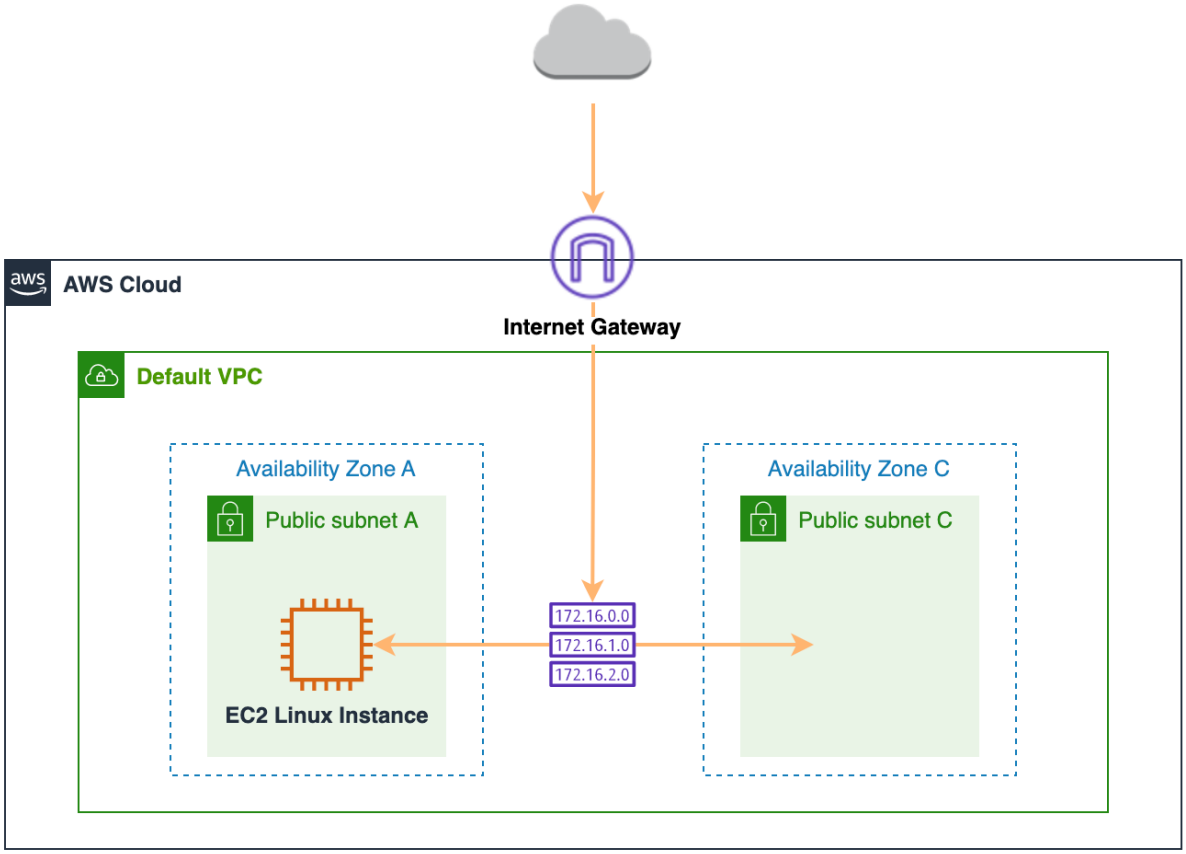
General Immersion Day

Lab 1

EC2 Linux Hands on Lab

Amazon EC2 Overview

Amazon EC2 provides scalable computing capacity in the Amazon Web Services (AWS) Cloud. Using Amazon EC2 eliminates your need to invest in hardware up front, so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage. Amazon EC2 enables you to scale up or down to handle changes in requirements or spikes in popularity, reducing your need to forecast traffic.



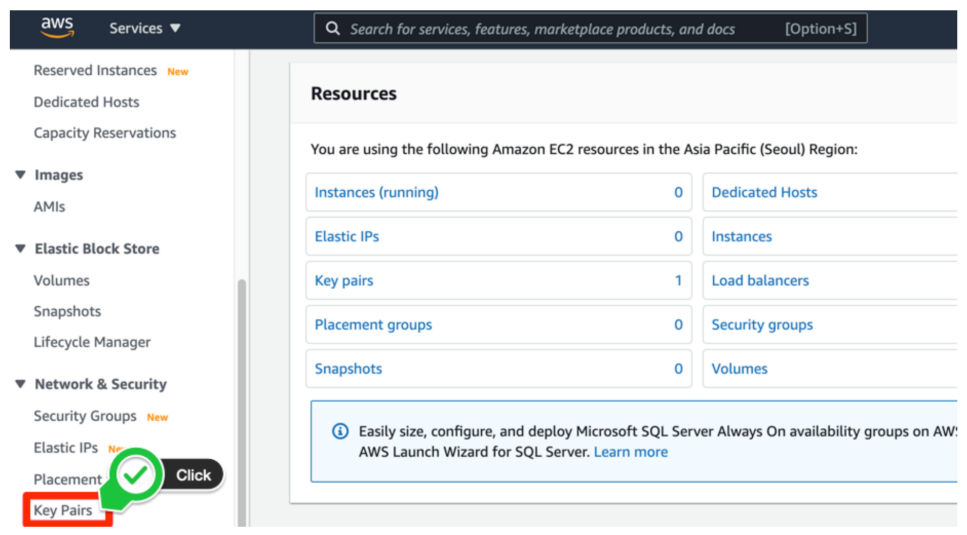
Create your own web server by going through the labs in the order below:

1. Create a new key pair
2. Launch a Web Server Instance
3. Connect to your linux instance
4. Connect to your Linux instance using Session Manager

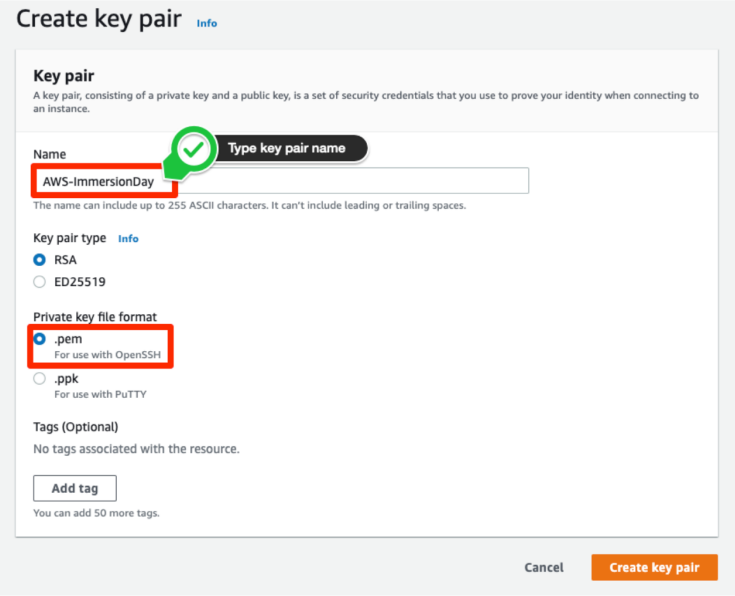
1-1 Create a new Key Pair

In this lab, you will need to create an EC2 instance using an SSH keypair. The following steps outline creating a unique SSH keypair for you to use in this lab.

1. Sign into the AWS Management Console and open the **Amazon EC2 console** . In the upper-right corner of the AWS Management Console, confirm you are in the desired AWS region.
2. Click on **Key Pairs** in the Network & Security section near the bottom of the leftmost menu. This will display a page to manage your SSH key pairs.



3. To create a new SSH key pair, click the **Create key pair** button at the top of the browser window.



4. Type **[Your Name]-ImmersionDay** into the Key Pair Name: text box and click **Create key pair** button. For Windows users, please select **ppk** for file format.
5. The page will download the file **[Your Name]-ImmersionDay.pem** to the local drive. Follow the browser instructions to save the file to the default download location. Remember the full path to the key pair file you just downloaded.

