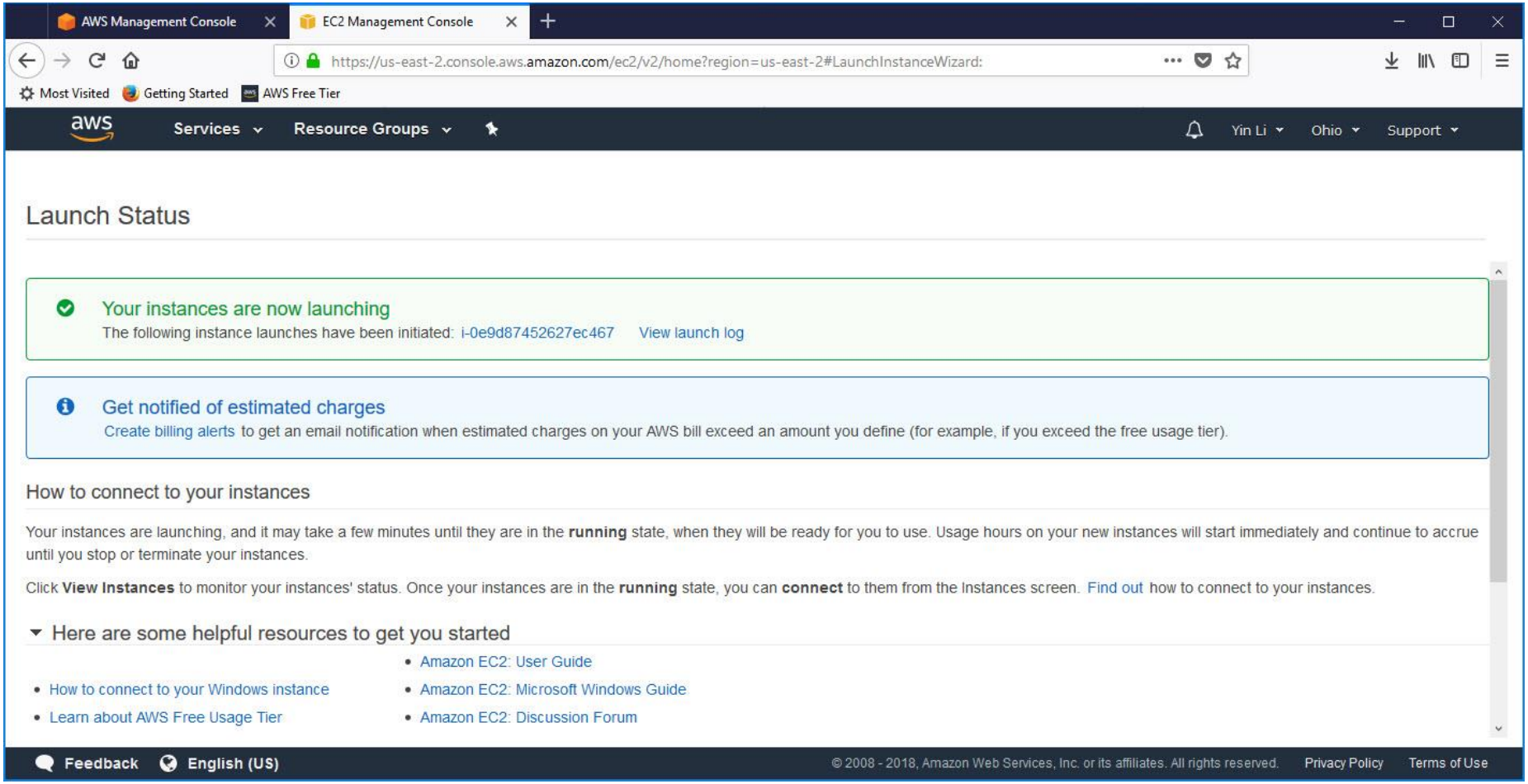


Launch EC2 Instance(6/9)

