

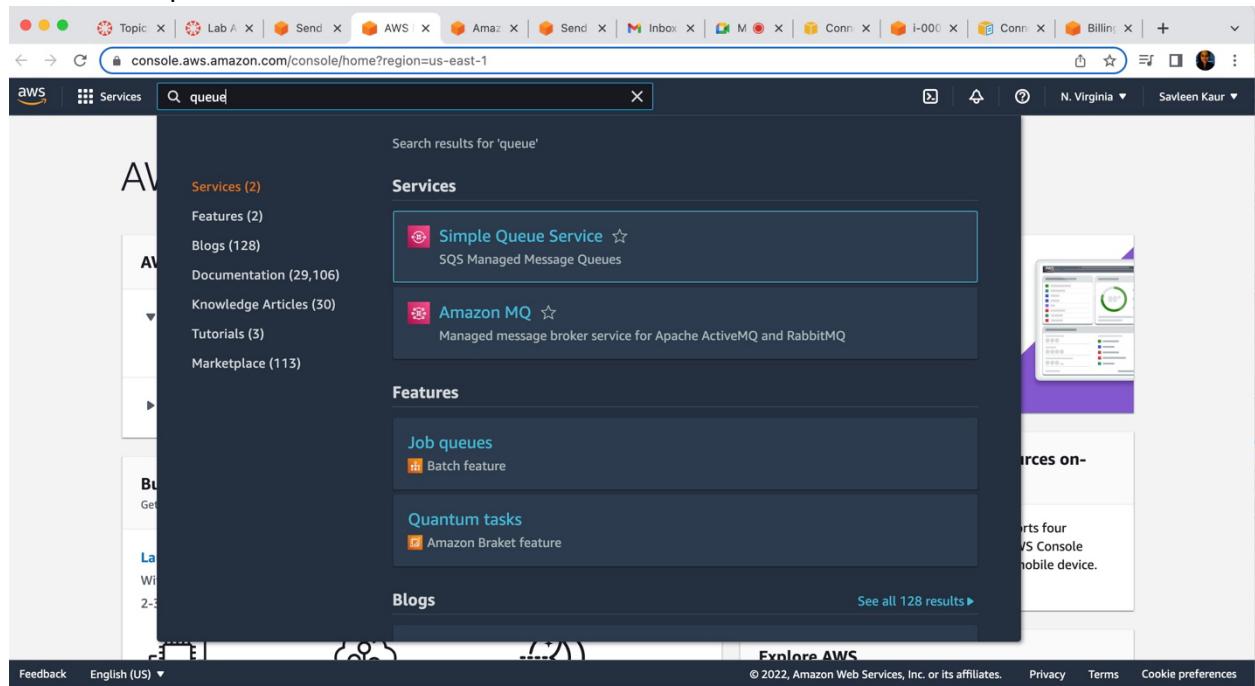
CS 524 Lab Assignment 1

Part 1:

Before proceeding with part 1, please review the link: <https://aws.amazon.com/getting-started/hands-on/send-messages-distributed-applications/> In the first part, you are going to learn about Amazon Simple Queue Service (SQS), which is an asynchronous messaging service that allows application components to communicate in the cloud.

You will be creating, using free tier, a standard SQS queue named <Your_Name>. Make sure to name the queue as your first name. Once the queue is created, you will be sending a simple message to the queue. The message body can have any one “fun” fact about you. Once you have successfully created and sent the message, you will view your message by polling the messages in the queue (in this case, it’s just one message). After you view the message, you will be deleting that message. [Screenshots of all of the above steps should be attached in your output!]. After deleting the message, make sure you delete the queue that you had created.

1. Open the Amazon Management console at <https://console.aws.amazon.com/console/home?region=us-east-1#>. Search for “queue” in Services



2. Click on Create Queue

The screenshot shows the Amazon SQS homepage. On the left, there's a large diagram titled "How it works" illustrating the flow from Producers to Consumers through an SQS Queue. The "Get started" section on the right provides a brief overview and a "Create queue" button. The bottom of the page features a "Pricing (US)" section and a "Cost calculator" link.

3. Enter the first name as queue name.

The screenshot shows the "Create queue" form. Under the "Details" section, the "Type" dropdown is set to "Standard". A note states "At-least-once delivery, message ordering isn't preserved" with options for "At-least once delivery" and "Best-effort ordering". The "Name" field is filled with "Savleen". A note below says "A queue name is case-sensitive and can have up to 80 characters. You can use alphanumeric characters, hyphens (-), and underscores (_)."/>

4. Click on Create Queue.

The screenshot shows the 'Create Queue' wizard on the AWS SQS console. It includes sections for optional configurations:

- Redrive allow policy - Optional**: Identify which source queues can use this queue as the dead-letter queue.
- Encryption - Optional**: Amazon SQS provides in-transit encryption by default. To add at-rest encryption to your queue, enable server-side encryption.
- Dead-letter queue - Optional**: Send undeliverable messages to a dead-letter queue.
- Tags - Optional**: A tag is a label assigned to an AWS resource. Use tags to search and filter your resources or track your AWS costs.

At the bottom right are 'Cancel' and 'Create queue' buttons.

5. Queue has been created. Click on Send and receive messages.

The screenshot shows the 'Savleen' queue details page on the AWS SQS console. A green success message states: "Queue Savleen created successfully. You can now send and receive messages." Below it, the queue configuration includes:

| Name | Type | ARN |
|---------|----------|--|
| Savleen | Standard | arn:aws:sqs:us-east-1:479614272148:Savleen |

Other settings shown include:

- Encryption: Disabled
- URL: https://sq.us-east-1.amazonaws.com/479614272148/Savleen
- Dead-letter queue: None

At the bottom, tabs for SNS subscriptions, Lambda triggers, Dead-letter queue, Monitoring, Tagging, Access policy, Encryption, and Dead-letter queue redrive tasks are visible.

6. Give in some details

The screenshot shows the AWS SQS 'Send message' interface. In the 'Message body' field, the text 'Hey there, I am Savleen, pretty sure you wont get my name correct at the first go! :P' is entered. The 'Delivery delay' field is set to 0 seconds. Below the message body, a note says 'Should be between 0 seconds and 15 minutes.' There is also a link for 'Message attributes - Optional'. At the bottom right are buttons for 'Edit poll settings', 'Stop polling', and 'Poll for messages'.

7. Message has been sent.

The screenshot shows the AWS SQS 'Send message' interface after a message has been sent. A green success message box displays the text 'Your message has been sent and is ready to be received.' Below this, the message body 'Hey there, I am Savleen, pretty sure you wont get my name correct at the first go! :P' is shown again. The 'Delivery delay' field is set to 0 seconds. A note below it says 'Should be between 0 seconds and 15 minutes.' There is also a link for 'Message attributes - Optional'. At the bottom right are buttons for 'Edit poll settings', 'Stop polling', and 'Poll for messages'.

Screenshot of the AWS Lambda console showing the 'Send message' step. A modal window displays the message details:

| Message: 547fad1e-39f5-4712-bac0-233c1618a169 | | | |
|---|----------------------------------|---------------------------|--|
| ID | MD5 of message body | MD5 of message attributes | |
| 547fad1e-39f5-4712-bac0-233c1618a169 | 071426d2b14a00cd03fff60a0ed2fae9 | - | |

Below the modal, the 'Receive messages' section shows 1 message available, a polling duration of 30 seconds, and a maximum message count of 10. Polling progress is at 0%.

Screenshot of the AWS Lambda console showing the 'Receive messages' step. The delivery delay is set to 0 seconds. The 'Messages (1)' table lists the sent message:

| ID | Sent | Size | Receive count |
|--------------------------------------|-------------------------|----------|---------------|
| 547fad1e-39f5-4712-bac0-233c1618a169 | 2/24/2022, 00:38:12 EST | 86 bytes | 1 |

The screenshot shows the AWS Lambda function configuration page. The 'Handler' field is highlighted with a red box, containing the value 'lambda_function.lambda_handler'. Other fields visible include 'Memory size', 'Timeout', 'Environment variables', and 'Role'.

The screenshot shows the AWS SQS queue details page for the 'Savleen' queue. The queue name is displayed at the top. Below it, there are tabs for 'Edit', 'Delete', 'Purge', 'Send and receive messages', and 'Start DLQ redrive'. The 'Details' tab is selected, showing the following information:

| Name | Type | ARN |
|---------|----------|--|
| Savleen | Standard | arn:aws:sqs:us-east-1:479614272148:Savleen |

Under the 'Encryption' section, it shows 'Disabled'. The 'URL' is listed as <https://sqs.us-east-1.amazonaws.com/479614272148/Savleen>. There is also a note about a 'Dead-letter queue'.

At the bottom, there are tabs for 'SNS subscriptions', 'Lambda triggers', 'Dead-letter queue', 'Monitoring', 'Tagging', 'Access policy', 'Encryption', and 'Dead-letter queue redrive tasks'. A 'Subscription region' dropdown is set to 'us-east-1'. The footer includes links for 'Privacy', 'Terms', and 'Cookie preferences'.

9. Select the message and delete it.

The screenshot shows the AWS SQS console interface. At the top, there is a search bar and navigation links for services and regions. Below the header, there are configuration options for delivery delay and message attributes. The main area displays a table for receiving messages, showing one message available. The message details are as follows:

| Messages available | Polling duration | Maximum message count | Polling progress |
|--------------------|------------------|-----------------------|--------------------------|
| 1 | 30 | 10 | 57% 1 receives/second |

Messages (1)

| ID | Sent | Size | Receive count |
|--------------------------------------|-------------------------|----------|---------------|
| 547fad1e-39f5-4712-bac0-233c1618a169 | 2/24/2022, 00:38:12 EST | 86 bytes | 3 |

At the bottom, there are feedback links and a footer with copyright information and links to privacy, terms, and cookie preferences.

The screenshot shows the AWS SQS console with a confirmation dialog box titled "Delete Messages". The dialog asks if the user is sure they want to delete the message, stating it cannot be undone. The message ID listed is 547fad1e-39f5-4712-bac0-233c1618a169 (86 bytes). There are "Cancel" and "Delete" buttons at the bottom of the dialog. The background shows the same message list as the previous screenshot, with the message still present in the table.

