

Launching an EC2 instance

A snapshot demo with example of sMAP R shiny application.



- Login into AWS Management Console dashboard using your AWS account credentials. @<https://aws.amazon.com/>
- Click on EC2.

The screenshot shows the AWS Management Console interface. At the top, there's a search bar and navigation options. The main content area is divided into several sections:

- AWS services:** A list of services with 'EC2' highlighted by a red box and a red arrow pointing to it. Other services shown include VPC and IAM.
- Build a solution:** A section with three cards: 'Launch a virtual machine' (With EC2, 2-3 minutes), 'Build a web app' (With Elastic Beanstalk, 6 minutes), and 'Build using virtual servers' (With Lightsail, 1-2 minutes).
- Explore AWS:** A section with three cards: 'Save money with Amazon Location Maps', 'Calling All Java and Python Developers', and 'Amazon Lookout for Metrics'.

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→ Click on Launch Instances.

The screenshot shows the AWS Management Console interface for the EC2 Instances page. The top navigation bar includes the AWS logo, 'Services', a search bar, and account information. The left sidebar contains navigation options like 'New EC2 Experience', 'EC2 Dashboard', 'Events', 'Tags', 'Limits', 'Instances', 'Images', and 'Elastic Block Store'. The main content area displays a table of instances with columns for Name, Type, Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, Public IPv4 DNS, and Public IP. A red box highlights the 'Launch Instances' button in the top right corner, with a red arrow pointing to it.

Name	Type	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IP
			Running	t2.micro	2/2 checks passed	No alarms	us-east-2a		3.133.11
			Running	t2.micro	2/2 checks passed	No alarms	us-east-2b		52.14.20
			Running	t2.micro	2/2 checks passed	No alarms	us-east-2c		13.59.38
			Running	t3.medium	2/2 checks passed	No alarms	us-east-2c		3.142.22
			Running	t3.medium	2/2 checks passed	No alarms	us-east-2c		3.131.15

→ Select desired AMI or select Ubuntu Server 20.04 LTS if you are familiar with user-friendly Linux environment.

The screenshot shows the 'Step 1: Choose an Amazon Machine Image (AMI)' screen in the AWS Management Console. The screen displays a list of AMIs with their details and a 'Select' button for each. The 'Ubuntu Server 20.04 LTS (HVM), SSD Volume Type' AMI is highlighted with a red box and a red arrow pointing to its 'Select' button.

AMI Name	AMI ID	Architecture	Operating System	Root Device Type	Virtualization Type	ENA Enabled	Select
SUSE Linux Enterprise Server 15 SP2 (HVM), SSD Volume Type	ami-0f052119b3c7e61d1	64-bit (x86) / 64-bit (Arm)	SUSE Linux Enterprise Server 15 Service Pack 2 (HVM), EBS General Purpose (SSD) Volume Type. Amazon EC2 AMI Tools preinstalled, Apache 2.2, MySQL 5.5, PHP 5.3, and Ruby 1.8.7 available.	ebs	hvm	Yes	Select
Ubuntu Server 20.04 LTS (HVM), SSD Volume Type	ami-0629230e074c580f2	64-bit (x86) / 64-bit (Arm)	Ubuntu Server 20.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (http://www.ubuntu.com/cloud/services).	ebs	hvm	Yes	Select
Microsoft Windows Server 2019 Base	ami-019a4607ba39bfde6	64-bit (x86)	Microsoft Windows 2019 Datacenter edition, [English]	ebs	hvm	Yes	Select
Microsoft Windows Server 2019 Base with Containers	ami-096b151a05b7e8b5c	64-bit (x86)	Microsoft Windows 2019 Datacenter edition with Containers, [English]	ebs	hvm	Yes	Select
Microsoft Windows Server 2019 with SQL Server 2017 Standard	ami-003d2322ecd858e68	64-bit (x86)	Microsoft Windows 2019 Datacenter edition, Microsoft SQL Server 2017 Standard, [English]	ebs	hvm	Yes	Select

- Choose an Instance Type. Usually start with a t2.micro by default for testing.
- Here we selected t3.medium for sMAP as Microarray analysis requires more memory and processing power.
- Click Next to configure Instance Details.