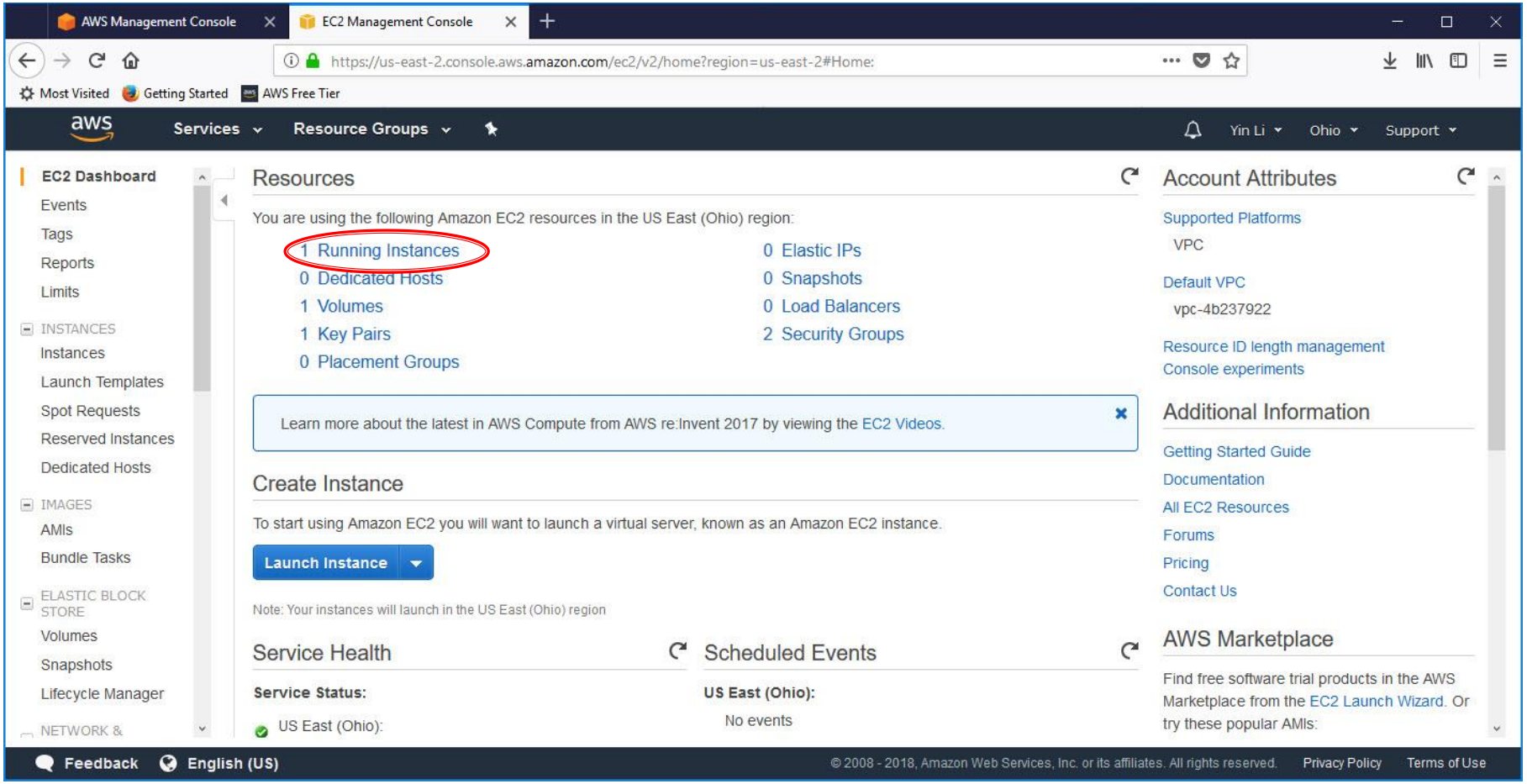




