Lab Overview

AWS Identity and Access Management (IAM) is a web service that enables Amazon Web Services (AWS) customers to manage users and user permissions in AWS. With IAM, you can centrally manage **users**, **security credentials** such as access keys, and **permissions** that control which AWS resources users can access.

Topics covered

This lab will demonstrate:

- Exploring pre-created **IAM Users and Groups**
- Inspecting **IAM policies** as applied to the pre-created groups
- Following a **real-world scenario**, adding users to groups with specific capabilities enabled
- Locating and using the **IAM sign-in URL**
- **Experimenting** with the effects of policies on service access

AWS Identity and Access Management

AWS Identity and Access Management (IAM) can be used to:

- **Manage IAM Users and their access:** You can create Users and assign them individual security credentials (access keys, passwords, and multi-factor authentication devices). You can manage permissions to control which operations a User can perform.
- **Manage IAM Roles and their permissions:** An IAM Role is similar to a User, in that it is an AWS identity with permission policies that determine what the identity can and cannot do in AWS. However, instead of being uniquely associated with one person, a Role is intended to be *assumable* by anyone who needs it.
- **Manage federated users and their permissions:** You can enable *identity federation* to allow existing users in your enterprise to access the AWS Management Console, to call AWS APIs and to access resources, without the need to create an IAM User for each identity.

Start lab

1. To launch the lab, at the top of the page, choose **Start Lab**.

Caution: You must wait for the provisioned AWS services to be ready before you can continue.

2. To open the lab, choose **Open Console** .

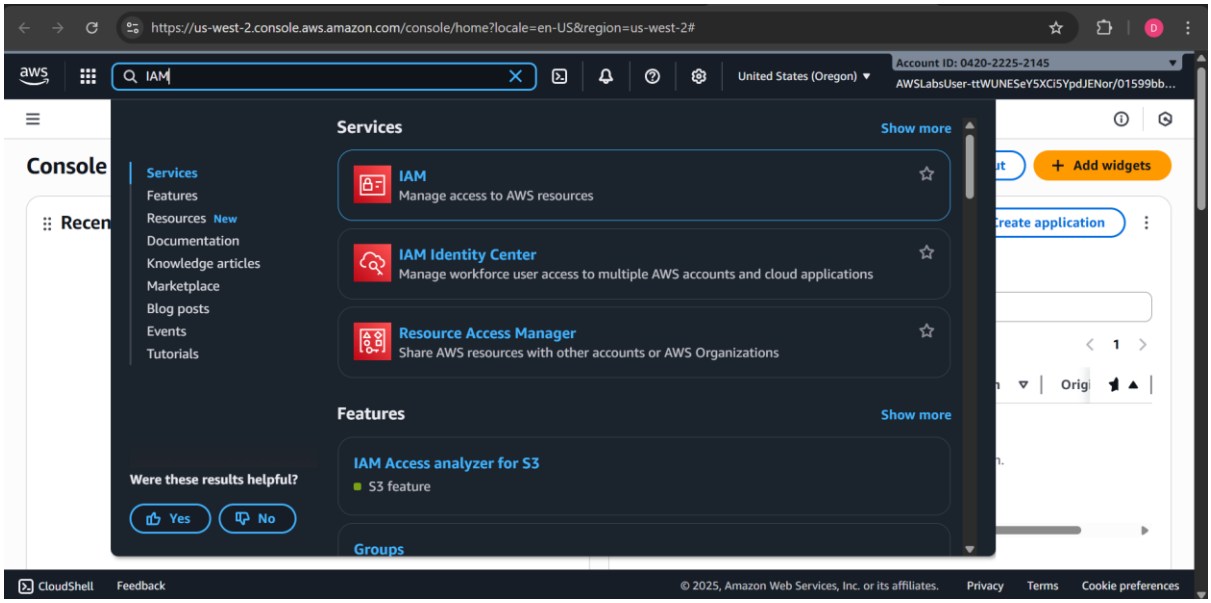
You are automatically signed in to the AWS Management Console in a new web browser tab.

Warning: Do not change the **Region** unless instructed.

Task 1: Explore the Users and Groups

In this task, you will explore the Users and Groups that have already been created for you in IAM.

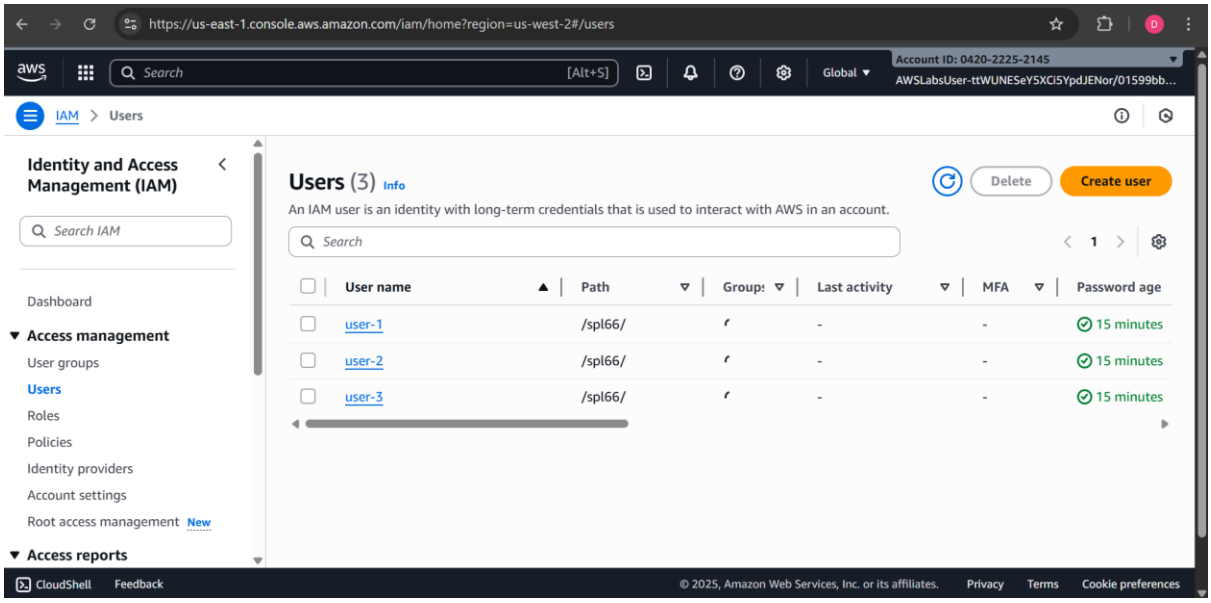
1. At the top of the AWS Management Console, in the search bar, search for and choose IAM



2. In the navigation pane on the left, choose **Users**.

   The following IAM Users have been created for you:

   1 user-1
   2 user-2
   3 user-3

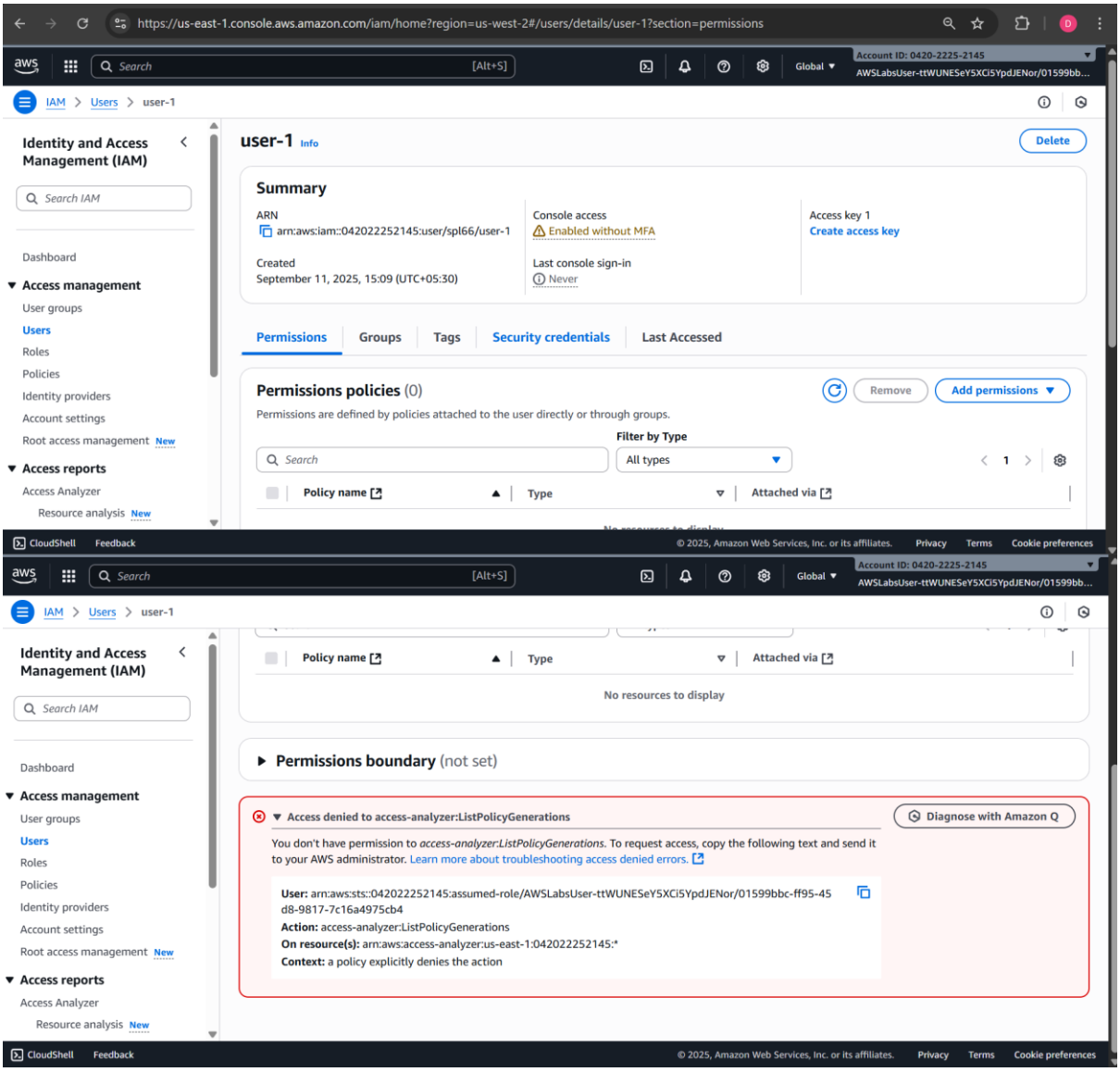


3. Choose **user-1**.

   This will bring to a summary page for user-1. The **Permissions** tab will be displayed.

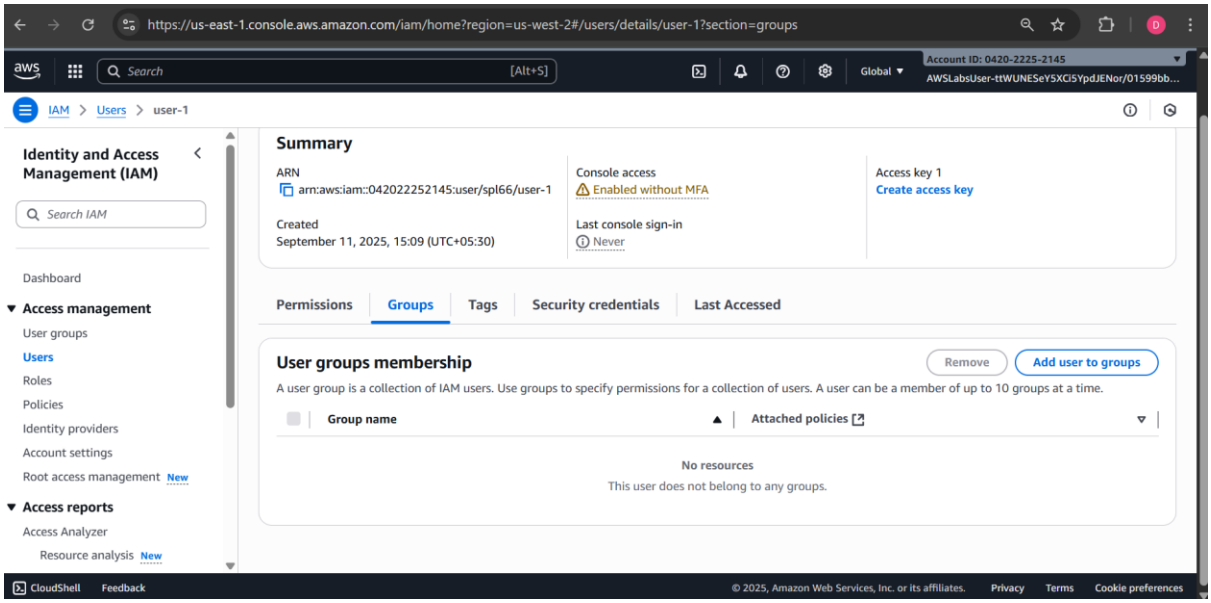
4. Notice that user-1 does not have any permissions.

Note: You should see an **Unexpected error** message. This is normal.



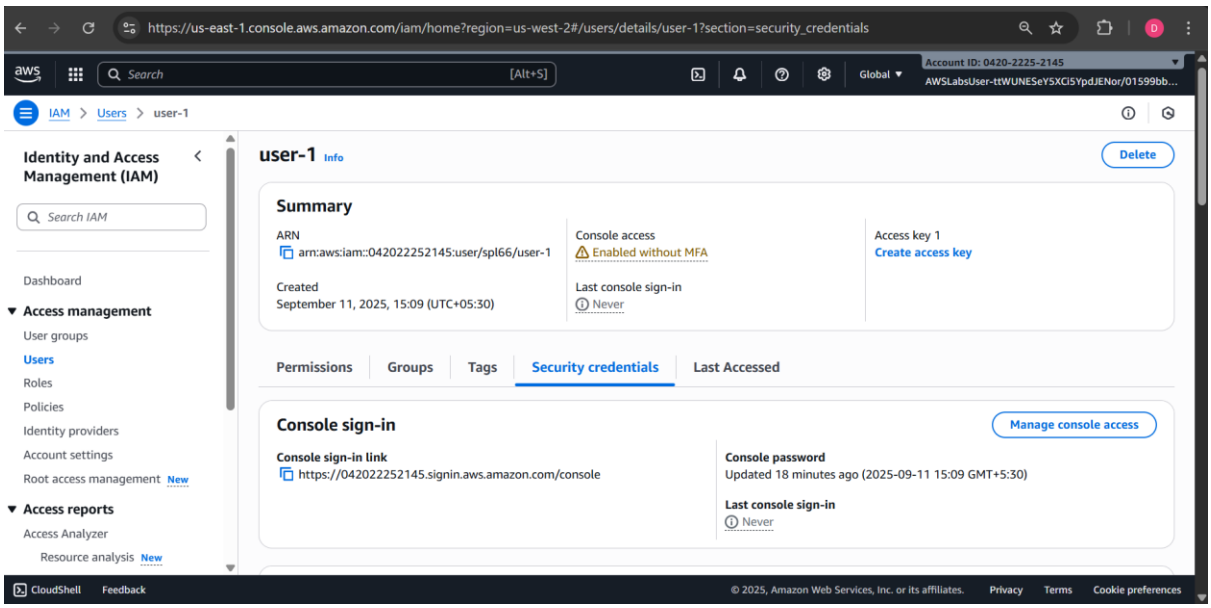
5. Choose the **Groups** tab.

   user-1 also is not a member of any groups.



