**Assessment Title**

# Report and Proof of Concepts
# (Network Security Expert using Fortinet)

CCC603| Assessment-6

**The Student Name | Geni Bahar**
Student ID: 27085022

**Tutor/Accessor | Ovesh Vohra**

Programme

**Diploma in Cloud Computing and Cyber Security (120 Credits)**

Course

**CCC603: Cyber Security in Cloud**

(Level 6, 30 Credits)

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# Part A: Written Report

## 1. Executive Summary

In modern organisations, cloud adoption provides flexibility and scalability, but it also introduces new challenges in terms of security, licensing, and system management. In this project, the organisation is moving towards a hybrid cloud model using AWS, where maintaining security and business continuity is very important.

The main goal of this solution was not only to deploy cloud resources but to design a secure and manageable architecture that can be used in a real-world environment. To achieve this, I created a custom VPC with multiple subnets and deployed a FortiGate firewall as the central security component.

One important design decision was to make sure internal resources are not directly exposed to the internet. Instead, all traffic is routed through the FortiGate firewall, which allows inspection and enforcement of security rules. This way, the attack surface is reduced, and the network is easier to control overall.

In addition to security, I also focused on cost and operational efficiency. AWS Lambda was used to automate the start and stop of the FortiGate instance during working hours. This reduces unnecessary usage and helps keep costs under control.

Another important consideration in this design is scalability. As organisations grow, the network should be able to handle more services and users without major redesign. By using a custom VPC and subnet-based architecture, it becomes easier to expand the environment when needed.

Overall, this solution demonstrates how security, automation, and cost management can be balanced in a cloud environment, while also allowing future improvements such as high availability and advanced monitoring.

## 2. Cloud Security Architecture

The architecture is designed using a custom VPC with a CIDR block 10.160.0.0/16. This provides enough IP range and allows better control over network segmentation.

I created one public subnet and multiple private subnets across different Availability Zones. The public subnet is used to host the FortiGate firewall, while private subnets are used for internal resources. This separation is important because it prevents internal systems from being directly exposed to the internet.

FortiGate plays a central role in this design. Instead of allowing direct communication between subnets or external access, all traffic is routed through the firewall. This allows inspection, filtering, and enforcement of security policies.

Routing is configured using route tables:

- Public subnet → Internet Gateway
- Private subnets → FortiGate interface

This means internal traffic is checked and controlled before it goes outside the network.

Another key design decision is network segmentation. By placing resources in separate subnets, I reduced the risk of lateral movement. Even if one subnet is compromised, it does not automatically impact the entire system.

In real-world environments, this segmentation can be extended further by separating workloads into multiple layers, such as web, application, and database tiers. This provides better control and improves security by limiting access between different parts of the system.

Security is enforced using both AWS Security Groups and FortiGate firewall rules. Instead of allowing open access (like 0.0.0.0/0), access is restricted based on required ports and trusted IP addresses. This follows best practices for cloud security.

Additionally, monitoring network traffic is also important. While FortiGate handles inspection, integrating services like VPC Flow Logs and CloudWatch can provide deeper visibility into traffic patterns and help detect unusual activity earlier.

Another aspect that is important in cloud architecture is scalability. As more services are added, the network should be able to support them without major redesign. By using a structured VPC and subnet layout, it becomes easier to introduce new subnets for additional applications or services when needed.

It is also important to consider traffic flow within the network. Keeping traffic within the same Availability Zone, where possible, helps reduce latency and avoid unnecessary data transfer costs. This is something that becomes more important in larger environments.

In real-world scenarios, load balancing and redundancy are also considered as part of the architecture. Although not fully implemented in this setup, these can be added later to improve performance and reliability.

## 3. License Management Procedures

For this implementation, I selected the PAYG (Pay-As-You-Go) model for FortiGate. The main reason for this choice is simplicity and ease of deployment.

With PAYG, the license is automatically attached when the instance is launched from AWS Marketplace. This avoids manual setup and makes it less likely for configuration mistakes to happen. It is also suitable for environments where instances may be frequently started and stopped.

However, PAYG may not always be the best option in long-term enterprise environments. For example, organisations with stable workloads may benefit from BYOL (Bring Your Own License), which can reduce costs over time.

Another factor to consider is cost predictability. PAYG can be more flexible, but costs can vary depending on usage. In contrast, BYOL may provide better cost control if the organisation already owns licenses.

License management in this setup is handled using AWS billing and monitoring tools. These tools help track usage and ensure that resources are active only when needed. It is also important to regularly review usage to avoid unnecessary costs or expired services.

From a compliance perspective, maintaining proper documentation of license usage is important. This helps during audits and ensures that all services are used correctly.

Another consideration in license management is flexibility. In cloud environments, resources may be scaled up or down depending on demand, so licensing models should support this behaviour. PAYG works well in this case because it allows organisations to only pay for what they use, which is useful for testing or short-term workloads.

However, organisations must also be careful about cost management. Without proper monitoring, PAYG usage can increase quickly, especially if resources are left running unintentionally. This is why combining licensing with automation, such as scheduled start and stop, is important to maintain control over expenses.

In addition, proper documentation of licensing decisions is useful for future planning. It helps organisations understand which model works best for their workloads and supports better decision-making when scaling systems further.

## 4. Compliance and Governance

In this implementation, I considered common industry frameworks such as ISO 27001, NIST Cybersecurity Framework, and CIS Benchmarks. These frameworks provide guidelines for securing cloud environments and managing risks.

FortiGate supports compliance by providing logging and monitoring features. All traffic passing through the firewall can be recorded, which helps in identifying suspicious activity and maintaining accountability.

AWS also provides monitoring tools such as CloudWatch, which can be integrated with firewall logs. This improves visibility and allows quicker detection of issues.

Policy management is handled through firewall rules and AWS configurations. Any changes made to rules should be properly documented. This is important because it helps track changes and ensures accountability in real-world environments.

Another important governance aspect is access control. Following the principle of least privilege ensures that users and services only have the permissions they actually need. This reduces the risk of misuse or accidental changes.

Regular audits and reviews are also important to maintain compliance over time. Even a secure system can become vulnerable if configurations are not reviewed regularly.

Overall, governance is maintained through a combination of controlled access, monitoring, and proper documentation.

In addition to technical controls, organisational policies also play a role in maintaining security. Employees and administrators should follow clear guidelines when making changes to the system. Without proper procedures, even a well-designed system can become vulnerable over time.

Another important factor is logging and audit trails. Keeping records of user actions and configuration changes helps identify issues and supports investigation if a security incident occurs. This also helps organisations meet compliance requirements more effectively.

Regular reviews of policies and configurations should be carried out to ensure they are still valid. As systems evolve, security controls must also be updated to match new risks and requirements.

## 5. Automation and Continuity Plan

Automation is an important part of this project. I used AWS Lambda to automatically start and stop the FortiGate instance during working hours (9 AM to 5 PM NZT). This helps keep costs down since the resources are not running all the time.

While this is a basic level of automation, more advanced automation can be implemented in real environments. For example, Infrastructure as Code (IaC) tools such as AWS CloudFormation or Terraform can be used to automate the entire deployment process. This ensures consistency and reduces manual errors.

Automation can also be extended to monitoring and alerting. For example, alerts can be triggered when unusual traffic patterns are detected, allowing faster response to potential threats.

For high availability, the recommended approach is to deploy FortiGate in an Active-Passive configuration across multiple Availability Zones. In this setup, one instance handles traffic while the other remains on standby. If the active instance fails, the standby instance automatically takes over.

For business continuity, two important metrics are considered:

- RTO (Recovery Time Objective) – how quickly the system can recover
- RPO (Recovery Point Objective) – how much data loss is acceptable

In this setup, recovery time is expected to be short because instances can be restarted quickly and configurations can be restored from backups.

Automation can also help improve system reliability. For example, automated health checks can be used to monitor the status of instances and trigger actions if something goes wrong. This reduces the need for manual intervention and improves response time.

In larger environments, automation is often combined with monitoring and alerting systems to create a more responsive infrastructure. This allows teams to detect and resolve issues faster, reducing downtime.

From a continuity perspective, regular backups are also important. Configuration backups ensure that systems can be restored quickly if something fails, which supports both RTO and RPO objectives.

## 6. Risk Assessment and Mitigation

During this setup, several risks were identified. At first, understanding the routing flow was a bit confusing, but testing it step by step made it clearer.

One major risk is misconfiguration, especially in route tables or firewall rules. Even a small mistake here can either expose resources or stop traffic from working properly. This risk can be reduced by regularly reviewing configurations and applying best practices.

Another risk is overly permissive security groups. Allowing access from 0.0.0.0/0 increases exposure to attacks. This can be mitigated by restricting access to specific IP addresses and required ports.

License-related risks can also occur. If a license becomes inactive, the firewall may stop functioning correctly. Monitoring tools should be used to track license status and avoid this issue.

Downtime is another concern, especially if the FortiGate instance fails. This risk can be reduced by implementing high availability and backup strategies.

Another possible risk is a lack of monitoring and alerting. Without proper alerts, issues may not be detected early. This can be improved by using CloudWatch alerts and logging tools.

Human error is also a common issue in cloud environments. Misconfigurations can happen easily, especially in complex setups. Using automation and predefined templates can help reduce this risk.

Overall, risks can be managed by using monitoring tools, following best practices, and regularly reviewing the system.

Another risk to consider is dependency on a single cloud provider. While AWS provides strong reliability, relying entirely on one platform can create limitations. Some organisations consider multi-cloud strategies to reduce this risk, although it also increases complexity.

Security threats are also constantly evolving. What is considered secure today may not be enough in the future. Because of this, systems should be regularly updated and reviewed to ensure they are protected against new vulnerabilities.

Overall, risk management is an ongoing process rather than a one-time task. Continuous monitoring and improvement are required to maintain a secure and reliable environment.

## 7. Conclusion and Recommendations

This project helped me understand how to design a secure cloud network using AWS and FortiGate. Instead of focusing only on setup, I learned the importance of security, management, and long-term reliability.

The architecture ensures that all traffic is controlled through a central firewall, which reduces exposure and improves security. Automation also plays an important role in managing resources efficiently.

If I were to improve this setup further, I would:

- Implement full high availability across multiple Availability Zones
- Use Infrastructure as Code for faster and more consistent deployment
- Improve monitoring with alerts and dashboards (e.g., CloudWatch)

One key takeaway from this project is that cloud security is not just about using the right tools, but also about designing the system correctly from the beginning. Small decisions, such as subnet design or routing configuration, can have a significant impact on the overall security and performance of the system.
I also realised that automation and monitoring play an important role in maintaining a stable environment. Even a well-configured system can become inefficient or insecure if it is not actively monitored and maintained over time.

This project also highlighted the importance of planning for future growth. A system that works well for a small setup may not be suitable as the organisation expands, so scalability should always be considered during the design phase.

Another important aspect of this solution is that it provides a foundation that can be improved over time. Features such as high availability, advanced monitoring, and automation can be added as requirements grow, making the system more robust and production-ready.

These improvements would make the system more reliable and closer to a real enterprise-level solution.

