



AWS Immersion Day

EC2 Hands-On Lab

Getting Started with Linux on Amazon EC2

Lab Prework(Setting up your VPC for EC2)

Before we begin the EC2 lab, a network environment will need to be built for the EC2 instance to reside in. Please follow the steps in the walkthrough provided in the VPC setup document.

EC2 Overview

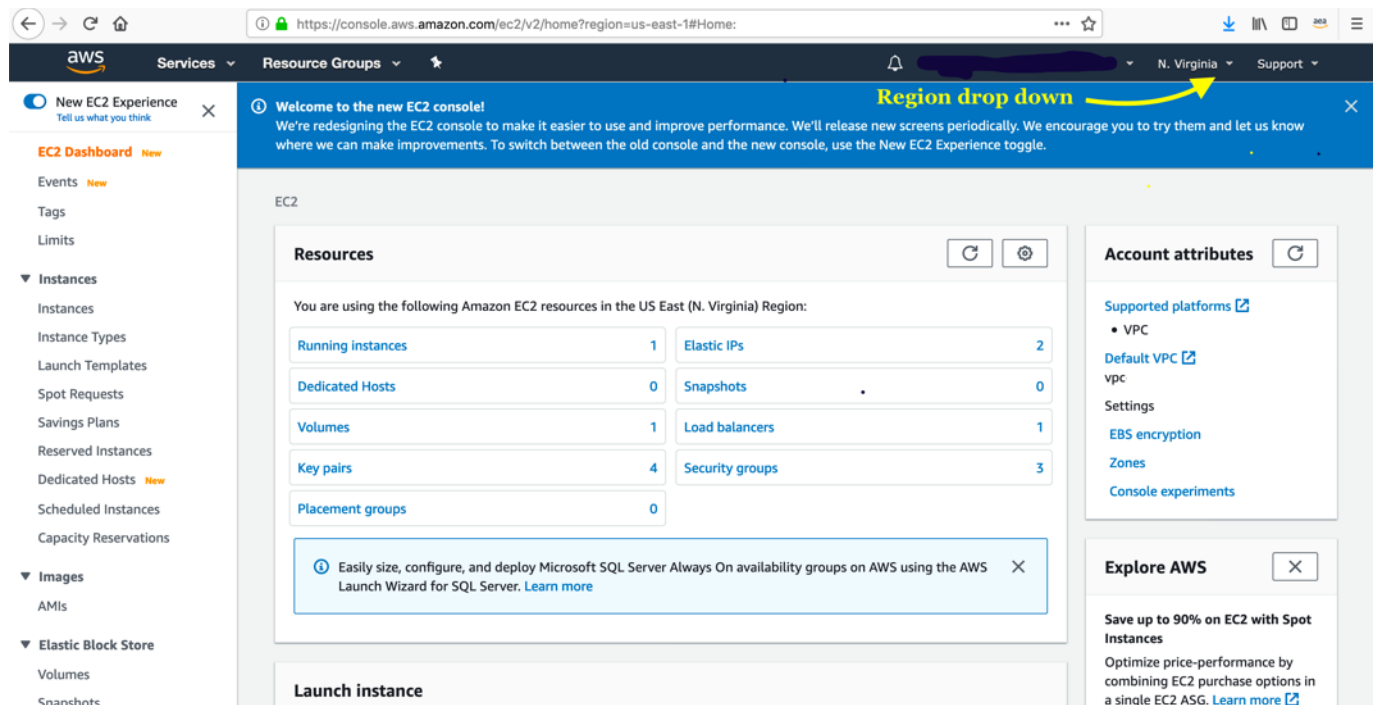
Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides resizable compute capacity in the cloud. Amazon EC2's simple web service interface allows you to obtain and configure capacity with minimal friction. Amazon EC2 reduces the time required to obtain and boot new server instances to minutes, allowing you to quickly scale capacity, both up and down, as your computing requirements change. Amazon EC2 changes the economics of computing by allowing you to pay only for capacity that you actually use.

This lab will walk you through launching, configuring, and customizing a web server on Amazon EC2 using the AWS Management Console.