1-2 Launch a Web Server Instance

We will launch an Amazon Linux 2 instance, bootstrap Apache/PHP, and install a basic web page that will display information about our instance.

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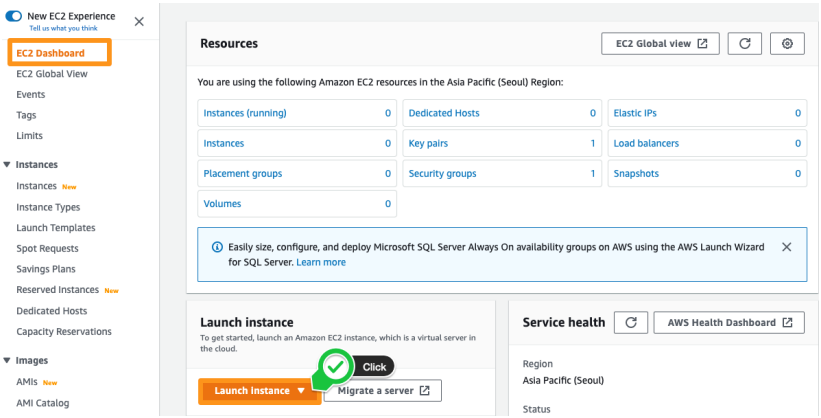
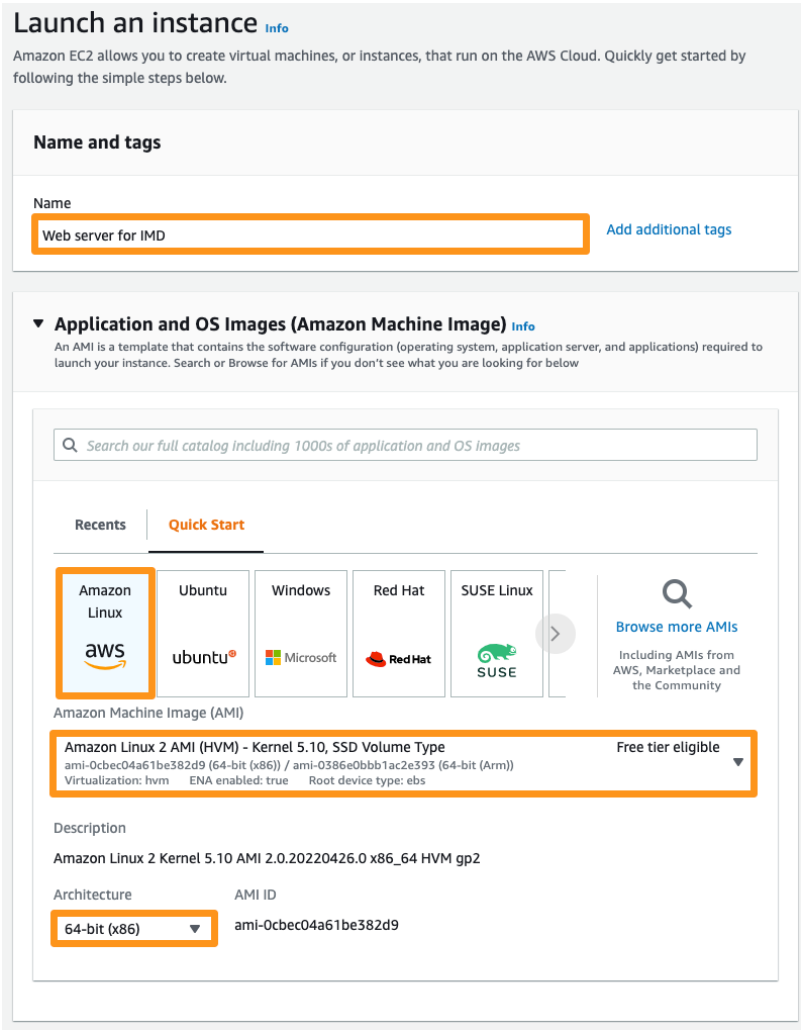
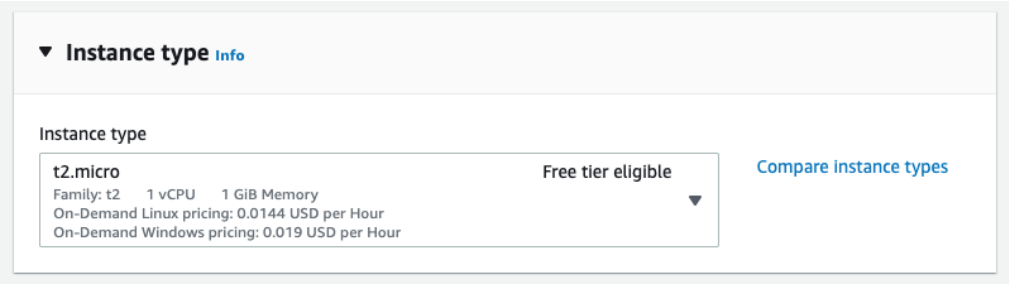
1. Click on **EC2 Dashboard** near the top of the leftmost menu. And Click on **Launch instances**.



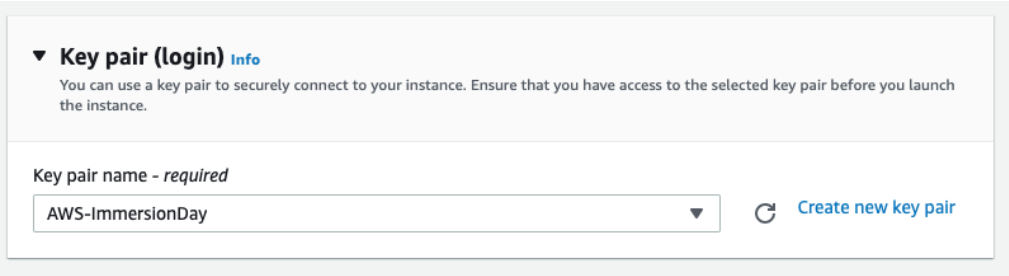
2. In **Name**, put the value **Web server for IMD**. And check the default setting for Amazon Machine Image below.