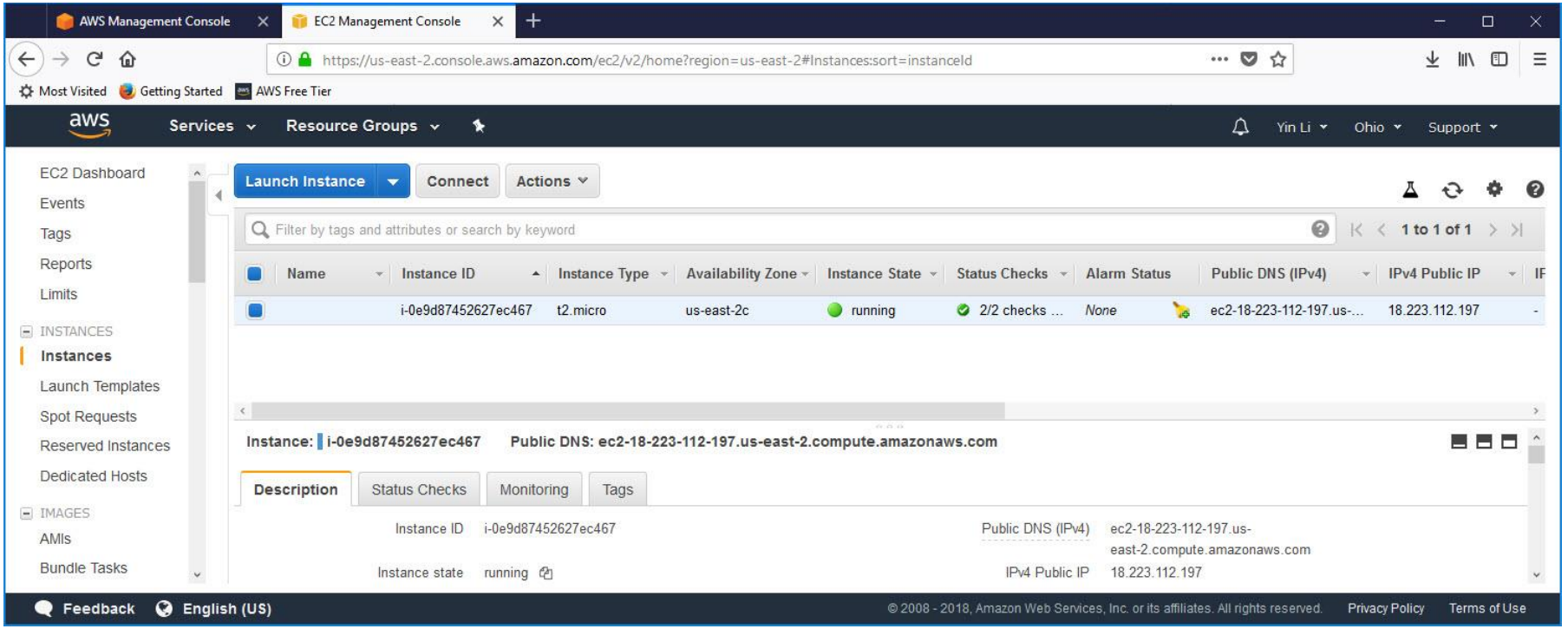
Launch EC2 Instance(7/9)