## 8. References


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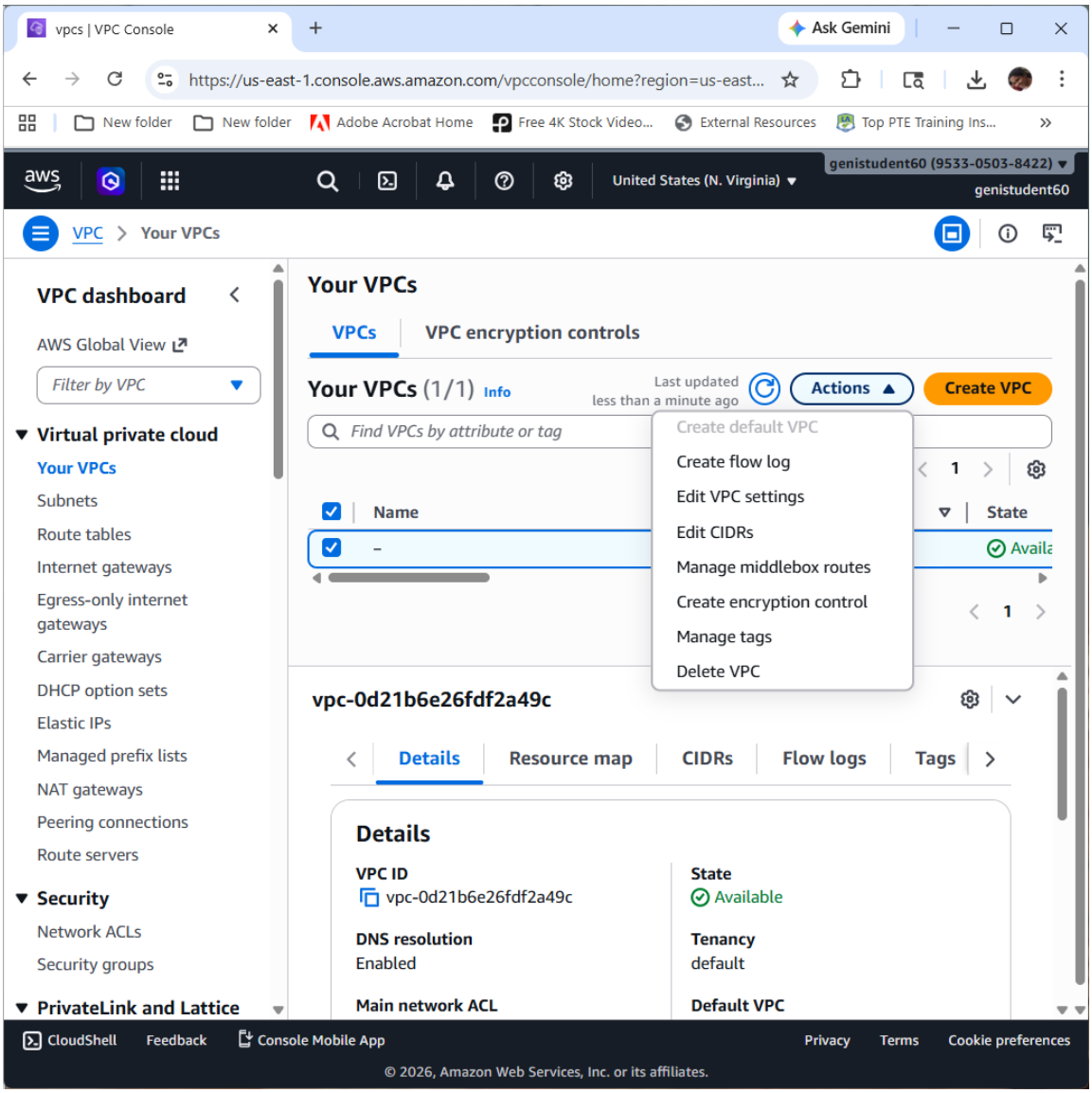
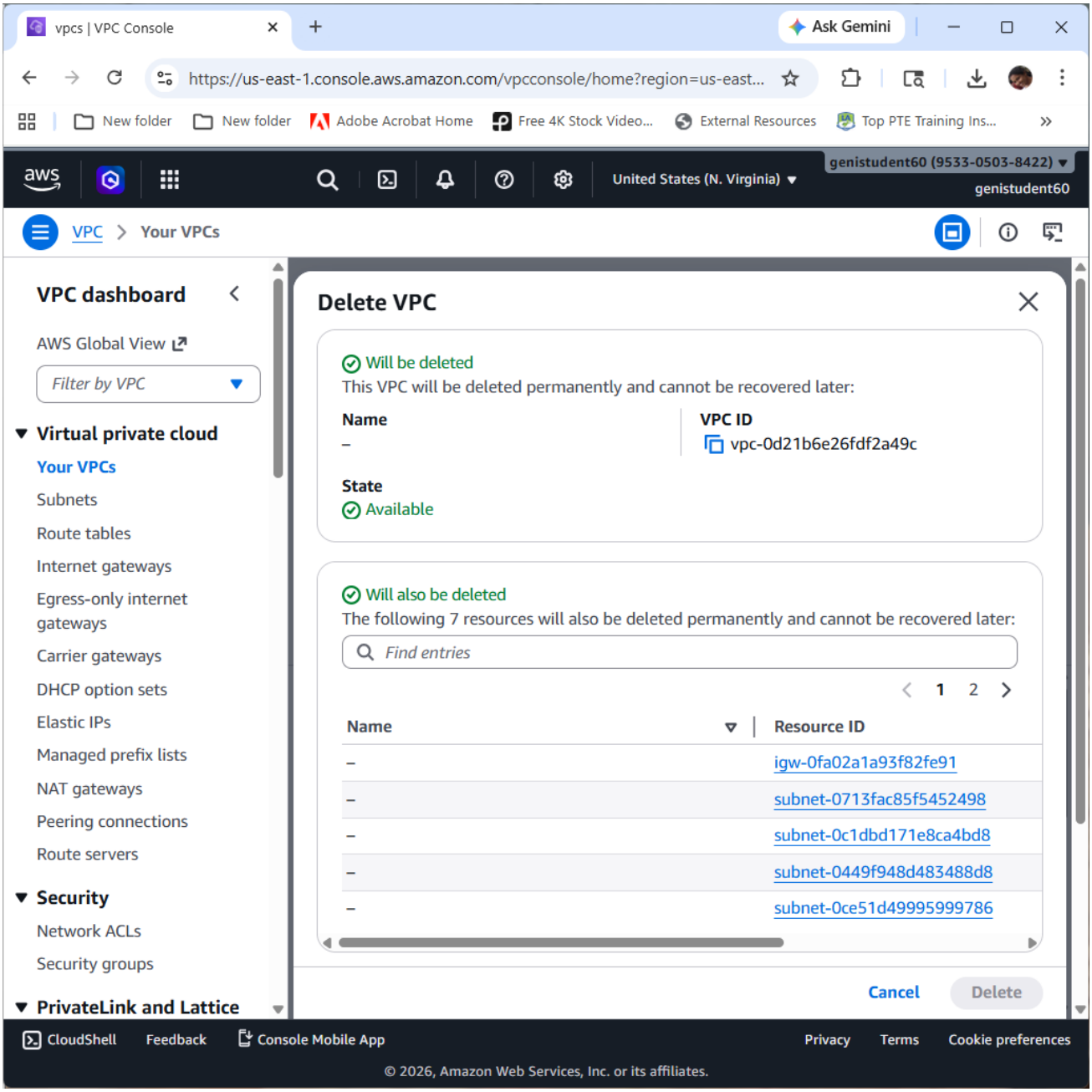
# Part B: Proof of Concepts

## Practical Demonstration

### Task 1: VPC Setup and Configuration

Created a custom VPC (10.160.0.0/16) after deleting the default VPC to have full control over network design and security. I selected the /16 CIDR range to allow enough IP space for future scalability and subnet segmentation.