6. Choose the **Security credentials** tab.

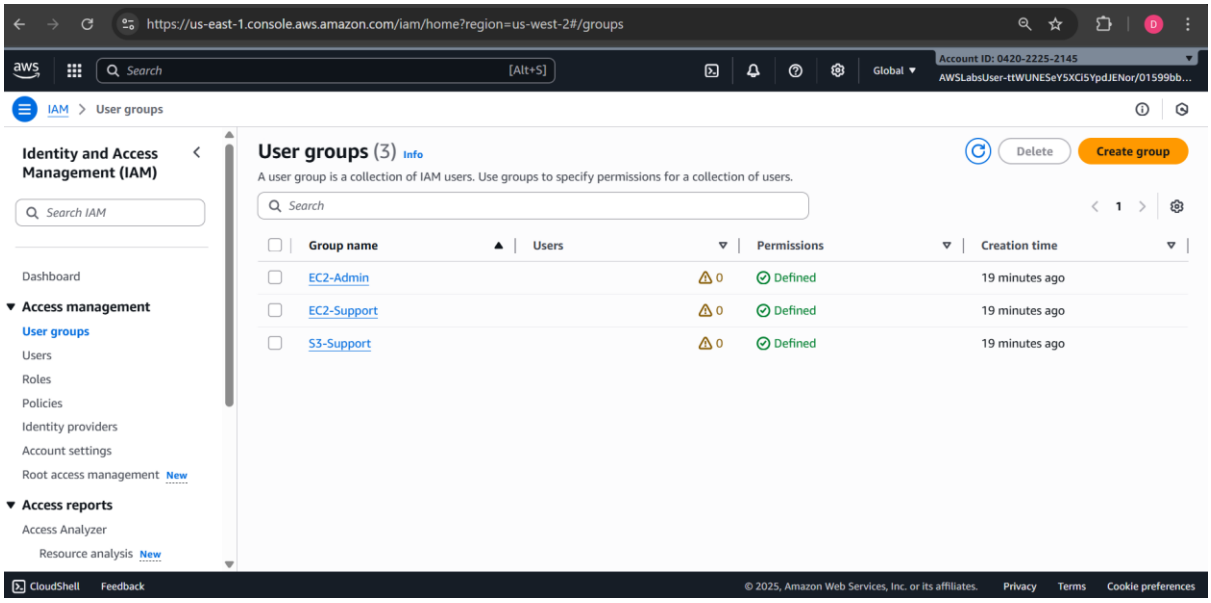
   user-1 is assigned a **Console password**



7. In the navigation pane on the left, choose **User groups**.

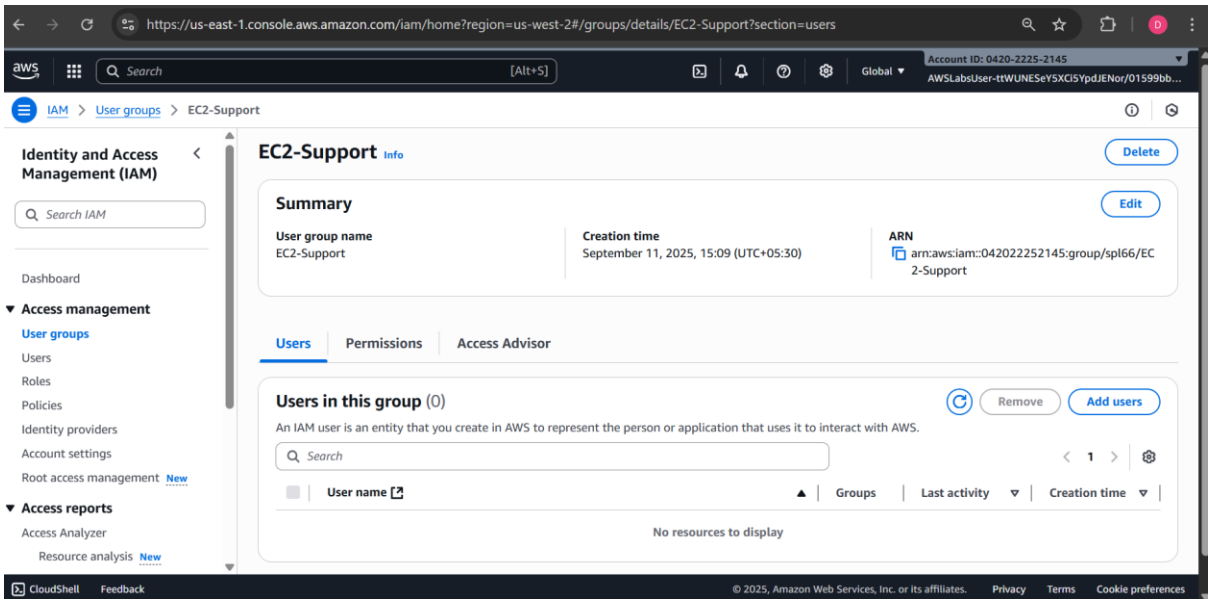
   The following groups have already been created for you:

   1 EC2-Admin
   2 EC2-Support
   3 S3-Support



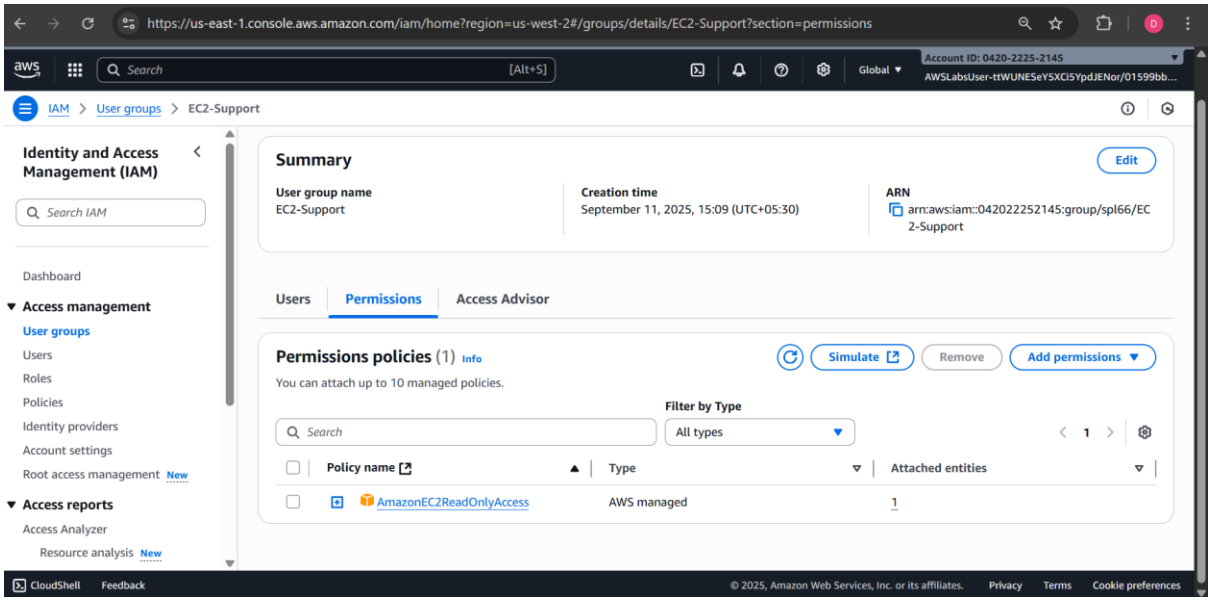
8. Choose the **EC2-Support** group.

   This will bring you to the summary page for the **EC2-Support** group.



9. Choose the **Permissions** tab.

   This group has a Managed Policy associated with it, called **AmazonEC2ReadOnlyAccess**. Managed Policies are pre-built policies (built either by AWS or by your administrators) that can be attached to IAM Users and Groups. When the policy is updated, the changes to the policy immediately apply against all Users and Groups to which the policy is attached.

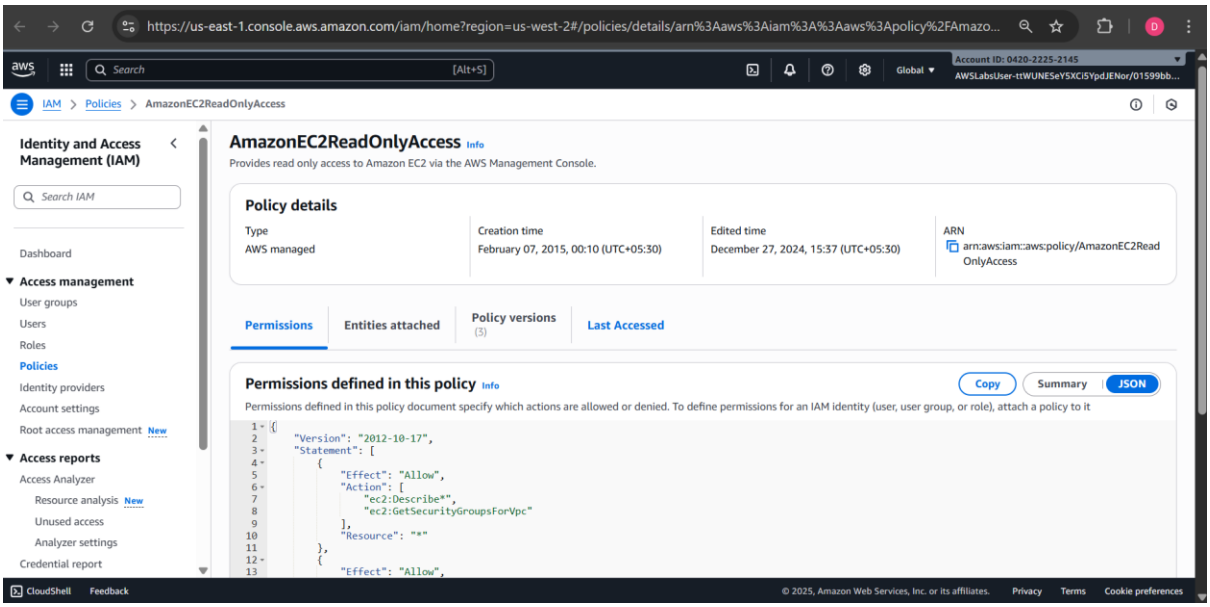


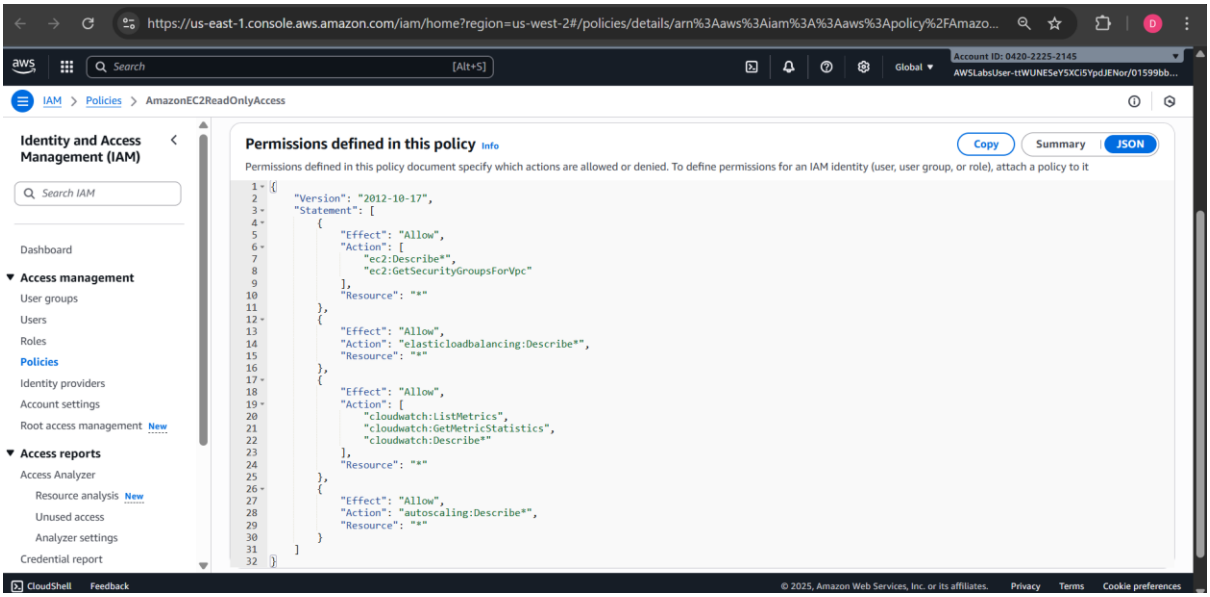
10. Choose **AmazonEC2ReadOnlyAccess** under the **Permissions** tab and a new browser window opens. Now choose **JSON**.

    A policy defines what actions are allowed or denied for specific AWS resources. This policy is granting permission to List and Describe information about EC2, Elastic Load Balancing, CloudWatch and Auto Scaling. This ability to view resources, but not modify them, is ideal for assigning to a Support role.

    The basic structure of the statements in an IAM Policy is:

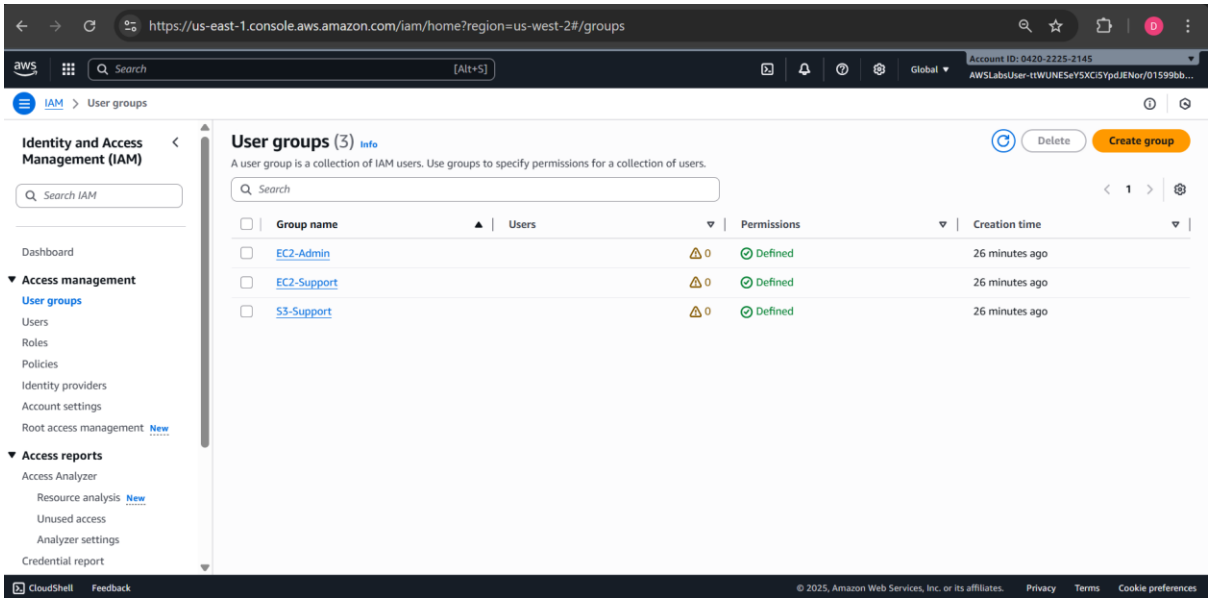
    1 **Effect** says whether to *Allow* or *Deny* the permissions.
    2 **Action** specifies the API calls that can be made against an AWS Service (eg *cloudwatch:ListMetrics*).
    3 **Resource** defines the scope of entities covered by the policy rule (eg a specific Amazon S3 bucket or Amazon EC2 instance, or * which means *any resource*).