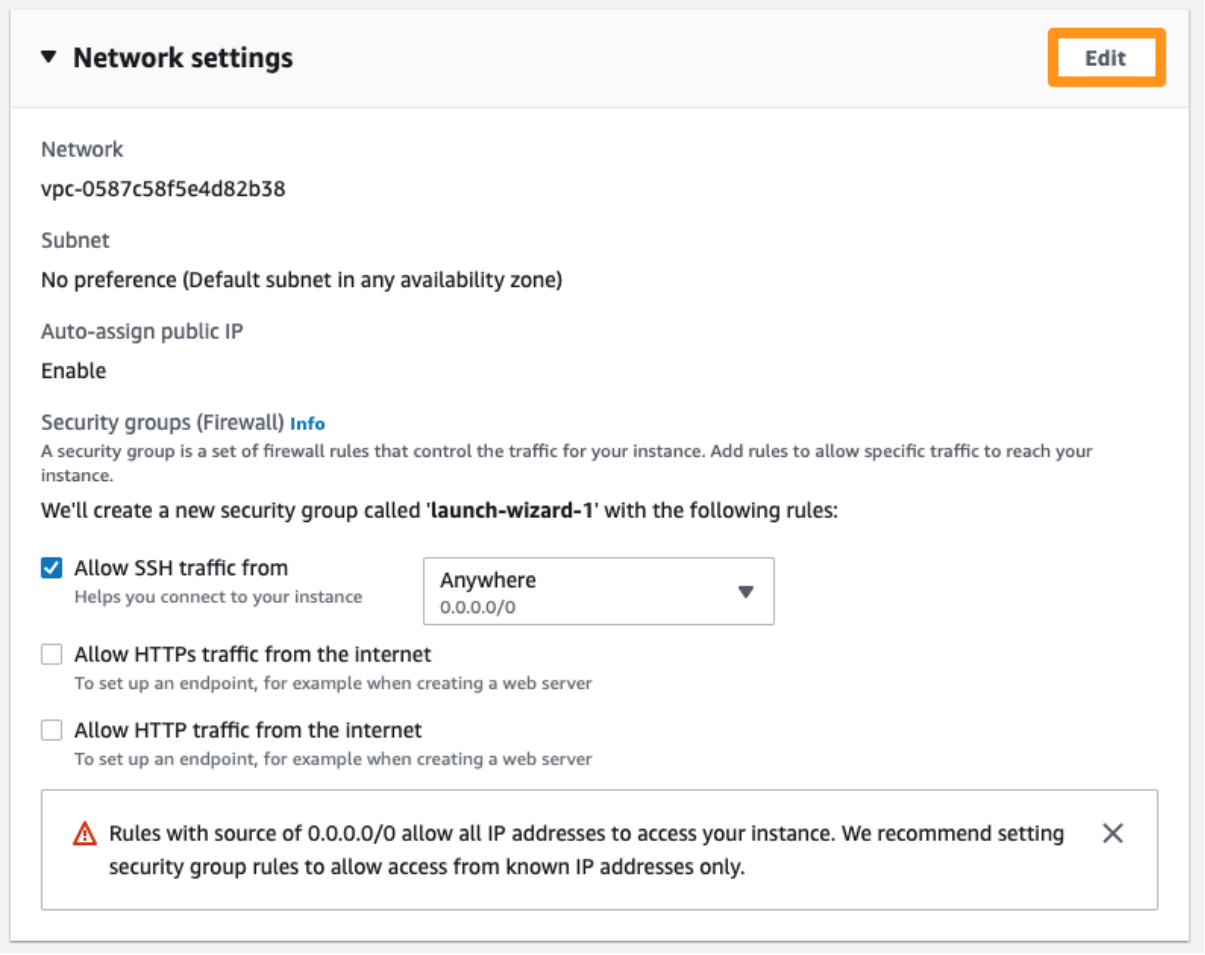
3. Select **t2.micro** in Instance Type.



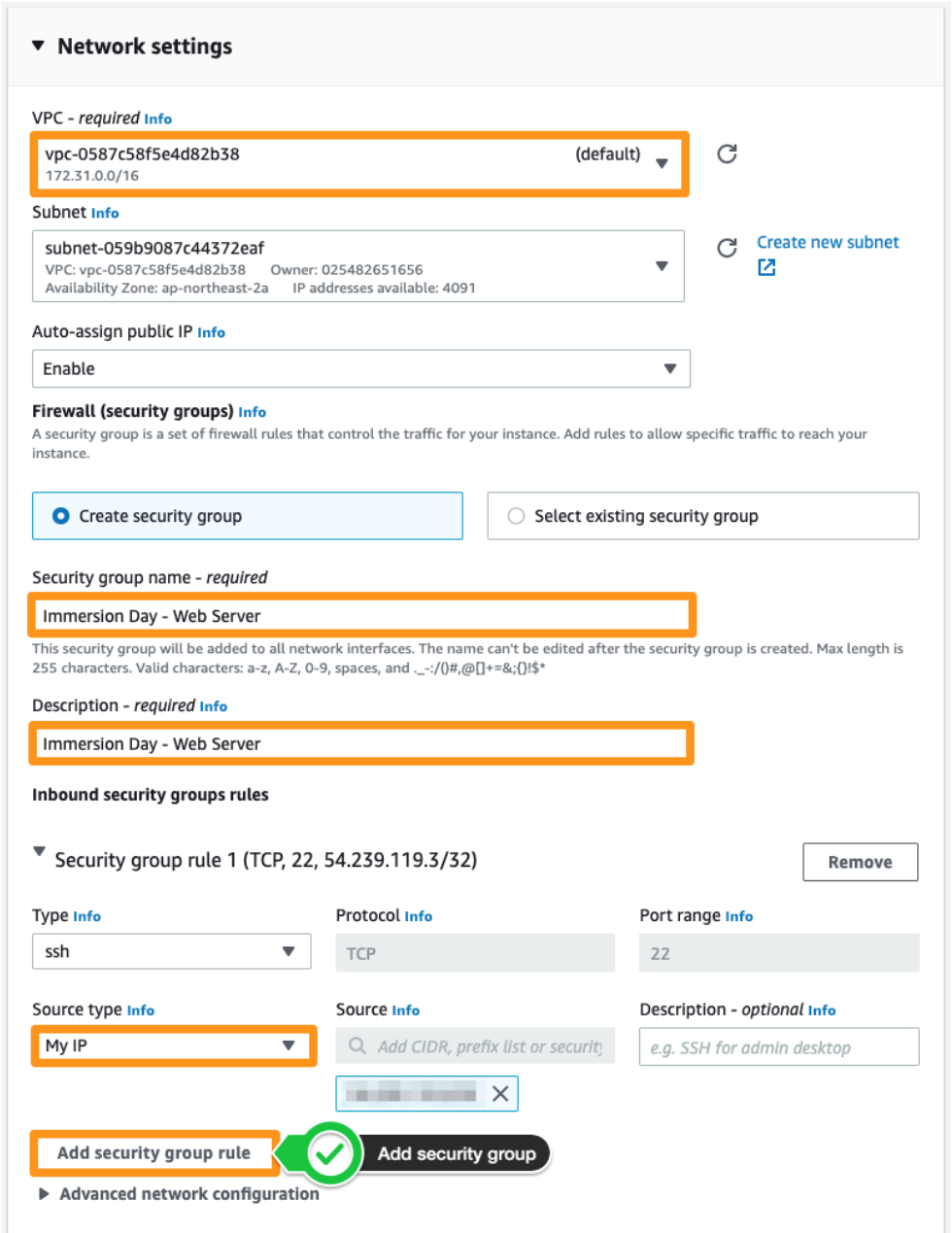
4. Select the key pair that you created in the beginning of this lab from the drop-down.