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External Resources
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VPC
Your VPCs
VPC dashboard
AWS Global View
Filter by VPC
Virtual private cloud
Your VPCs
Subnets
Route tables
Internet gateways
Egress-only internet gateways
Carrier gateways
DHCP option sets
Elastic IPs
Managed prefix lists
NAT gateways
Peering connections
Route servers
Security
Network ACLs
Security groups
PrivateLink and Lattice
Delete VPC
Will be deleted
This VPC will be deleted permanently and cannot be recovered later:
Name
–
VPC ID
vpc-0d21b6e26fdf2a49c
State
Available
Will also be deleted
The following 7 resources will also be deleted permanently and cannot be recovered later:
Find entries
1
2
Name
Resource ID
– igw-0fa02a1a93f82fe91
– subnet-0713fac85f5452498
– subnet-0c1dbd171e8ca4bd8
– subnet-0449f948d483488d8
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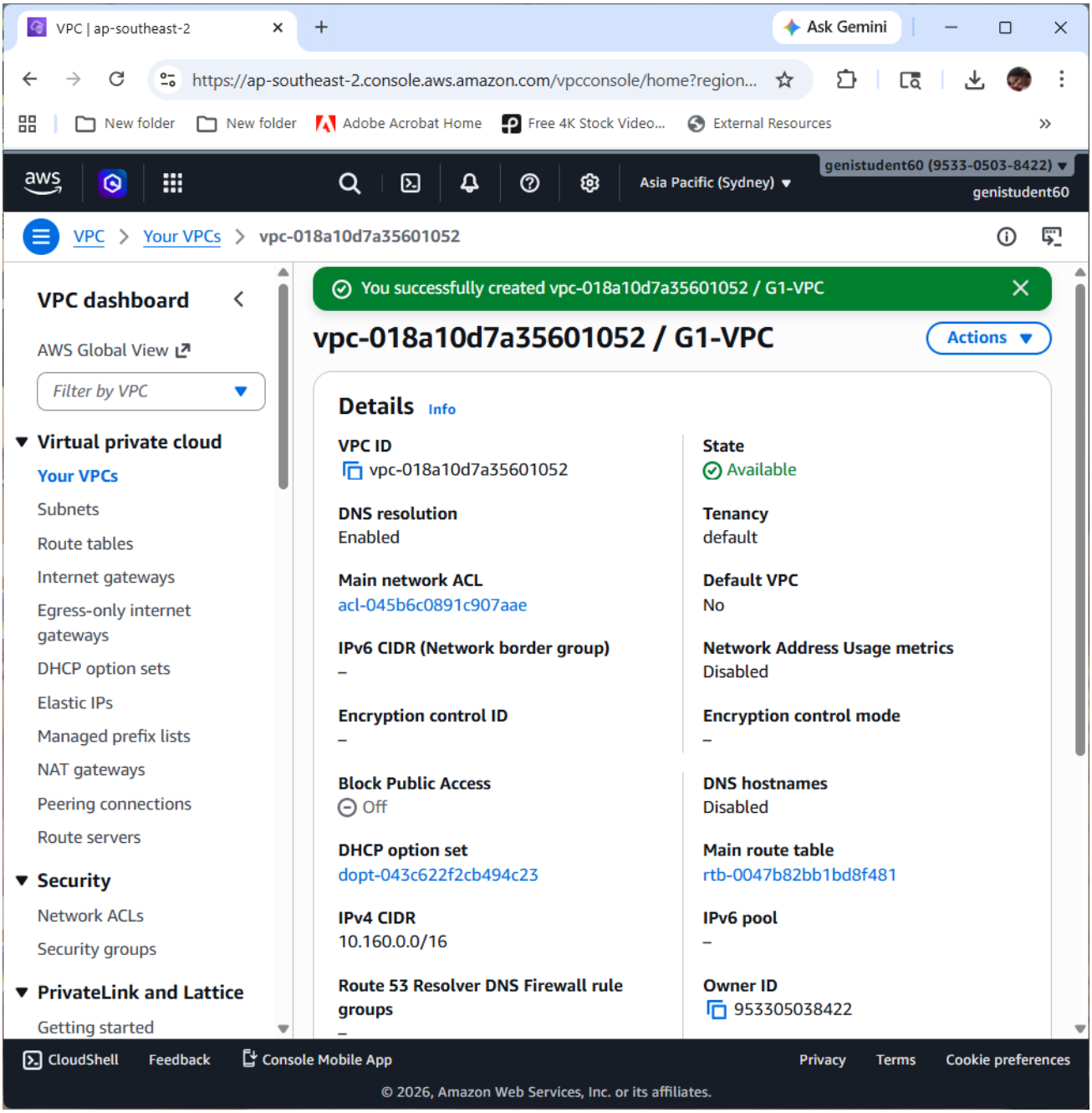
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External Resources
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VPC > Your VPCs > vpc-018a10d7a35601052
VPC dashboard
AWS Global View
Filter by VPC
Virtual private cloud
Your VPCs
Subnets
Route tables
Internet gateways
Egress-only internet gateways
DHCP option sets
Elastic IPs
Managed prefix lists
NAT gateways
Peering connections
Route servers
Security
Network ACLs
Security groups
PrivateLink and Lattice
Getting started
You successfully created vpc-018a10d7a35601052 / G1-VPC
vpc-018a10d7a35601052 / G1-VPC
Actions
Details Info
VPC ID
vpc-018a10d7a35601052
State
Available
DNS resolution
Enabled
Tenancy
default
Main network ACL
acl-045b6c0891c907aae
Default VPC
No
IPv6 CIDR (Network border group)
–
Network Address Usage metrics
Disabled
Encryption control ID
–
Encryption control mode
–
Block Public Access
Off
DNS hostnames
Disabled
DHCP option set
dopt-043c622f2cb494c23
Main route table
rtb-0047b82bb1bd8f481
IPv4 CIDR
10.160.0.0/16
IPv6 pool
–
Route 53 Resolver DNS Firewall rule groups
–
Owner ID
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CloudShell
Feedback
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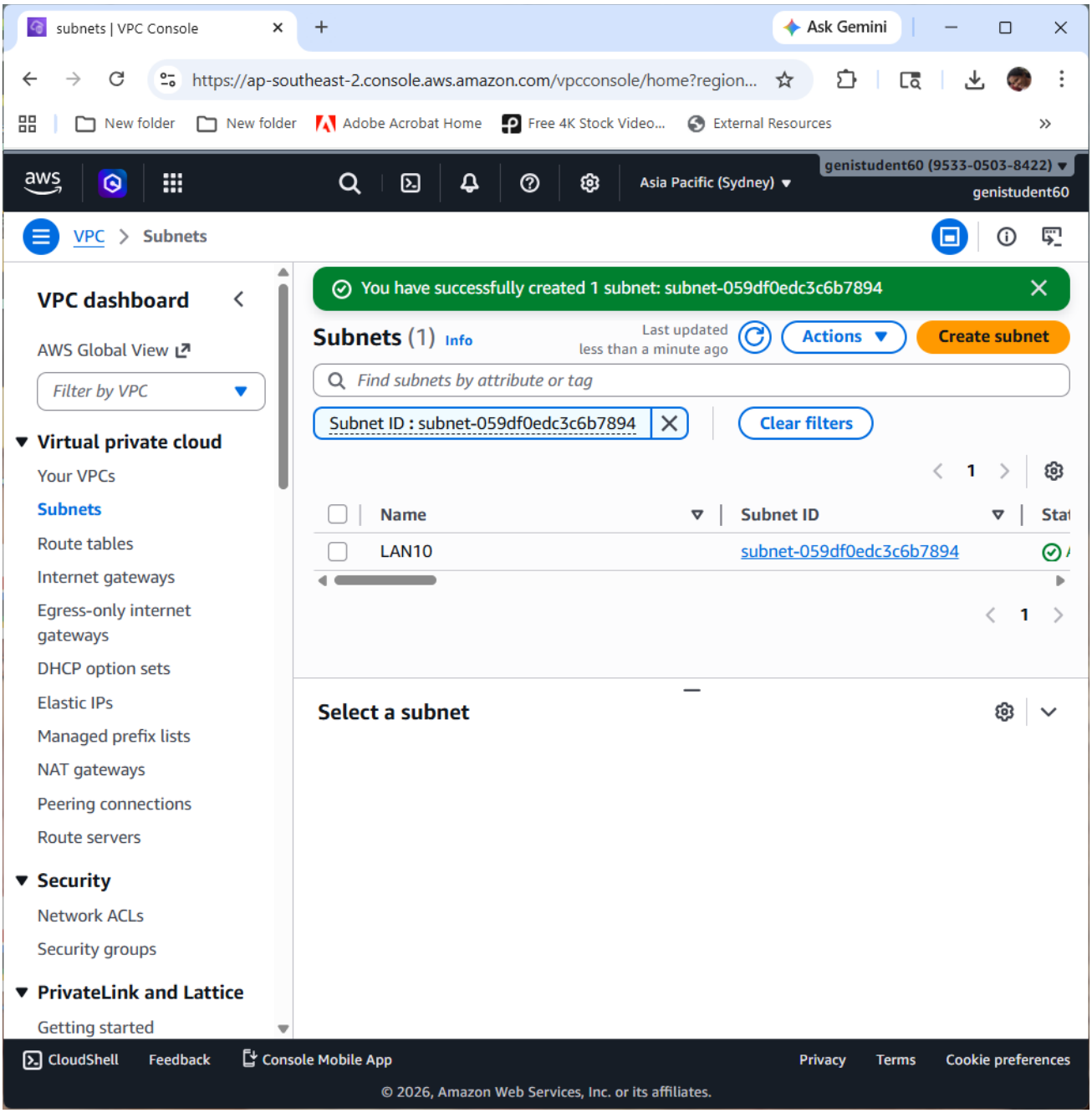
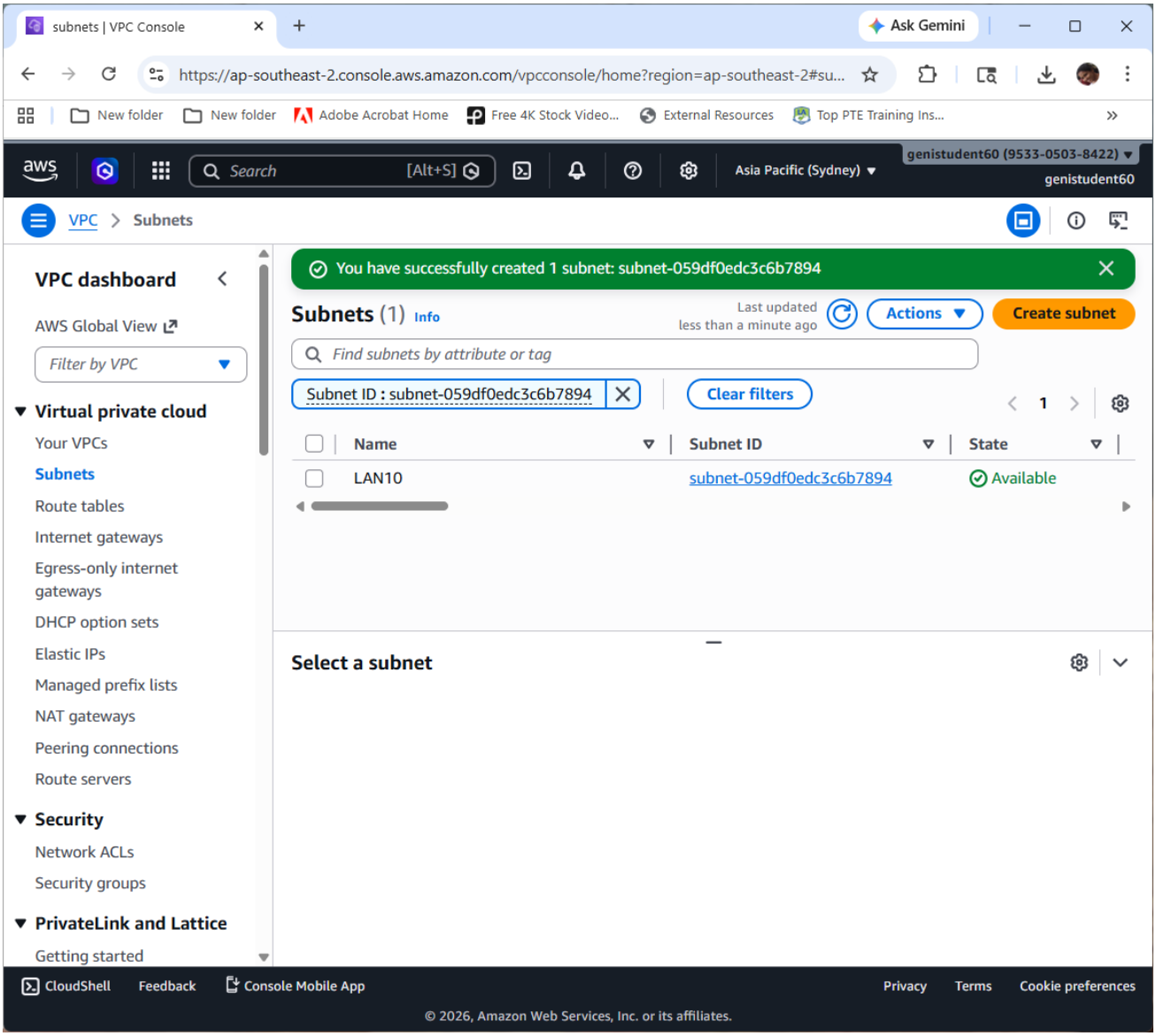
## Task 2: Subnet Creation

Created public and private subnets across multiple AZs to ensure network segmentation and high availability. Public and private subnets were separated to follow security best practices and reduce direct exposure of internal resources.