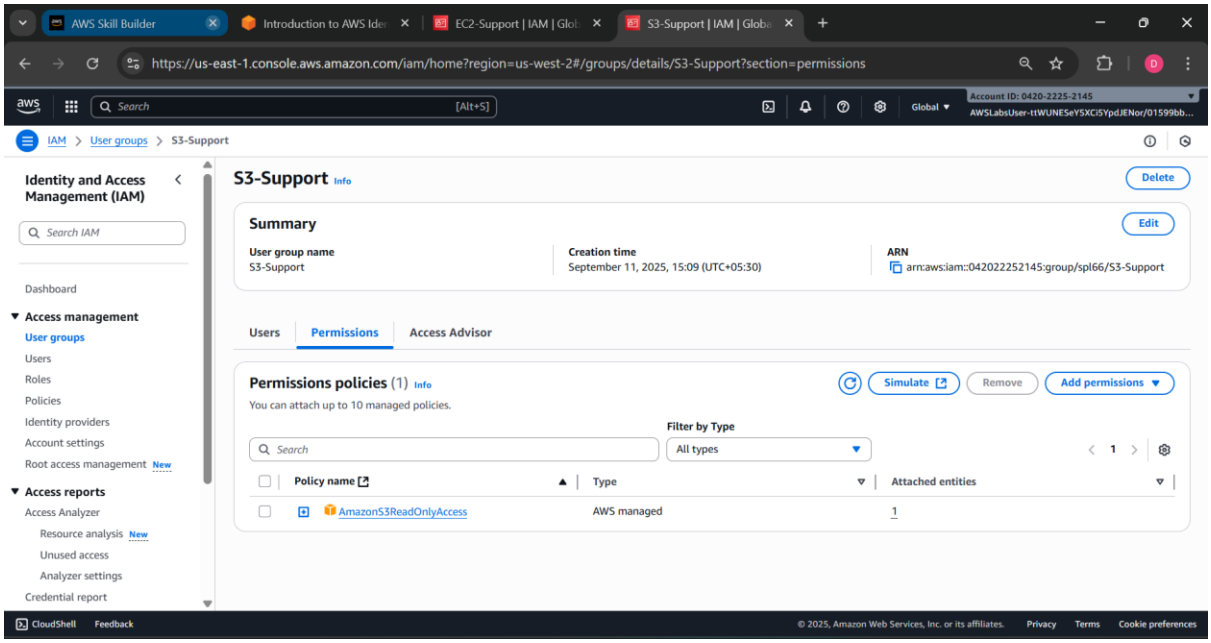




11. In the navigation pane on the left, choose **User groups**.
12. Choose the **S3-Support** group.

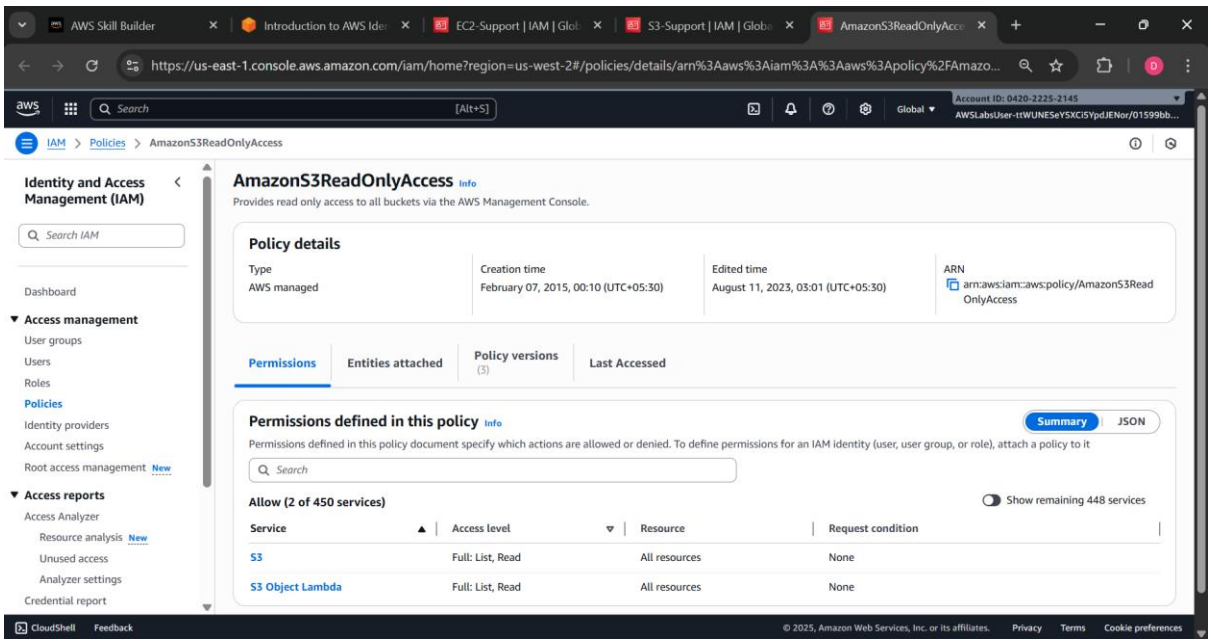
    The S3-Support group has the **AmazonS3ReadOnlyAccess** policy attached.



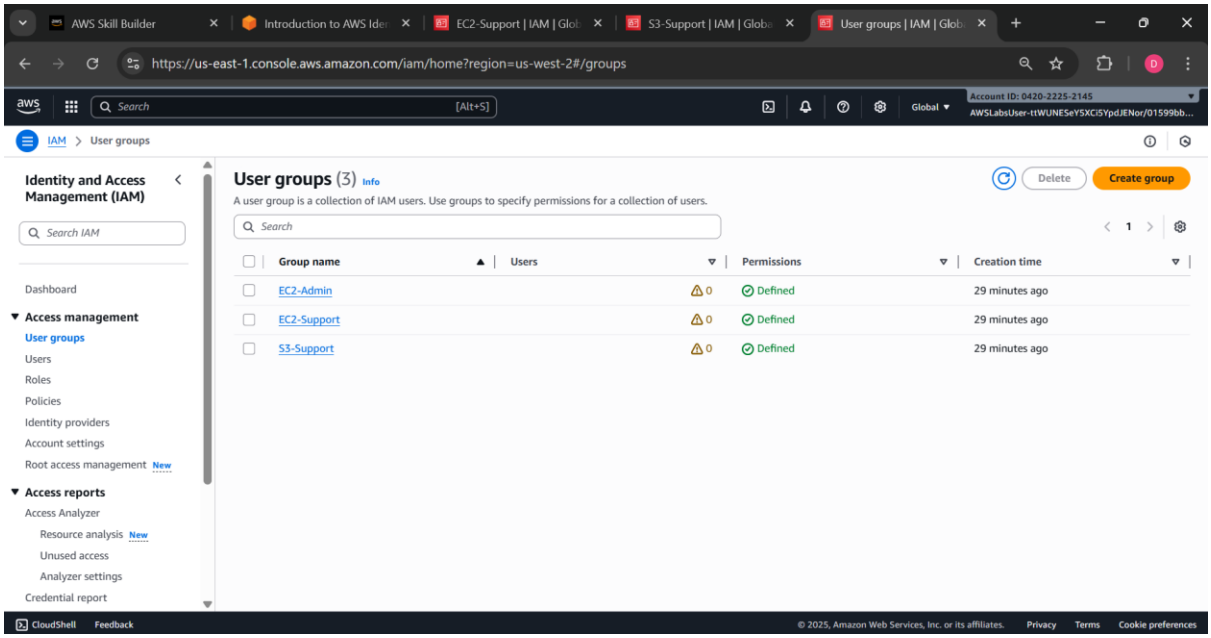


13. Choose **AmazonS3ReadOnlyAccess** under the **Permissions** tab and a new browser window opens. Now choose **JSON**.

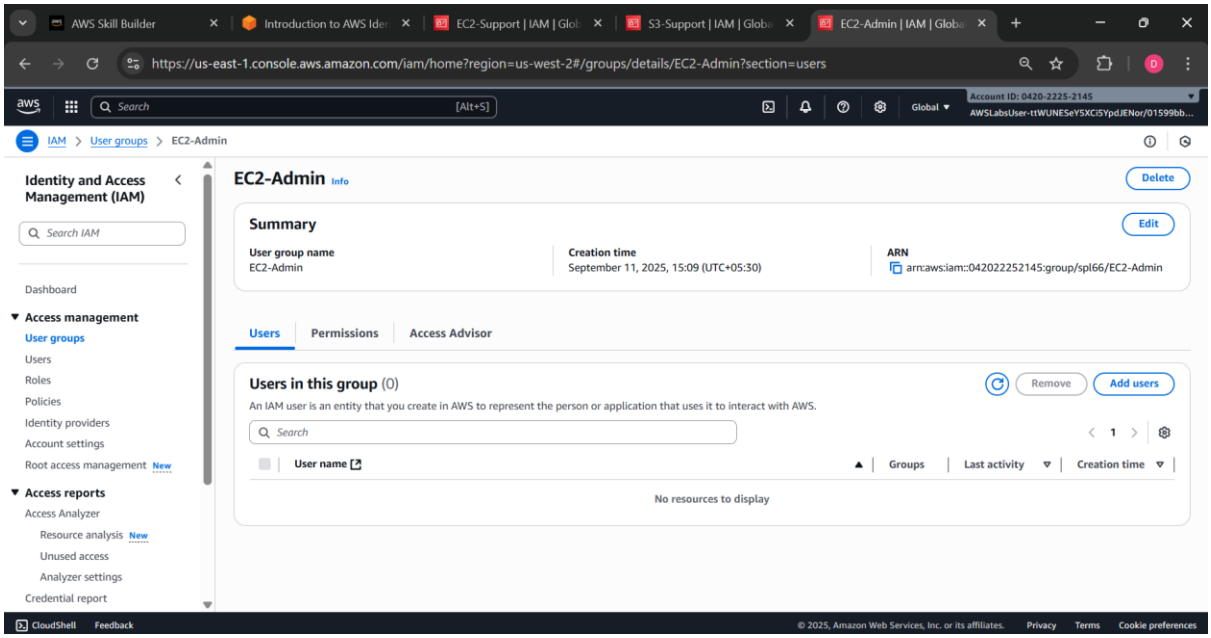
    This policy has permissions to Get and List resources in Amazon S3.



14. In the navigation pane on the left, choose **User groups**.
15. Choose the **EC2-Admin** group.

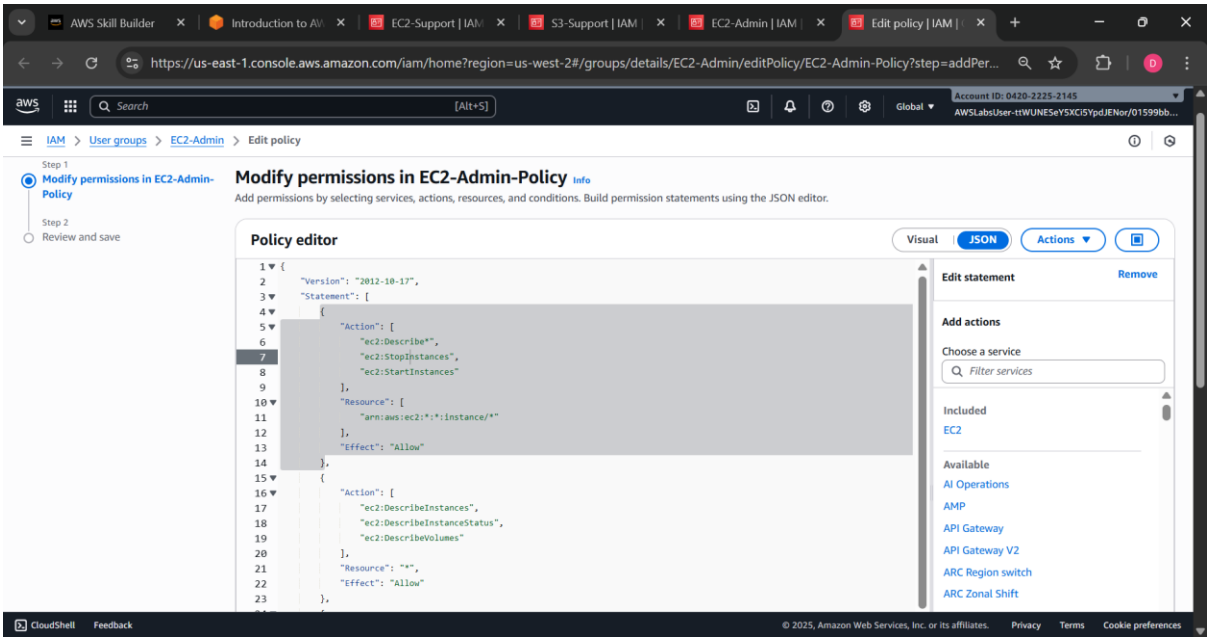


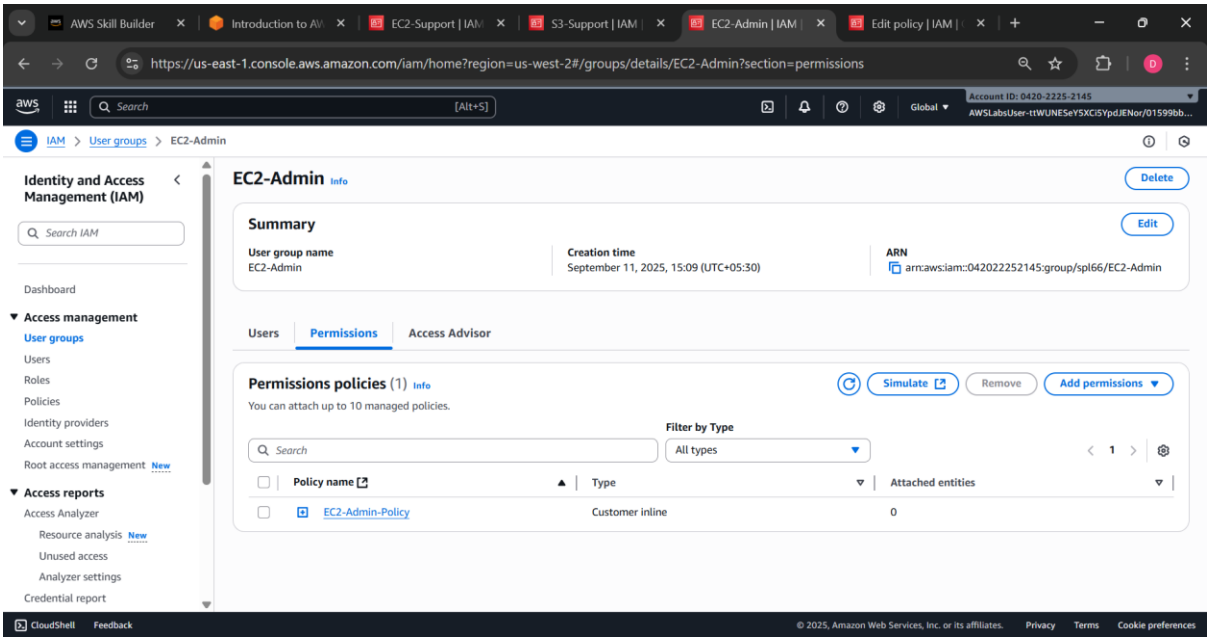
This Group is slightly different from the other two. Instead of a *Managed Policy*, it has an **Inline Policy**, which is a policy assigned to just one User or Group. Inline Policies are typically used to apply permissions for one-off situations.



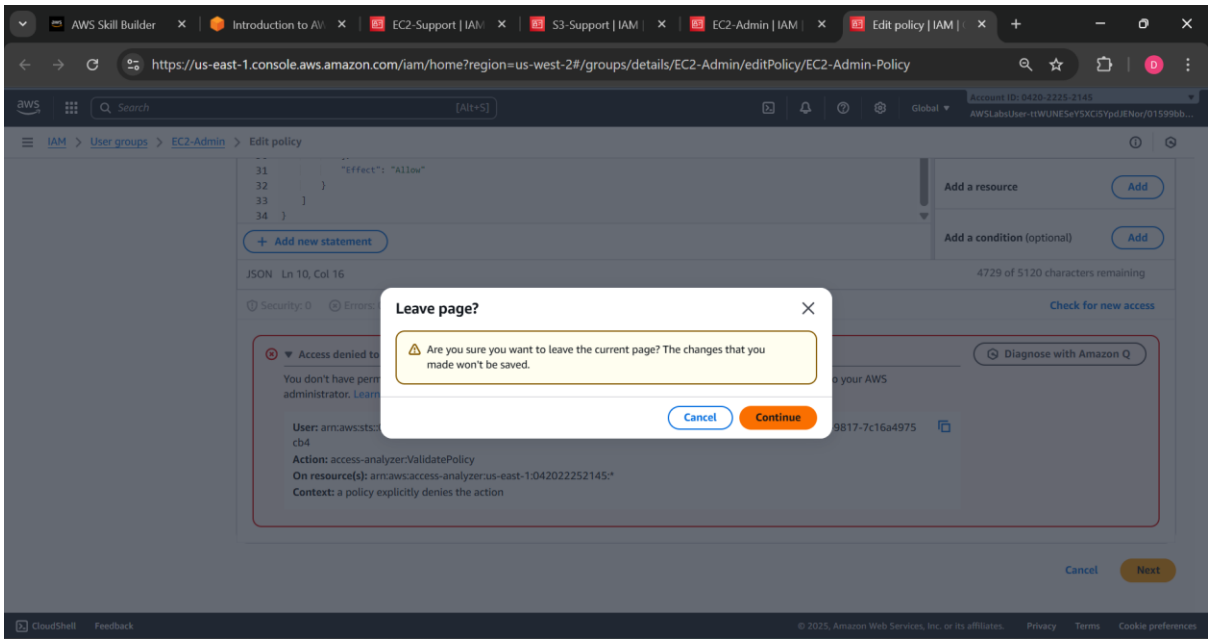
16. Choose **EC2-Admin-Policy** under the **Permissions** tab. Now choose **JSON** tab.