Should be between 0 seconds and 15 minutes.

▶ Message attributes - *Optional* [Info](#)

Receive messages [Info](#)

1 message deleted successfully.

| Messages available | Polling duration | Maximum message count | Polling progress |
|--------------------|------------------|-----------------------|-------------------|
| 0 | 30 | 10 | 1 receives/second |

Messages (0)

| ID | Sent | Size | Receive count |
|--|------|------|---------------|
| No messages. To view messages in the queue, poll for messages. | | | |

[View details](#) [Delete](#)

[Poll for messages](#)

Delivery delay [Info](#)

0 Seconds

Should be between 0 seconds and 15 minutes.

▶ Message attributes - *Optional* [Info](#)

Receive messages [Info](#)

| Messages available | Polling duration | Maximum message count | Polling progress |
|--------------------|------------------|-----------------------|-------------------|
| 0 | 30 | 10 | 0 receives/second |

Messages (0)

| ID | Sent | Size | Receive count |
|--|------|------|---------------|
| No messages. To view messages in the queue, poll for messages. | | | |

[View details](#) [Delete](#)

[Poll for messages](#)

10. Delete the queue.

The screenshot shows the AWS SQS console interface. In the center, a modal dialog titled "Delete queue" is open, asking if the user wants to delete the "Savleen" queue permanently. It states that the action is irreversible and lists "0 messages" in the queue. A text input field contains the word "delete". At the bottom of the dialog are "Cancel" and "Delete" buttons. The background shows the queue details page for "Savleen", including tabs for "Details" and "Info", and sections for "Name" (Savleen), "Encryption" (Disabled), and "More". Below the queue details are tabs for "SNS subscriptions", "Lambda triggers", "Dead-letter queue", "Monitoring", "Tagging", "Access policy", "Encryption", and "Dead-letter queue redrive tasks".

The screenshot shows the AWS SQS console after the queue has been deleted. A green success message at the top of the screen reads "Queue Savleen has been deleted successfully." The main content area shows a table titled "Queues (0)" with columns for Name, Type, Created, Messages available, Messages in flight, Encryption, and Content-based deduplication. The table displays the message "No queues" and "No queues available." A "Create queue" button is visible at the bottom of the table.

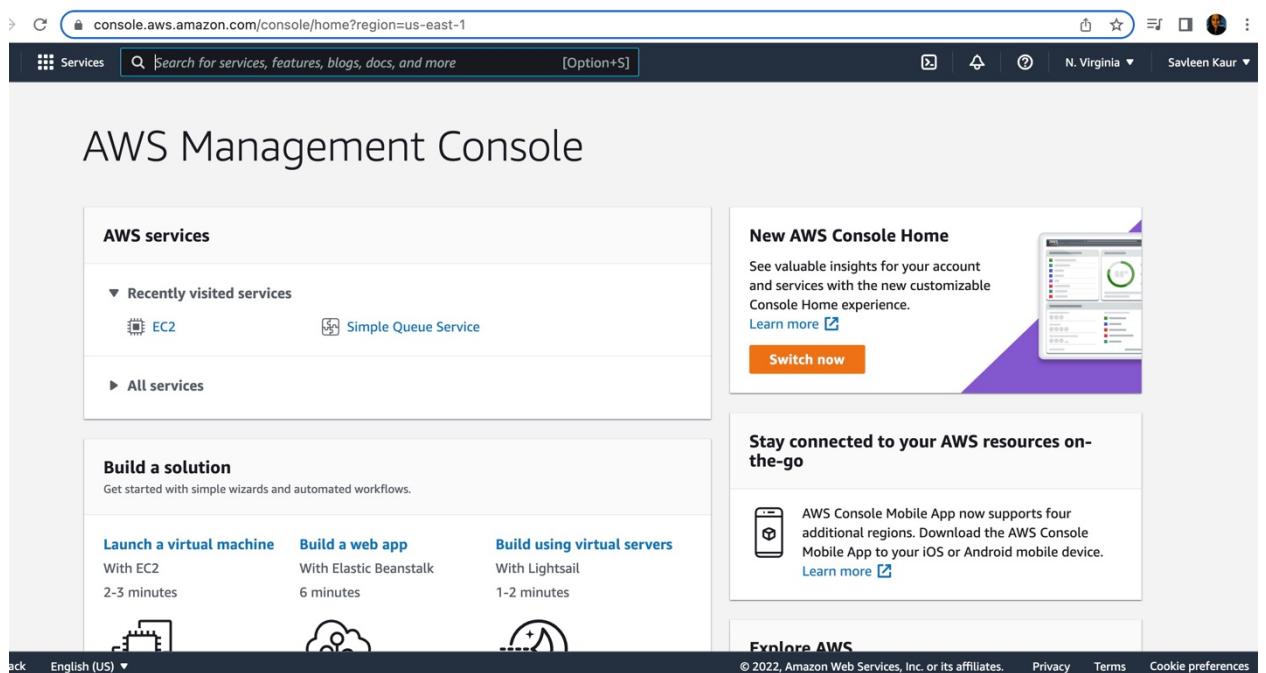
Reference: <https://aws.amazon.com/getting-started/hands-on/send-messages-distributed-applications/>

Part 2:

This section involves setting up a free Amazon EC2 instance (i.e., a virtual machine) and understanding some of its key networking properties. Although this is seemingly simple and straight-forward, there is much to read and learn here, so make sure you start working at once. The next lab assignment will build on what you will have achieved in this one.

The first part of the assignment is understanding the respective SLA, which Homework #2 had prepared you for. The second part is purely technical (and it will involve an independent learning as a follow-up to Lecture 4): After having created an EC2 instance, you will execute several systems commands, which will give you information on the networking set-up. In order to understand the results, you will need to learn the output resulted from invoking the commands.

1. Click on EC2



The screenshot shows the AWS Management Console homepage. At the top, there is a navigation bar with a search bar containing "Search for services, features, blogs, docs, and more". Below the search bar, there are links for "Services", "N. Virginia", and "Savleen Kaur". The main content area has a title "AWS Management Console". On the left, there is a sidebar titled "AWS services" with a "Recently visited services" section showing "EC2" and "Simple Queue Service". Below that is a "All services" link. In the center, there is a "Build a solution" section with three options: "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). To the right, there are two promotional boxes: "New AWS Console Home" encouraging users to switch to the new customizable experience, and "Stay connected to your AWS resources on-the-go" about the AWS Console Mobile App supporting four additional regions. At the bottom, there are links for "Explore AWS", "Privacy", "Terms", and "Cookie preferences".

2. Click on Launch Instances

The screenshot shows the AWS EC2 Instances page. The left sidebar has a collapsed state. The main area displays a table with columns: Name, Instance ID, Instance state, Instance type, Status check, Alarm status, and Availability Zone. A message at the top of the table says, "You do not have any instances in this region". Below the table, a modal window titled "Select an instance" is open. At the bottom of the screen, there is a footer bar with links for "Sign In", "English (US)", "© 2022, Amazon Web Services, Inc. or its affiliates.", "Privacy", "Terms", and "Cookie preferences".

3. Select Ubuntu 20.04

The screenshot shows the "Choose an Amazon Machine Image (AMI)" step of the AWS New Launch Instance Wizard. The top navigation bar includes a "Try it now!" button. The main content area shows three AMI options:

- SUSE Linux Enterprise Server 15 Service Pack 3 (HVM), EBS General Purpose (SSD) Volume Type.** Description: "Amazon EC2 AMI Tools preinstalled; Apache 2.2, MySQL 5.5, PHP 5.3, and Ruby 1.8.7 available." Root device type: ebs, Virtualization type: hvm, ENA Enabled: Yes. Buttons: "Select" (radio button selected for 64-bit x86), "Cancel and Exit", "64-bit (x86)", "64-bit (Arm)".
- Ubuntu Server 20.04 LTS (HVM), SSD Volume Type** - ami-04505e74c0741db8d (64-bit x86) / ami-0b49a4a6e8e22fa16 (64-bit Arm). Description: "Ubuntu Server 20.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).". Root device type: ebs, Virtualization type: hvm, ENA Enabled: Yes. Buttons: "Select" (radio button selected for 64-bit x86), "Cancel and Exit", "64-bit (x86)", "64-bit (Arm)".
- Ubuntu Server 18.04 LTS (HVM), SSD Volume Type** - ami-0e472ba40eb589f49 (64-bit x86) / ami-0a940cb939351cccc (64-bit Arm). Description: "Ubuntu Server 18.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).". Root device type: ebs, Virtualization type: hvm, ENA Enabled: Yes. Buttons: "Select" (radio button selected for 64-bit x86), "Cancel and Exit", "64-bit (x86)", "64-bit (Arm)".

4. Click on Review and Launch

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 families ▾ Current generation ▾ Show/Hide Columns

Currently selected: t2.micro (- ECUs, 1 vCPUs, 2.5 GHz, ~ 1 GiB memory, EBS only)

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

Cancel Previous Review and Launch Next: Configure Instance Details

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5. 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.

AMI Details Edit AMI

Ubuntu Server 20.04 LTS (HVM), SSD Volume Type - ami-04505e74c0741db8d

Free tier eligible Ubuntu Server 20.04 LTS (HVM),EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).
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 |
|---------------|------|-------|--------------|-----------------------|-------------------------|---------------------|
| t2.micro | - | 1 | 1 | EBS only | - | Low to Moderate |

Security Groups Edit security groups

Cancel Previous Launch

Screenshot of the AWS CloudFormation Step 7: Review Instance Launch page. The instance type is set to t2.micro. A modal window titled "Select an existing key pair or create a new key pair" is open, showing the creation of a new RSA key pair named "savleen3". A note in the modal states: "You have to download the private key file (*.pem file) before you can continue. Store it in a secure and accessible location. You will not be able to download the file again after it's created." Below the modal, there are tabs for Network Performance (Low to Moderate), Edit security groups, Description, Edit instance details, Edit storage, and Edit tags. At the bottom right of the modal are "Cancel", "Previous", and "Launch" buttons.