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VPC > Subnets
VPC dashboard
AWS Global View
Filter by VPC
Virtual private cloud
Your VPCs
Subnets
Route tables
Internet gateways
Egress-only internet gateways
DHCP option sets
Elastic IPs
Managed prefix lists
NAT gateways
Peering connections
Route servers
Security
Network ACLs
Security groups
PrivateLink and Lattice
Getting started
You have successfully created 1 subnet: subnet-059df0edc3c6b7894
Subnets (1) Info
Last updated less than a minute ago
Actions
Create subnet
Find subnets by attribute or tag
Subnet ID : subnet-059df0edc3c6b7894
Clear filters
1
Name
Subnet ID
State
LAN10
subnet-059df0edc3c6b7894
Available
Select a subnet
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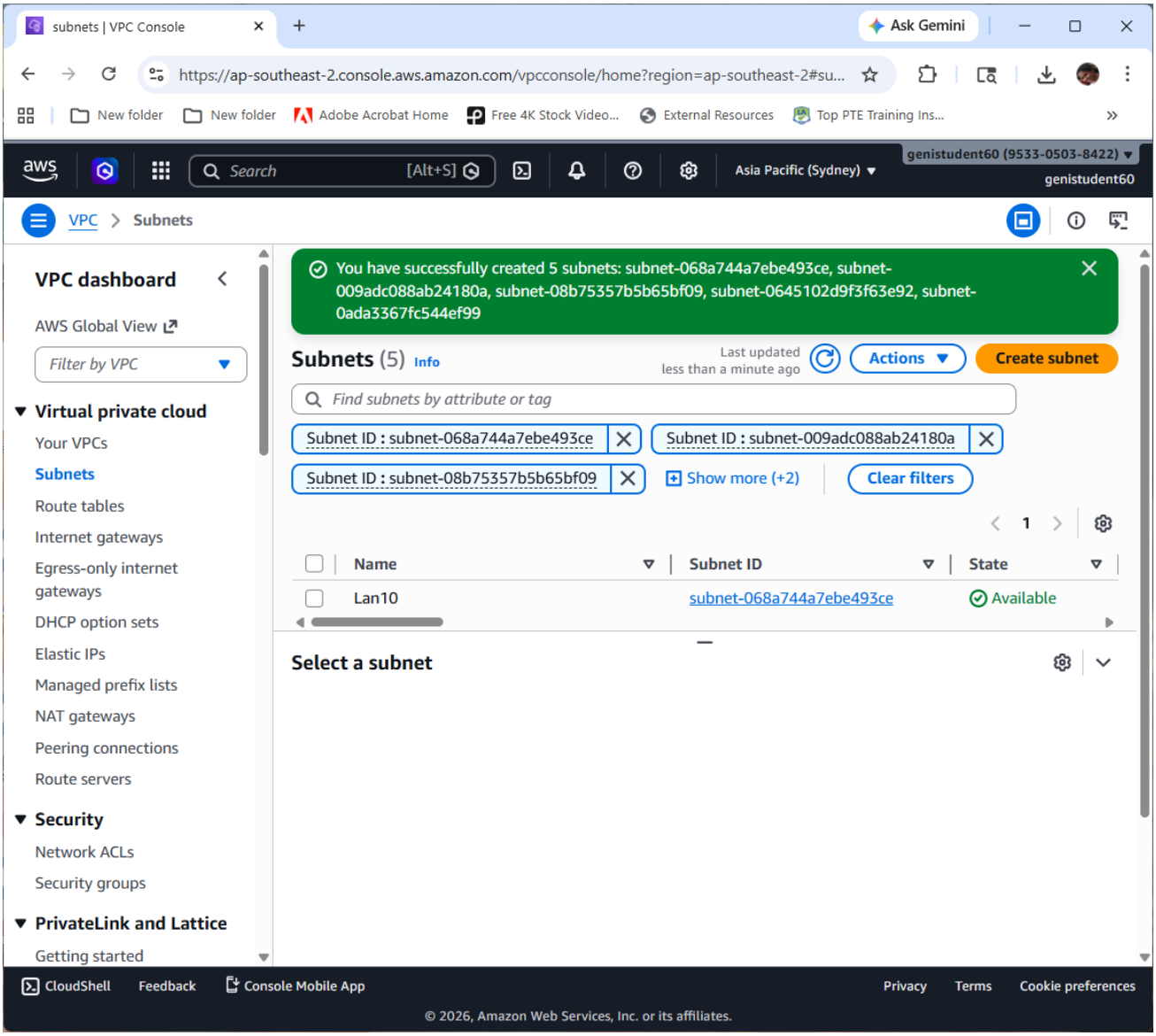
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Filter by VPC
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Subnets
Route tables
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Egress-only internet gateways
DHCP option sets
Elastic IPs
Managed prefix lists
NAT gateways
Peering connections
Route servers
Security
Network ACLs
Security groups
PrivateLink and Lattice
Getting started
You have successfully created 5 subnets: subnet-068a744a7ebe493ce, subnet-009adc088ab24180a, subnet-08b75357b5b65bf09, subnet-0645102d9f3f63e92, subnet-0ada3367fc544ef99