    This policy grants permission to view (Describe) information about Amazon EC2 and also the ability to Start and Stop instances.





17. At the bottom of the screen, choose **Cancel** and then choose **Continue** to close the policy.



Business Scenario

For the remainder of this lab, we will work with these Users and Groups to enable permissions supporting the following business scenario:

Your company is growing its use of Amazon Web Services, and is using many Amazon EC2 instances and a great deal of Amazon S3 storage. You wish to give access to new staff depending upon their job function:

User	In Group	Permissions
user-1	S3-Support	Read-Only access to Amazon S3
user-2	EC2-Support	Read-Only access to Amazon EC2
user-3	EC2-Admin	View, Start and Stop Amazon EC2 instances

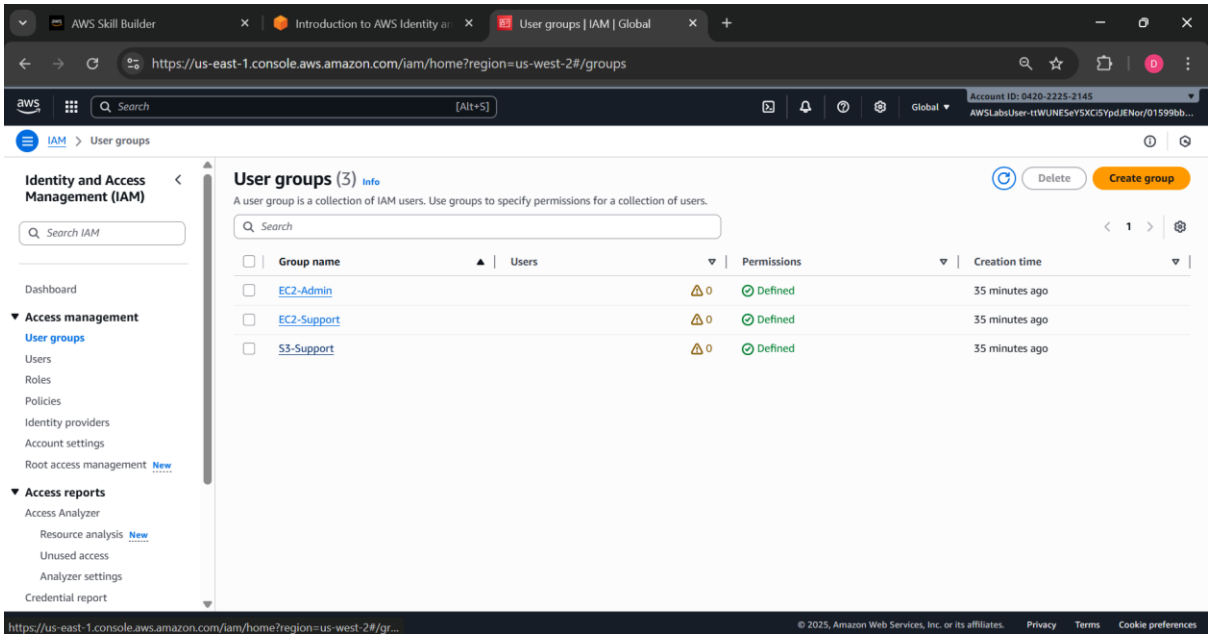
Task 2: Add Users to Groups

You have recently hired **user-1** into a role where they will provide support for Amazon S3. You will add them to the **S3-Support** group so that they inherit the necessary permissions via the attached *AmazonS3ReadOnlyAccess* policy.

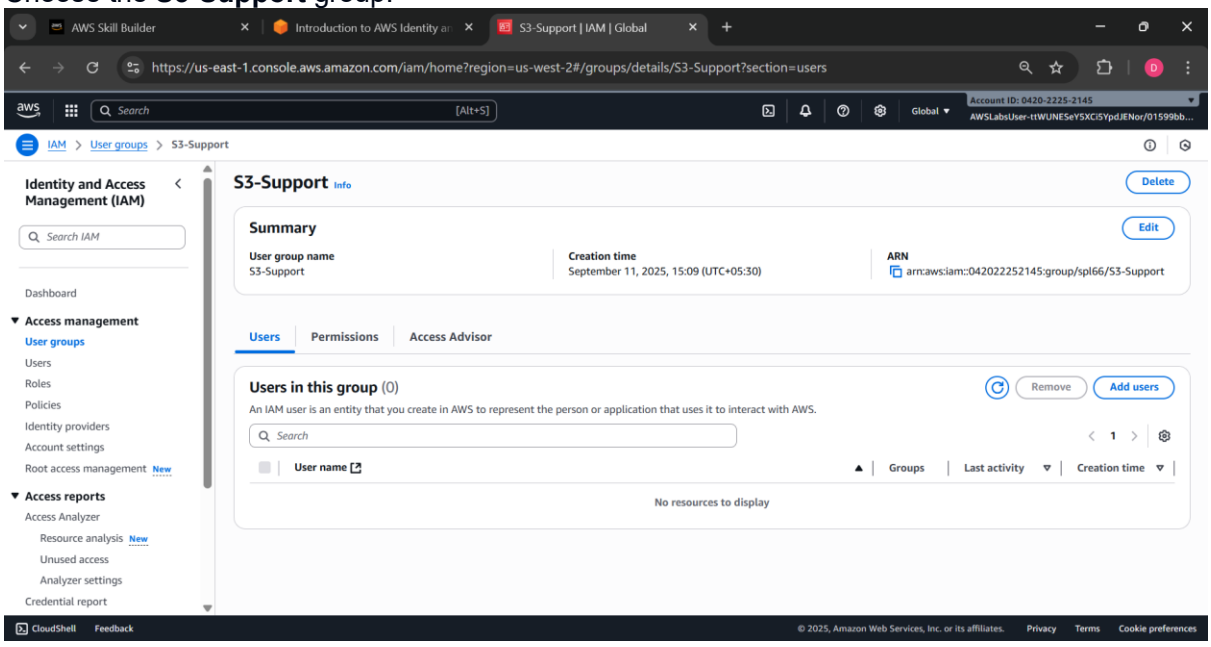
You can ignore any “not authorized” errors that appear during this task. They are caused by your lab account having limited permissions and will not impact your ability to complete the lab.

Add user-1 to the S3-Support Group

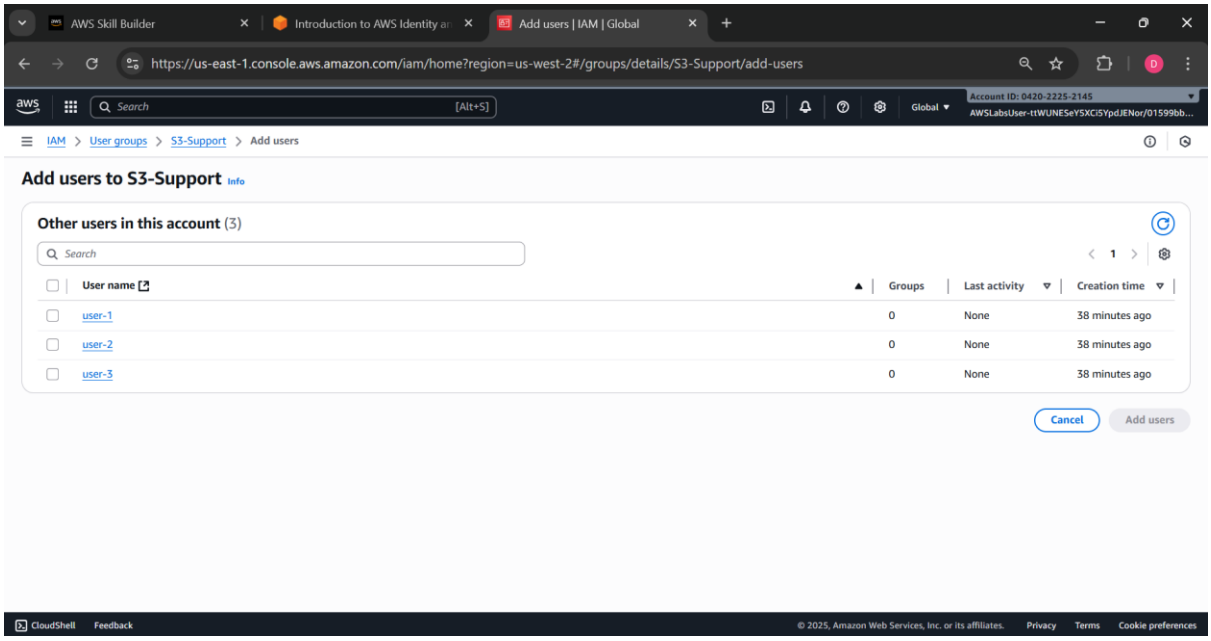
18. In the left navigation pane, choose **User groups**.



19. Choose the **S3-Support** group.

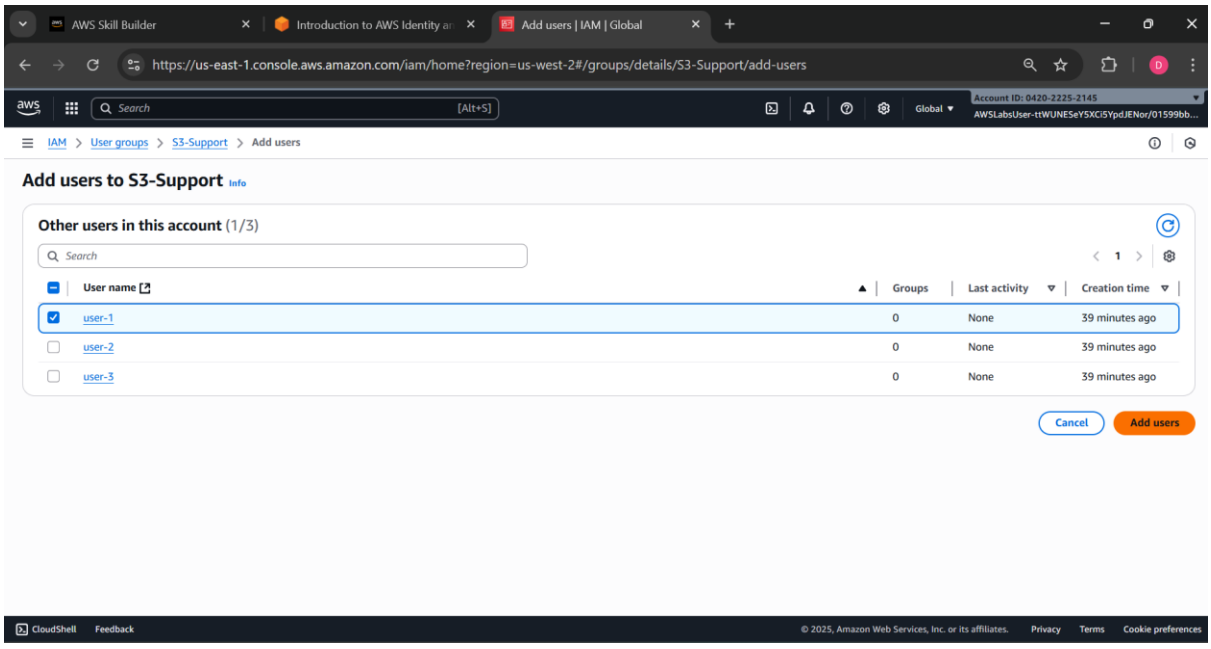


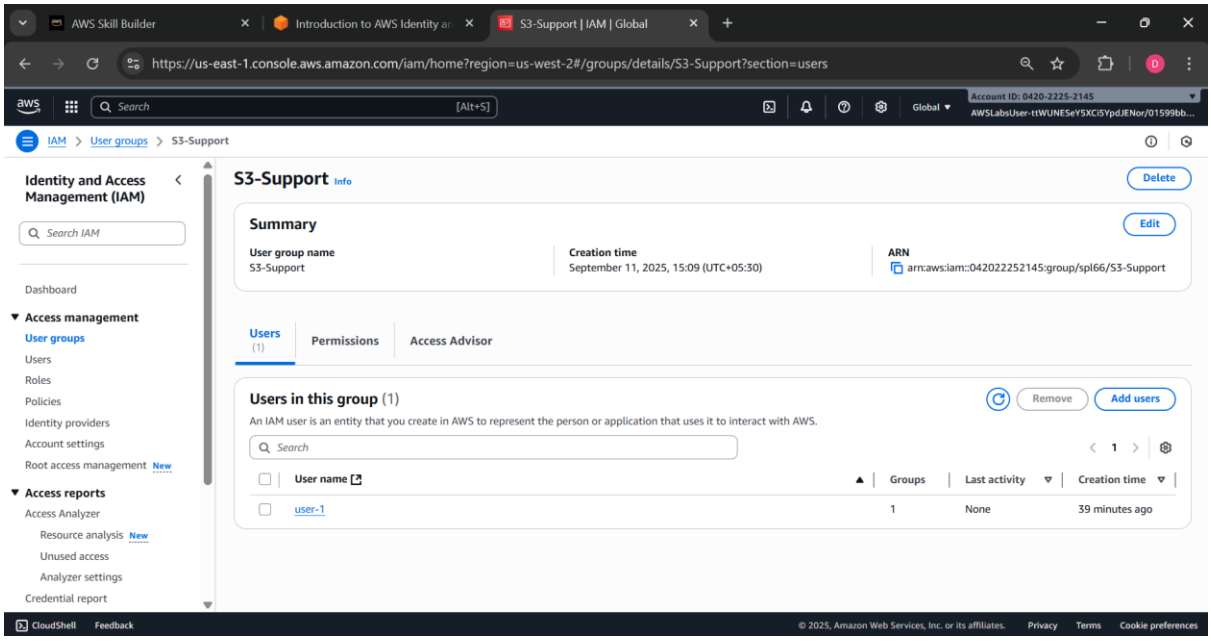
20. Choose the **Users** tab.
21. In the **Users** tab, choose **Add users**.



22. In the **Add users to Group** window, configure the following:
    1 Select **user-1**.
    2 At the bottom of the screen, choose **Add users**.

In the **Users** tab you will see that **user-1** has been added to the group.



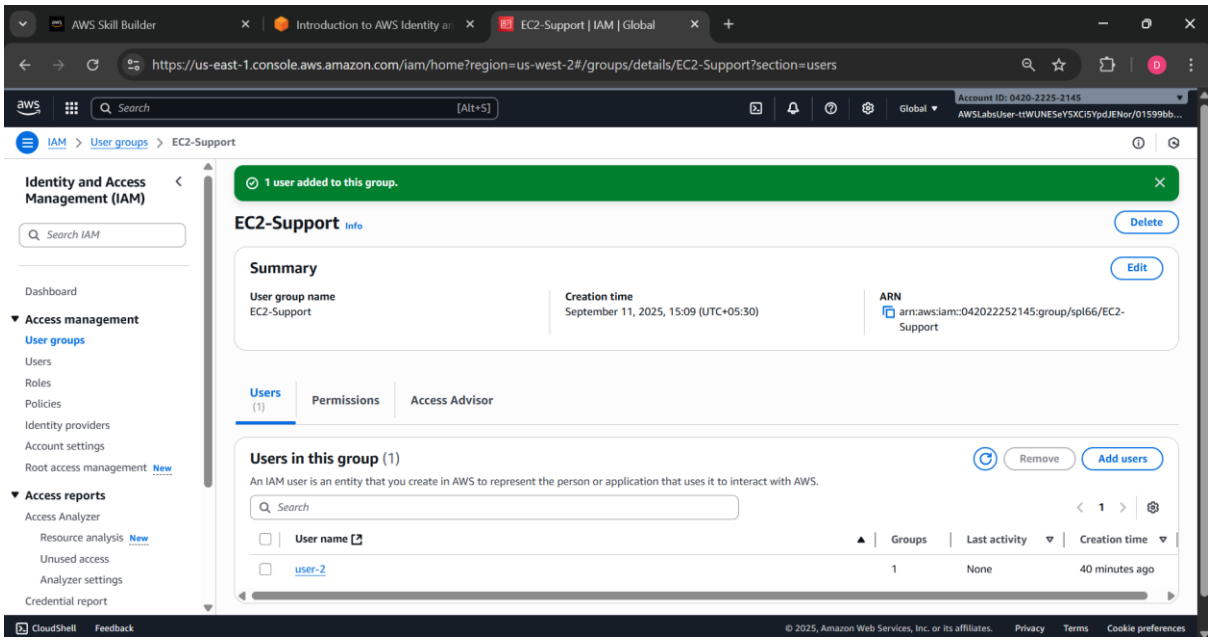


Add user-2 to the EC2-Support Group

You have hired **user-2** into a role where they will provide support for Amazon EC2.