6. Create a new key pair and enter key pair name and click on Download Key Pair.

7. Then Launch instance

Screenshot of the AWS CloudFormation Step 7: Review Instance Launch page. The instance type is set to t2.micro. A modal window titled "Select an existing key pair or create a new key pair" is open, showing the creation of a new RSA key pair named "savleen3". A note in the modal states: "You have to download the private key file (*.pem file) before you can continue. Store it in a secure and accessible location. You will not be able to download the file again after it's created." Below the modal, there are tabs for Network Performance (Low to Moderate), Edit security groups, Description, Edit instance details, Edit storage, and Edit tags. At the bottom right of the modal are "Cancel", "Previous", and "Launch Instances" buttons. The status bar at the bottom shows three files: "savleen3.pem", "SavleenEc2.pem", and "Savleen.pem".

Savleen Kaur ▾

Launch Status

Your instances are now launching

The following instance launches have been initiated: i-099431a8db07f08f4 [View launch log](#)

Get notified of estimated charges

Create billing alerts to get an email notification when estimated charges on your AWS bill exceed an amount you define (for example, if you exceed the free usage tier).

How to connect to your instances

Your instances are launching, and it may take a few minutes until they are in the **running** state, when they will be ready for you to use. Usage hours on your new instances will start immediately and continue to accrue until you stop or terminate your instances.

Click [View Instances](#) to monitor your instances' status. Once your instances are in the **running** state, you can **connect** to them from the Instances screen. [Find out](#) how to connect to your instances.

Here are some helpful resources to get you started

- How to connect to your Linux instance
- Learn about AWS Free Usage Tier
- Amazon EC2: User Guide
- Amazon EC2: Discussion Forum

While your instances are launching you can also

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8. Click on View Instance

Savleen Kaur ▾

Launch Status

Your instances are now launching

The following instance launches have been initiated: i-099431a8db07f08f4 [View launch log](#)

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How to connect to your instances

Your instances are launching, and it may take a few minutes until they are in the **running** state, when they will be ready for you to use. Usage hours on your new instances will start immediately and continue to accrue until you stop or terminate your instances.

Click [View Instances](#) to monitor your instances' status. Once your instances are in the **running** state, you can **connect** to them from the Instances screen. [Find out](#) how to connect to your instances.

Here are some helpful resources to get you started

- How to connect to your Linux instance
- Learn about AWS Free Usage Tier
- Amazon EC2: User Guide
- Amazon EC2: Discussion Forum

While your instances are launching you can also

- Create status check alarms to be notified when these instances fail status checks. (Additional charges may apply)
- Create and attach additional EBS volumes (Additional charges may apply)
- Manage security groups

[View Instances](#)

The screenshot shows the AWS EC2 Instances page. On the left, there's a navigation sidebar with sections like EC2 Dashboard, EC2 Global View, Events, Tags, Limits, Instances (selected), Images, AMIs, and Elastic Block Store. The main area displays a table of instances with one row visible:

| Name | Instance ID | Instance state | Instance type | Status check | Alarm status | Availability Zone | Public IPv4 DN |
|------|---------------------|----------------|---------------|--------------|--------------|-------------------|----------------|
| - | i-099431a8db07f08f4 | Running | t2.micro | Initializing | No alarms | us-east-1b | ec2-54-86-19-1 |

9. Once instance is running, click on the instance and connect.

The screenshot shows the 'Connect to instance' dialog box for the instance i-099431a8db07f08f4. The dialog has tabs for EC2 Instance Connect, Session Manager, SSH client, and EC2 Serial Console. The EC2 Instance Connect tab is selected. It shows the Instance ID (i-099431a8db07f08f4) and Public IP address (54.86.19.111). The User name field contains 'ubuntu'. A note at the bottom states: 'Note: In most cases, the guessed user name is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.' At the bottom right are 'Cancel' and 'Connect' buttons.

```
← → ⌂ console.aws.amazon.com/ec2/v2/connect/ubuntu/i-099431a8db07f08f4
Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 5.11.0-1022-aws x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

 System information as of Fri Feb 25 06:26:22 UTC 2022

 System load: 0.39      Processes:          101
 Usage of /: 18.2% of 7.69GB   Users logged in: 0
 Memory usage: 20%           IPv4 address for eth0: 172.31.94.59
 Swap usage: 0%

1 update can be applied immediately.
To see these additional updates run: apt list --upgradable

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

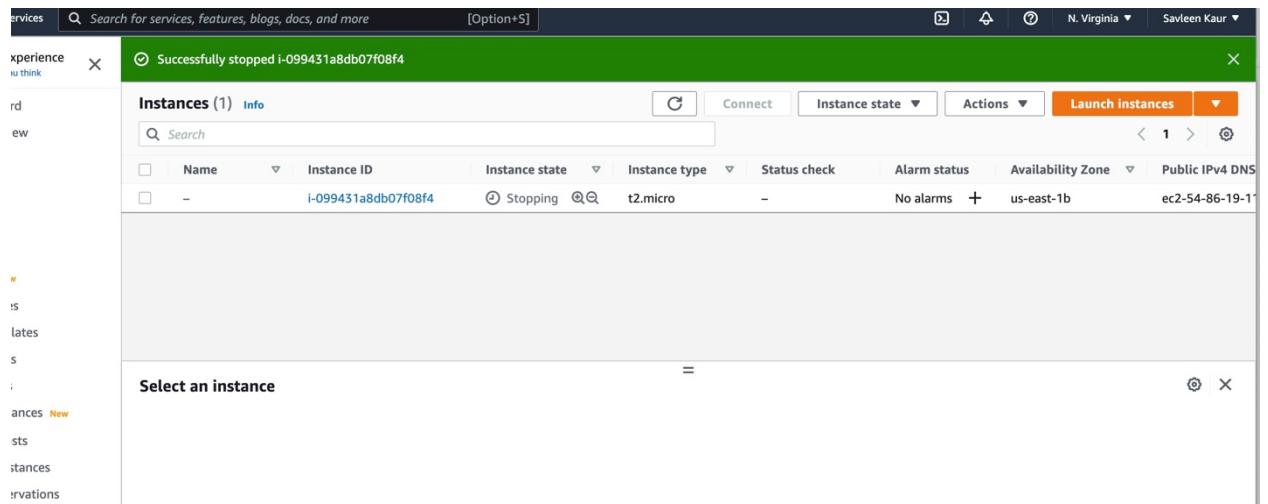
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-94-59:~$
```

10. Once instance is running, Stop the instance.



The screenshot shows the AWS CloudWatch Metrics interface. A modal window is open in the center, displaying the message: "Successfully stopped i-099431a8db07f08f4". Below this, a table titled "Instances (1) Info" lists one instance: Name - i-099431a8db07f08f4, Instance state - Stopping, Instance type - t2.micro, Status check - -, Alarm status - No alarms, Availability Zone - us-east-1b, Public IPv4 DNS - ec2-54-86-19-1. To the left of the main content, there is a sidebar with various navigation links like Services, Experience, and Metrics.

You've been invited to try an early, beta iteration of the new launch instance wizard. We will continue to improve the experience over the next few months. We're asking customers for their feedback on this early release. To exit the new launch instance wizard at any time, choose the **Cancel** button.

Step 1: Choose an Amazon Machine Image (AMI)

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

Quick Start

- My AMIs
- AWS Marketplace
- Community AMIs
- Free tier only ⓘ

| AMI Name | Description | Root device type | Virtualization type | ENI Enabled | Select |
|---|---|------------------|---------------------|-------------|---|
| Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type - ami-033b95fb8079dc481 (64-bit x86) / ami-0f7691f59fd7c47af (64-bit Arm) | Amazon Linux 2 comes with five years support. It provides Linux kernel 5.10 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. This AMI is the successor of the Amazon Linux AMI that is now under maintenance only mode and has been removed from this wizard. | ebs | hvm | Yes | <input checked="" type="radio"/> 64-bit (x86) <input type="radio"/> 64-bit (Arm) |
| Amazon Linux 2 AMI (HVM) - Kernel 4.14, SSD Volume Type - ami-038b3df3312ddf25d (64-bit x86) / ami-0a200d3f40a2f6ca0 (64-bit Arm) | 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. This AMI is the successor of the Amazon Linux AMI that is now under maintenance only mode and has been removed from this wizard. | ebs | hvm | Yes | <input checked="" type="radio"/> 64-bit (x86) <input type="radio"/> 64-bit (Arm) |
| macOS Monterey 12.2.1 - ami-03f795d99e0a6256e | The macOS Monterey AMI is an EBS-backed, AWS-supported image. This AMI includes the AWS Command Line Interface, Command Line Tools for Xcode, Amazon SSM Agent, and Homebrew. The AWS Homebrew Tap includes the latest versions of multiple AWS packages included in the AMI. | | | | <input type="radio"/> 64-bit (Mac) |

11. Create a new AMI Linux 2 64 bit

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.

| Family | Type | vCPUs | Memory (GiB) | Instance Storage (GB) | EBS-Optimized Available | Network Performance | IPv6 Support |
|--|------------|-------|--------------|-----------------------|-------------------------|---------------------|--------------|
| t2 | t2.nano | 1 | 0.5 | EBS only | - | Low to Moderate | Yes |
| <input checked="" type="checkbox"/> t2 | t2.micro | 1 | 1 | EBS only | - | Low to Moderate | Yes |
| t2 | t2.small | 1 | 2 | EBS only | - | Low to Moderate | Yes |
| t2 | t2.medium | 2 | 4 | EBS only | - | Low to Moderate | Yes |
| t2 | t2.large | 2 | 8 | EBS only | - | Low to Moderate | Yes |
| t2 | t2.xlarge | 4 | 16 | EBS only | - | Moderate | Yes |
| t2 | t2.2xlarge | 8 | 32 | EBS only | - | Moderate | Yes |
| t3 | t3.nano | 2 | 0.5 | EBS only | Yes | Up to 5 Gigabit | Yes |
| t3 | t3.micro | 2 | 1 | EBS only | Yes | Up to 5 Gigabit | Yes |
| t3 | t3.small | 2 | 2 | EBS only | Yes | Up to 5 Gigabit | Yes |

Next: Configure Instance Details

Screenshot of the AWS Step 7: Review Instance Launch page. The instance is set to launch with an Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type. It is using a t2.micro instance type with 1 vCPU and 1 GiB of memory. The instance is in the Free tier eligible category. A security group named 'launch-wizard-4' is assigned, allowing SSH access on port 22. The network performance is set to Low to Moderate. The review step is selected, and the 'Launch' button is visible at the bottom right.