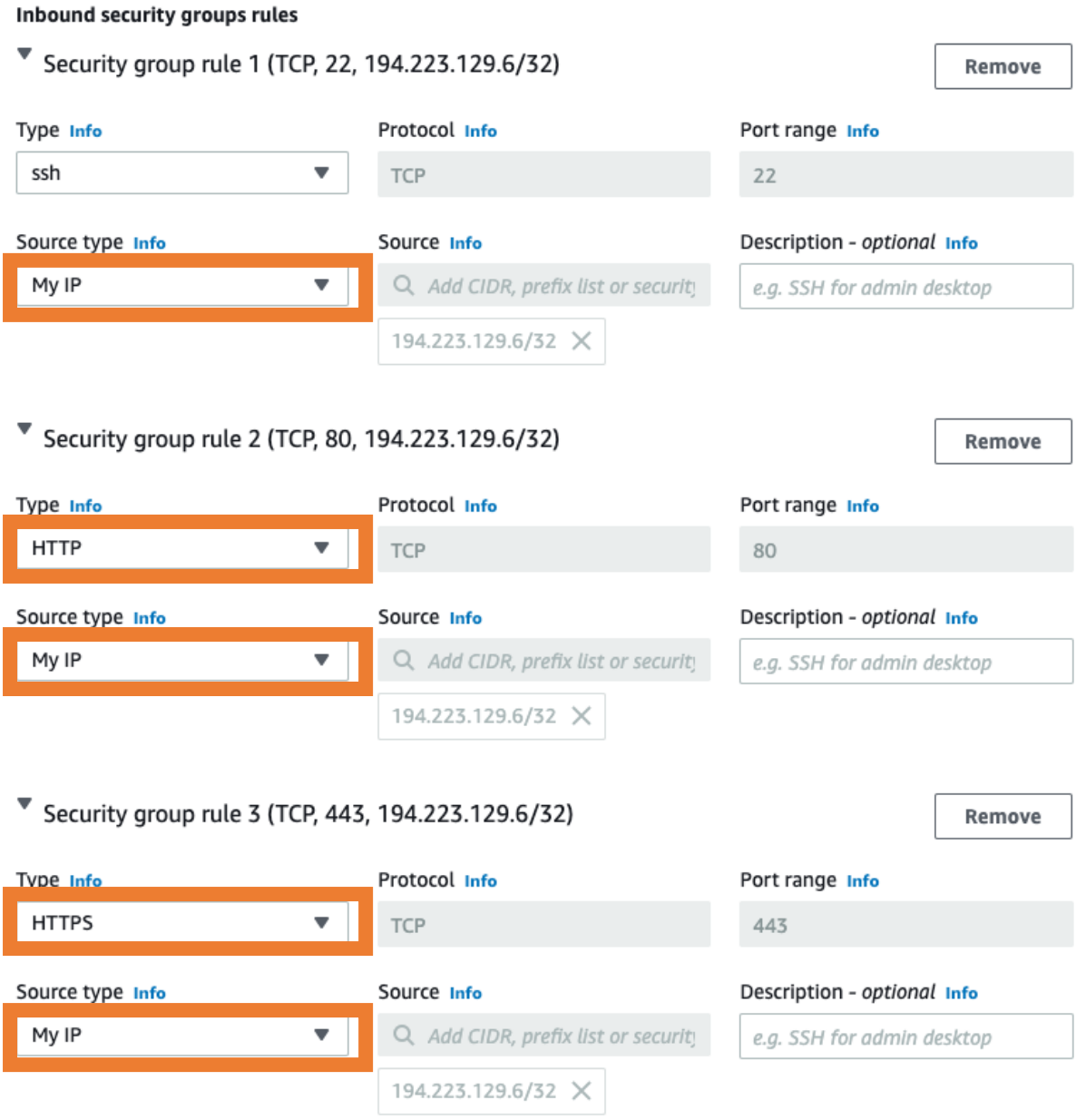
5. Click the Edit button in Network settings to set the space where EC2 will be located.



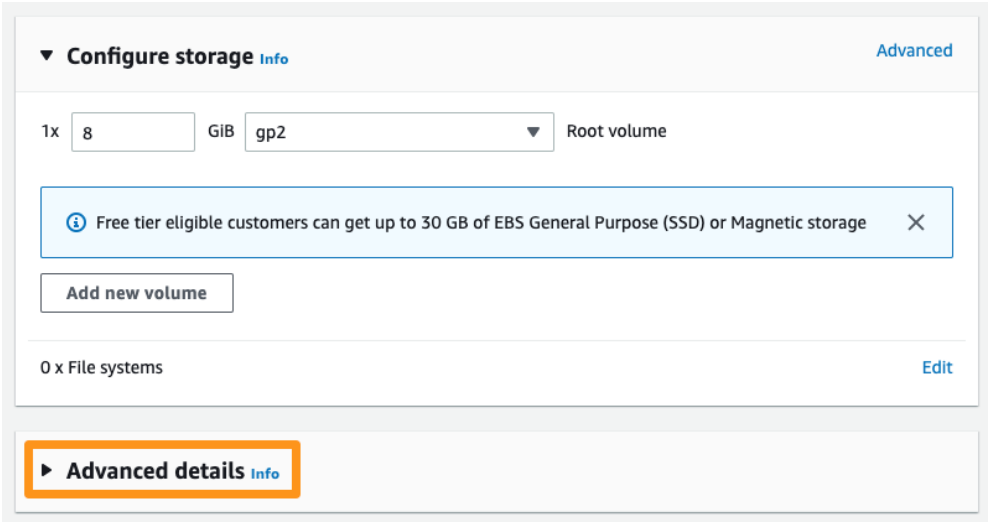
Check **default VPC** and **subnet**. **Auto-assign public IP** is set to **Enable**. Right below it, create **Security groups** to act as a network firewall. Security groups will specify the protocols and addresses you want to allow in your firewall policy. For the security group you are currently creating, this is the rule that applies to the EC2 that will be created. After entering *Immersion Day - Web Server* in Security group name and Description, select Add Security group rule and set HTTP to Type.



Also allow TCP/80 for Web Service and TCP/443 by specifying it. Select **My IP** in the source.



6. All other values accept the default values, expand by clicking on the **Advanced Details** tab at the bottom of the screen. Enter the following values in the **User data** field and select **Launch instance**.



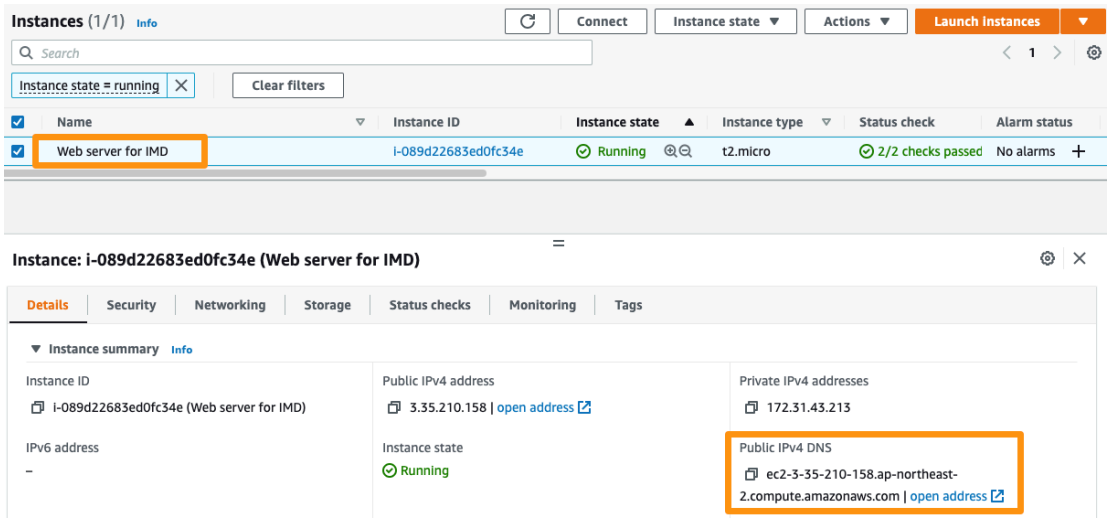
User data Info

```
#!/bin/sh

# Install a LAMP stack
amazon-linux-extras install -y lamp-mariadb10.2-php7.2 php7.2
yum -y install httpd php-mbstring

# Start the web server
chkconfig httpd on
systemctl start httpd

# Install the web pages for our lab
if [ ! -f /var/www/html/immersion-day-app-php7.tar.gz ]; then
  cd /var/www/html
  wget https://aws-joozero.s3.ap-northeast-2.amazonaws.com/immersion-day-
app-php7.tar.gz
  tar xvfz immersion-day-app-php7.tar.gz
fi

# Install the AWS SDK for PHP
if [ ! -f /var/www/html/aws.zip ]; then
  cd /var/www/html
  mkdir vendor
  cd vendor
  wget https://docs.aws.amazon.com/aws-sdk-php/v3/download/aws.zip
  unzip aws.zip
fi

# Update existing packages
yum -y update
```

Note: Do **not** copy and paste the codes from this manual into the **User Data** field. Please make sure to download the file “ec2bootstrap.txt” and copy the codes from there.

```
#!/bin/sh

# Install a LAMP stack
amazon-linux-extras install -y lamp-mariadb10.2-php7.2 php7.2
yum -y install httpd php-mbstring

# Start the web server
chkconfig httpd on
systemctl start httpd

# Install the web pages for our lab
if [ ! -f /var/www/html/immersion-day-app-php7.tar.gz ]; then
   cd /var/www/html
   wget https://aws-joozero.s3.ap-northeast-2.amazonaws.com/immersion-day-app-
php7.tar.gz
   tar xvfz immersion-day-app-php7.tar.gz
fi

# Install the AWS SDK for PHP
if [ ! -f /var/www/html/aws.zip ]; then
   cd /var/www/html
   mkdir vendor
   cd vendor
   wget https://docs.aws.amazon.com/aws-sdk-php/v3/download/aws.zip
   unzip aws.zip
fi

# Update existing packages
yum -y update
```

7. Click the **View Instances** button in the lower right hand portion of the screen to view the list of EC2 instances. Once your instance has launched, you will see your Web Server as well as the Availability Zone the instance is in, and the publicly routable **DNS name**. Click the checkbox next to your web server to view details about this EC2 instance.