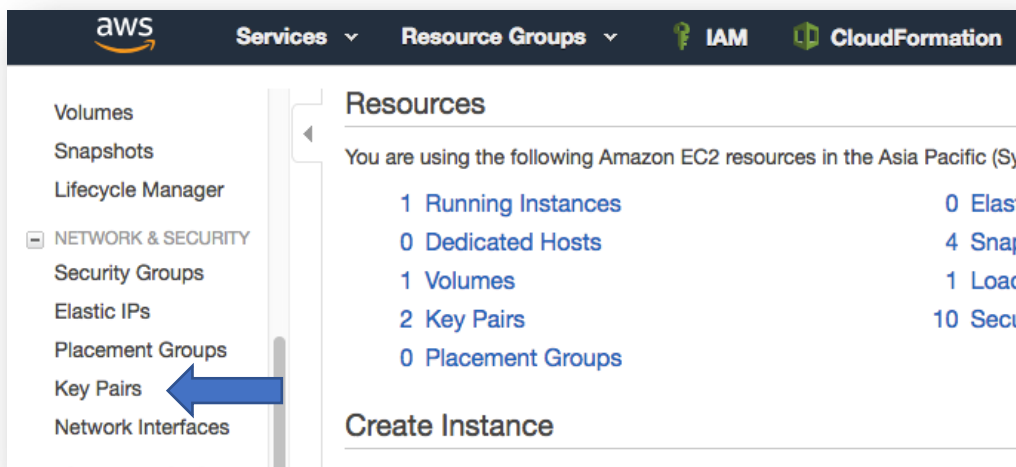
Create a new Key Pair

In this lab, you will create an EC2 instance as your web server. To manage the instance, you need to be able to connect to it via SSH. The following steps outline how to create a unique SSH keypair for this purpose.

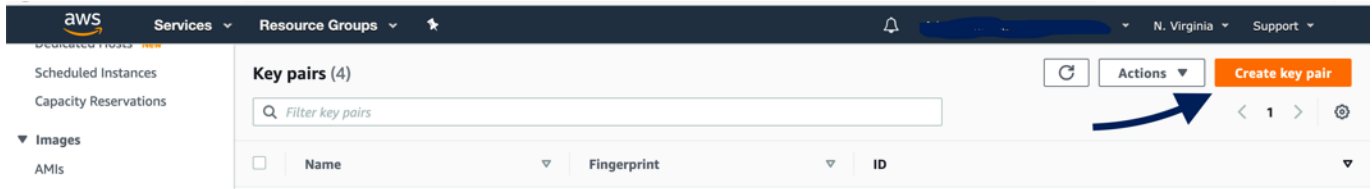
1. Sign into the AWS Management Console and open the Amazon EC2 console at <https://console.aws.amazon.com/ec2>.
2. In the upper-right corner of the AWS Management Console, confirm you are in the desired AWS region (e.g., N. Virginia).