12. Launch the instance and create a new Key Pair and download it.

Screenshot of the AWS Step 7: Review Instance Launch page. The instance is set to launch with an Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type. It is using a t2.micro instance type with 1 vCPU and 1 GiB of memory. The instance is in the Free tier eligible category. A security group named 'launch-wizard-4' is assigned, allowing SSH access on port 22. A modal dialog box titled 'Select an existing key pair or create a new key pair' is open, showing options to create a new RSA key pair named 'savleenLinux'. A note in the dialog states: 'You have to download the private key file (*.pem file) before you can continue. Store it in a secure and accessible location. You will not be able to download the file again after it's created.' The 'Launch Instances' button is visible at the bottom right of the dialog.

console.aws.amazon.com/ec2/v2/home?region=us-east-1#LaunchInstanceWizard:

Step 7: Review Instance Launch

AMI Details

Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type - ami-033b95fb8079dc481

Free tier eligible

Amazon Linux 2 comes with five years support. It provides Linux kernel 5.10 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. This AMI is the successor of the Amazon Linux 1 AMI.

Root Device Type: ebs Virtualization type: hvm

Instance Type

| Instance Type | ECUs | vCPUs | Memory (GiB) |
|---------------|------|-------|--------------|
| t2.micro | - | 1 | 1.7 |

Security Groups

Security group name: launch-wizard-4
Description: launch-wizard-4 created 2022-07-11T10:44:20Z

| Type | Protocol |
|------|----------|
| SSH | TCP |

Instance Details

Select an existing key pair or create a new key pair

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance. Amazon EC2 supports ED25519 and RSA key pair types.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Create a new key pair

RSA ED25519

Key pair name: savleenLinux

Download Key Pair

You have to download the **private key file** (.pem file) before you can continue. **Store it in a secure and accessible location**. You will not be able to download the file again after it's created.

Cancel Launch Instances

13. Once downloaded, click on View Instance.

Launch Status

Your instances are now launching

The following instance launches have been initiated: i-04a5c8cf24ec3e50a [View launch log](#)

Get notified of estimated charges

Create billing alerts to get an email notification when estimated charges on your AWS bill exceed an amount you define (for example, if you exceed the free usage tier).

How to connect to your instances

Your instances are launching, and it may take a few minutes until they are in the **running** state, when they will be ready for you to use. Usage hours on your new instances will start immediately and continue to accrue until you stop or terminate your instances.

Click [View Instances](#) to monitor your instances' status. Once your instances are in the **running** state, you can [connect](#) to them from the Instances screen. [Find out](#) how to connect to your instances.

Here are some helpful resources to get you started

- How to connect to your Linux instance
- Learn about AWS Free Usage Tier
- Amazon EC2: User Guide
- Amazon EC2: Discussion Forum

While your instances are launching you can also

- Create status check alarms to be notified when these instances fail status checks. (Additional charges may apply)
- Create and attach additional EBS volumes (Additional charges may apply)
- Manage security groups

[View Instances](#)

Savleen Kaur

Instances (1/2) Info

| Name | Instance ID | Instance state | Instance type | Status check | Alarm status | Availability Zone |
|-------------------------------------|---------------------|----------------|---------------|--------------|--------------|-------------------|
| - | i-099431a8db07f08f4 | Stopped | t2.micro | - | No alarms + | us-east-1b |
| <input checked="" type="checkbox"/> | i-04a5c8df24ec3e50a | Running | t2.micro | - | No alarms + | us-east-1b |

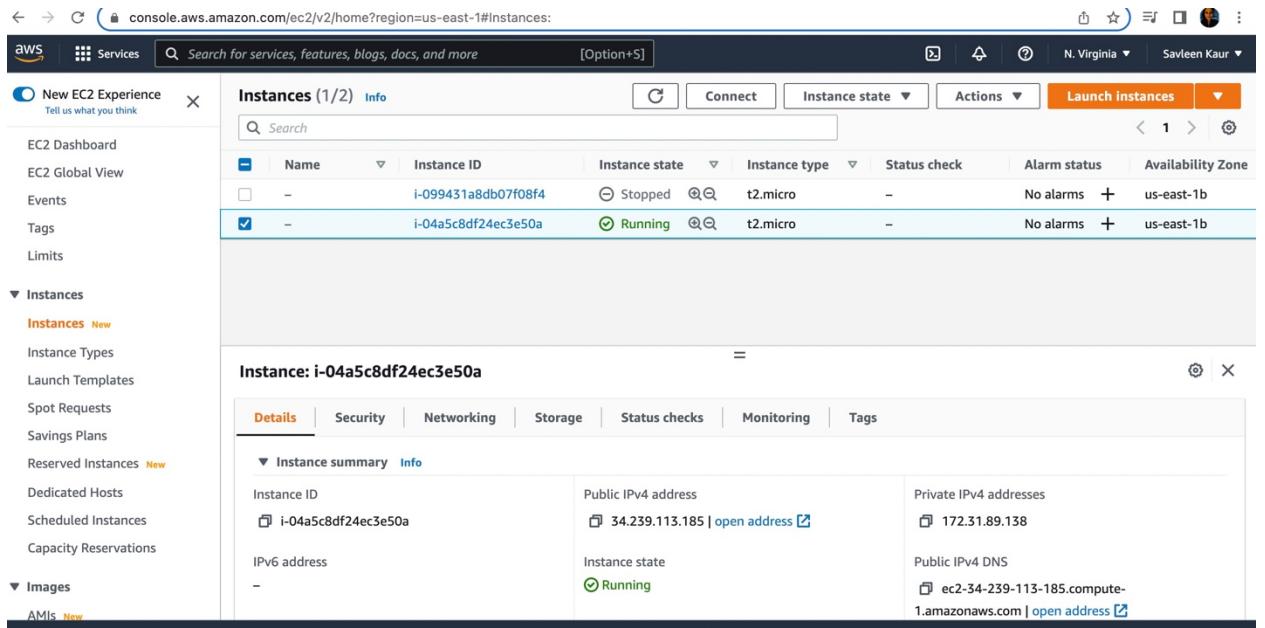
Instance: i-04a5c8df24ec3e50a

Details Security Networking Storage Status checks Monitoring Tags

Instance summary Info

| | | |
|------------------------------------|--|--|
| Instance ID i-04a5c8df24ec3e50a | Public IPv4 address 34.239.113.185 open address | Private IPv4 addresses 172.31.89.138 |
| IPv6 address - | Instance state Running | Public IPv4 DNS ec2-34-239-113-185.compute-1.amazonaws.com open address |