Subnets (5) Info
Last updated less than a minute ago
Actions
Create subnet
Find subnets by attribute or tag
Subnet ID : subnet-068a744a7ebe493ce
Subnet ID : subnet-009adc088ab24180a
Subnet ID : subnet-08b75357b5b65bf09
Show more (+2)
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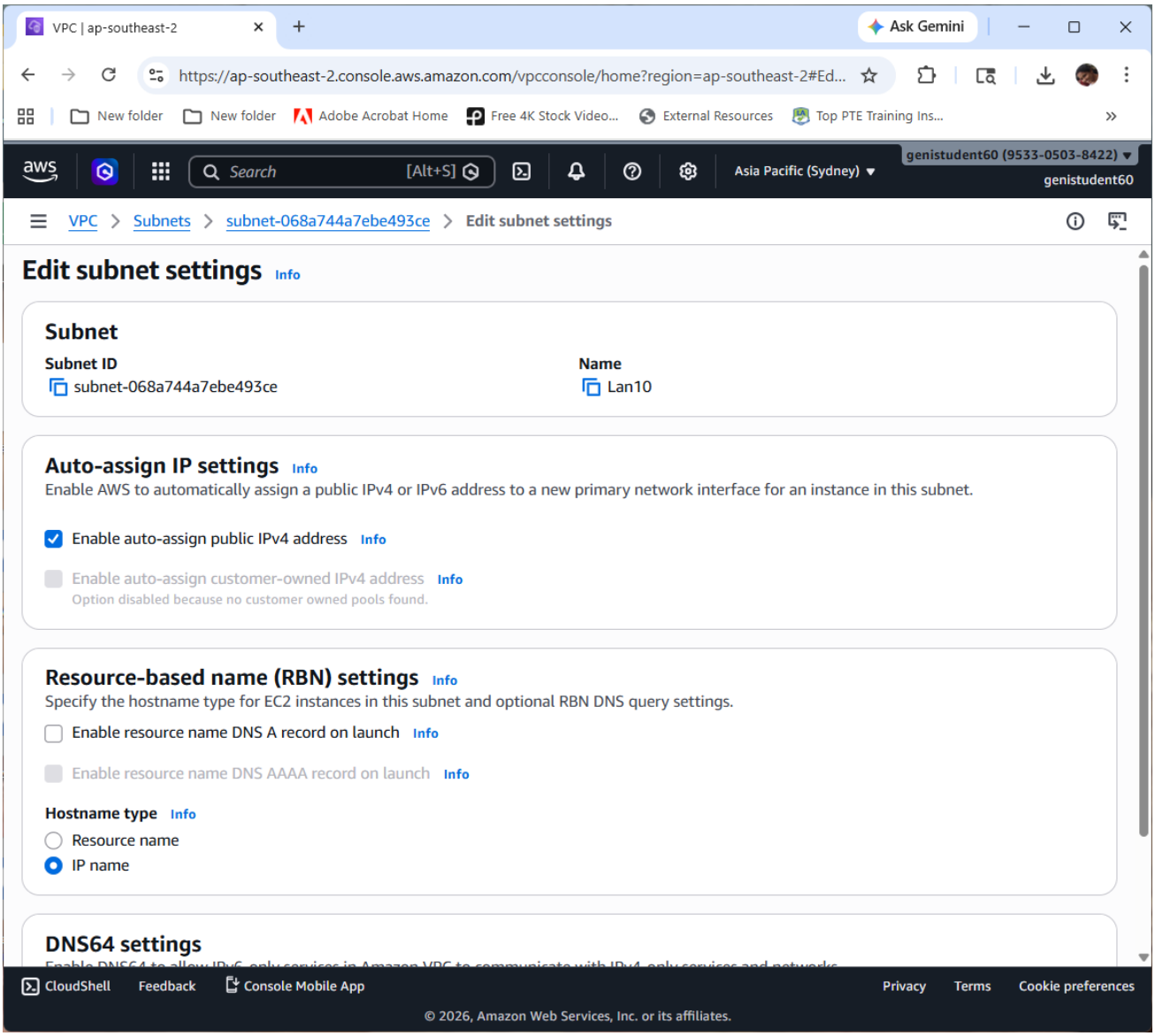
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genistudent60
VPC > Subnets > subnet-068a744a7ebe493ce > Edit subnet settings
Edit subnet settings Info
Subnet
Subnet ID
subnet-068a744a7ebe493ce
Name
Lan10
Auto-assign IP settings Info
Enable AWS to automatically assign a public IPv4 or IPv6 address to a new primary network interface for an instance in this subnet.
Enable auto-assign public IPv4 address Info
Enable auto-assign customer-owned IPv4 address Info
Option disabled because no customer owned pools found.
Resource-based name (RBN) settings Info
Specify the hostname type for EC2 instances in this subnet and optional RBN DNS query settings.
Enable resource name DNS A record on launch Info
Enable resource name DNS AAAA record on launch Info
Hostname type Info
Resource name
IP name
DNS64 settings
CloudShell
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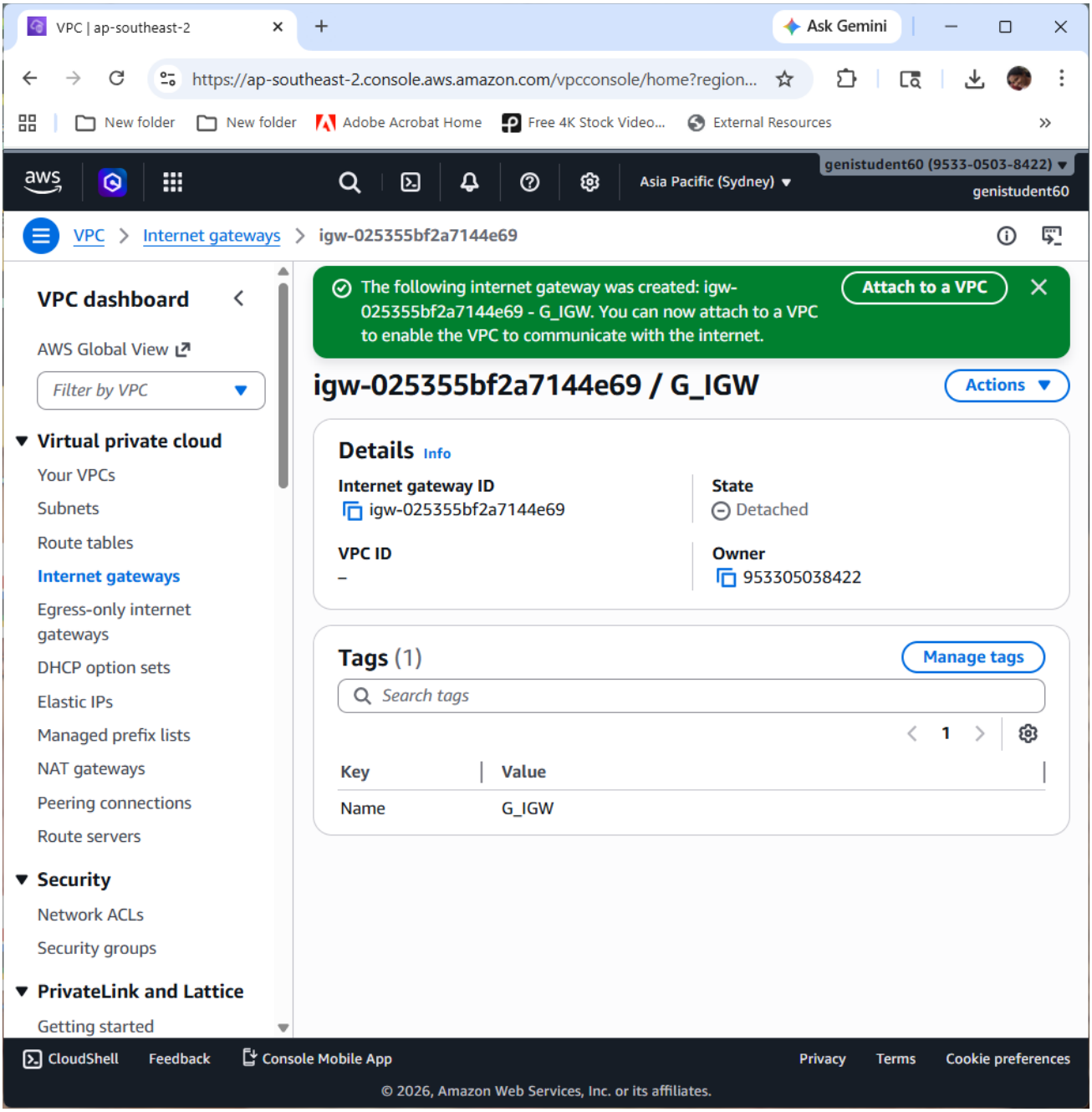
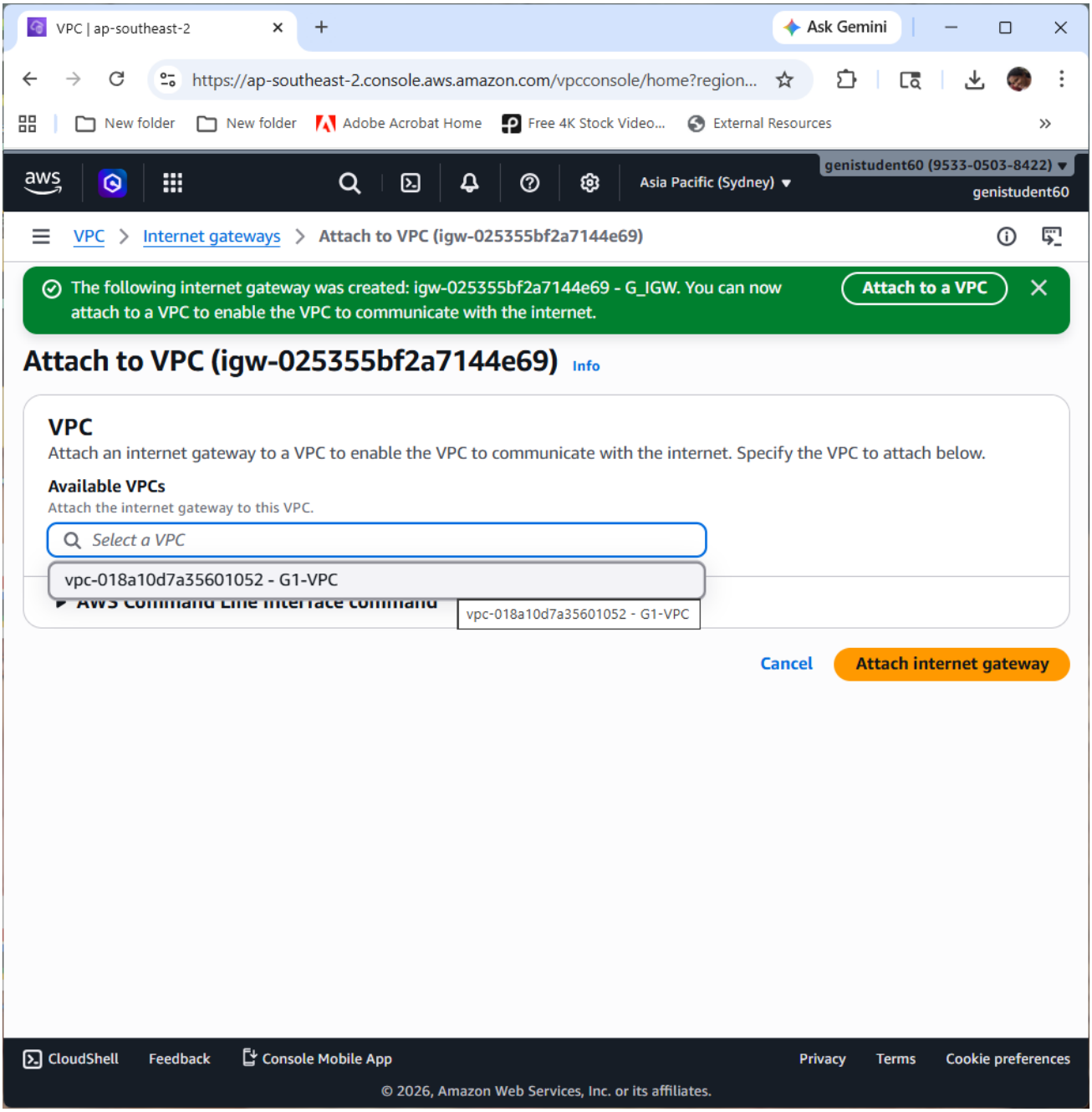
## Task 3: Internet Gateway Setup