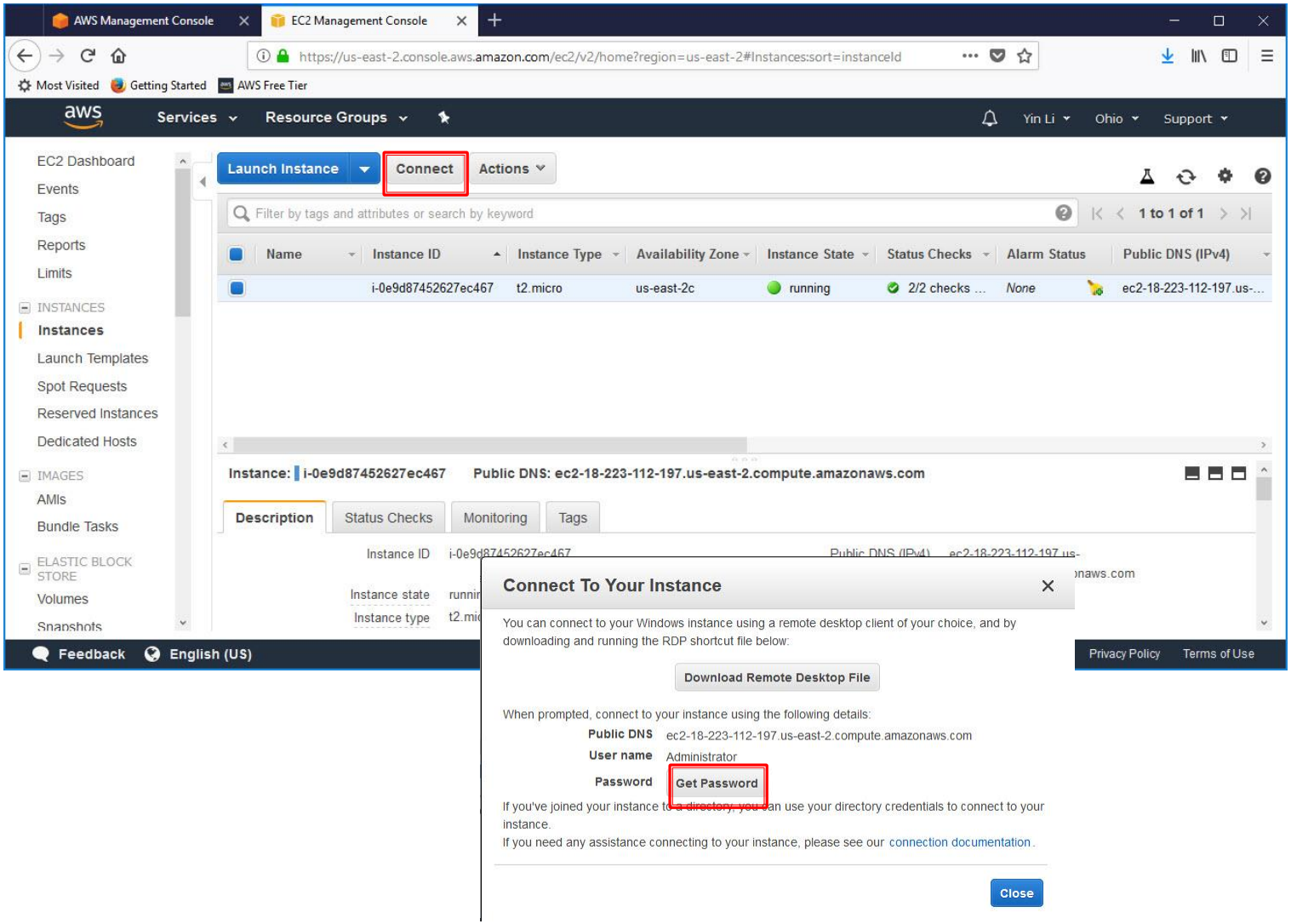
Launch EC2 Instance(8/9)