AMIs New



14. Connect to the instance

Connect to instance Info

Connect to your instance i-04a5c8df24ec3e50a using any of these options

EC2 Instance Connect Session Manager SSH client EC2 Serial Console

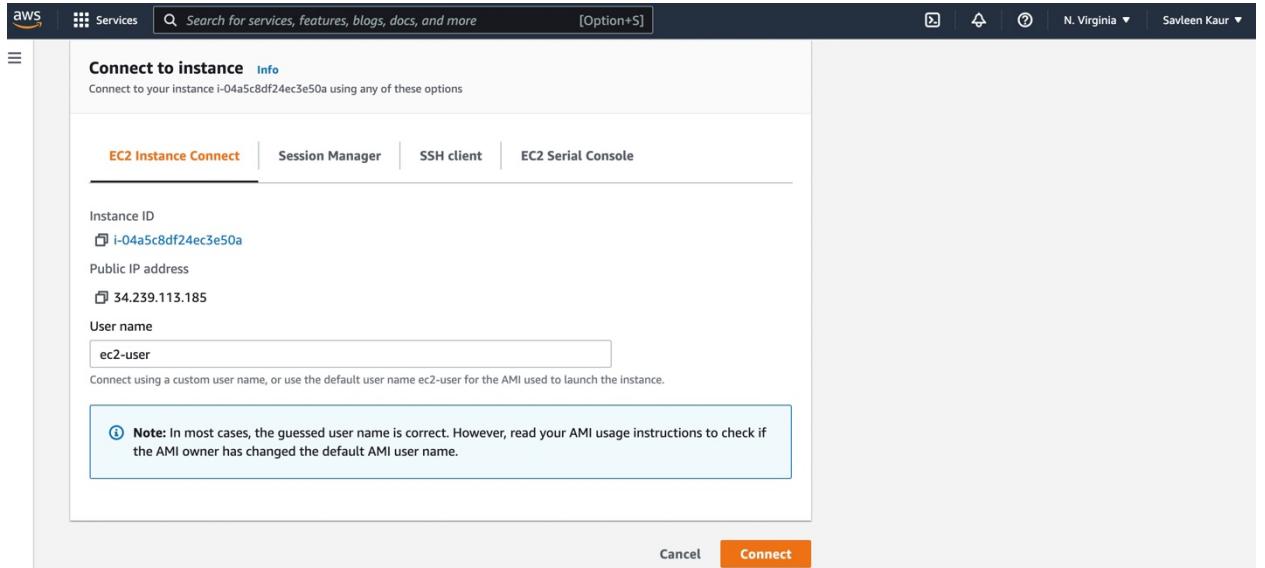
Instance ID
i-04a5c8df24ec3e50a

Public IP address
34.239.113.185

User name
ec2-user

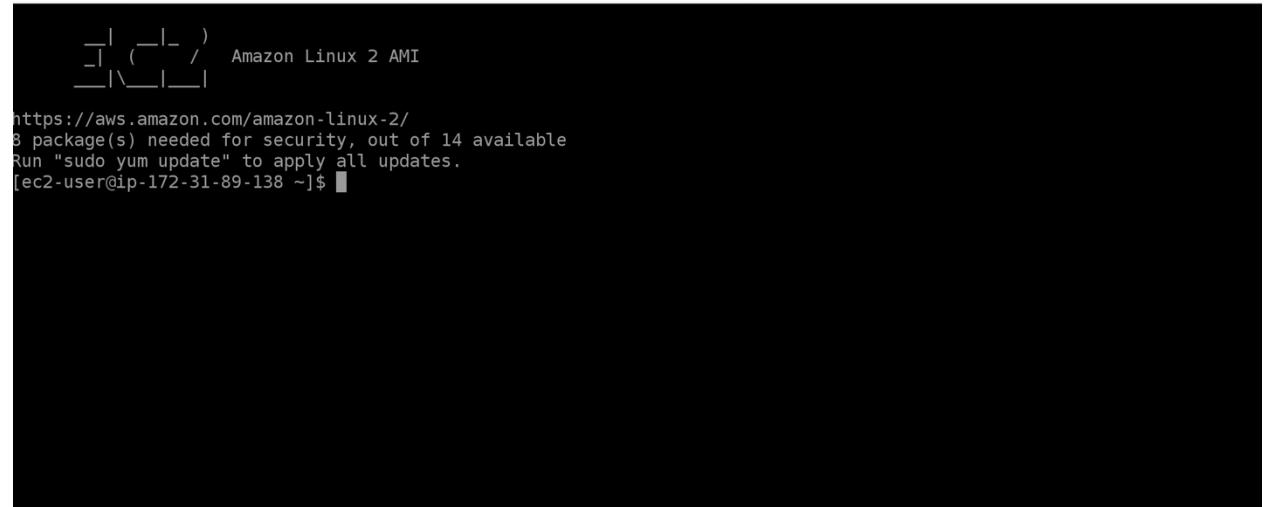
Note: In most cases, the guessed user name is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.

Cancel Connect



15. Instance is running

← → ⌂ console.aws.amazon.com/ec2/v2/connect/ec2-user/i-04a5c8df24ec3e50a



16. `uname -a`: Prints the name, version and other details like processor, node name, hardware platform about the current machine and the operating system running on it.

← → ⌂ console.aws.amazon.com/ec2/v2/connect/ec2-user/i-04a5c8df24ec3e50a

| Verifying | File | Status |
|-----------|---|--------|
| Verifying | : openssh-server-7.4pl-21.amzn2.0.3.x86_64 | 18/28 |
| Verifying | : tzdata-2021a-1.amzn2.noarch | 19/28 |
| Verifying | : cloud-init-19.3-44.amzn2.noarch | 20/28 |
| Verifying | : 2:vim-data-8.2.4006-1.amzn2.0.1.noarch | 21/28 |
| Verifying | : 2:vim-filesystem-8.2.4006-1.amzn2.0.1.noarch | 22/28 |
| Verifying | : ec2-utils-1.2-45.amzn2.noarch | 23/28 |
| Verifying | : openssh-clients-7.4pl-21.amzn2.0.3.x86_64 | 24/28 |
| Verifying | : 2:vim-common-8.2.4006-1.amzn2.0.1.x86_64 | 25/28 |
| Verifying | : aws-cfn-bootstrap-2.0-9.amzn2.noarch | 26/28 |
| Verifying | : ca-certificates-2021.2.50-72.amzn2.0.2.noarch | 27/28 |
| Verifying | : 2:vim-minimal-8.2.4006-1.amzn2.0.1.x86_64 | 28/28 |

Updated:
aws-cfn-bootstrap.noarch 0:2.0-10.amzn2 ca-certificates.noarch 0:2021.2.50-72.amzn2.0.3 cloud-init.noarch 0:19.3-45.amzn2
ec2-net-utils.noarch 0:1.6-1.amzn2 ec2-utils.noarch 0:1.2-47.amzn2 openssh.x86_64 0:7.4pl-22.amzn2.0.1
openssh-clients.x86_64 0:7.4pl-22.amzn2.0.1 openssh-server.x86_64 0:7.4pl-22.amzn2.0.1 tzdata.noarch 0:2021e-1.amzn2
vim-common.x86_64 2:8.2.4314-1.amzn2.0.1 vim-data.noarch 2:8.2.4314-1.amzn2.0.1 vim-enhanced.x86_64 2:8.2.4314-1.amzn2.0.1
vim-filesystem.noarch 2:8.2.4314-1.amzn2.0.1 vim-minimal.x86_64 2:8.2.4314-1.amzn2.0.1

Complete!
[ec2-user@ip-172-31-89-138 ~]\$ uname
Linux
[ec2-user@ip-172-31-89-138 ~]\$ -
-bash: -: command not found
[ec2-user@ip-172-31-89-138 ~]\$ a
-bash: a: command not found
[ec2-user@ip-172-31-89-138 ~]\$ uname -a
Linux ip-172-31-89-138.ec2.internal 5.10.96-90.460.amzn2.x86_64 #1 SMP Fri Feb 4 17:12:04 UTC 2022 x86_64 x86_64 x86_64 GNU/Linux

17. man uname -a

```
NAME
    uname - print system information

SYNOPSIS
    uname [OPTION]...

DESCRIPTION
    Print certain system information. With no OPTION, same as -s.

-a, --all
    print all information, in the following order, except omit -p and -i if unknown:

-s, --kernel-name
    print the kernel name

-n, --nodename
    print the network node hostname

-r, --kernel-release
    print the kernel release

-v, --kernel-version
    print the kernel version

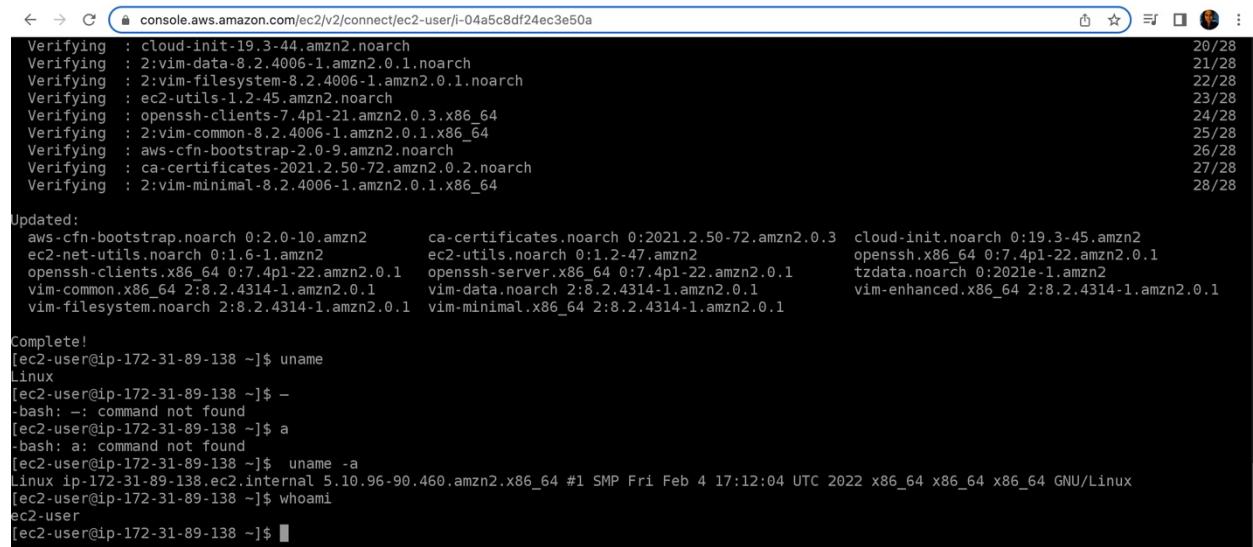
-m, --machine
    print the machine hardware name

-p, --processor
    print the processor type or "unknown"

Manual page uname(1) line 1 (press h for help or q to quit)...skipping...
UNAME(1)                                         User Commands

NAME
```

18. whoami: prints the username with the effective userid



The screenshot shows a terminal window with the URL `console.aws.amazon.com/ec2/v2/connect/ec2-user/i-04a5c8df24ec3e50a` in the address bar. The terminal output is as follows:

```
Verifying : cloud-init-19.3-44.amzn2.noarch          20/28
Verifying : 2:vim-data-8.2.4006-1.amzn2.0.1.noarch  21/28
Verifying : 2:vim-filesystem-8.2.4006-1.amzn2.0.1.noarch 22/28
Verifying : ec2-utils-1.2-45.amzn2.noarch           23/28
Verifying : openssh-clients-7.4pl-21.amzn2.0.3.x86_64 24/28
Verifying : 2:vim-common-8.2.4006-1.amzn2.0.1.x86_64 25/28
Verifying : aws-cfn-bootstrap-2.0-9.amzn2.noarch     26/28
Verifying : ca-certificates-2021.2.50-72.amzn2.0.2.noarch 27/28
Verifying : 2:vim-minimal-8.2.4006-1.amzn2.0.1.x86_64 28/28

Updated:
aws-cfn-bootstrap.noarch 0:2.0-10.amzn2      ca-certificates.noarch 0:2021.2.50-72.amzn2.0.3  cloud-init.noarch 0:19.3-45.amzn2
ec2-net-utils.noarch 0:1.6-1.amzn2            ec2-utils.noarch 0:1.2-47.amzn2                  openssh.x86_64 0:7.4pl-22.amzn2.0.1
openssh-clients.x86_64 0:7.4pl-22.amzn2.0.1  openssh-server.x86_64 0:7.4pl-22.amzn2.0.1   tzdata.noarch 0:2021e-1.amzn2
vim-common.x86_64 2:8.2.4314-1.amzn2.0.1    vim-data.noarch 2:8.2.4314-1.amzn2.0.1       vim-enhanced.x86_64 2:8.2.4314-1.amzn2.0.1

Complete!
[ec2-user@ip-172-31-89-138 ~]$ uname
Linux
[ec2-user@ip-172-31-89-138 ~]$ -
[bash: -: command not found
[ec2-user@ip-172-31-89-138 ~]$ a
[bash: a: command not found
[ec2-user@ip-172-31-89-138 ~]$ uname -a
Linux ip-172-31-89-138.ec2.internal 5.10.96-90.460.amzn2.x86_64 #1 SMP Fri Feb 4 17:12:04 UTC 2022 x86_64 x86_64 x86_64 GNU/Linux
[ec2-user@ip-172-31-89-138 ~]$ whoami
ec2-user
[ec2-user@ip-172-31-89-138 ~]$
```