Browse the Web Server

Wait for the instance to pass the Status Checks to finish loading. Open a new browser tab and browse the Web Server by entering the EC2 instance's **Public DNS name** into the browser.

Note: Remove "S" from HTTPS. Browse with HTTP instead.

The EC2 instance's Public DNS name can be found in the console by reviewing the **Public IPv4 DNS** name line highlighted above. You should see a website that looks like the following.

LOAD TEST RDS

Meta-Data	Value
InstanceId	*i-0f9c0154bbc266ca9*
Availability Zone	*ap-northeast-2c*

Current CPU Load: **1%**

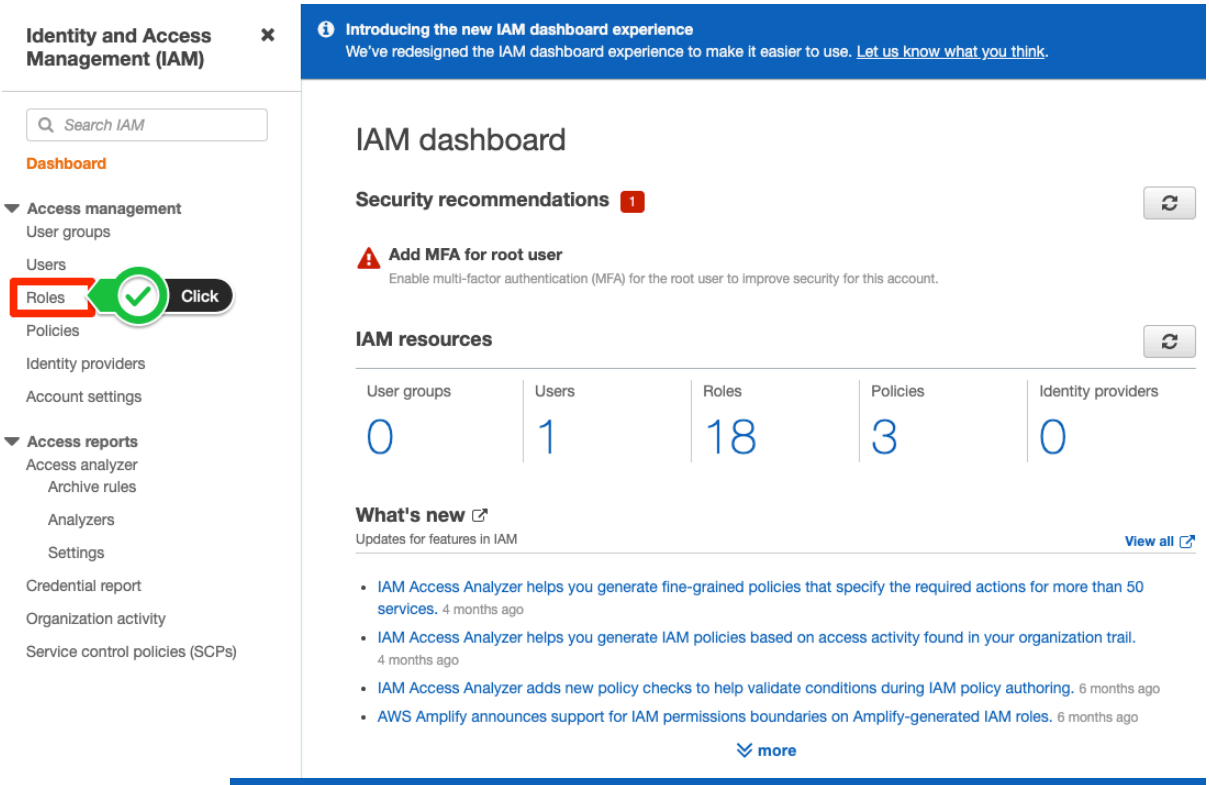
Great Job! You have deployed a server and launched a web site in a matter of minutes!

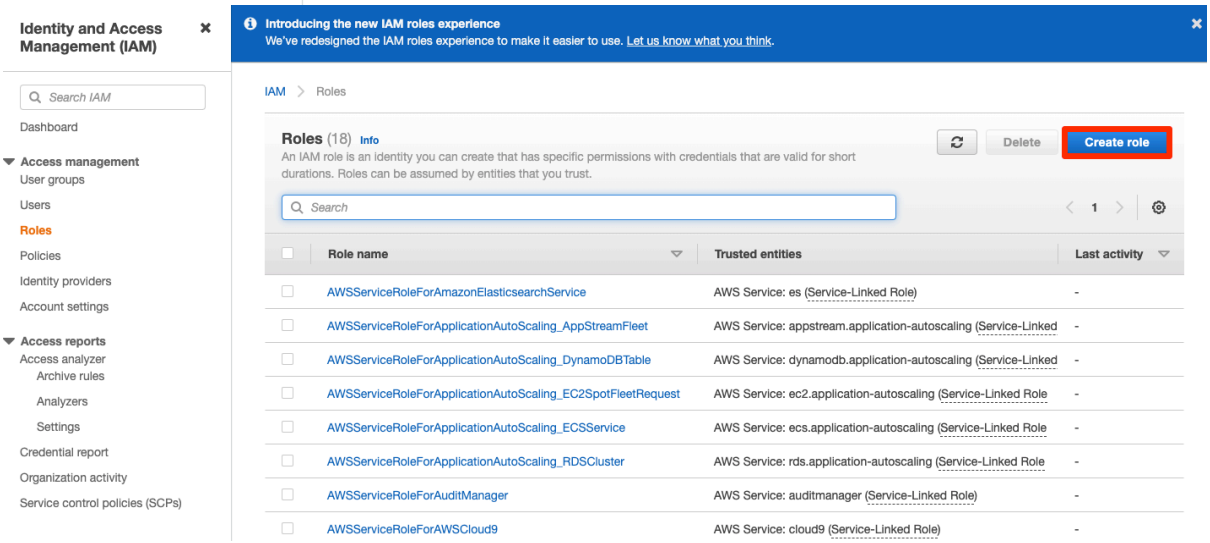
1-3 Connect to your Linux Instance using Session Manager

Session Manager is a fully managed AWS Systems Manager capability that lets you manage your Amazon EC2 instances through an interactive one-click browser-based shell or through the AWS CLI. You can use Session Manager to start a session with an instance in your account. After the session is started, you can run bash commands as you would through any other connection type.