The screenshot shows the AWS console interface for Step 2: Choose an Instance Type. A table lists various instance types with columns for Instance Type, Instance Size, vCPUs, Memory (GiB), Storage, EBS only, Private IP, Network I/O capacity, and Tenancy. The 't3.medium' instance is selected and highlighted in blue. A red box highlights the 't3.medium' row, and a red arrow points to the 'Next: Configure Instance Details' button at the bottom right of the table.

Instance Type	Instance Size	vCPUs	Memory (GiB)	Storage	EBS only	Private IP	Network I/O capacity	Tenancy
t2	t2.micro	1	1	8	EBS only	-	Low to Moderate	Yes
t2	t2.medium	2	4	8	EBS only	-	Low to Moderate	Yes
t2	t2.large	2	8	17	EBS only	-	Low to Moderate	Yes
t2	t2.xlarge	4	16	34	EBS only	-	Moderate	Yes
t2	t2.2xlarge	8	32	68	EBS only	-	Moderate	Yes
t3	t3.nano	2	0.5	2	EBS only	Yes	Up to 5 Gigabit	Yes
t3	t3.micro	2	1	2	EBS only	Yes	Up to 5 Gigabit	Yes
t3	t3.small	2	2	2	EBS only	Yes	Up to 5 Gigabit	Yes
t3	t3.medium	2	4	8	EBS only	Yes	Up to 5 Gigabit	Yes
t3	t3.large	2	8	17	EBS only	Yes	Up to 5 Gigabit	Yes
t3	t3.xlarge	4	16	34	EBS only	Yes	Up to 5 Gigabit	Yes
t3	t3.2xlarge	8	32	68	EBS only	Yes	Up to 5 Gigabit	Yes
t3a	t3a.nano	2	0.5	2	EBS only	Yes	Up to 5 Gigabit	Yes
t3a	t3a.micro	2	1	2	EBS only	Yes	Up to 5 Gigabit	Yes

- Configuration of Instance details are kept default here. User can change if require and when know exactly what each parameter does.
- Click Next to Add storage to your EC2 instance.

The screenshot shows the AWS console interface for Step 3: Configure Instance Details. The page contains various configuration options for the instance, such as Number of instances, Purchasing option, Network, Subnet, Auto-assign Public IP, Placement group, Capacity Reservation, Domain join directory, IAM role, CPU options, Shutdown behavior, Stop - Hibernate behavior, and Enable termination protection. The 'Next: Add Storage' button is highlighted with a red box, and a red arrow points to it.

- Enter Amount of memory require for your instance. Here we go with 30GB for sMAP which is a little more than sufficient to install all libraries, server and memory required for storing mircoarray analysis data.
- Click Next to add tags to your EC2 Instance.

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/sda1	snap-0125d51161175828	30	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

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.

Shared file systems

You currently don't have any file systems on this instance. Select "Add file system" button below to add a file system.

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

- Adding Tags is an important step especially when using a shared login account and multiple EC2 instances are already launched. Add tags like following or define your own custom tags.
- Click Next to configure security group of your EC2 Instance.

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	Value	Instances	Volumes	Network Interfaces
Developer	John Doe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Type	Shiny Server	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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

- Create a new security group, enter security group name and description.
- Add custom TCP rule for port 3838 and select "Anywhere" in the source. [Shiny application launches default at port 3838]
- Similarly add another custom TCP rule for port 80.

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 **1**

Select an existing security group

Security group name: **2**

Description: **2**

Type	Protocol	Port Range	Source	Description
SSH	TCP	22	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop
Custom TCP 3	TCP	3838 4	Anywhere 5	e.g. SSH for Admin Desktop
Custom TCP 3	TCP	80 4	Anywhere 5	e.g. SSH for Admin Desktop

Add Rule

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.

Cancel Previous **Review and Launch**

- Review the configurations of your EC2 instance and edit by going back.
- Once reviewed click on launch.

Step 7: Review Instance Launch

Please review your instance launch details. You can go back to edit changes for each section. Click **Launch** to assign a key pair to your instance and complete the launch process.