Attached an Internet Gateway to allow internet access for resources in the public subnet. The Internet Gateway was attached only to the public subnet to ensure controlled external access.

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VPC > Internet gateways > Attach to VPC (igw-025355bf2a7144e69)
The following internet gateway was created: igw-025355bf2a7144e69 - G_IGW. You can now attach to a VPC to enable the VPC to communicate with the internet.
Attach to a VPC
Attach to VPC (igw-025355bf2a7144e69) Info
VPC
Attach an internet gateway to a VPC to enable the VPC to communicate with the internet. Specify the VPC to attach below.
Available VPCs
Attach the internet gateway to this VPC.
Select a VPC
vpc-018a10d7a35601052 - G1-VPC
vpc-018a10d7a35601052 - G1-VPC
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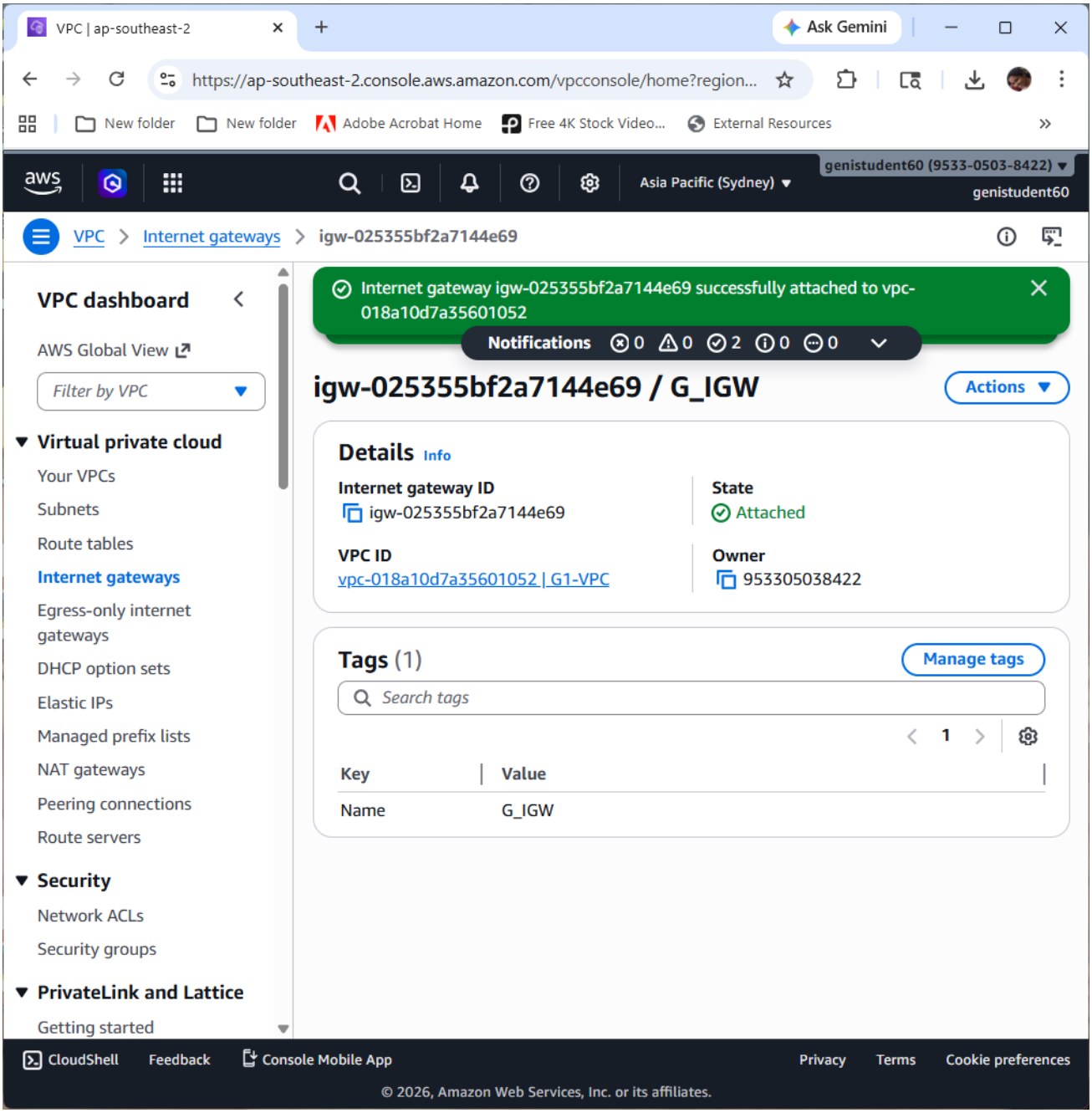
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Egress-only internet gateways
DHCP option sets
Elastic IPs
Managed prefix lists
NAT gateways
Peering connections
Route servers
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Network ACLs
Security groups
PrivateLink and Lattice
Getting started
Internet gateway igw-025355bf2a7144e69 successfully attached to vpc-018a10d7a35601052
Notifications 0 0 2 0 0
igw-025355bf2a7144e69 / G_IGW
Actions
Details Info
Internet gateway ID
igw-025355bf2a7144e69
State
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Search tags
1
Key
Value
Name
G_IGW
CloudShell
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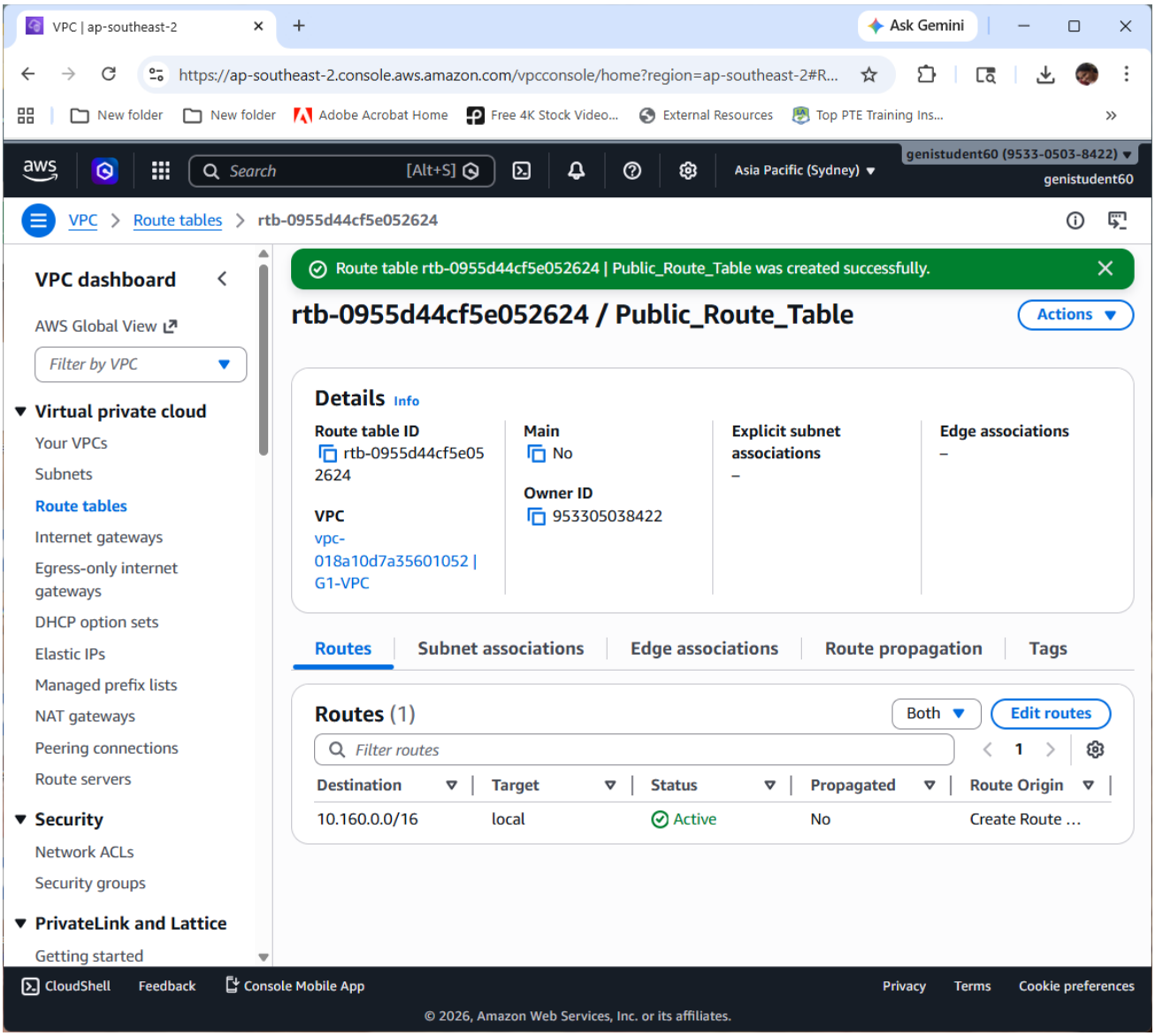
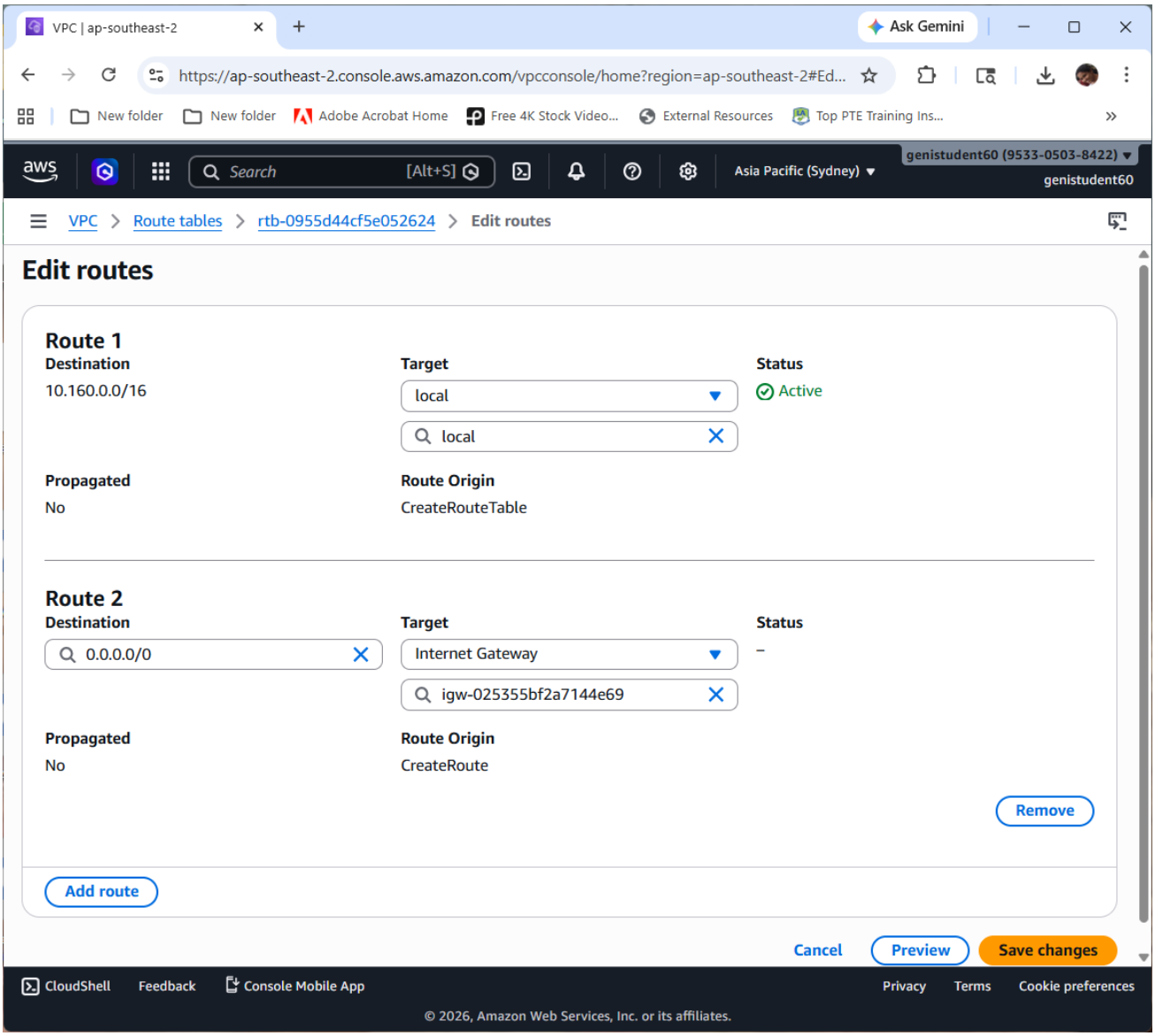
## Task 4: Route Tables Configuration