23. Using similar steps to the ones above, add **user-2** to the **EC2-Support** group.

user-2 should now be part of the **EC2-Support** group.

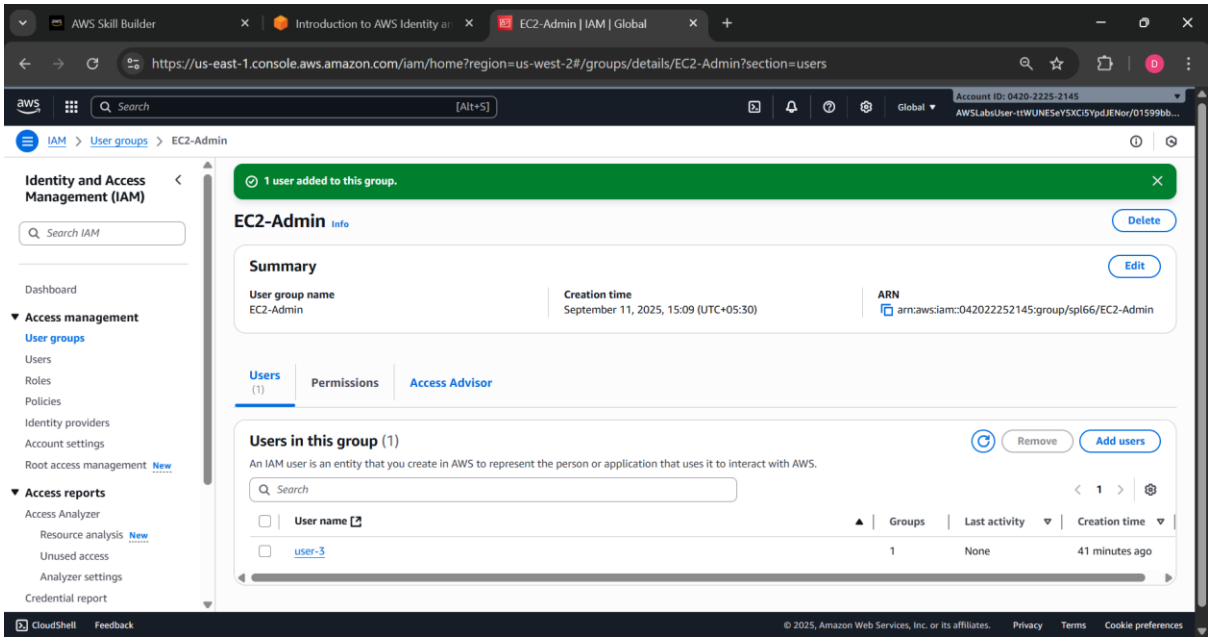


Add user-3 to the EC2-Admin Group

You have hired **user-3** as your Amazon EC2 administrator, who manage your EC2 instances.

24. Using similar steps to the ones above, add **user-3** to the **EC2-Admin** group.

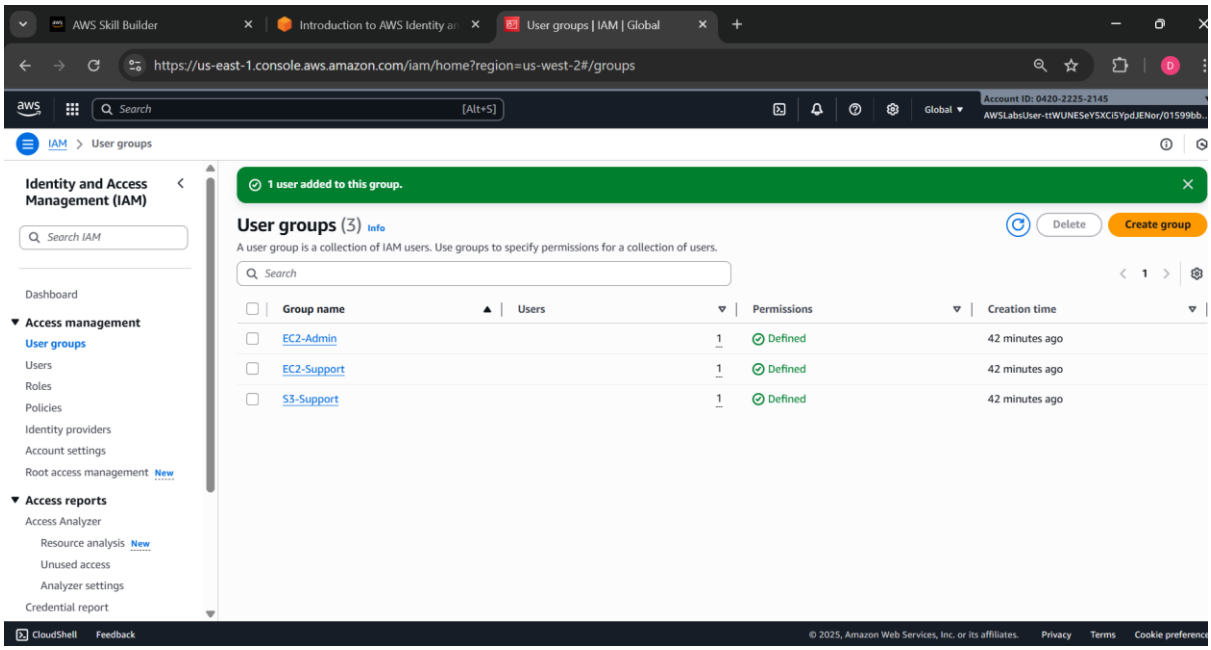
user-3 should now be part of the **EC2-Admin** group.



25. In the navigation pane on the left, choose **User groups**.

    Each Group should have a **1** in the Users column for the number of Users in each Group.

    If you do not have a **1** beside each group, revisit the above instructions to ensure that each user is assigned to a Group, as shown in the table in the Business Scenario section.



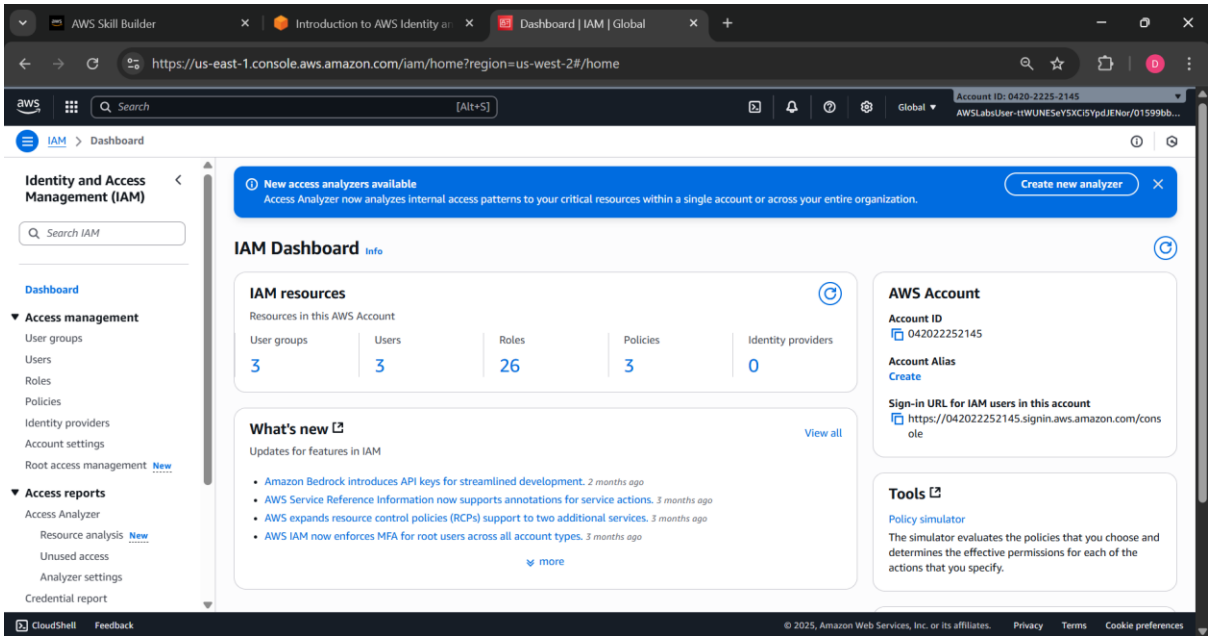
Task 3: Sign-In and Test Users

In this task, you will test the permissions of each IAM User.

26. In the navigation pane on the left, choose **Dashboard**.

    An **IAM users Sign-in URL** is displayed It will look similar to: *https://123456789012.signin.aws.amazon.com/console*

    This link can be used to sign-in to the AWS Account you are currently using.



27. Copy the **IAM users Sign-in URL** to a text editor.
28. Open a private window.

Mozilla Firefox

1 Choose the menu bars at the top-right of the screen
2 Select **New Private Window**

Google Chrome

1 Choose the ellipsis at the top-right of the screen
2 Choose **New Incognito window**

Microsoft Edge

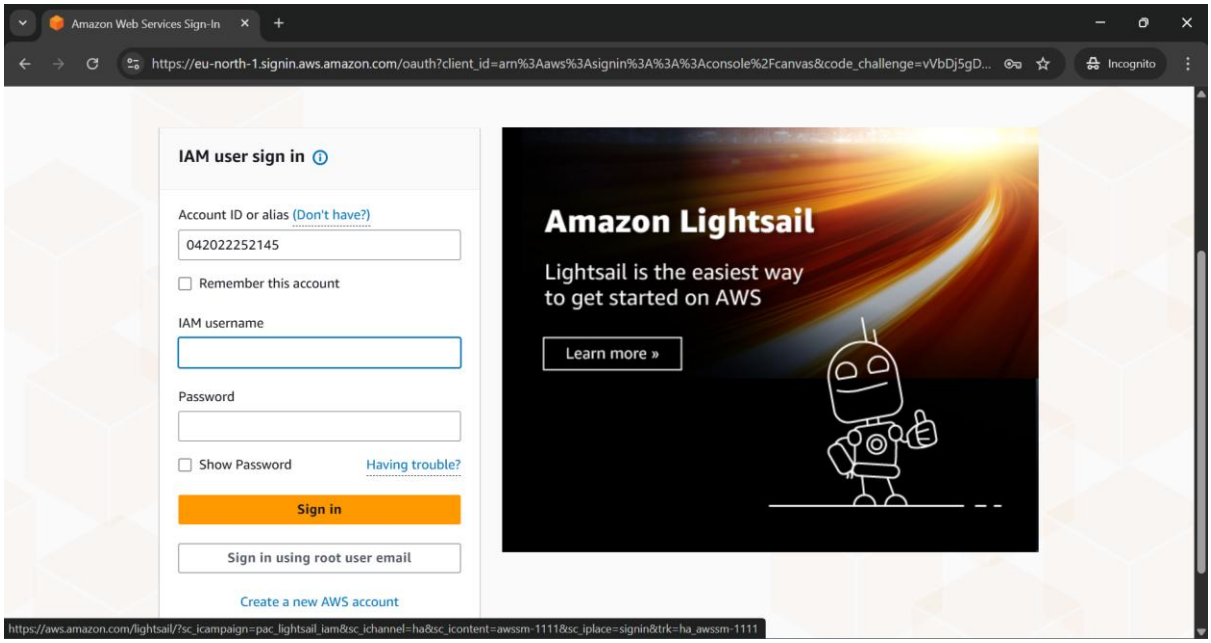
1 Choose the ellipsis at the top-right of the screen
2 Choose **New InPrivate window**

Microsoft Internet Explorer

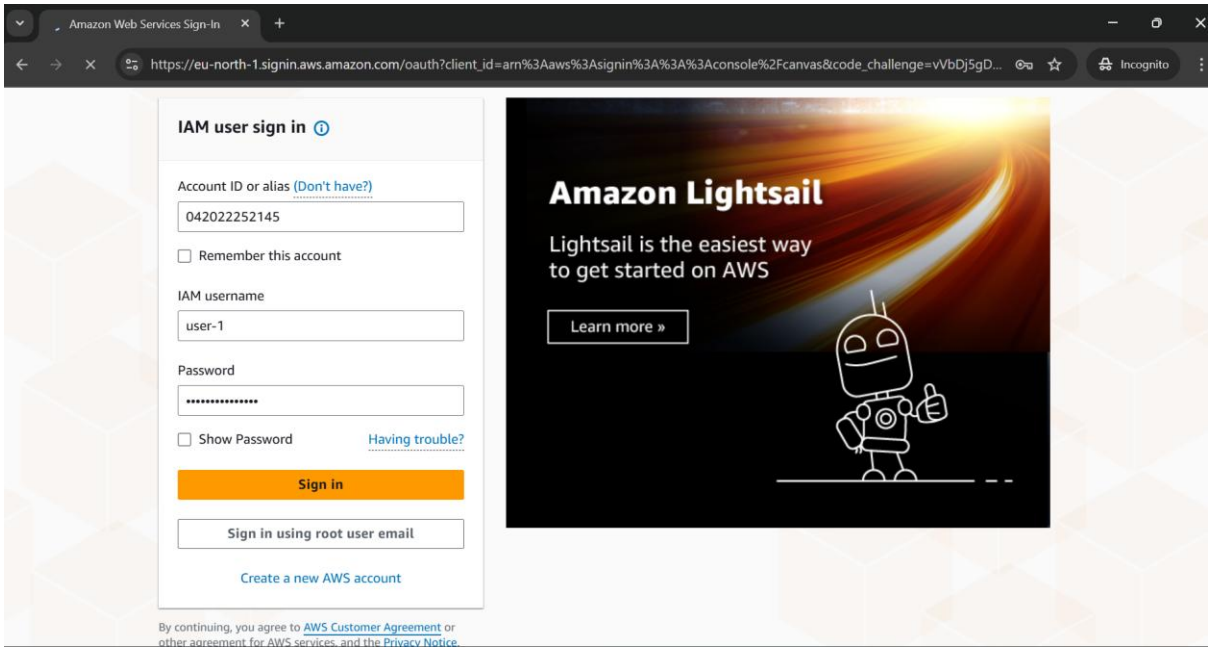
1 Choose the **Tools** menu option
2 Choose **InPrivate Browsing**

29. Paste the **IAM users sign-in** link into your private window and press **Enter**.

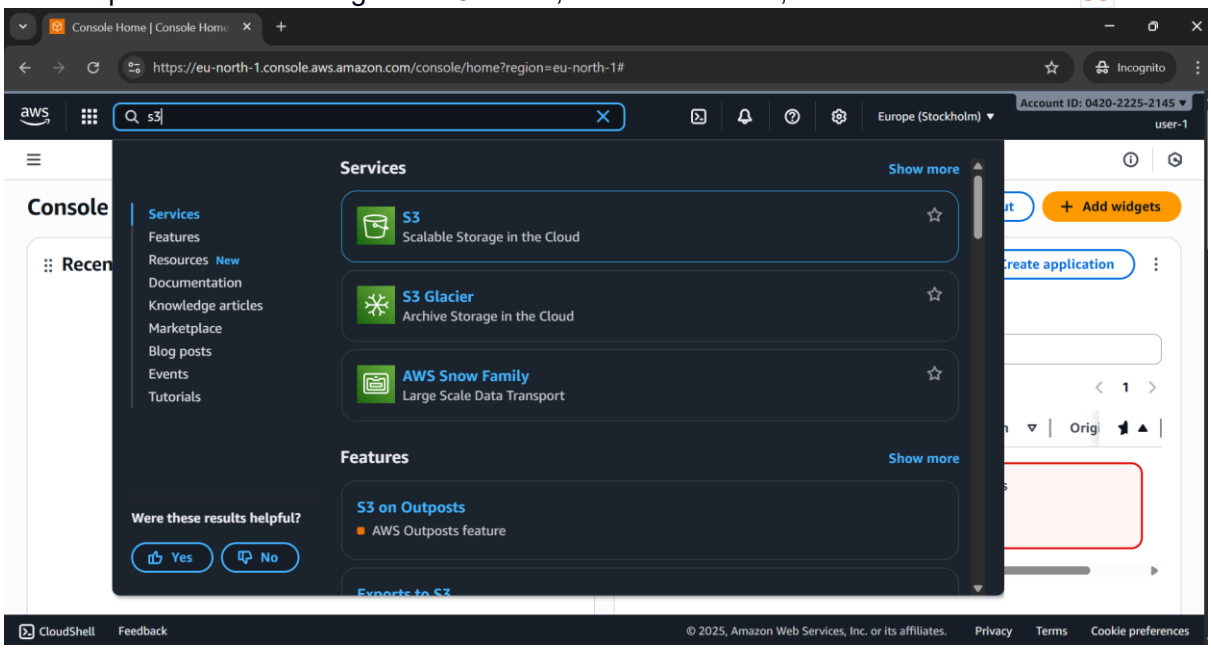
    You will now sign-in as **user-1**, who has been hired as your Amazon S3 storage support staff.