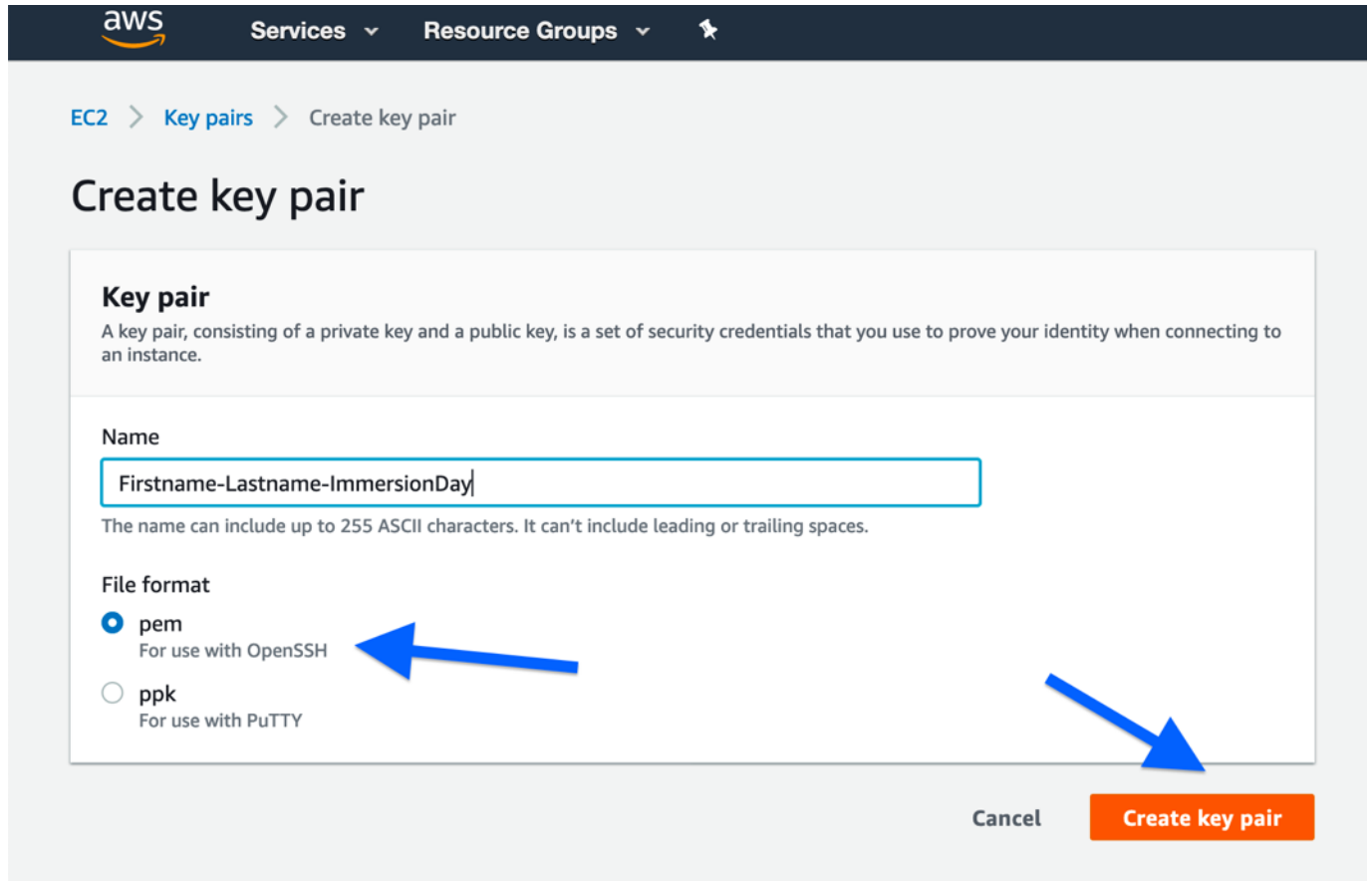
- Click on **Key Pairs** in the NETWORK & SECURITY section near the bottom of the leftmost menu. This will display a page to manage your SSH key pairs.



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



5. In the resulting pop up window, type *[First Name]-[Last Name]-ImmersionDay* into the **Key Pair Name:** text box and click **Create**.



6. The page prompts you to download the file "*[First Name]-[Last Name]-ImmersionDay.pem*" to the local drive. Follow your browser instructions to save the file to the default download location.
7. Remember the full path to this .pem file you just downloaded. This file contains your private key for future SSH connections.

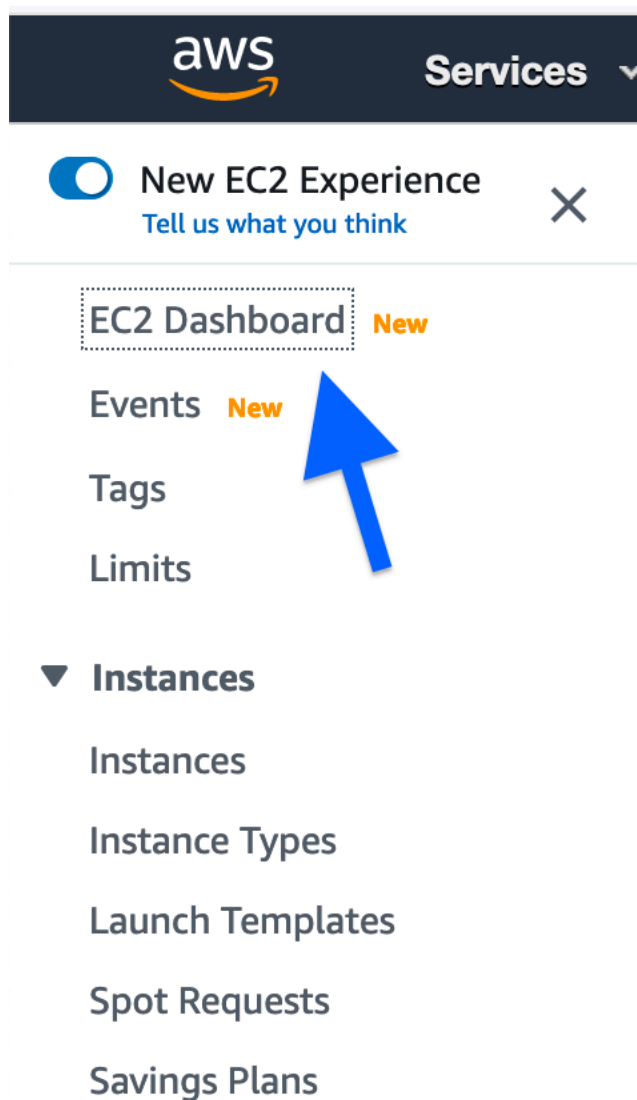


You will use the Key Pair you just created to manage your EC2 instances for the rest of the lab.