Configured public routes via IGW and private routes via FortiGate to control and secure traffic flow. Routing private subnet traffic through FortiGate ensures that all traffic is inspected before reaching external networks.




VPC | ap-southeast-2
Ask Gemini
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VPC
Route tables
rtb-0955d44cf5e052624
Edit routes
Edit routes
Route 1
Destination
10.160.0.0/16
Target
local
local
Status
Active
Propagated
No
Route Origin
CreateRouteTable
Route 2
Destination
0.0.0.0/0
Target
Internet Gateway
igw-025355bf2a7144e69
Status
–
Propagated
No
Route Origin
CreateRoute
Remove
Add route
Cancel
Preview
Save changes
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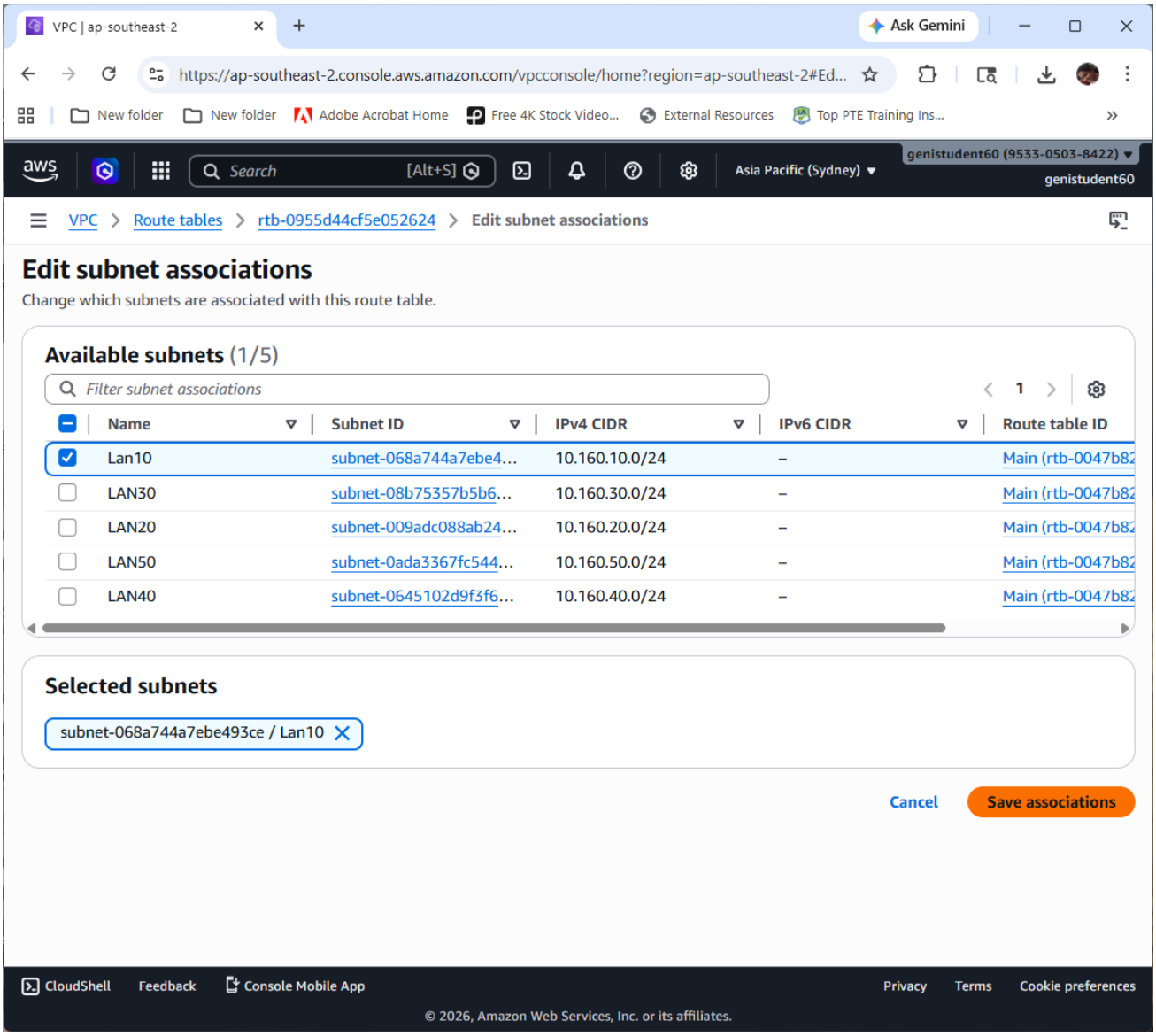
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VPC > Route tables > rtb-0955d44cf5e052624 > Edit subnet associations
Edit subnet associations
Change which subnets are associated with this route table.
Available subnets (1/5)
Filter subnet associations
1
Name
Subnet ID
IPv4 CIDR
IPv6 CIDR
Route table ID
Lan10
subnet-068a744a7ebe4...
10.160.10.0/24
–
Main (rtb-0047b82
LAN30
subnet-08b75357b5b6...
10.160.30.0/24
–
Main (rtb-0047b82
LAN20
subnet-009adc088ab24...
10.160.20.0/24
–
Main (rtb-0047b82
LAN50
subnet-0ada3367fc544...
10.160.50.0/24
–
Main (rtb-0047b82
LAN40
subnet-0645102d9f3f6...
10.160.40.0/24
–
Main (rtb-0047b82
Selected subnets
subnet-068a744a7ebe493ce / Lan10
Cancel
Save associations
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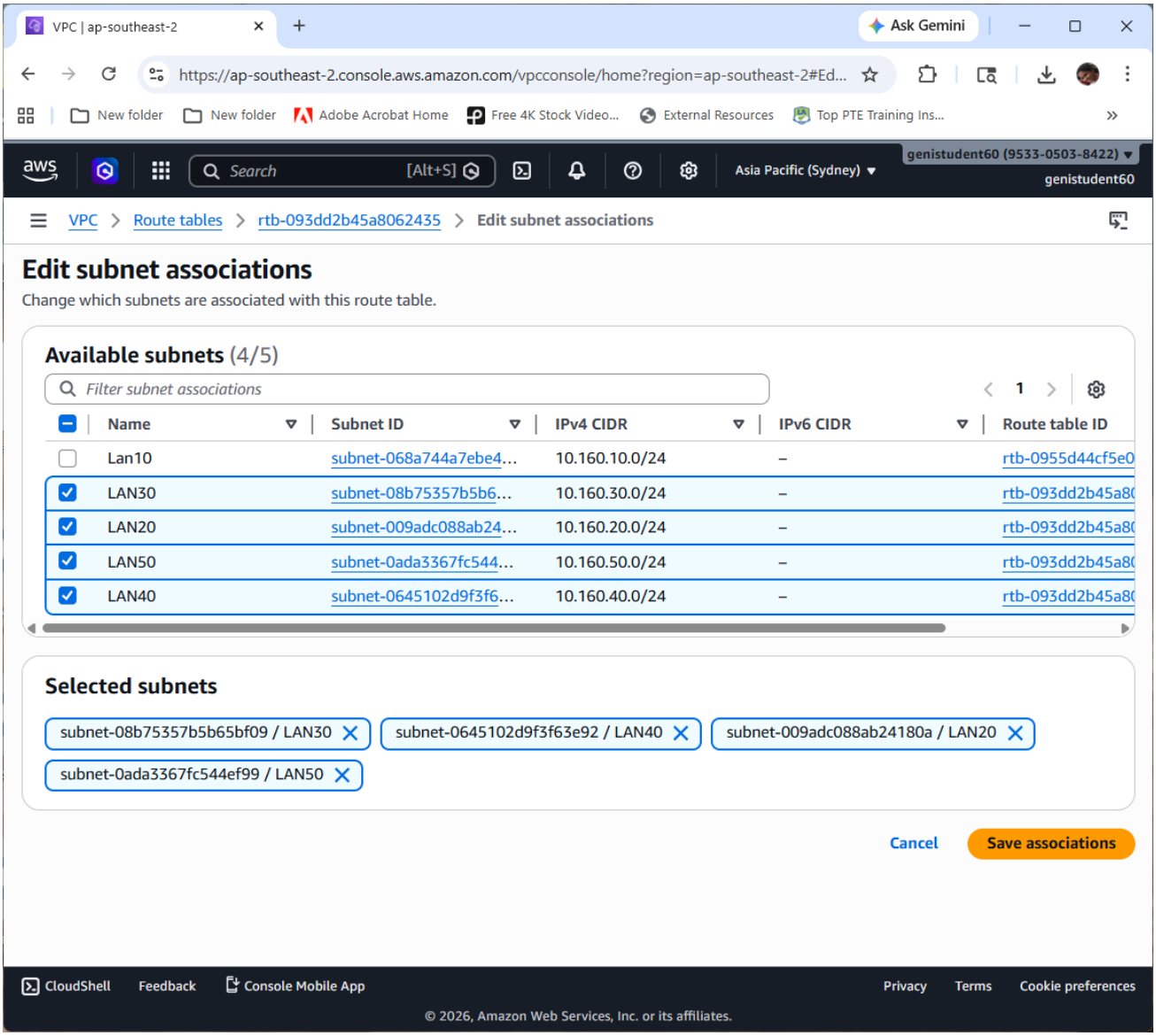
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VPC
Route tables
rtb-093dd2b45a8062435
Edit subnet associations
Edit subnet associations
Change which subnets are associated with this route table.
Available subnets (4/5)
Filter subnet associations
1
Name
Subnet ID
IPv4 CIDR
IPv6 CIDR
Route table ID
Lan10
subnet-068a744a7ebe4...
10.160.10.0/24
–
rtb-0955d44cf5e0
LAN30
subnet-08b75357b5b6...
10.160.30.0/24
–
rtb-093dd2b45a8
LAN20
subnet-009adc088ab24...
10.160.20.0/24
–
rtb-093dd2b45a8
LAN50
subnet-0ada3367fc544...
10.160.50.0/24
–
rtb-093dd2b45a8
LAN40
subnet-0645102d9f3f6...
10.160.40.0/24
–
rtb-093dd2b45a8
Selected subnets
subnet-08b75357b5b65bf09 / LAN30
subnet-0645102d9f3f63e92 / LAN40
subnet-009adc088ab24180a / LAN20
subnet-0ada3367fc544ef99 / LAN50
Cancel
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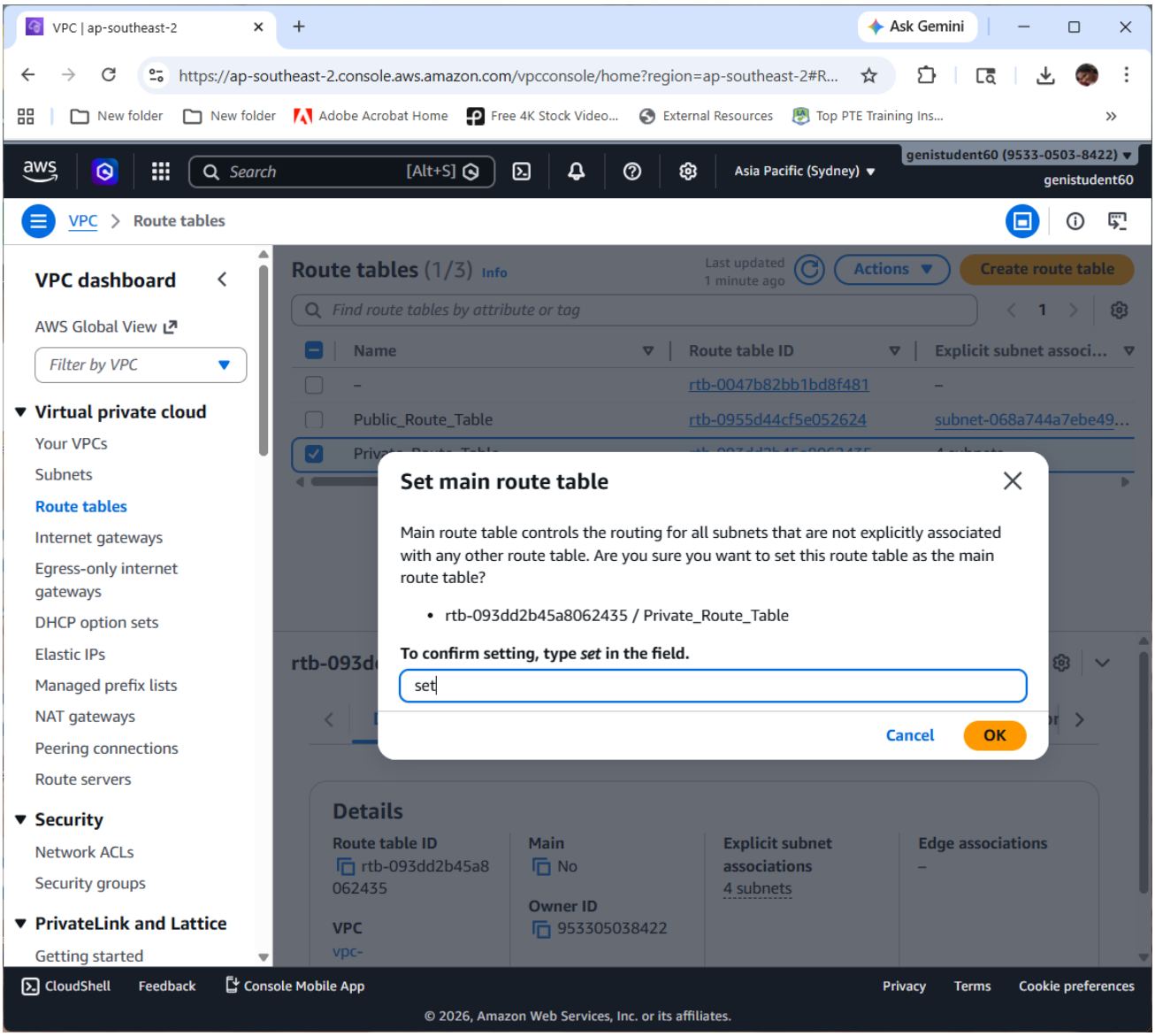
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Egress-only internet gateways
DHCP option sets
Elastic IPs
Managed prefix lists
NAT gateways
Peering connections
Route servers
Security
Network ACLs
Security groups