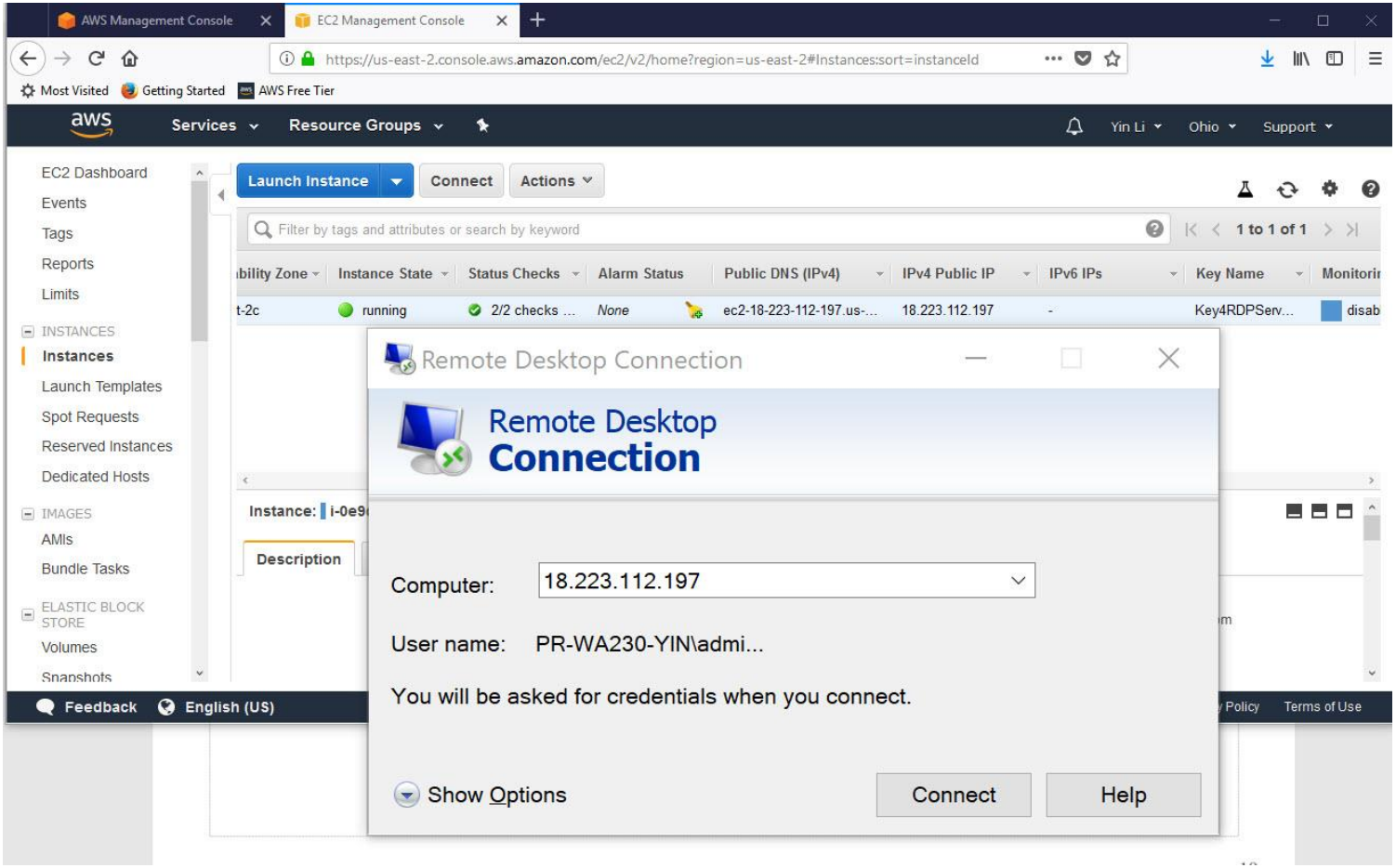
Launch EC2 Instance(9/9)