Launch a Web Server Instance

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

Click on EC2 Dashboard from the left menu. If you've signed out after creating your key pair, sign into your AWS Management Console and choose EC2 from the Services menu.



8. Click on Launch Instance

The screenshot shows the AWS Management Console 'New EC2 Experience' dashboard. On the left is a navigation sidebar with categories like 'EC2 Dashboard', 'Instances', 'Images', and 'Elastic Block Store'. The main content area features a summary of resources (Dedicated Hosts, Volumes, Key pairs, etc.), a 'Launch instance' section with a blue arrow pointing to the 'Launch instance' button, and a 'Scheduled events' section. The right sidebar contains 'Settings', 'Explore AWS' (with links to Spot Instances and third-party AMIs), and 'Save 10% with AMD EPYC-Powered Instances'.

Launch instance

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

[Launch instance](#)

Note: Your instances will launch in the US East (N. Virginia) Region

9. In the **Quick Start** section, select the first Amazon Linux 2 AMI for 64-bit (x86) architecture and click **Select**. Note that the ami-xxxxxxxx label and specific versions of the installed package may be different than in the image below.

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 1: Choose an Amazon Machine Image (AMI) Cancel and Exit

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

Search for an AMI by entering a search term e.g. "Windows"

Search by Systems Manager parameter

Quick Start

My AMIs

AWS Marketplace

Community AMIs

☐ Free tier only ⓘ

Amazon Linux 2 AMI (HVM), SSD Volume Type - ami-09d95fab7fff3776c (64-bit x86) / ami-02b5d851009884e20 (64-bit Arm) Select

Amazon Linux Free tier eligible

Amazon Linux 2 comes with five years support. It provides Linux kernel 4.14 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras.

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

Amazon Linux AMI 2018.03.0 (HVM), SSD Volume Type - ami-0e9089763828757e1 Select

Amazon Linux Free tier eligible

The Amazon Linux AMI is an EBS-backed, AWS-supported image. The default image includes AWS command line tools, Python, Ruby, Perl, and Java. The repositories include Docker, PHP, MySQL, PostgreSQL, and other packages.

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

Red Hat Enterprise Linux 8 (HVM), SSD Volume Type - ami-098f16afa9edf40be (64-bit x86) / ami-029ba835ddd43c34f (64-bit Arm) Select

Red Hat Free tier eligible

Red Hat Enterprise Linux version 8 (HVM), EBS General Purpose (SSD) Volume Type

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

10. In the Step 2. *Choose an Instance Type*, select the **t2.micro** instance size and click **Next: Configure Instance Details**.

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: All instance types Current generation Show/Hide Columns

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GiB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	General purpose	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.large	2	8	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.xlarge	4	16	EBS only	-	Moderate	Yes
<input type="checkbox"/>	General purpose	t2.xlarge	8	32	EBS only	-	Moderate	Yes
<input type="checkbox"/>	General purpose	t2.xlarge	8	32	EBS only	-	Moderate	Yes

Cancel Previous **Review and Launch** Next: Configure Instance Details

11. On Step 3. **Configure Instance Details** page, you'll add the values based on the lab prework of creating your network for this web server, as shown below. Also, expand the **Advanced Details** section(scroll down since it is located at the bottom of the page), then, copy/paste the script below into the **User Data** field. This shell script will install Apache & PHP, start the web service,

and deploy a simple web page.



'User data' is a method for bootstrapping your instance - Any code placed here will be executed the first time an instance is launched.