30. Sign-in with:
    1. **IAM username:**
        1. `user-1`
    2. **Password:** Paste the value of *AdministratorPassword* located to the left of these instructions.



31. At the top of the AWS Management Console, in the search bar, search for and choose S3

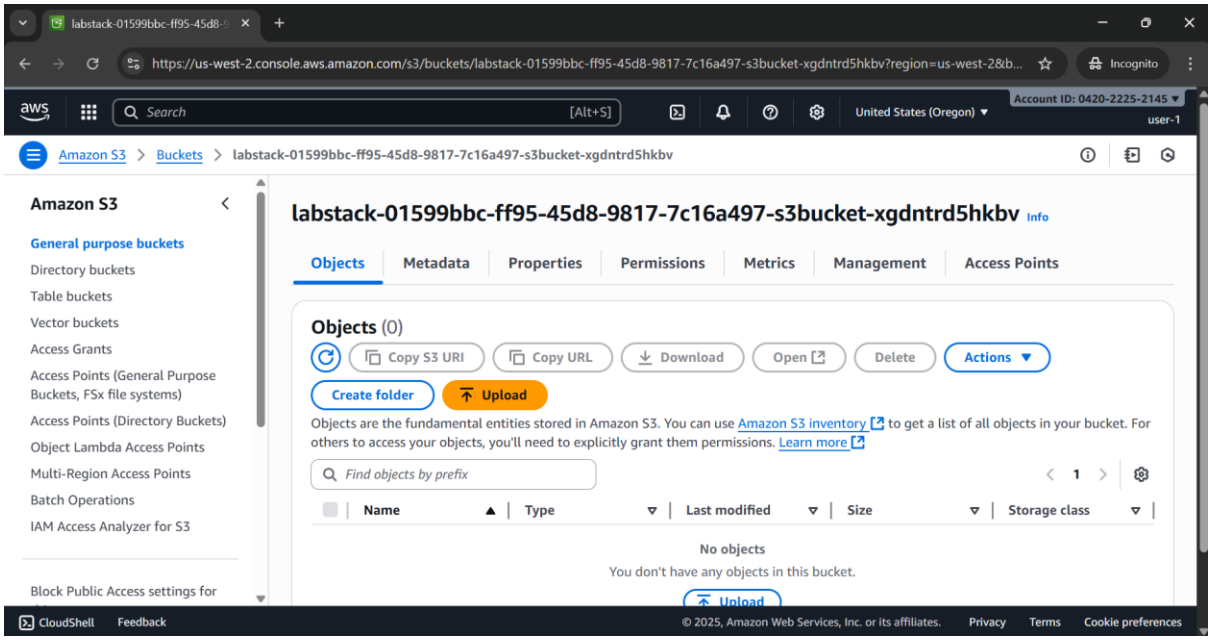


32. Choose the bucket that has **s3bucket** in its name.

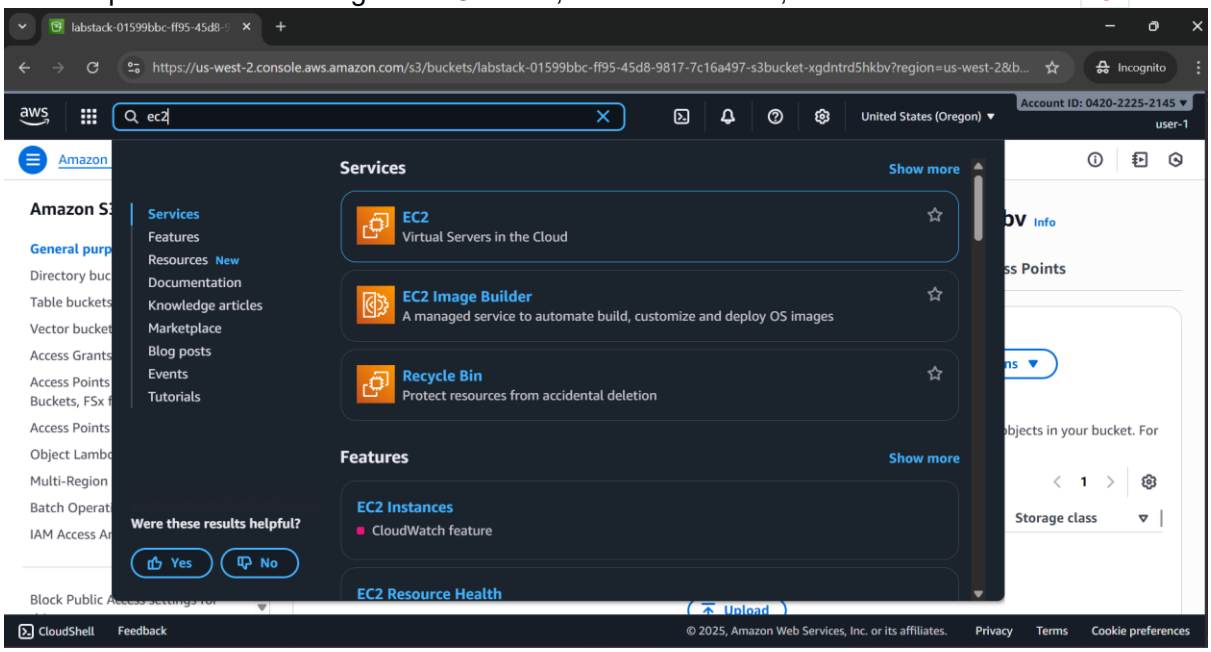
    The name of your S3 bucket is also located to the left of these instructions.

    Since your user is part of the **S3-Support** Group in IAM, they have permission to view a list of Amazon S3 buckets and the contents of the **s3bucket**.

    Now, test whether they have access to Amazon EC2.



33. At the top of the AWS Management Console, in the search bar, search for and choose `EC2`

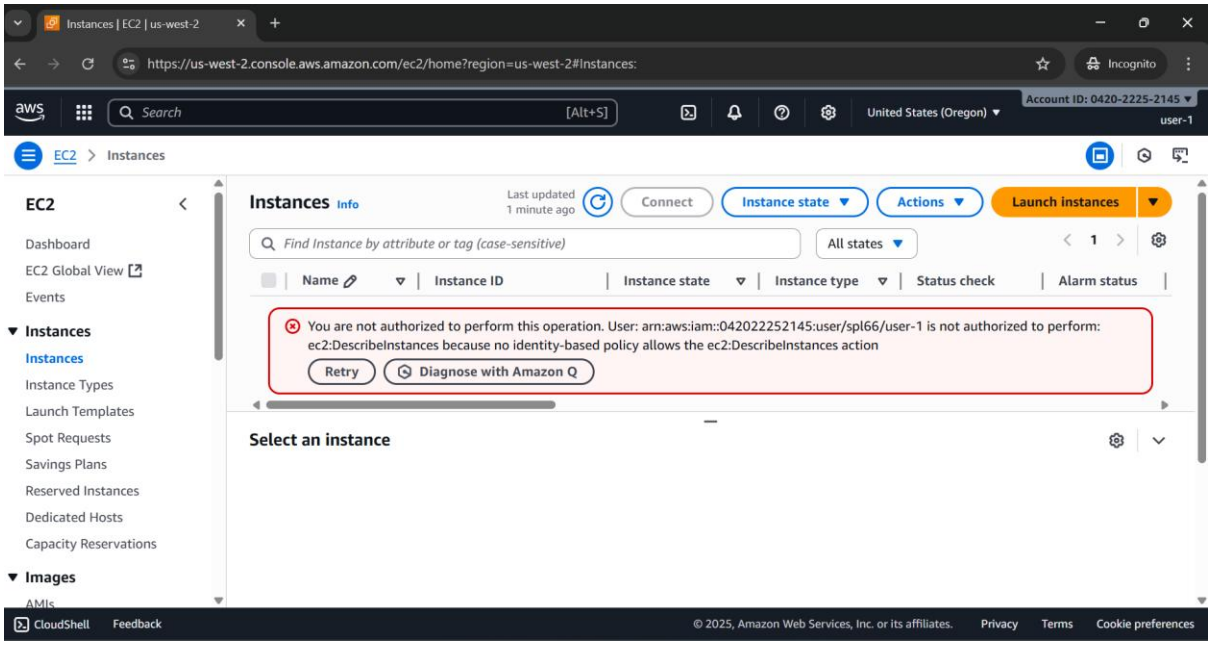


34. Navigate to the region that your lab was launched in by:
    1. Choosing the drop-down arrow at the top of the screen, to the left of **Support**
    2. Selecting the region value that matches the value of **Region** to the left of these instructions

35. In the left navigation pane, choose **Instances**.

    You cannot see any instances. This is because your user has not been assigned any permissions to use Amazon EC2.

    You will now sign-in as **user-2**, who has been hired as your Amazon EC2 support person.

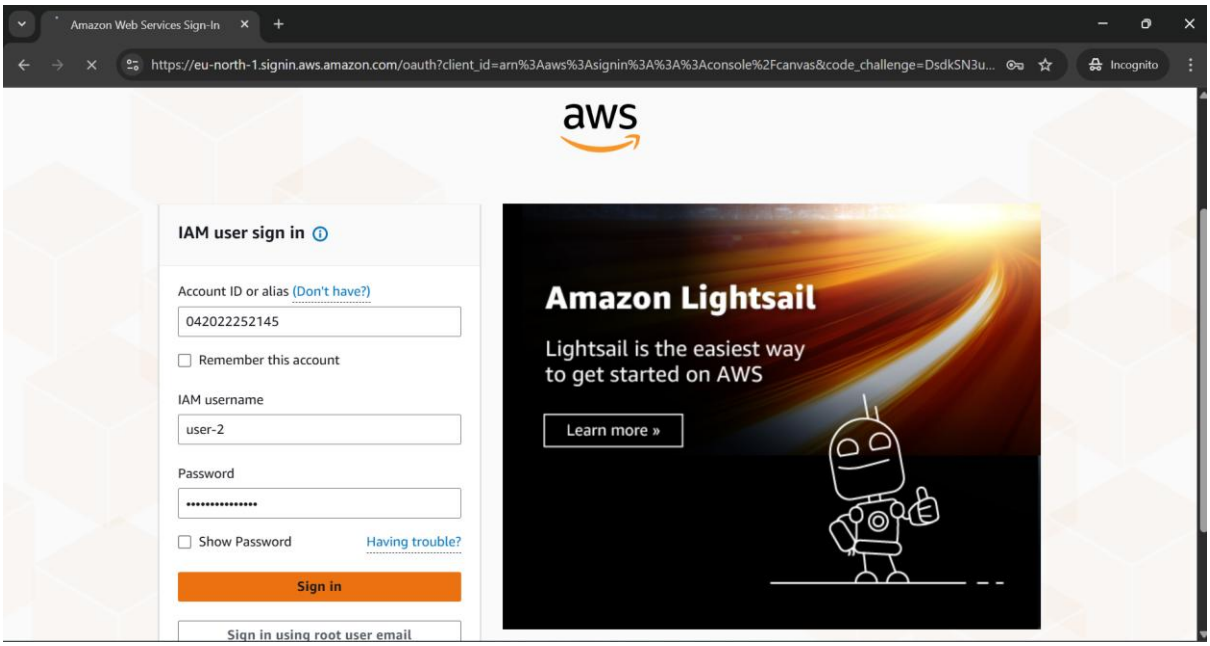


36. Sign user-1 out of the **AWS Management Console** by completing the following actions:
    1 At the top of the screen, choose **user-1**
    2 Choose **Sign out**

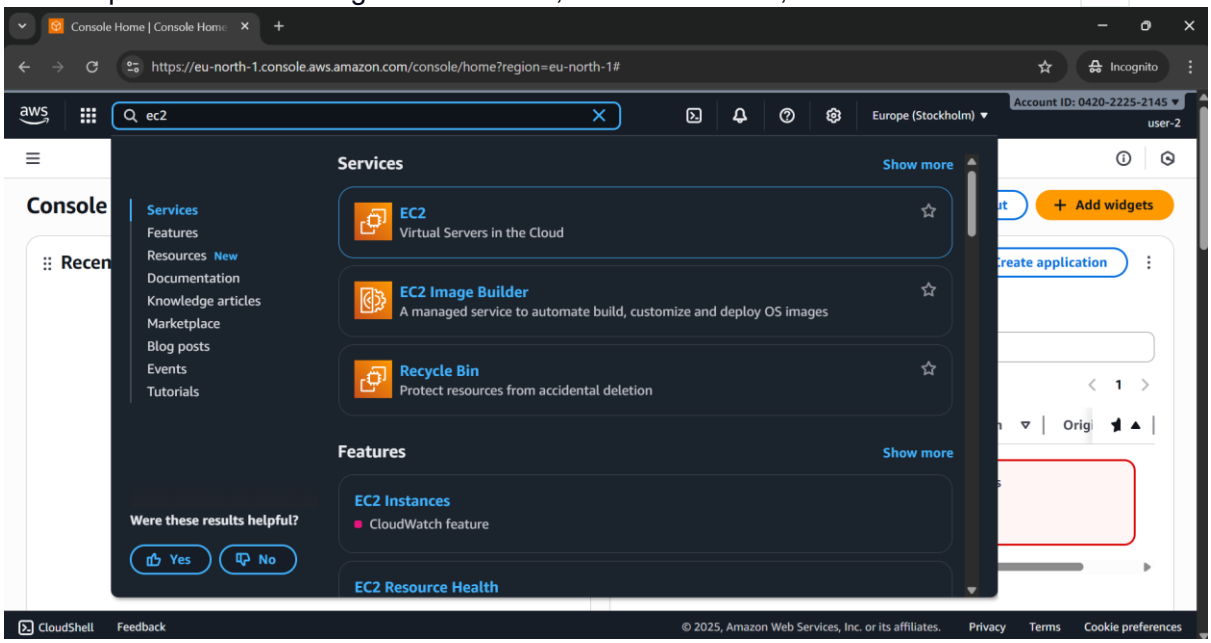
37. Paste the **IAM users sign-in** link into your private window and press **Enter**.

    This links should be in your text editor.

38. Sign-in with:
    1 **IAM user name:** `user-2`
    2 **Password:** Paste the value of *AdministratorPassword* located to the left of these instructions.