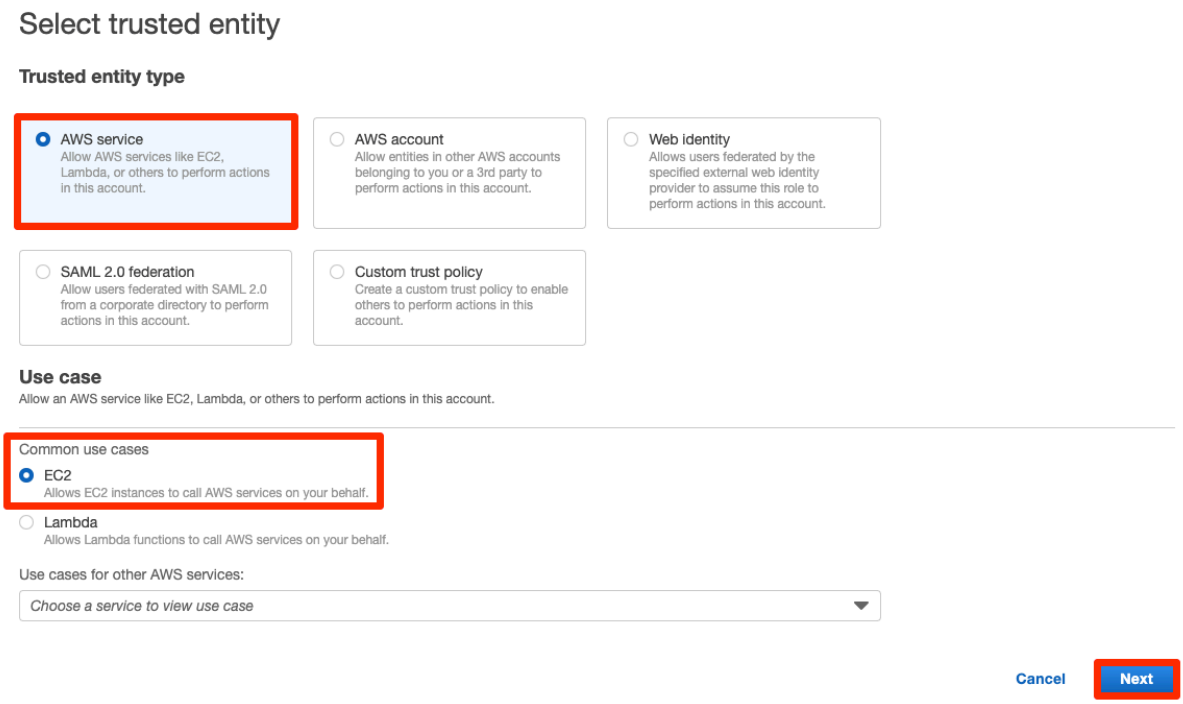
Create an IAM instance profile for Systems Manager

1. Sign in to the AWS Management Console and open the **IAM console .** In the navigation pane, choose **Roles**, and then choose **Create role**.

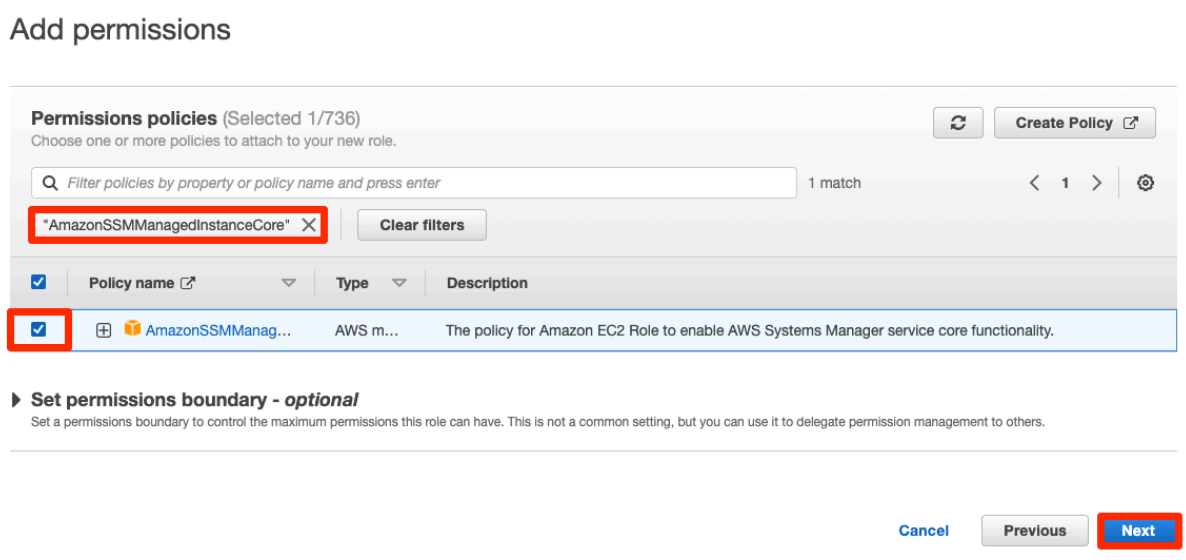




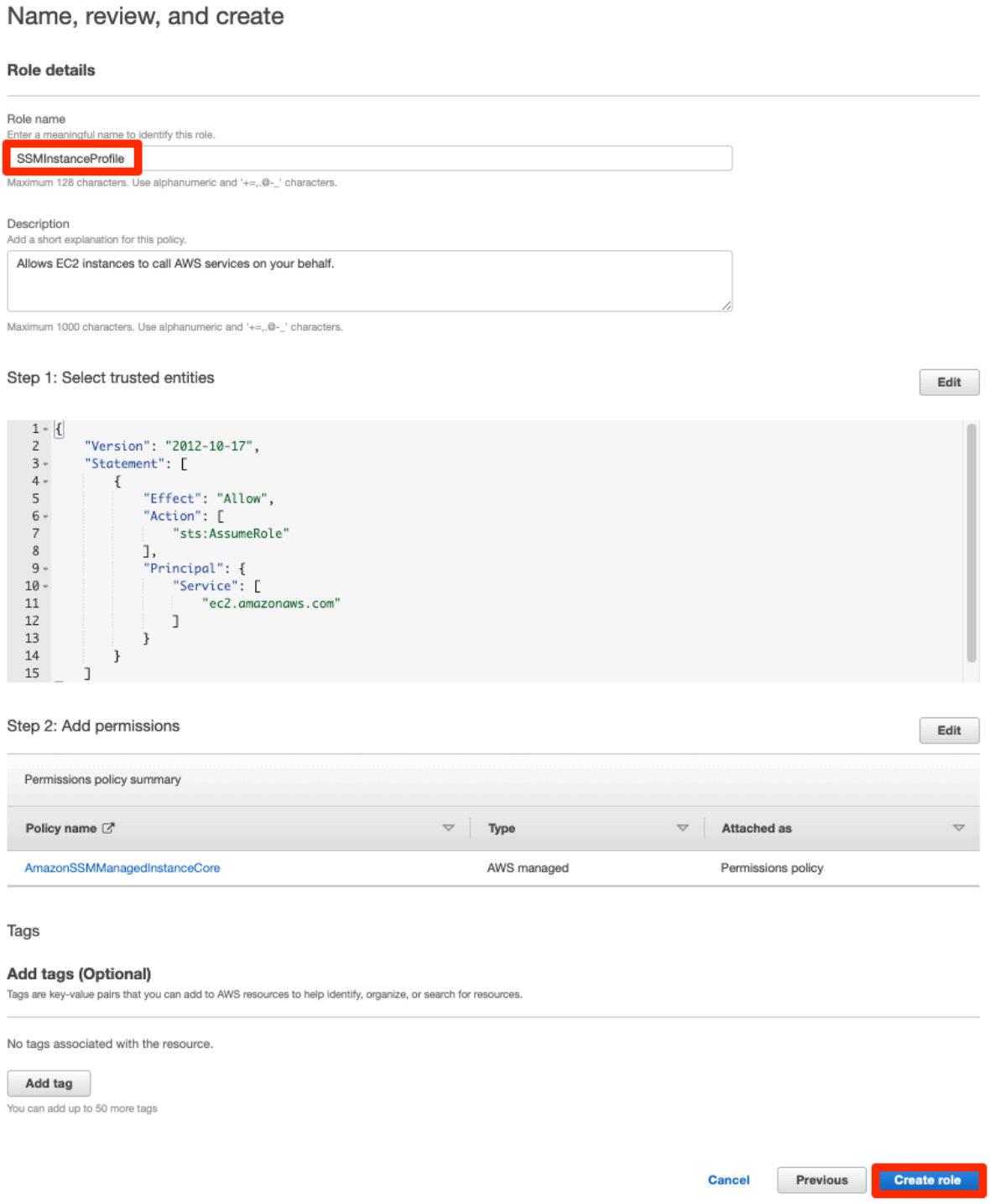
2. Under **Select type of trusted entity**, choose **AWS service**. Immediately under **Choose the service that will use this role**, choose **EC2**, and then choose **Next**.