Copy/paste highlighted items below

```
#include  
https://s3.amazonaws.com/immersionday-labs/bootstrap.sh
```

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances Launch into Auto Scaling Group

Purchasing option ☐ Request Spot instances

Network Create new VPC

Subnet Create new subnet
251 IP Addresses available

Auto-assign Public IP

Placement group ☐ Add instance to placement group

Capacity Reservation Create new Capacity Reservation

IAM role Create new IAM role

Shutdown behavior

Stop - Hibernate behavior ☐ Enable hibernation as an additional stop behavior

Enable termination protection ☐ Protect against accidental termination

Cancel Previous **Review and Launch** Next: Add Storage

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 3: Configure Instance Details

File systems Create new file system

Network interfaces

Device	Network Interface	Subnet	Primary IP	Secondary IP addresses	IPv6 IPs
eth0	New network interface	subnet-0820c8c	Auto-assign	Add IP	Add IP

Add Device

Advanced Details

Metadata accessible

Metadata version

Metadata token response hop limit

User data ☒ As text ☐ As file ☐ Input is already base64 encoded

```
#include  
https://s3.amazonaws.com/immersionday-labs/bootstrap.sh
```

Cancel Previous **Review and Launch** Next: Add Storage

Click Add Storage.

12. On this page you have the ability to modify or add storage and disk drives to the instance. For this lab, we will simply accept the storage defaults and click **Next: Add Tags**.

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.

Volume Type ⓘ	Device ⓘ	Snapshot ⓘ	Size (GiB) ⓘ	Volume Type ⓘ	IOPS ⓘ	Throughput (MB/s) ⓘ	Delete on Termination ⓘ	Encryption ⓘ
Root	/dev/xvda	snap-074e8f0568ee430f1	8	General Purpose SSD (gp2) ⚙	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted ▼

Add New Volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

Cancel Previous **Review and Launch** Next: Add Tags

13. Here, you can choose a “friendly name” for your instance by clicking ‘Add Tag’, and entering “Name” for the Key part and “[Your Name] Web Server” for the Value part. This Name key, more correctly known as a **tag**, will appear in the console once the instance launches. It makes it easy to keep track of running machines in a complex environment. Click **Next: Configure Security Group**.

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.

A copy of a tag can be applied to volumes, instances or both.

Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key (128 characters maximum)	Value (256 characters maximum)	Instances ⓘ	Volumes ⓘ
------------------------------	--------------------------------	-------------	-----------

This resource currently has no tags

Choose the Add tag button or [click to add a Name tag](#).
Make sure your [IAM policy](#) includes permissions to create tags.

Add Tag (Up to 50 tags maximum)

Cancel Previous **Review and Launch** Next: Configure Security Group

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. A copy of a tag can be applied to volumes, instances or both. Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key (128 characters maximum)	Value (256 characters maximum)	Instances ⓘ	Volumes ⓘ
Name	<input type="text" value="EnterUniqueNameHere"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

(Up to 50 tags maximum)

14. Select an existing security group and choose the one you created in the lab prework. Verify rules are as shown below and click Review and Launch.

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: ☐ Create a new security group
☒ Select an existing security group

Security Group ID	Name	Description	Actions
<input type="checkbox"/> sg-011654bdbecf09bad	default	default VPC security group	Copy to new
<input checked="" type="checkbox"/> sg-0f161df82eda7183e	ImmersionDaySG	ImmersionDaySG	Copy to new

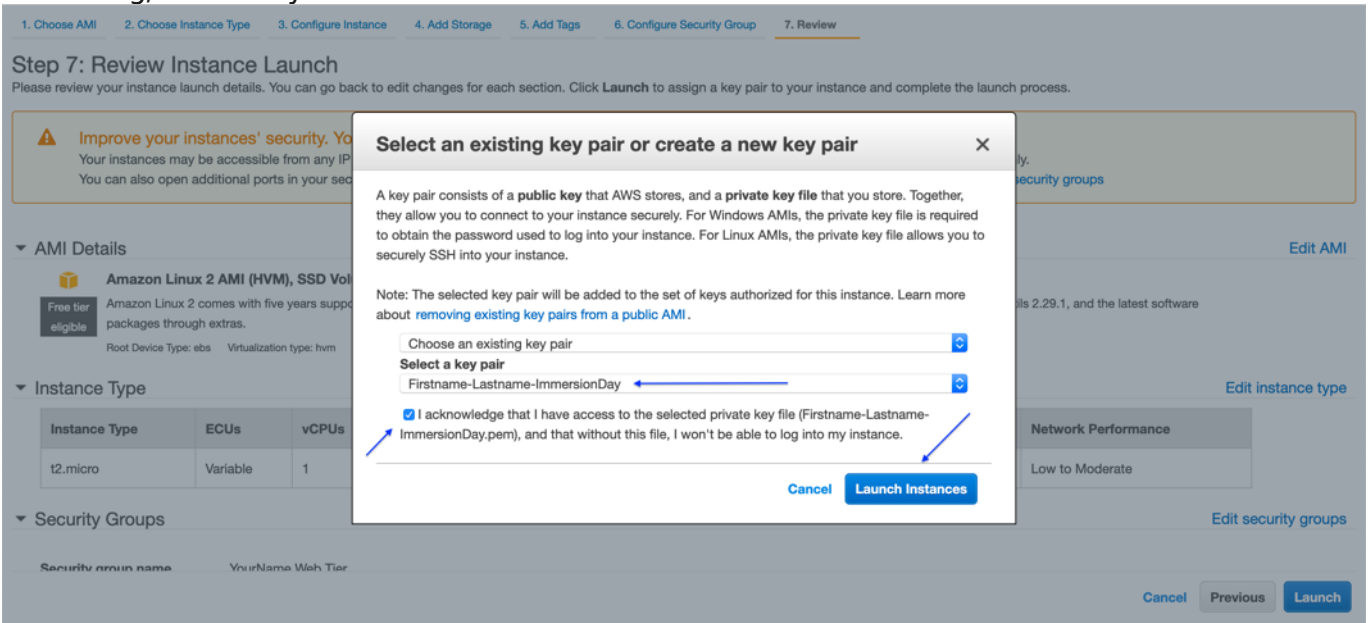
Warning
Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Inbound rules for sg-0f161df82eda7183e (Selected security groups: sg-0f161df82eda7183e)