Warning
Improve your instances' security. Your security group, sMAP security group, is open to the world. Your instances may be accessible from any IP address. We recommend that you update your security group rules to allow access from known IP addresses only. You can also open additional ports in your security group to facilitate access to the application or service you're running, e.g., HTTP (80) for web servers. [Edit security groups](#)

AMI Details [Edit AMI](#)

Ubuntu Server 20.04 LTS (HVM), SSD Volume Type - ami-0629230e074c580f2
Free tier eligible
Root Device Type: ebs Virtualization type: hvm

Instance Type [Edit instance type](#)

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t3.medium	-	2	4	EBS only	Yes	Up to 5 Gigabit

Security Groups [Edit security groups](#)

Security group name: sMAP security group
Description: Custom Port settings for running and testing sMAP

Cancel Previous **Launch**

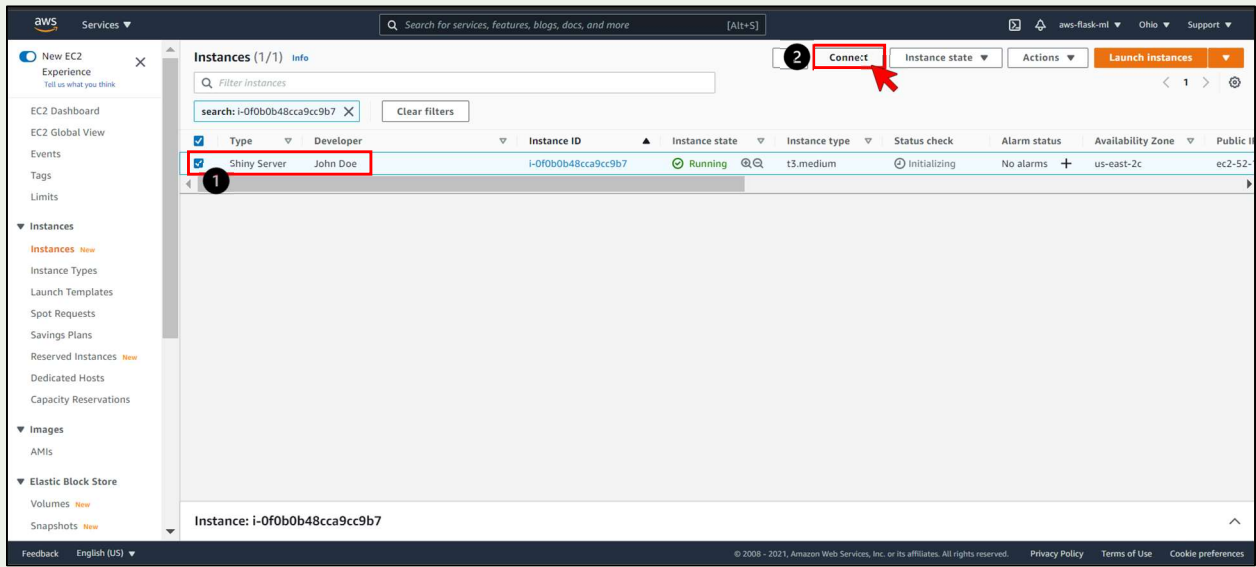
- Create a new key pair if you are launching instance first time. Enter a name for your key pair.
- Click on Download Key Pair. Save this file in the directory you'll be working in your local computer.
- Click Launch Instances.

The screenshot displays the AWS Management Console interface during the 'Step 7: Review Instance Launch' process. A modal dialog box is open, titled 'Select an existing key pair or create a new key pair'. The dialog provides instructions on key pairs and offers options to either create a new key pair or select an existing one. The 'Key pair type' is set to RSA, and the 'Key pair name' is 'sMAP_EC2_key'. A red box highlights the 'Key pair name' field with a '1' and the 'Download Key Pair' button with a '2'. A red arrow points to the 'Launch Instances' button at the bottom of the dialog. The background shows the instance configuration steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, 7. Review.

- Your instance should be running now. To check visit the link by clicking on instance ID as shown below.

The screenshot shows the 'Launch Status' page in the AWS Management Console. A green notification banner states 'Your instances are now launching' and provides a link to view the launch log for instance ID 'i-0f0d0b48ccaf9cc9b7', which is highlighted with a red box and a red arrow. Below the notification, there is a section for 'How to connect to your instances' and a 'View Instances' button at the bottom right.

- Check the box and confirm the tags. You can show/hide tags using the settings icon below launch instances.
- Click on connect to connect to your EC2 instance.



- As shown below, there are four ways to connect to your instance.
- We'll be using SSH client to connect.
- Click on icon highlighted below to copy the command and use it in the Linux environment of your local computer.