39. At the top of the AWS Management Console, in the search bar, search for and choose `EC2`



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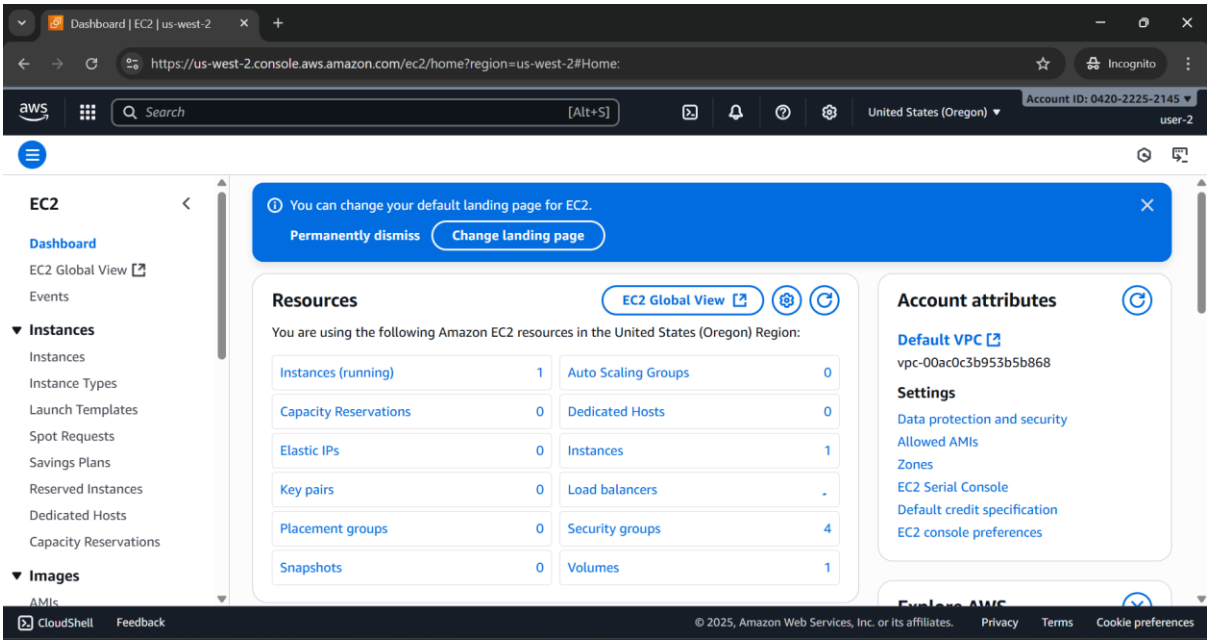
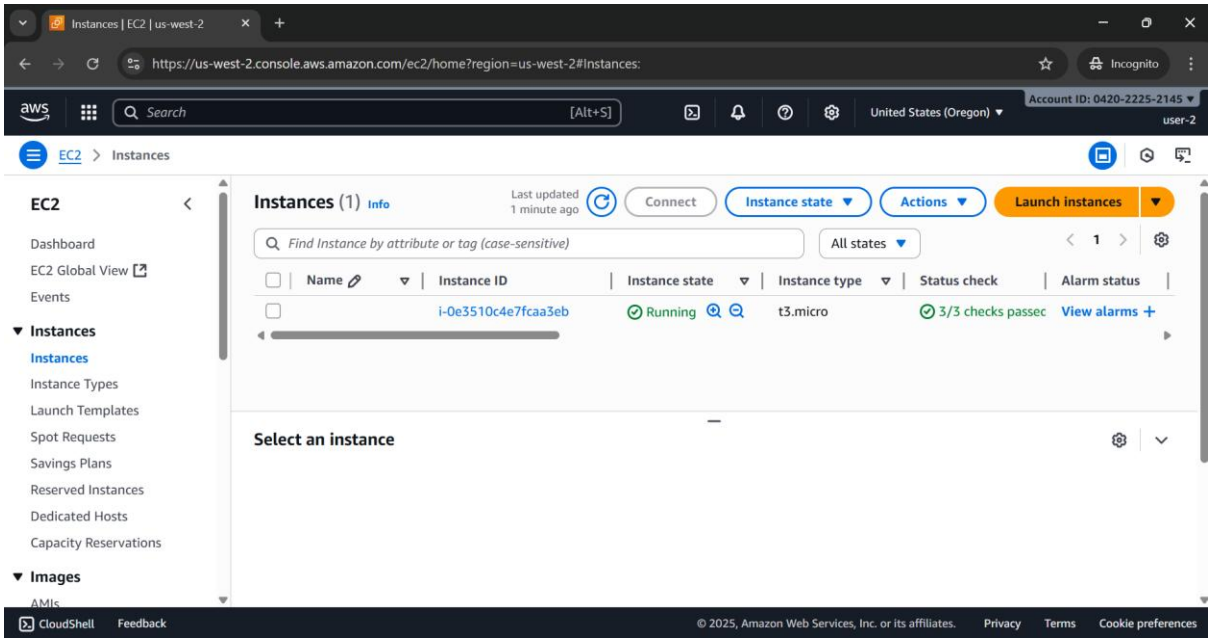
    1 Choosing the drop-down arrow at the top of the screen, to the left of **Support**
    2 Selecting the region value that matches the value of **Region** to the left of these instructions



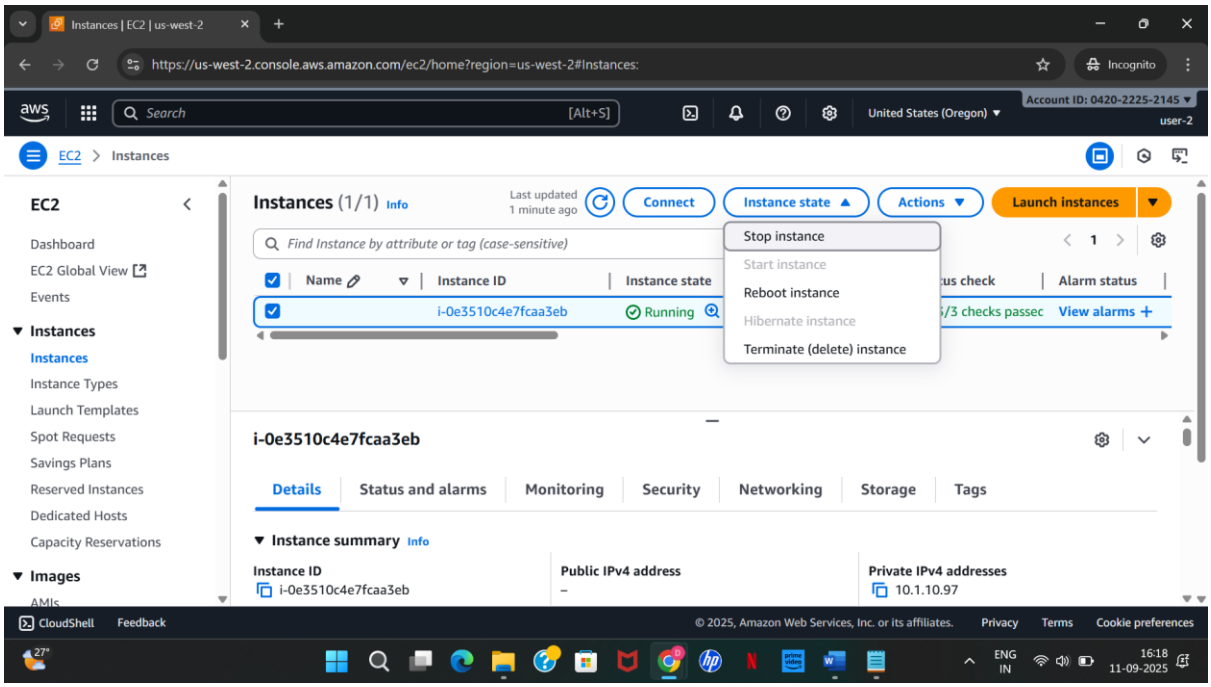
41. In the navigation pane on the left, choose **Instances**.

    You are now able to see an Amazon EC2 instance because you have Read Only permissions. However, you will not be able to make any changes to Amazon EC2 resources.

    Your EC2 instance should be selected If it is not selected, select it.

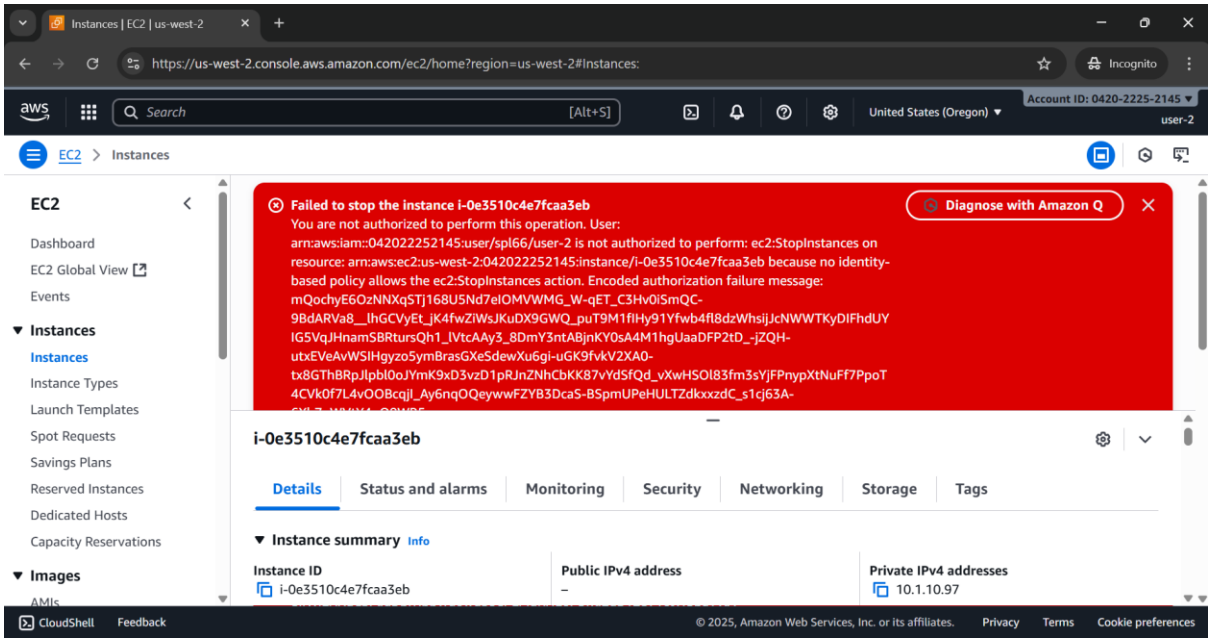


42. In **Instance state**, menu choose **Stop instance**.



43. In the **Stop instance** window, choose **Stop**.

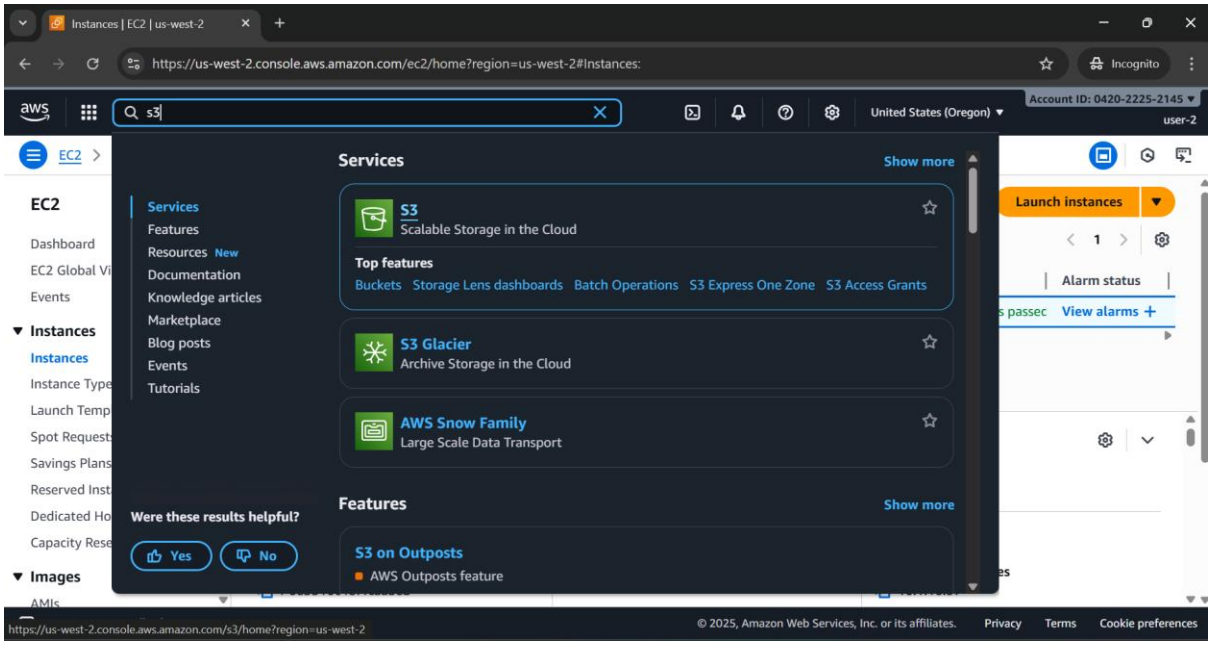
You will receive an error stating *You are not authorized to perform this operation*. This demonstrates that the policy only allows you to information, without making changes.

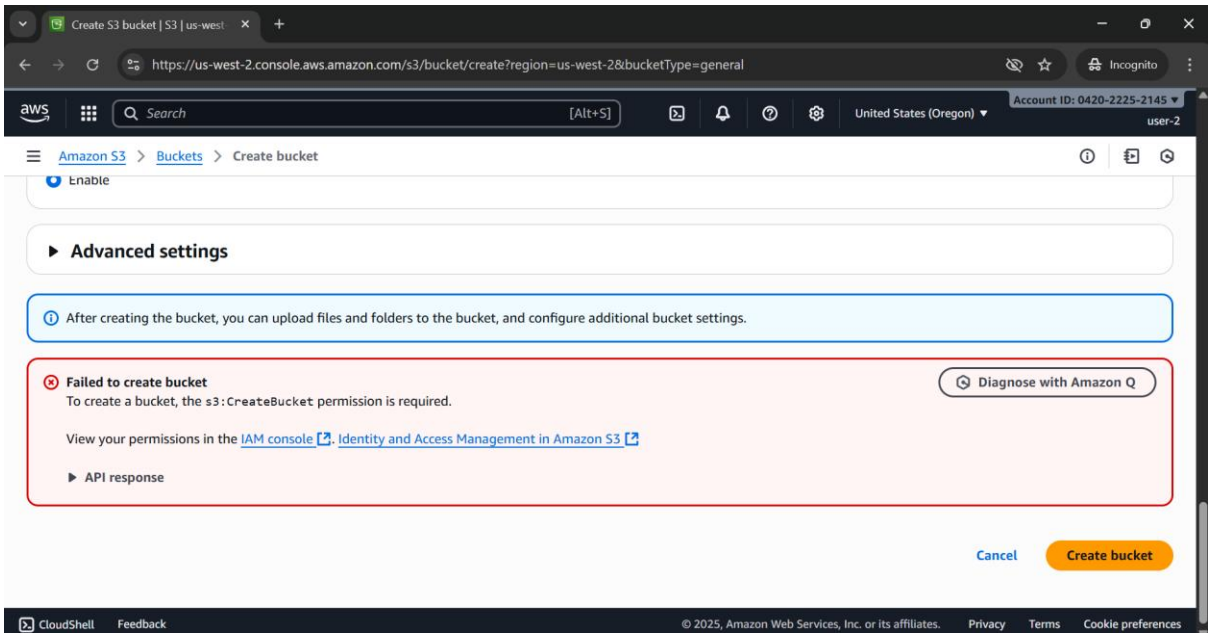


44. Close the displayed error message.

Next, check if user-2 can access Amazon S3.

45. At the top of the AWS Management Console, in the search bar, search for and choose S3
You will receive an **Error Access Denied** because user-2 does not permission to use Amazon S3.