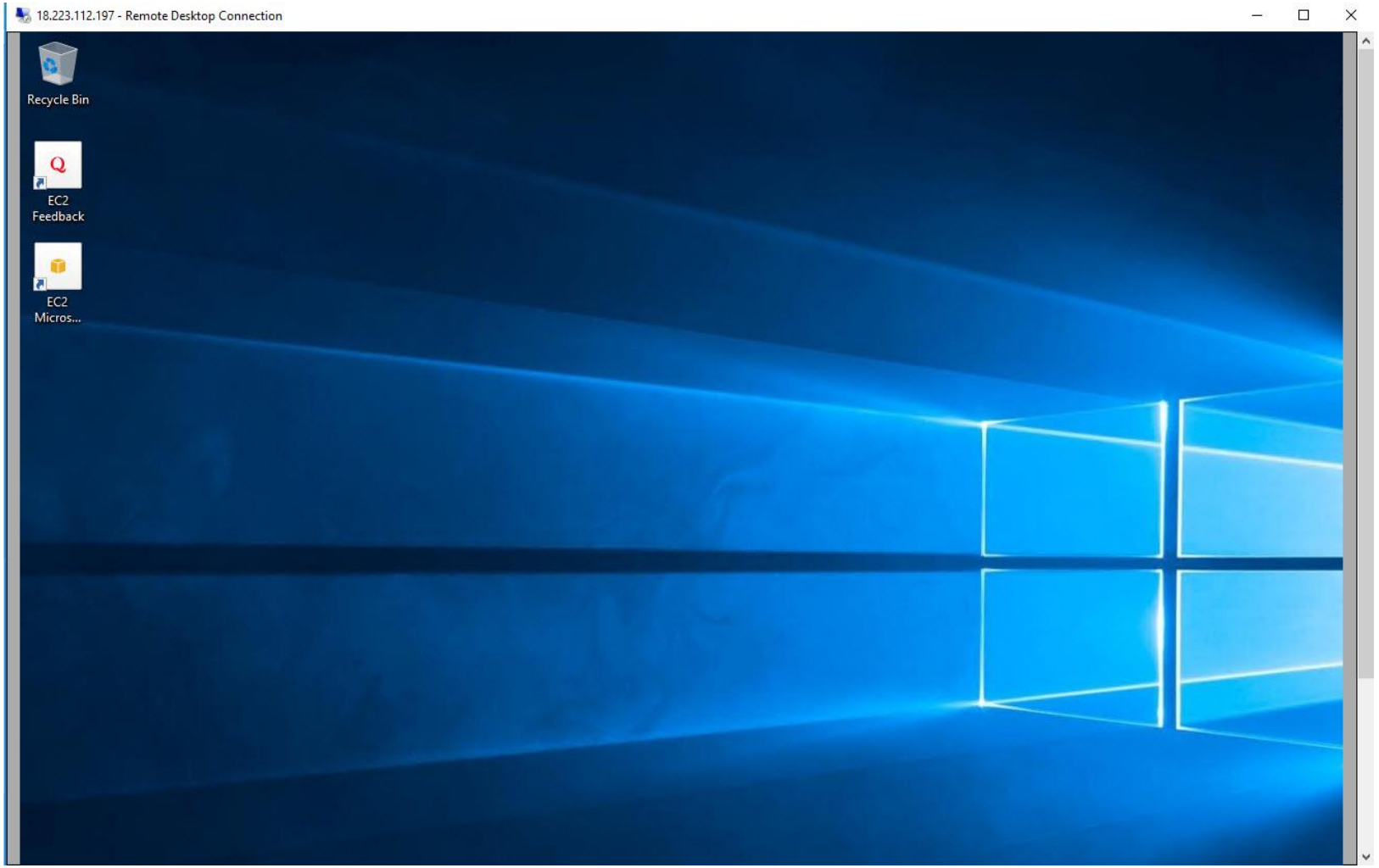
Connect to Launched Instance(1/3)