3. On the **Attach permissions policies page**, do the following: Use the **Search** field to locate the **AmazonSSMManagedInstanceCore**. Select the box next to its name. Choose **Next**.



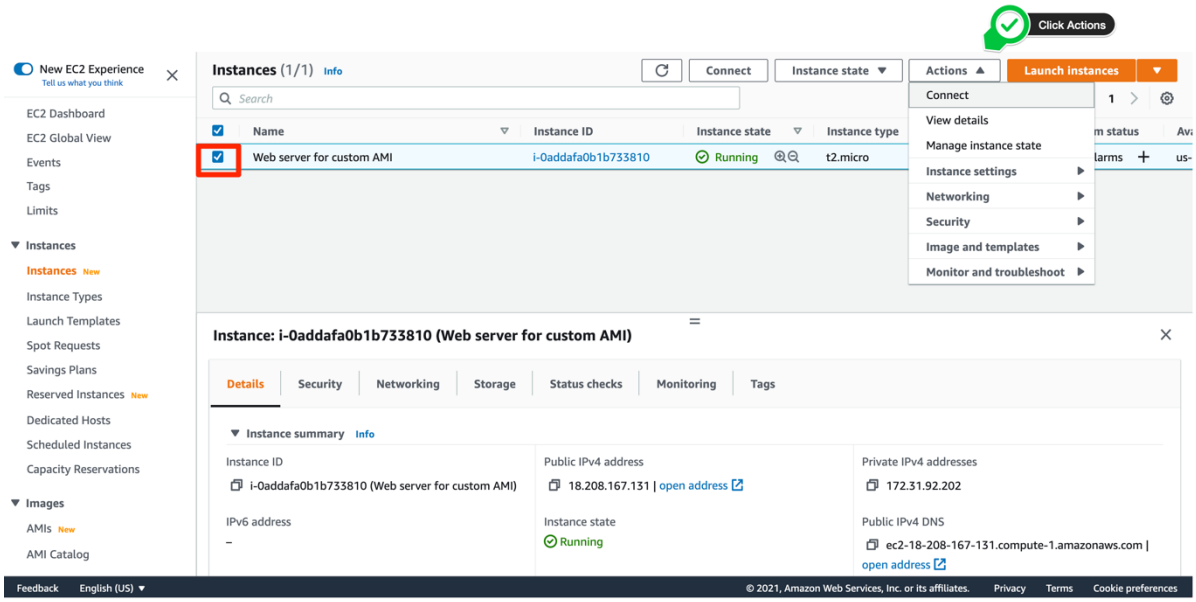
4. For **Role name**, enter a name for your new instance profile, such as **SSMInstanceProfile**. Choose **Create role**. The system returns you to the **Roles** page.



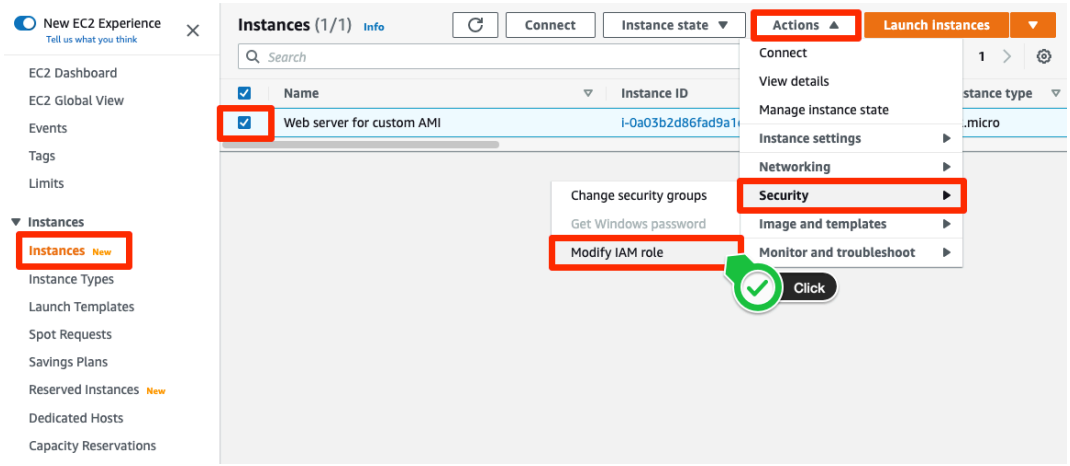
Make a note of the role name. You will choose this role when you create new instances that you want to manage by using Systems Manager.

Attach the Systems Manager instance profile to an existing instance (console)

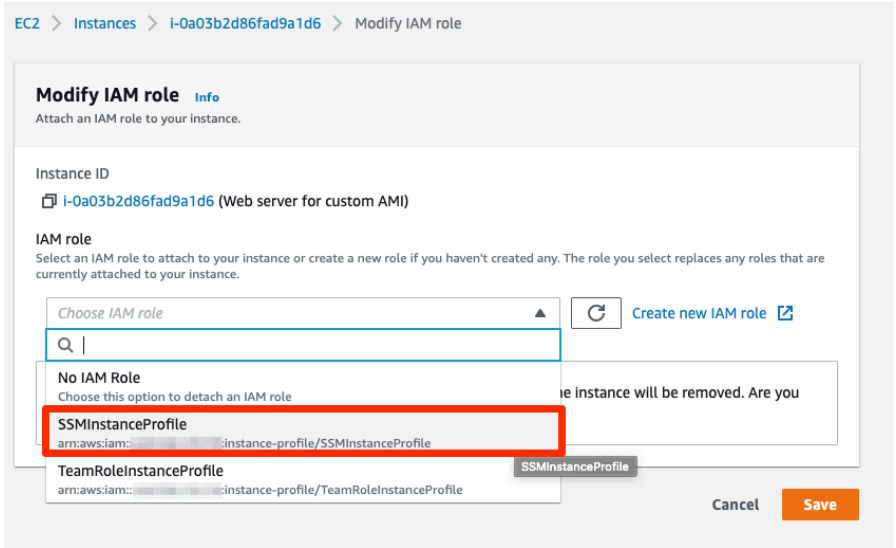
1. Sign in to the AWS Management Console and open the Amazon EC2 console at Amazon EC2 console .
2. In the navigation pane, under **Instances**, choose **Instances**. Choose your EC2 instance from the list and click Actions.