19. man whoami

```
No manual entry for -a
[ec2-user@ip-172-31-89-138 ~]$ man whoami
WHOAMI(1)                               User Commands                               WHOAMI(1)

NAME
    whoami - print effective userid

SYNOPSIS
    whoami [OPTION]...

DESCRIPTION
    Print the user name associated with the current effective user ID. Same as id -un.

    --help display this help and exit
    --version
        output version information and exit

    GNU coreutils online help: <http://www.gnu.org/software/coreutils/> Report whoami translation bugs to <http://translationproject.org/team/>

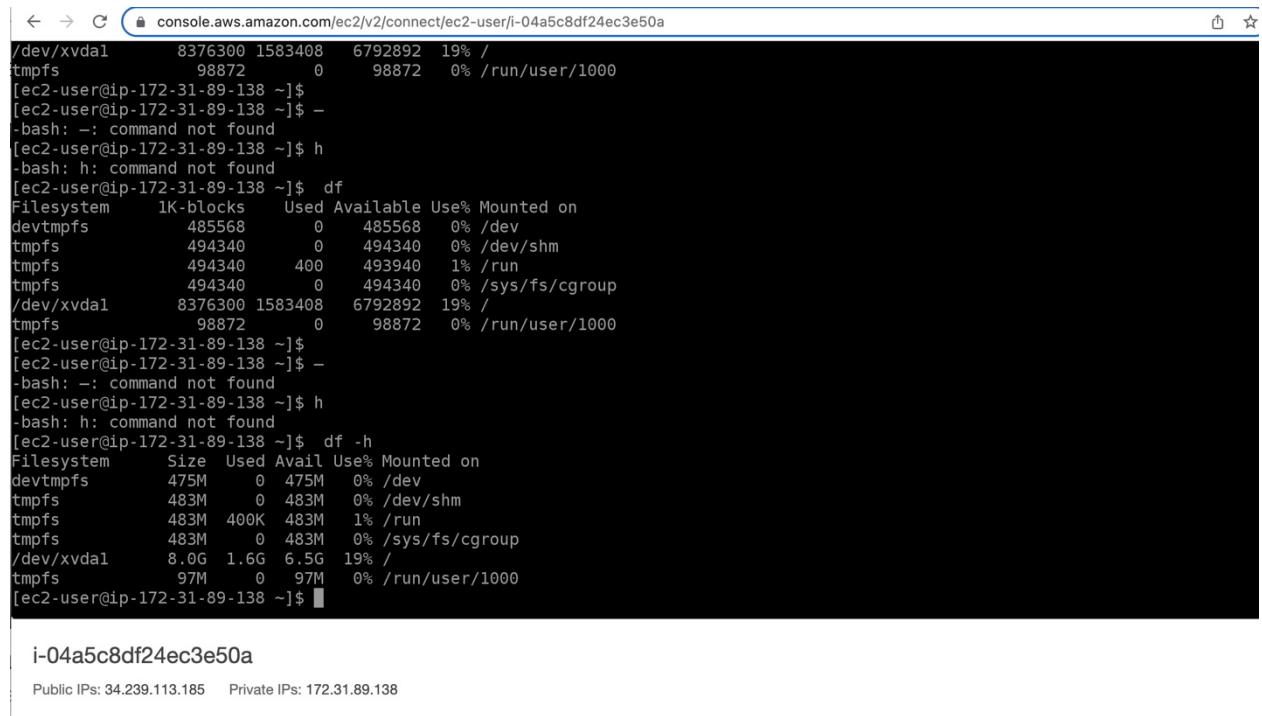
AUTHOR
    Written by Richard Mlynarik.

COPYRIGHT
    Copyright © 2013 Free Software Foundation, Inc. License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>.
    This is free software: you are free to change and redistribute it. There is NO WARRANTY, to the extent permitted by law.

SEE ALSO
    The full documentation for whoami is maintained as a Texinfo manual. If the info and whoami programs are properly installed at your site,
    the command
        info coreutils 'whoami invocation'
    should give you access to the complete manual.

GNU coreutils 8.22                         January 2020
Manual page whoami(1) line 1/38 (END) (press h for help or q to quit)                               WHOAMI(1)
```

20. df -h: Shows the amount of disk available in the file system for the given filename. If no filename is given, space available on all mounted file system is shown.



```
← → ⌂ console.aws.amazon.com/ec2/v2/connect/ec2-user/i-04a5c8df24ec3e50a
/dev/xvda1      8376300 1583408  6792892  19% /
tmpfs          98872     0    98872   0% /run/user/1000
[ec2-user@ip-172-31-89-138 ~]$ 
[ec2-user@ip-172-31-89-138 ~]$ -
-bash: -: command not found
[ec2-user@ip-172-31-89-138 ~]$ h
-bash: h: command not found
[ec2-user@ip-172-31-89-138 ~]$ df
Filesystem 1K-blocks Used Available Use% Mounted on
devtmpfs    485568     0    485568   0% /dev
tmpfs       494340     0    494340   0% /dev/shm
tmpfs       494340    400   493940   1% /run
tmpfs       494340     0    494340   0% /sys/fs/cgroup
/dev/xvda1    8376300 1583408  6792892  19% /
tmpfs          98872     0    98872   0% /run/user/1000
[ec2-user@ip-172-31-89-138 ~]$ 
[ec2-user@ip-172-31-89-138 ~]$ -
-bash: -: command not found
[ec2-user@ip-172-31-89-138 ~]$ h
-bash: h: command not found
[ec2-user@ip-172-31-89-138 ~]$ df -h
Filesystem  Size  Used Avail Use% Mounted on
devtmpfs    475M    0    475M   0% /dev
tmpfs       483M    0    483M   0% /dev/shm
tmpfs       483M  400K  483M   1% /run
tmpfs       483M    0    483M   0% /sys/fs/cgroup
/dev/xvda1   8.0G  1.6G  6.5G  19% /
tmpfs      97M    0    97M   0% /run/user/1000
[ec2-user@ip-172-31-89-138 ~]$ 
```

i-04a5c8df24ec3e50a
Public IPs: 34.239.113.185 Private IPs: 172.31.89.138

21. man df -h

```
DF(1)                               User Commands                               DF(1)

NAME
    df - report file system disk space usage

SYNOPSIS
    df [OPTION]... [FILE]...

DESCRIPTION
    This manual page documents the GNU version of df. df displays the amount of disk space available on the file system containing each file name argument. If no file name is given, the space available on all currently mounted file systems is shown. Disk space is shown in 1K blocks by default, unless the environment variable POSIXLY_CORRECT is set, in which case 512-byte blocks are used.

    If an argument is the absolute file name of a disk device node containing a mounted file system, df shows the space available on that file system rather than on the file system containing the device node. This version of df cannot show the space available on unmounted file systems, because on most kinds of systems doing so requires very nonportable intimate knowledge of file system structures.

OPTIONS
    Show information about the file system on which each FILE resides, or all file systems by default.

    Mandatory arguments to long options are mandatory for short options too.

    -a, --all
        include pseudo, duplicate, inaccessible file systems

    -B, --block-size=SIZE
        scale sizes by SIZE before printing them; e.g., '-BM' prints sizes in units of 1,048,576 bytes; see SIZE format below

    --direct
        show statistics for a file instead of mount point

    --total
        produce a grand total

    -h, --human-readable
        print sizes in human readable format (e.g., 1K 234M 2G)

Manual page df(1) line 1 (press h for help or q to quit)
```

22. ifconfig -a: Will show all the interfaces which are currently available even if they are down

```
[ec2-user@ip-172-31-89-138 ~]$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/devtmpfs       475M   0  475M  0% /dev
tmpfs          483M   0  483M  0% /dev/shm
tmpfs          483M  400K 483M  1% /run
tmpfs          483M   0  483M  0% /sys/fs/cgroup
/dev/xvda1     8.0G  1.6G  6.5G 19% /
tmpfs          97M   0   97M  0% /run/user/1000
[ec2-user@ip-172-31-89-138 ~]$ ifconfig -a
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 9001
      inet 172.31.89.138  netmask 255.255.240.0  broadcast 172.31.95.255
          inet6 fe80::1047:fdff:fe6c:515d  prefixlen 64  scopeid 0x20<link>
            ether 12:47:fd:6c:51:5d  txqueuelen 1000  (Ethernet)
              RX packets 63368  bytes 88285913 (84.1 MiB)
              RX errors 0  dropped 0  overruns 0  frame 0
              TX packets 5843  bytes 536244 (523.6 KiB)
              TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
      inet 127.0.0.1  netmask 255.0.0.0
          inet6 ::1  prefixlen 128  scopeid 0x10<host>
            loop  txqueuelen 1000  (Local Loopback)
              RX packets 24  bytes 1944 (1.8 KiB)
              RX errors 0  dropped 0  overruns 0  frame 0
              TX packets 24  bytes 1944 (1.8 KiB)
              TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

[ec2-user@ip-172-31-89-138 ~]$
```