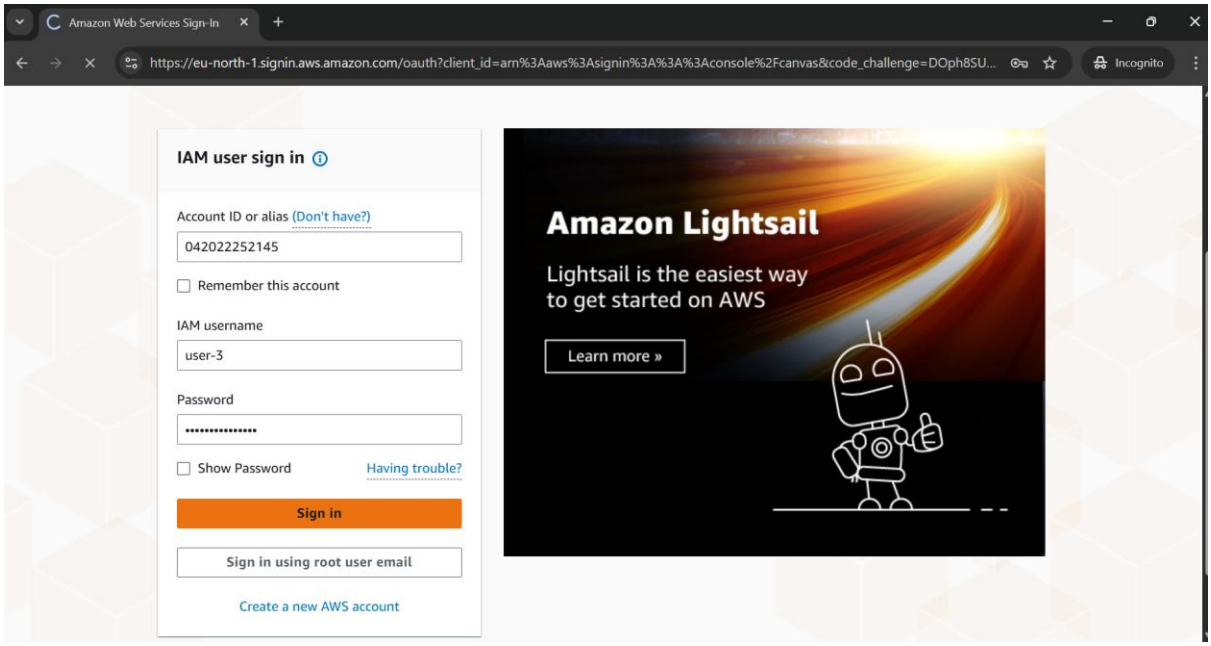
46. You will now sign-in as **user-3**, who has been hired as your Amazon EC2 administrator.

47. Sign user-2 out of the **AWS Management Console** by completing the following actions:
    1 At the top of the screen, choose **user-2**
    2 Choose **Sign out**

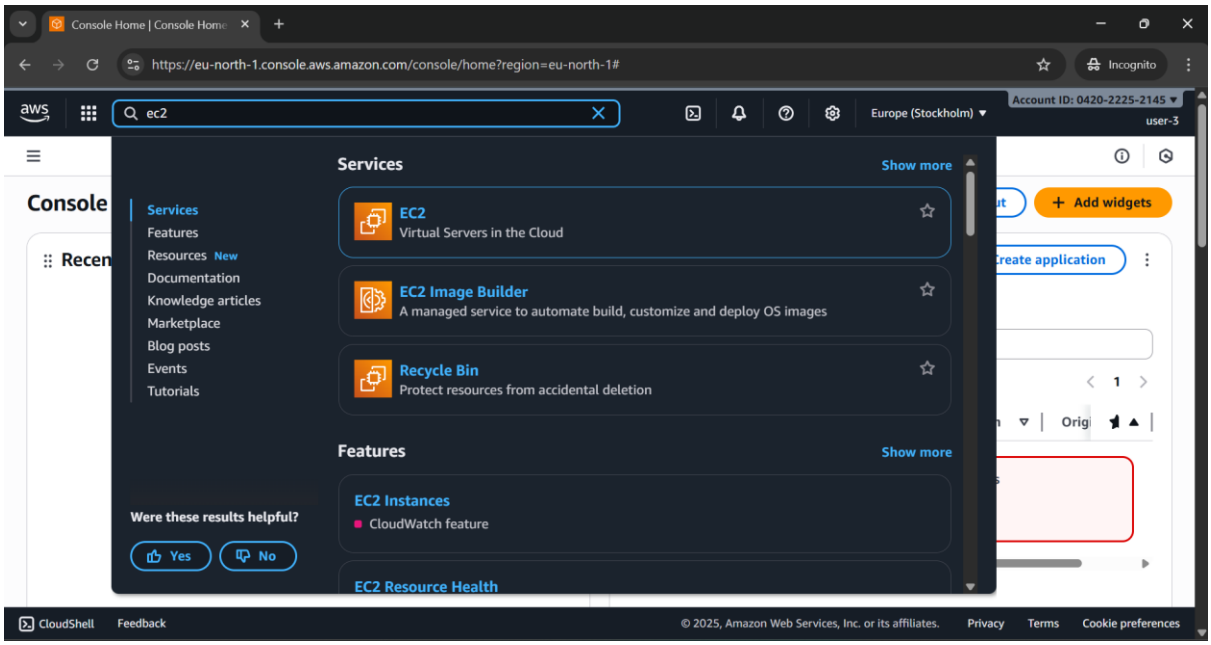
48. Paste the **IAM users sign-in** link into your private window and press **Enter**.

49. Paste the sign-in link into your web browser address bar again. If it is not in your clipboard, retrieve it from the text editor where you stored it earlier.

50. Sign-in with:
    1 **IAM user name:** `user-3`
    2 **Password:** Paste the value of *AdministratorPassword* located to the left of these instructions.

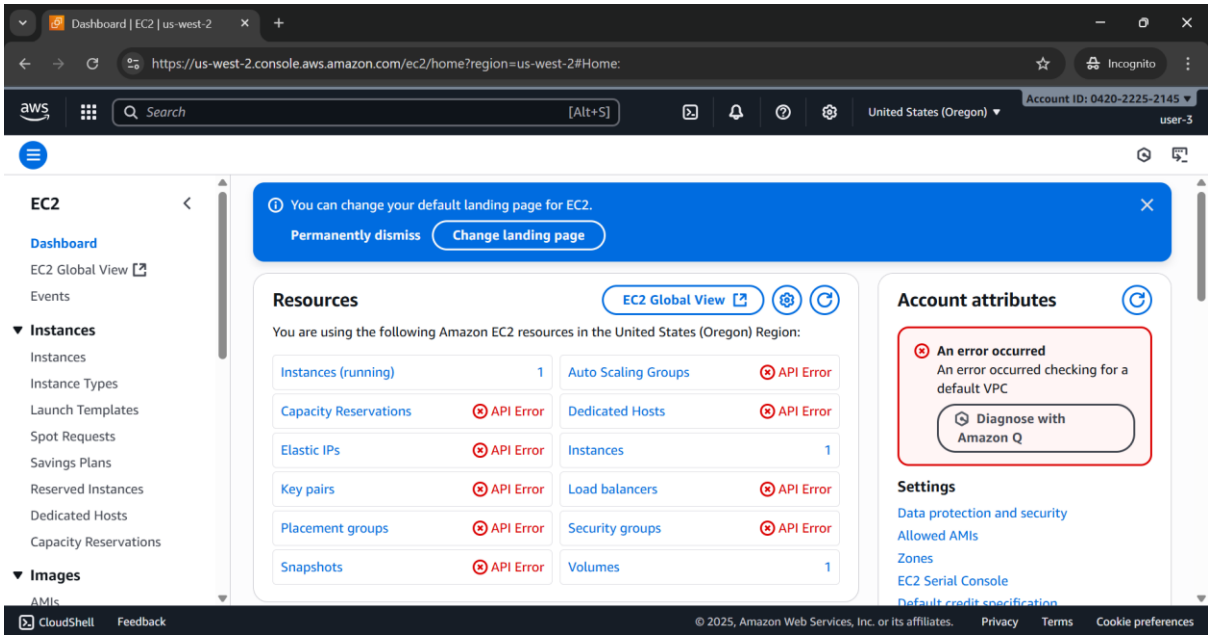


51. At the top of the AWS Management Console, in the search bar, search for and choose `EC2`

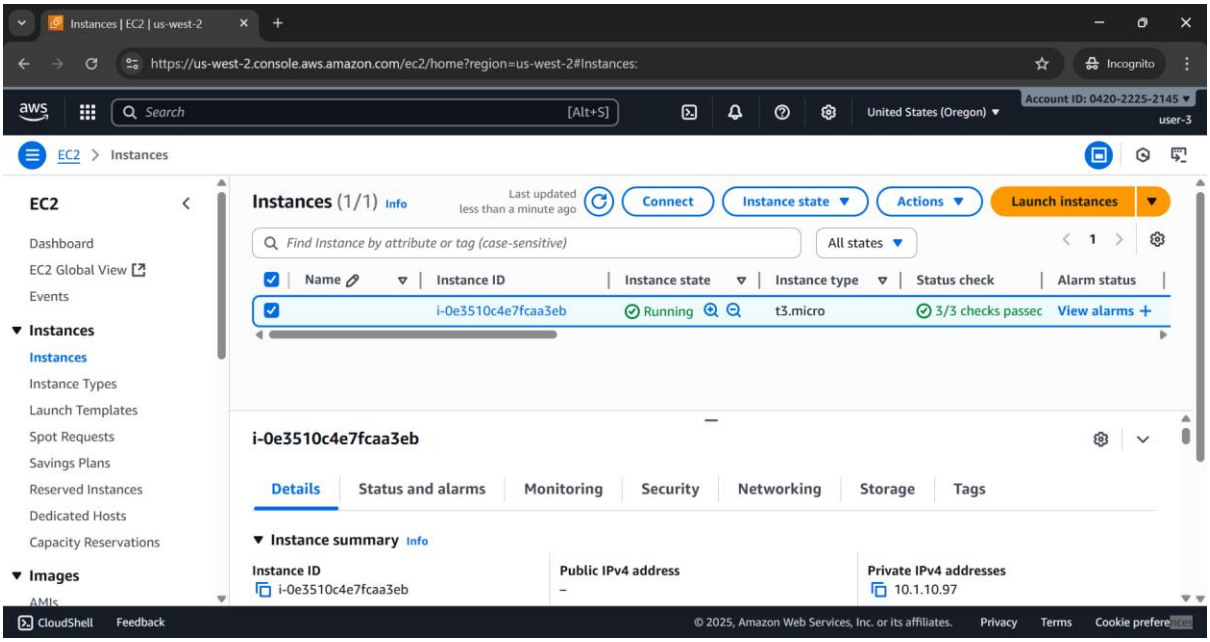


52. Navigate to the region that your lab was launched in by:
    1 Choosing the drop-down arrow at the top of the screen, to the left of **Support**

2 Selecting the region value that matches the value of **Region** to the left of these instructions



53. In the navigation pane on the left, choose **Instances**.
    1 As an EC2 Administrator, you should now have permissions to Stop the Amazon EC2 instance.
    2 Your EC2 instance should be selected . If it is not, please select it.

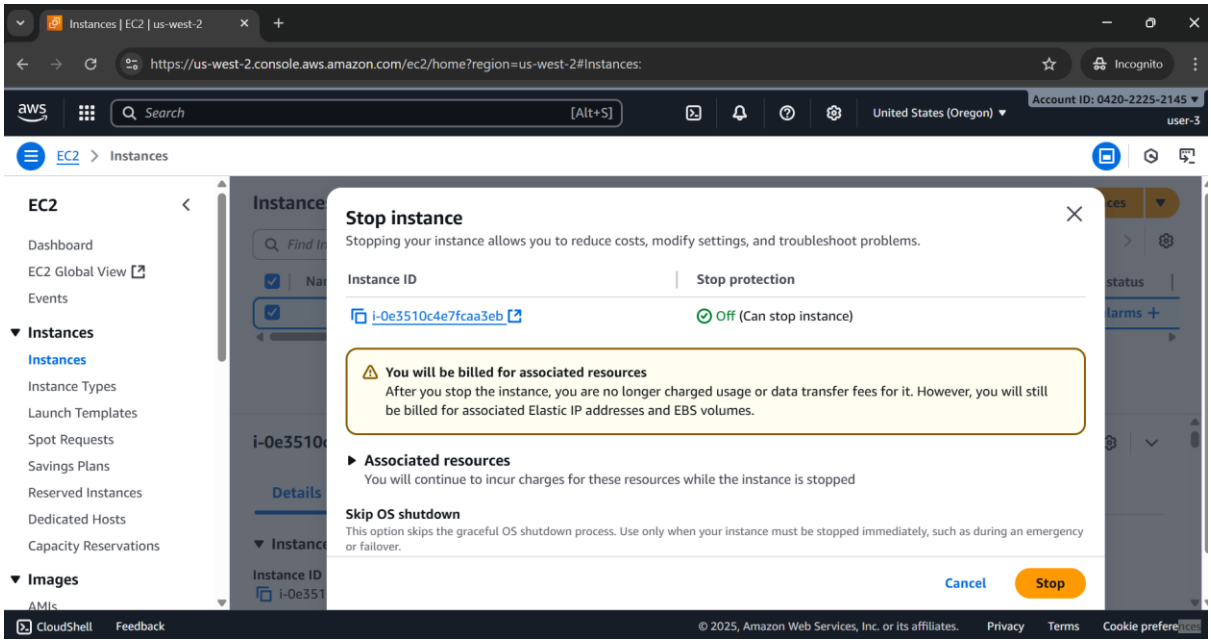


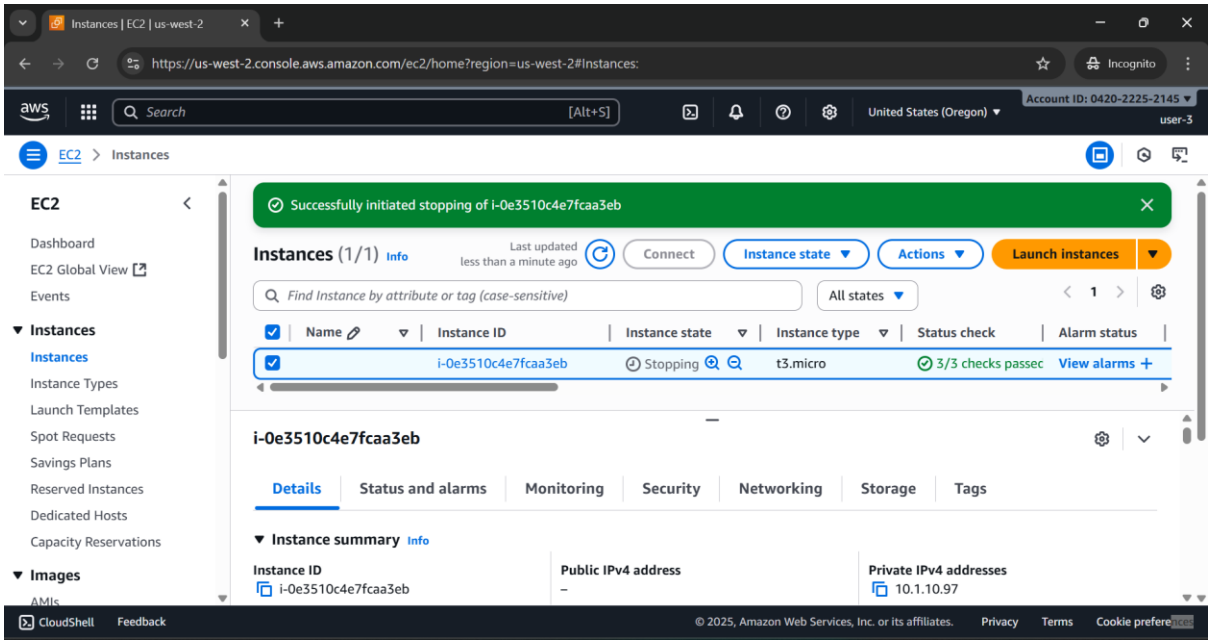
54. In **Instance state**, menu choose **Stop instance**.

55. In the **Stop Instance** window, choose **Stop**.

    1 The instance will enter the *stopping* state and will shutdown.

56. Close your private window.





Conclusion

Congratulations! You now have successfully:

- Explored pre-created IAM users and groups
- Inspected IAM policies as applied to the pre-created groups
- Followed a real-world scenario, adding users to groups with specific capabilities enabled
- Located and used the IAM sign-in URL
- Experimented with the effects of policies on service access

End lab

Follow these steps to close the console and end your lab.

57. Return to the **AWS Management Console**.
58. At the upper-right corner of the page, choose **AWSLabsUser**, and then choose **Sign out**.
59. Choose **End Lab** and then confirm that you want to end your lab.