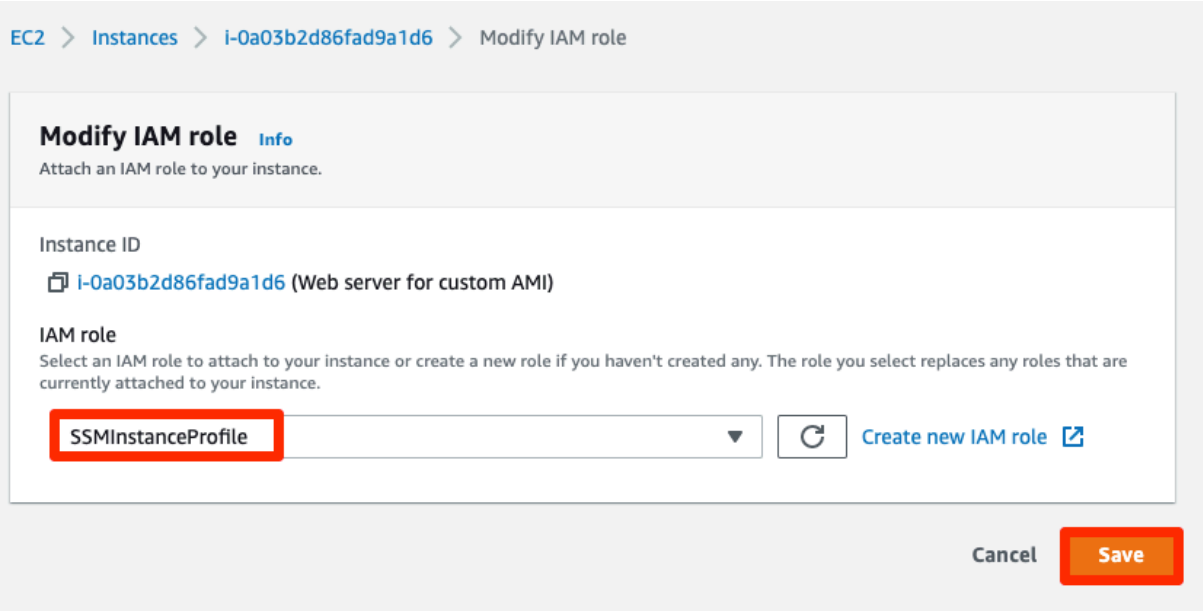
3. In the **Actions** menu, choose **Security, Modify IAM role**.



4. For IAM role, select the instance profile you created **SSMInstanceProfile**.

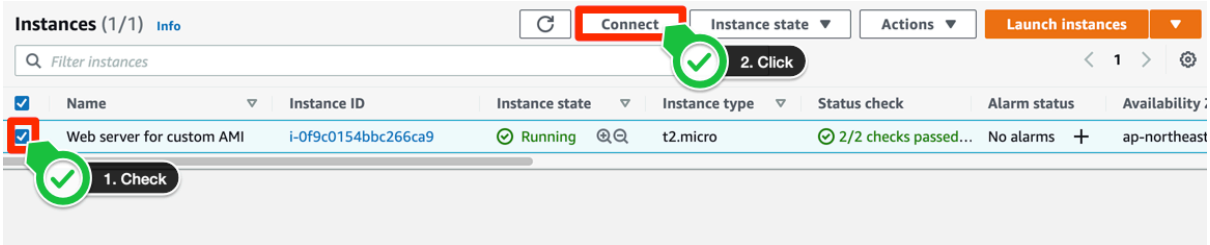


5. Choose **Save**.

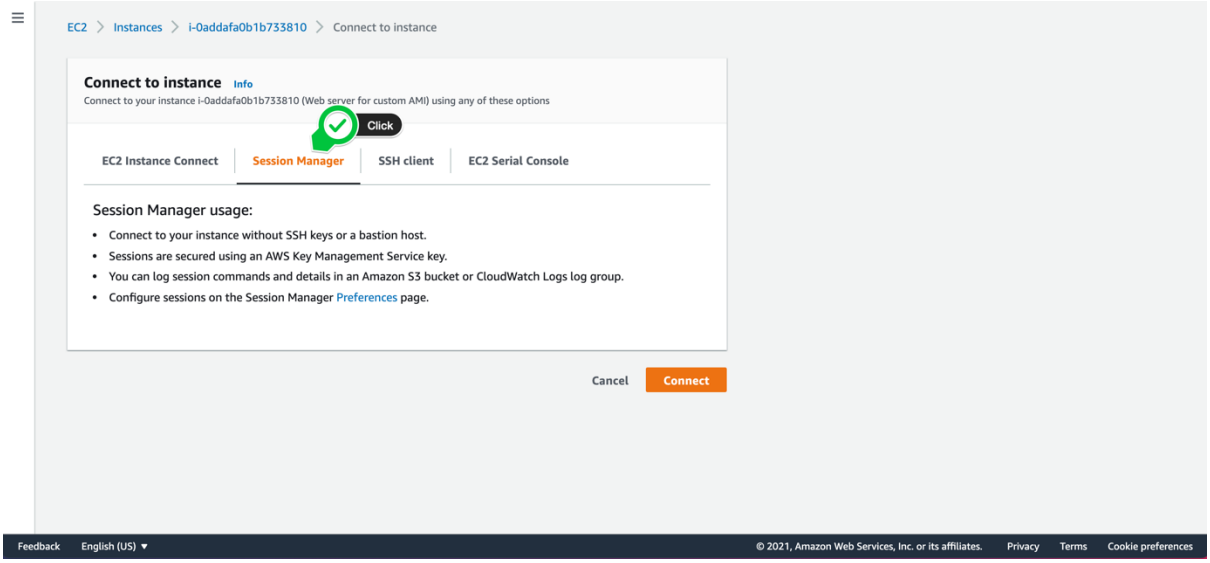


Connect to your Linux instance using Session Manager

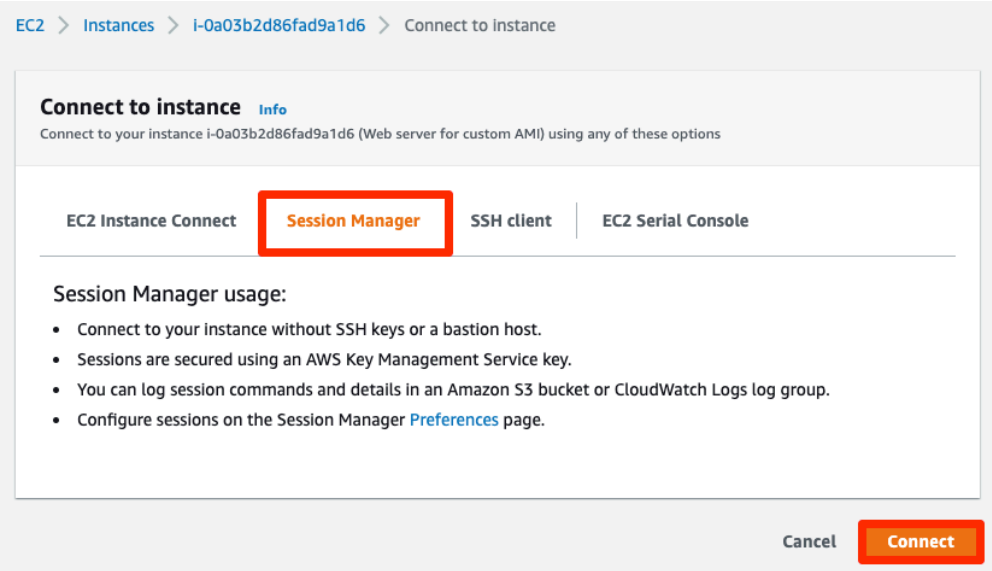
1. In the EC2 instance console, select the instance you want to connect to, and then click the **Connect** button.



2. In the **Connect to instance** page, select **Session Manager**. Follow the instructions below.



3. Review the **Session Manager usage section** for advantages of using Session Manager.
4. Choose **Connect**. A new session will be started in a new tab. After the session is started, you can run bash commands as you would through any other connection type.



Note: If you receive an error like shown below, wait for few seconds and refresh your browser. Behind the scenes the EC2 instance is being setup for use with Session Manager