i-04a5c8df24ec3e50a

Public IPs: 34.239.113.185 Private IPs: 172.31.89.138

23. man ifconfig -a

```
IFCONFIG(8)                               Linux System Administrator's Manual                               IFCONFIG(8)

NAME
    ifconfig - configure a network interface

SYNOPSIS
    ifconfig [-v] [-a] [-s] [interface]
    ifconfig [-v] interface [aftype] options | address ...

NOTE
    This program is obsolete! For replacement check ip addr and ip link. For statistics use ip -s link.

DESCRIPTION
    Ifconfig is used to configure the kernel-resident network interfaces. It is used at boot time to set up interfaces as necessary. After that, it is usually only needed when debugging or when system tuning is needed.

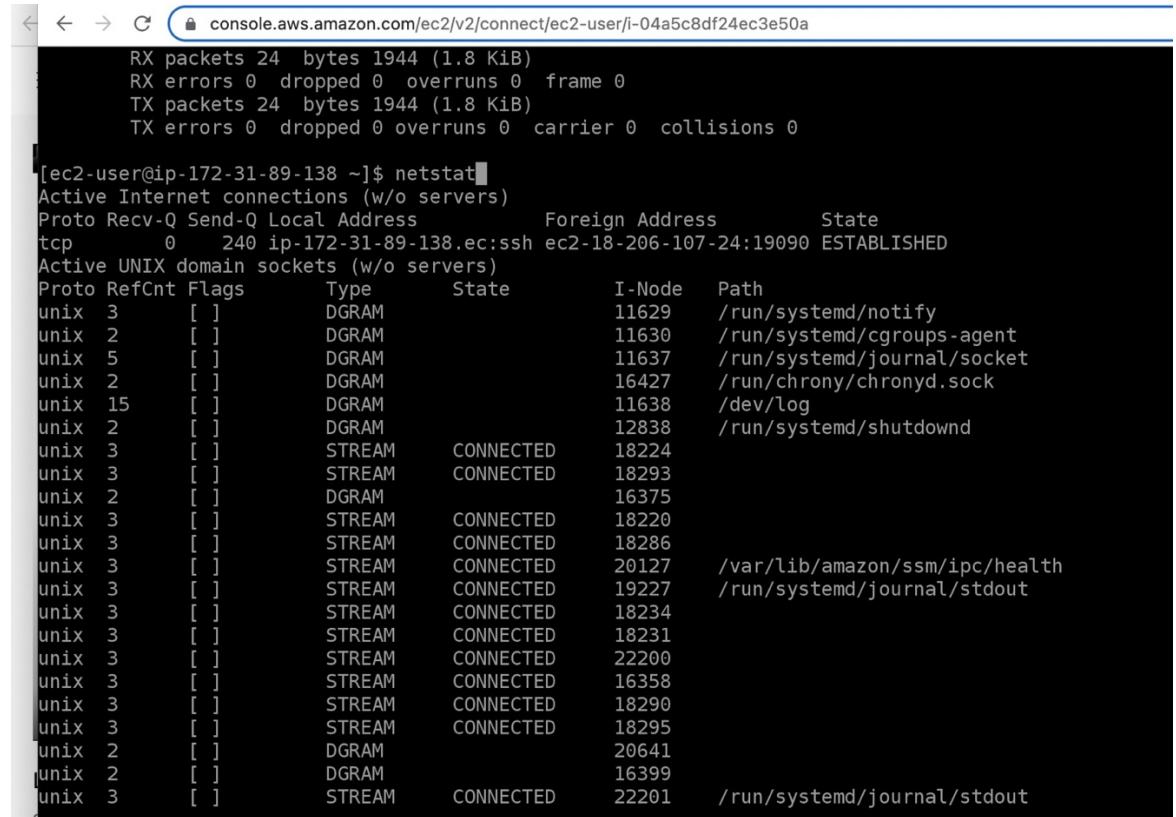
    If no arguments are given, ifconfig displays the status of the currently active interfaces. If a single interface argument is given, it displays the status of the given interface only; if a single -a argument is given, it displays the status of all interfaces, even those that are down. Otherwise, it configures an interface.

ADDRESS Families
    If the first argument after the interface name is recognized as the name of a supported address family, that address family is used for decoding and displaying all protocol addresses. Currently supported address families include inet (TCP/IP, default), inet6 (IPv6), ax25 (AMPR Packet Radio), ddp (Appletalk Phase 2), ipx (Novell IPX) and netrom (AMPR Packet radio). All numbers supplied as parts in IPv4 dotted decimal notation may be decimal, octal, or hexadecimal, as specified in the ISO C standard (that is, a leading 0x or 0X implies hexadecimal; otherwise, a leading '0' implies octal; otherwise, the number is interpreted as decimal). Use of hexadecimal and octal numbers is not RFC-compliant and therefore its use is discouraged.

OPTIONS
    -a      display all interfaces which are currently available, even if down
    -s      display a short list (like netstat -i)
    -v      be more verbose for some error conditions

    interface
        The name of the interface. This is usually a driver name followed by a unit number, for example eth0 for the first Ethernet interface.
        Manual page ifconfig(8) line 1 (press h for help or q to quit)
```

24. netstat: will print network connections, routing table, internet stats, masquerade connections & multicast membership



The screenshot shows a terminal window with the URL "console.aws.amazon.com/ec2/v2/connect/ec2-user/i-04a5c8df24ec3e50a" in the address bar. The terminal displays the output of the netstat command.

```
RX packets 24 bytes 1944 (1.8 KiB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 24 bytes 1944 (1.8 KiB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

[ec2-user@ip-172-31-89-138 ~]$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address        State
tcp      0      240 ip-172-31-89-138.ec:ssh ec2-18-206-107-24:19090 ESTABLISHED

Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type            State         I-Node      Path
unix  3      [ ]           DGRAM          11629      /run/systemd/notify
unix  2      [ ]           DGRAM          11630      /run/systemd/cgroups-agent
unix  5      [ ]           DGRAM          11637      /run/systemd/journal/socket
unix  2      [ ]           DGRAM          16427      /run/chrony/chronyd.sock
unix 15     [ ]           DGRAM          11638      /dev/log
unix  2      [ ]           DGRAM          12838      /run/systemd/shutdownd
unix  3      [ ]           STREAM         CONNECTED   18224
unix  3      [ ]           STREAM         CONNECTED   18293
unix  2      [ ]           DGRAM          16375
unix  3      [ ]           STREAM         CONNECTED   18220
unix  3      [ ]           STREAM         CONNECTED   18286
unix  3      [ ]           STREAM         CONNECTED   20127      /var/lib/amazon/ssm/IPC/health
unix  3      [ ]           STREAM         CONNECTED   19227      /run/systemd/journal/stdout
unix  3      [ ]           STREAM         CONNECTED   18234
unix  3      [ ]           STREAM         CONNECTED   18231
unix  3      [ ]           STREAM         CONNECTED   22200
unix  3      [ ]           STREAM         CONNECTED   16358
unix  3      [ ]           STREAM         CONNECTED   18290
unix  3      [ ]           STREAM         CONNECTED   18295
unix  2      [ ]           DGRAM          20641
unix  2      [ ]           DGRAM          16399
unix  3      [ ]           STREAM         CONNECTED   22201      /run/systemd/journal/stdout
```

| | | | | | | |
|------|---|-----|--------|-----------|-------|-----------------------------|
| unix | 3 | [] | STREAM | CONNECTED | 22201 | /run/systemd/journal/stdout |
| unix | 3 | [] | STREAM | CONNECTED | 15867 | |
| unix | 3 | [] | STREAM | CONNECTED | 18292 | |
| unix | 3 | [] | STREAM | CONNECTED | 16390 | /run/dbus/system_bus_socket |
| unix | 3 | [] | STREAM | CONNECTED | 19226 | |
| unix | 2 | [] | DGRAM | | 18339 | |
| unix | 3 | [] | STREAM | CONNECTED | 20126 | |
| unix | 3 | [] | STREAM | CONNECTED | 16287 | |
| unix | 3 | [] | STREAM | CONNECTED | 18296 | |
| unix | 3 | [] | STREAM | CONNECTED | 21289 | |
| unix | 3 | [] | STREAM | CONNECTED | 15868 | |
| unix | 3 | [] | STREAM | CONNECTED | 16450 | |
| unix | 3 | [] | STREAM | CONNECTED | 18281 | |
| unix | 3 | [] | STREAM | CONNECTED | 18230 | |
| unix | 2 | [] | DGRAM | | 13107 | |
| unix | 3 | [] | STREAM | CONNECTED | 18283 | |
| unix | 2 | [] | DGRAM | | 19077 | |
| unix | 2 | [] | DGRAM | | 18058 | |
| unix | 2 | [] | DGRAM | | 18318 | |
| unix | 3 | [] | STREAM | CONNECTED | 18223 | |
| unix | 2 | [] | DGRAM | | 17061 | |
| unix | 3 | [] | STREAM | CONNECTED | 16285 | |
| unix | 3 | [] | STREAM | CONNECTED | 18284 | |
| unix | 3 | [] | STREAM | CONNECTED | 16451 | |
| unix | 3 | [] | STREAM | CONNECTED | 18221 | |
| unix | 2 | [] | DGRAM | | 21283 | |
| unix | 2 | [] | DGRAM | | 16411 | |
| unix | 3 | [] | STREAM | CONNECTED | 18736 | /run/systemd/journal/stdout |
| unix | 2 | [] | DGRAM | | 19228 | |
| unix | 2 | [] | DGRAM | | 22378 | |
| unix | 2 | [] | DGRAM | | 18090 | |