Type ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ	Description ⓘ
HTTP	TCP	80	0.0.0.0/0	
HTTP	TCP	80	:::0	
SSH	TCP	22	0.0.0.0/0	



15. Click the **Review and Launch** button after configuring the security group.
16. Review your configuration and choices, and then click **Launch**.

17. Select the key pair that you created in the beginning of this lab from the drop-down and check the "I acknowledge" checkbox. Then click the **Launch Instances** button. Your instance will now be starting, which may take a moment.



18. Click the **Instances** button in the left 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.

 **Services** 

 **New EC2 Experience**
[Tell us what you think](#) 

EC2 Dashboard **New**

Events **New**

Tags

Limits

▼ **Instances**

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts **New**

Scheduled Instances

Capacity Reservations



▼ **Images**

AMIs

▼ **Elastic Block Store**

Volumes

Snapshots

 **Feedback**  **English (US)**

19. Click the checkbox next to your web server to view details about this EC2 instance.

The screenshot shows the AWS Management Console interface. On the left, the navigation menu includes sections like INSTANCES, IMAGES, ELASTIC BLOCK STORE, NETWORK & SECURITY, and AUTO SCALING. The main content area displays a table of EC2 instances. The first instance, 'John Doe Web Server', is selected, and its details are shown below the table. The details include the instance ID, state, type, and DNS information.

Name	aws:autoscaling:groupName	Instance ID	Instance Type	Avail
<input checked="" type="checkbox"/>	John Doe Web Server	i-664070ae	t2.micro	us-w

Instance: **i-664070ae (John Doe Web Server)** Public DNS: **ec2-54-183-155-199.us-west-1.compute.amazonaws.com**

Description	Status Checks	Monitoring	Tags
Instance ID	i-664070ae	Public DNS	ec2-54-183-155-199.us-west-1.compute.amazonaws.com
Instance state	running	Public IP	54.183.155.199
Instance type	t2.micro	Elastic IP	-
Private DNS	ip-172-31-16-33.us-west-1.compute.internal	Availability zone	us-west-1c

Browse the Web Server

1. Wait for the instance to pass the Status Checks to finish loading.


<input type="checkbox"/>	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks
<input type="checkbox"/>	John Doe Web Server	i-664070ae	t2.micro	us-west-1c	● running	Initializing

Finished initializing

<input type="checkbox"/>	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks
<input type="checkbox"/>	John Doe Web Server	i-664070ae	t2.micro	us-west-1c	● running	✓ 2/2 checks passed

Open a new browser tab and browse the Web Server by entering the EC2 instance's Public DNS name into the browser. The EC2 instance's Public DNS name can be found in the console by reviewing the "Public DNS" name line highlighted above.

You should see a website that looks like the following:



LOAD TEST
RDS

Meta-Data	Value
InstanceId	i-664070ae
Availability Zone	us-west-1c

Current CPU Load: 0%



If you don't see the web page (and you've waited a sufficient time for the instance to boot), try rebooting the instance via the console. Can you find it??

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