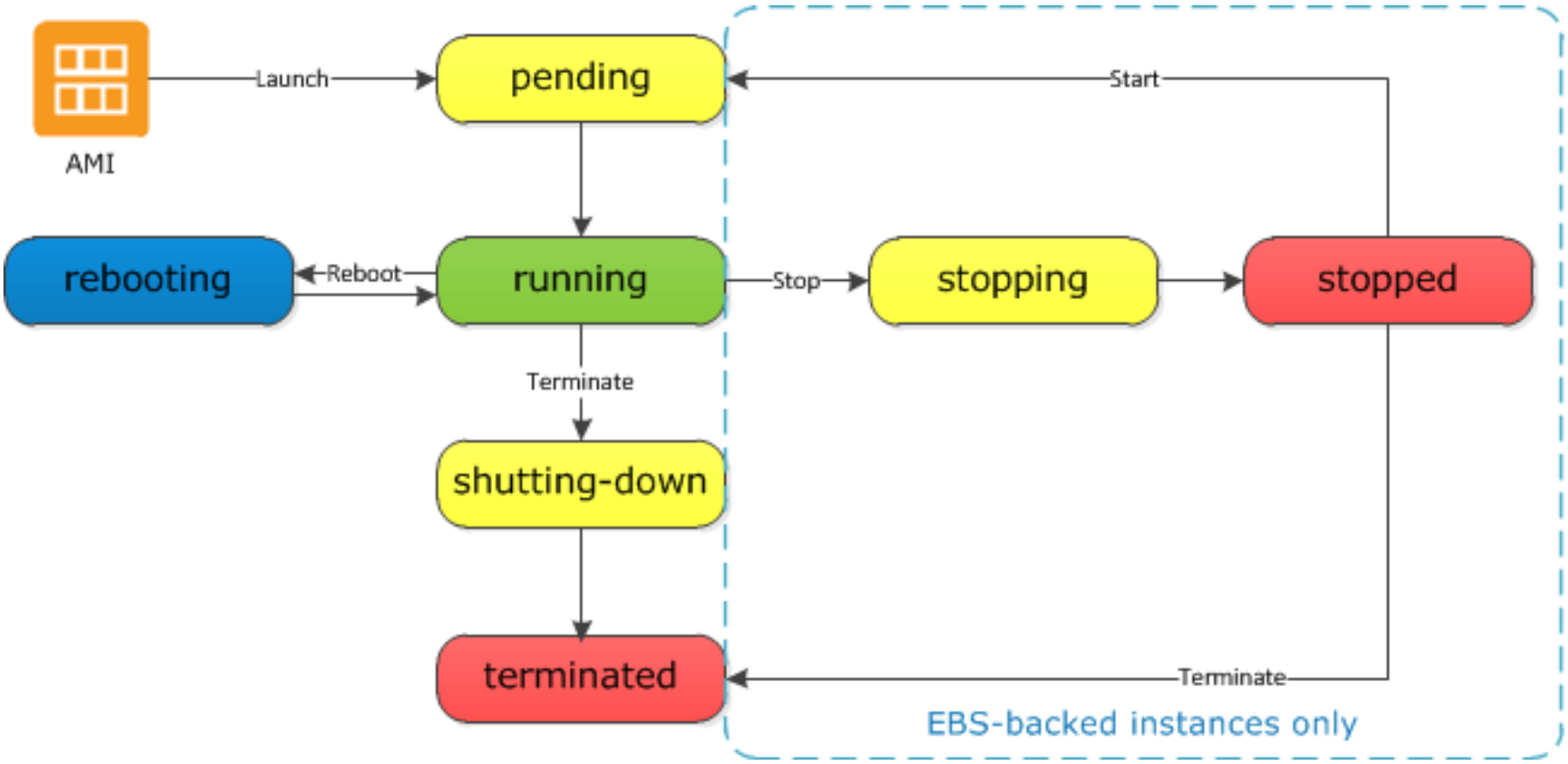
Connect to Launched Instance(2/3)



Connect to Launched Instance(3/3)



EC2 Instance Life Cycle



From https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/ec2-instance-lifecycle.html

Reference

- https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/concepts.html
- https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/AMIs.html
- https://en.wikipedia.org/wiki/Remote_Desktop_Protocol
- https://aws.amazon.com/getting-started/tutorials/launch-windows-vm/

- https://www.youtube.com/watch?v=r4YIdn2eTm4

- https://www.youtube.com/watch?v=uJssXPyMfos
- https://www.youtube.com/watch?v=5FepK5pV39c\

A **Spot Instance** is an unused EC2 **instance** that is available for less than the On-Demand price. Because **Spot Instances** enable you to request unused EC2 **instances** at steep discounts, you can lower your Amazon EC2 costs significantly. The hourly price for a **Spot Instance** is called a **Spot** price.

- e.g. have 4 bkups instead of 3 bkups, share that 4th one with others, auction it off at discounted price
  however, this means not good for real time services because it is offered to highest bidder; only good for ad hoc services