| | | | | | | |
|----------------------|--------------------------|-------------------------|--------|-----------|-------|-------------------------------------|
| i-04af5cb0d24ec3e50a | Print IP: 34.229.113.180 | Print IP: 172.31.88.128 | | | | |
| unix | 2 | [] | DGRAM | | 19228 | |
| unix | 2 | [] | DGRAM | | 22378 | |
| unix | 2 | [] | DGRAM | | 18090 | |
| unix | 3 | [] | STREAM | CONNECTED | 18228 | |
| unix | 3 | [] | STREAM | CONNECTED | 16389 | |
| unix | 3 | [] | STREAM | CONNECTED | 20123 | |
| unix | 3 | [] | STREAM | CONNECTED | 16286 | /run/systemd/journal/stdout |
| unix | 3 | [] | STREAM | CONNECTED | 18289 | |
| unix | 3 | [] | STREAM | CONNECTED | 20124 | /var/lib/amazon/ssm/ssh/termination |
| unix | 3 | [] | STREAM | CONNECTED | 18227 | |
| unix | 2 | [] | DGRAM | | 16857 | |
| unix | 3 | [] | STREAM | CONNECTED | 15972 | /run/systemd/journal/stdout |
| unix | 3 | [] | STREAM | CONNECTED | 18287 | |
| unix | 3 | [] | STREAM | CONNECTED | 16288 | /run/systemd/journal/stdout |
| unix | 3 | [] | STREAM | CONNECTED | 15971 | |
| unix | 3 | [] | STREAM | CONNECTED | 18735 | |
| unix | 3 | [] | STREAM | CONNECTED | 21290 | |
| unix | 3 | [] | STREAM | CONNECTED | 16359 | /run/systemd/journal/stdout |
| unix | 3 | [] | STREAM | CONNECTED | 18278 | |
| unix | 3 | [] | STREAM | CONNECTED | 15780 | /run/systemd/journal/stdout |
| unix | 3 | [] | STREAM | CONNECTED | 18272 | |
| unix | 3 | [] | STREAM | CONNECTED | 15779 | |
| unix | 3 | [] | STREAM | CONNECTED | 18260 | |
| unix | 3 | [] | STREAM | CONNECTED | 18252 | |
| unix | 3 | [] | STREAM | CONNECTED | 15869 | /run/dbus/system_bus_socket |
| unix | 2 | [] | DGRAM | | 13709 | |
| unix | 3 | [] | STREAM | CONNECTED | 18259 | |
| unix | 3 | [] | STREAM | CONNECTED | 18247 | |
| unix | 3 | [] | STREAM | CONNECTED | 18256 | |
| unix | 3 | [] | STREAM | CONNECTED | 18237 | |
| unix | 3 | [] | STREAM | CONNECTED | 18262 | |
| unix | 3 | [] | STREAM | CONNECTED | 15686 | |
| unix | 3 | [] | STREAM | CONNECTED | 18274 | |

i-04af5cb0d24ec3e50a

Print IP: 34.229.113.180

Print IP: 172.31.88.128

```

unix 3 []      STREAM CONNECTED 18282
unix 3 []      STREAM CONNECTED 15686
unix 3 []      STREAM CONNECTED 18274
unix 3 []      STREAM CONNECTED 13483
unix 3 []      STREAM CONNECTED 18263
unix 3 []      STREAM CONNECTED 15483
unix 3 []      STREAM CONNECTED 16282 /run/systemd/journal/stdout
unix 3 []      STREAM CONNECTED 13707 /run/systemd/journal/stdout
unix 3 []      STREAM CONNECTED 18280
unix 3 []      STREAM CONNECTED 18235
unix 3 []      STREAM CONNECTED 18240
unix 3 []      STREAM CONNECTED 18238
unix 3 []      STREAM CONNECTED 18268
unix 3 []      STREAM CONNECTED 18250
unix 3 []      STREAM CONNECTED 18249
unix 3 []      STREAM CONNECTED 13484 /run/systemd/journal/stdout
unix 3 []      STREAM CONNECTED 18265
unix 2 []      DGRAM 15474
unix 3 []      STREAM CONNECTED 18266
unix 3 []      STREAM CONNECTED 18241
unix 3 []      STREAM CONNECTED 18277
unix 3 []      STREAM CONNECTED 18246
unix 3 []      STREAM CONNECTED 18271
unix 3 []      DGRAM 13730
unix 3 []      STREAM CONNECTED 13706
unix 3 []      STREAM CONNECTED 18255
unix 3 []      STREAM CONNECTED 16281
unix 3 []      STREAM CONNECTED 18275
unix 3 []      STREAM CONNECTED 15484
unix 3 []      STREAM CONNECTED 18269
unix 3 []      STREAM CONNECTED 18253
unix 3 []      DGRAM 13729
[ec2-user@ip-172-31-89-138 ~]$
```

i-04a5c0f8f4ec3e0da
Public IP: 34.238.181.69 Private IP: 172.31.89.138

25. man netstat

```

NETSTAT(8)                               Linux System Administrator's Manual                               NETSTAT(8)

NAME
       netstat - Print network connections, routing tables, interface statistics, masquerade connections, and multicast memberships

SYNOPSIS
       netstat [address_family_options] [-tcp|-t] [-udp|-u] [-udplite|-U] [-sctp|-S] [-raw|-w] [-listening|-l] [-all|-a] [--numeric|-n]
              [--numeric-hosts] [-numeric-ports] [-numeric-users] [-symbolic|-N] [-extend|-e|--extend|-e] [--timers|-o] [--program|-p] [--verbose|-v] [--continuous|-c] [-wide|-W] [delay]

       netstat {--route|-r} [address_family_options] [-e|--extend|-e] [--verbose|-v] [--numeric|-n] [--numeric-hosts] [--numeric-ports]
              [--numeric-users] [-c] [delay]

       netstat {--interfaces|-I|-i} [-all|-a] [-e|--extend|-e] [--verbose|-v] [--program|-p] [--numeric|-n] [--numeric-hosts] [--numeric-ports]
              [--numeric-users] [-c] [delay]

       netstat {--groups|-g} [--numeric|-n] [--numeric-hosts] [--numeric-ports] [-e|--extend|-e] [--numeric-users] [-c] [delay]

       netstat {--masquerade|-M} [-e|--extend|-e] [--numeric|-n] [--numeric-hosts] [--numeric-ports] [--numeric-users] [-c] [delay]

       netstat {--statistics|-s} [-tcp|-t] [-udp|-u] [-udplite|-U] [-sctp|-S] [-raw|-w] [delay]

       netstat {--version|-V}

       netstat {--help|-h}

       address_family_options:
              [-4|-inet] [-6|-inet6] [-protocol={inet,inet6,unix,ipx,ax25,netrom,ddp, ...}] [-unix|-x] [-inet|--ip|--tcpip] [-ax25] [-x25]
              [-rose] [-ash] [-ipx] [-netrom] [-ddp] [-appleTalk] [-econet] [-ec]

NOTES
       This program is obsolete. Replacement for netstat is ss. Replacement for netstat -r is ip route. Replacement for netstat -i is ip -s
       link. Replacement for netstat -g is ip maddr.

DESCRIPTION
       Netstat prints information about the Linux networking subsystem. The type of information printed is controlled by the first argument, as
       Manual page netstat(8) line 1 (press h for help or q to quit)
```

26. After all the commands are run, come back and Stop the instance.

The screenshot shows the AWS EC2 Instances page. There are two instances listed:

- Instance ID: i-099431a8db07f08f4, Instance state: Stopped, Instance type: t2.micro
- Instance ID: i-04a5c8df24ec3e50a, Instance state: Running, Instance type: t2.micro

A modal window is open for the instance with ID i-04a5c8df24ec3e50a. The modal title is "Instance: i-04a5c8df24ec3e50a". It displays the following details:

| Details | Security | Networking | Storage | Status checks | Monitoring | Tags |
|--|--|--|---------|---------------|------------|------|
| Instance summary Info | | | | | | |
| Instance ID i-04a5c8df24ec3e50a | Public IPv4 address 34.239.113.185 open address | Private IPv4 addresses 172.31.89.138 | | | | |
| IPv6 address - | Instance state Running | Public IPv4 DNS ec2-34-239-113-185.compute-1.amazonaws.com open address | | | | |

Below the modal, a confirmation dialog box titled "Stop instance?" is displayed. It contains the message "To confirm that you want to stop the instance, choose the Stop button below." and two buttons: "Cancel" and "Stop".

27. Both instances are stopped

The screenshot shows the AWS EC2 Instances page. A success message at the top says "Successfully stopped i-04a5c8df24ec3e50a". The main table lists two instances:

| Name | Instance ID | Instance state | Instance type | Status check | Alarm status | Availability Zone |
|------|---------------------|----------------|---------------|--------------|--------------|-------------------|
| - | i-099431a8db07f08f4 | Stopped | t2.micro | - | No alarms | us-east-1b |
| - | i-04a5c8df24ec3e50a | Stopping | t2.micro | - | No alarms | us-east-1b |

A modal window titled "Select an instance" is open, showing the same two instances.

28. Select the instance and goto Instance state and click on Terminate.

The screenshot shows the AWS EC2 Instances page with one instance selected. A confirmation dialog titled "Terminate instance?" is open:

⚠ On an EBS-backed instance, the default action is for the root EBS volume to be deleted when the instance is terminated. Storage on any local drives will be lost.

Are you sure you want to terminate these instances?
i-04a5c8df24ec3e50a

To confirm that you want to terminate the instances, choose the terminate button below. Terminating the instance cannot be undone.

Cancel **Terminate**

The screenshot shows the AWS EC2 Instances page. A modal dialog titled "Terminate instance?" is open over the list of instances. The modal contains a warning message: "On an EBS-backed instance, the default action is for the root EBS volume to be deleted when the instance is terminated. Storage on any local drives will be lost." Below the message, it asks, "Are you sure you want to terminate these instances? i-099431a8db07f08f4". A confirmation message at the bottom says, "To confirm that you want to terminate the instances, choose the terminate button below. Terminating the instance cannot be undone." At the bottom right of the modal are "Cancel" and "Terminate" buttons. The main table lists two instances: "i-099431a8db07f08f4" and "i-04a5c8df24ec3e50a", both of which are now in a "Terminated" state.

29. Both instances have been terminated.

The screenshot shows the AWS EC2 Instances page. Two success messages are displayed at the top: "Successfully terminated i-04a5c8df24ec3e50a" and "Successfully terminated i-099431a8db07f08f4". The main table shows two terminated instances: "i-099431a8db07f08f4" and "i-04a5c8df24ec3e50a", both of which are listed under the "Terminated" status column. The table includes columns for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, and Availability Zone.

References: <https://aws.amazon.com/ec2/getting-started/>
<https://aws.amazon.com/ec2/>