PrivateLink and Lattice
Getting started
Route tables (1/3) Info
Last updated 1 minute ago
Actions
Create route table
Find route tables by attribute or tag
Name
Route table ID
Explicit subnet associ...
rtb-0047b82bb1bd8f481
Public_Route_Table
rtb-0955d44cf5e052624
subnet-068a744a7ebe49...
Set main route table
Main route table controls the routing for all subnets that are not explicitly associated with any other route table. Are you sure you want to set this route table as the main route table?
rtb-093dd2b45a8062435 / Private_Route_Table
To confirm setting, type set in the field.
set
Cancel
OK
Details
Route table ID
rtb-093dd2b45a8062435
Main
No
Explicit subnet associations
4 subnets
Edge associations
Owner ID
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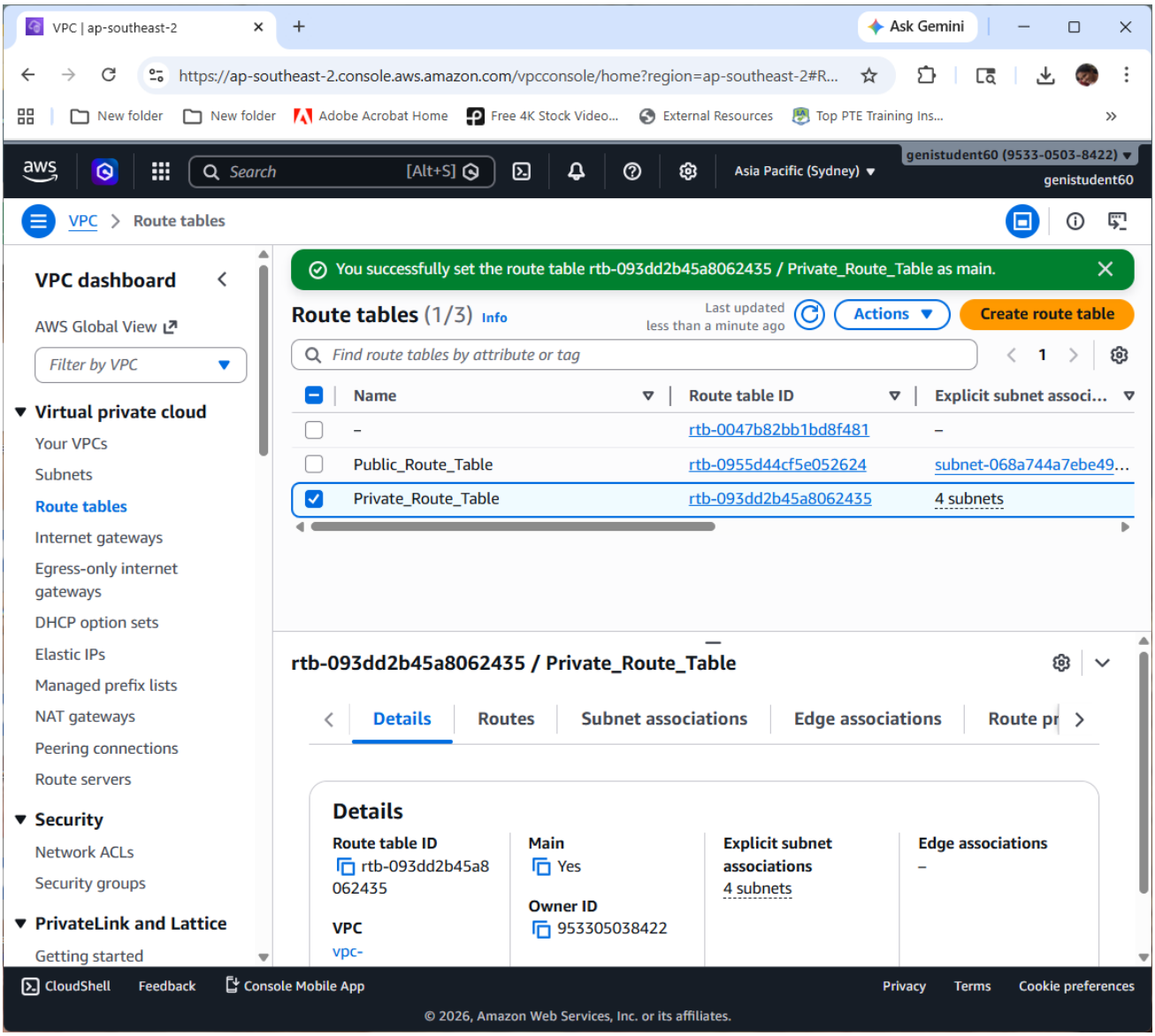
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NAT gateways
Peering connections
Route servers
Security
Network ACLs
Security groups
PrivateLink and Lattice
Getting started
You successfully set the route table rtb-093dd2b45a8062435 / Private_Route_Table as main.
Route tables (1/3) Info
Last updated less than a minute ago
Actions
Create route table
Find route tables by attribute or tag
1
Name
Route table ID
Explicit subnet associ...
–
rtb-0047b82bb1bd8f481
–
Public_Route_Table
rtb-0955d44cf5e052624
subnet-068a744a7ebe49...
Private_Route_Table
rtb-093dd2b45a8062435
4 subnets
rtb-093dd2b45a8062435 / Private_Route_Table
Details
Routes
Subnet associations
Edge associations
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Details
Route table ID
rtb-093dd2b45a8062435
Main
Yes
Explicit subnet associations
4 subnets
Edge associations
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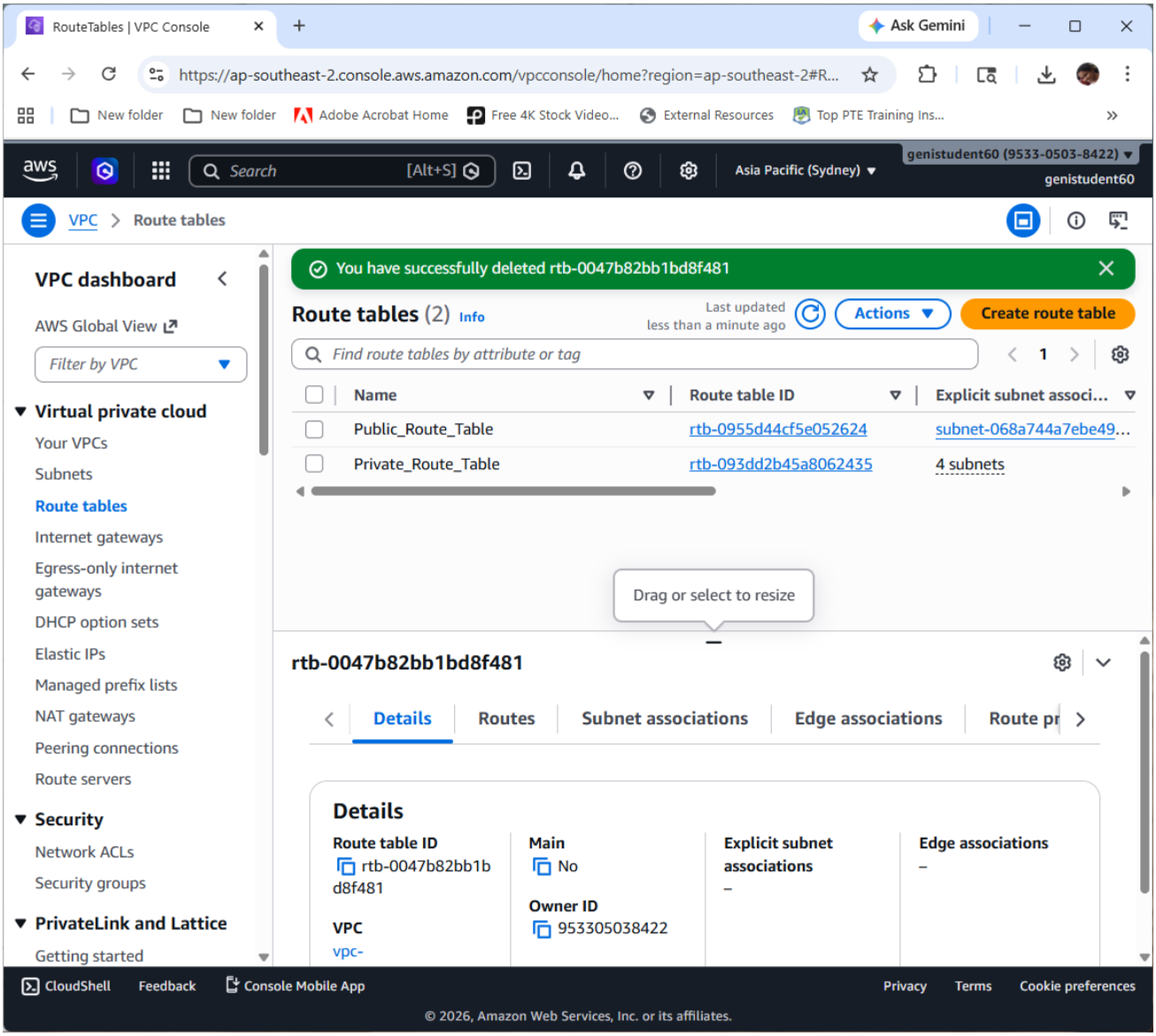
RouteTables | VPC Console
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DHCP option sets
Elastic IPs
Managed prefix lists
NAT gateways
Peering connections
Route servers
Security
Network ACLs
Security groups
PrivateLink and Lattice
Getting started
You have successfully deleted rtb-0047b82bb1bd8f481
Route tables (2) Info
Last updated less than a minute ago
Actions
Create route table
Find route tables by attribute or tag
1
Name
Route table ID
Explicit subnet associ...
Public_Route_Table
rtb-0955d44cf5e052624
subnet-068a744a7ebe49...
Private_Route_Table
rtb-093dd2b45a8062435
4 subnets
Drag or select to resize
rtb-0047b82bb1bd8f481
Details
Routes
Subnet associations
Edge associations
Route pr
Details
Route table ID
rtb-0047b82bb1bd8f481
Main
No
Explicit subnet associations
–
Edge associations
–
VPC
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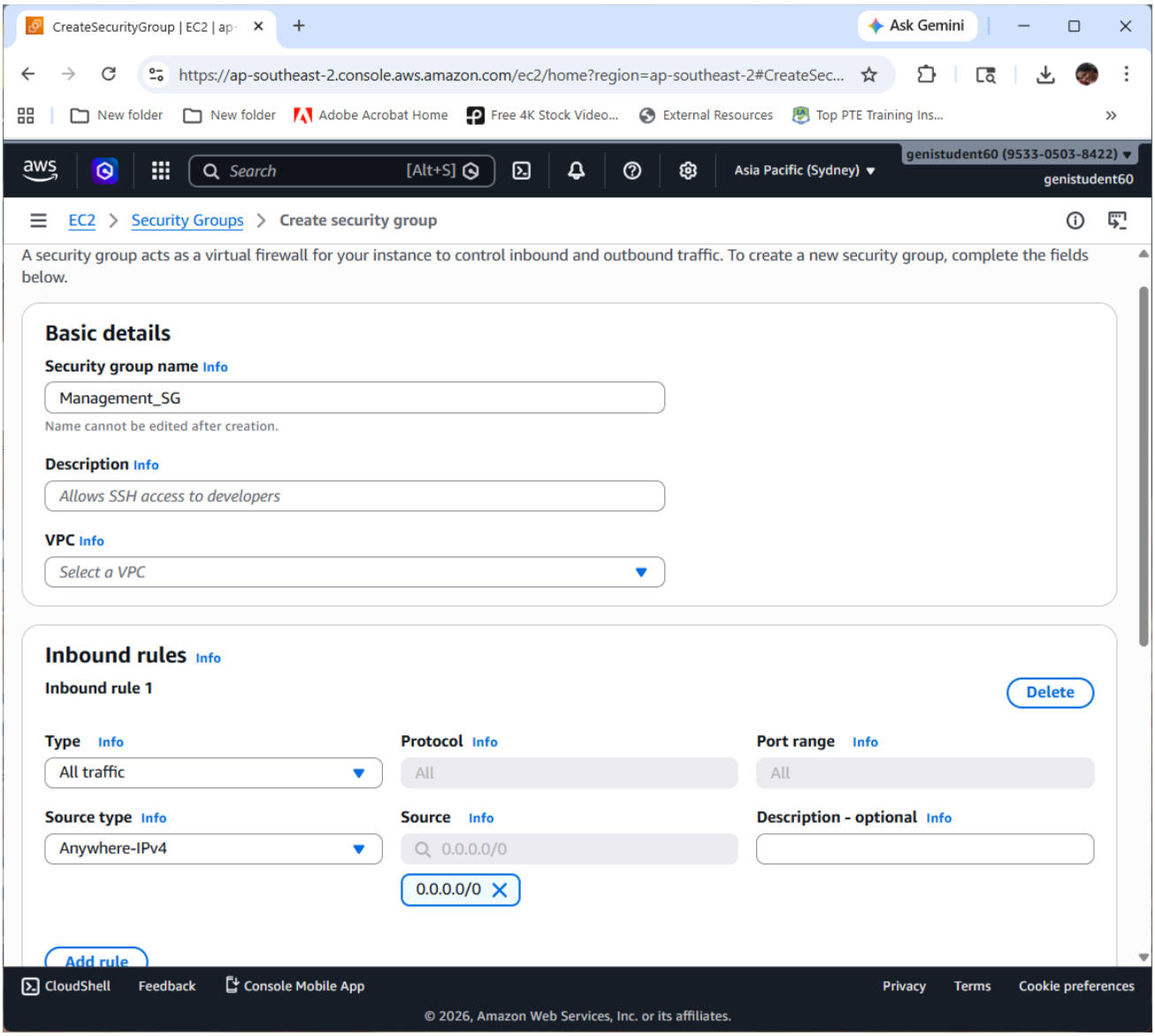
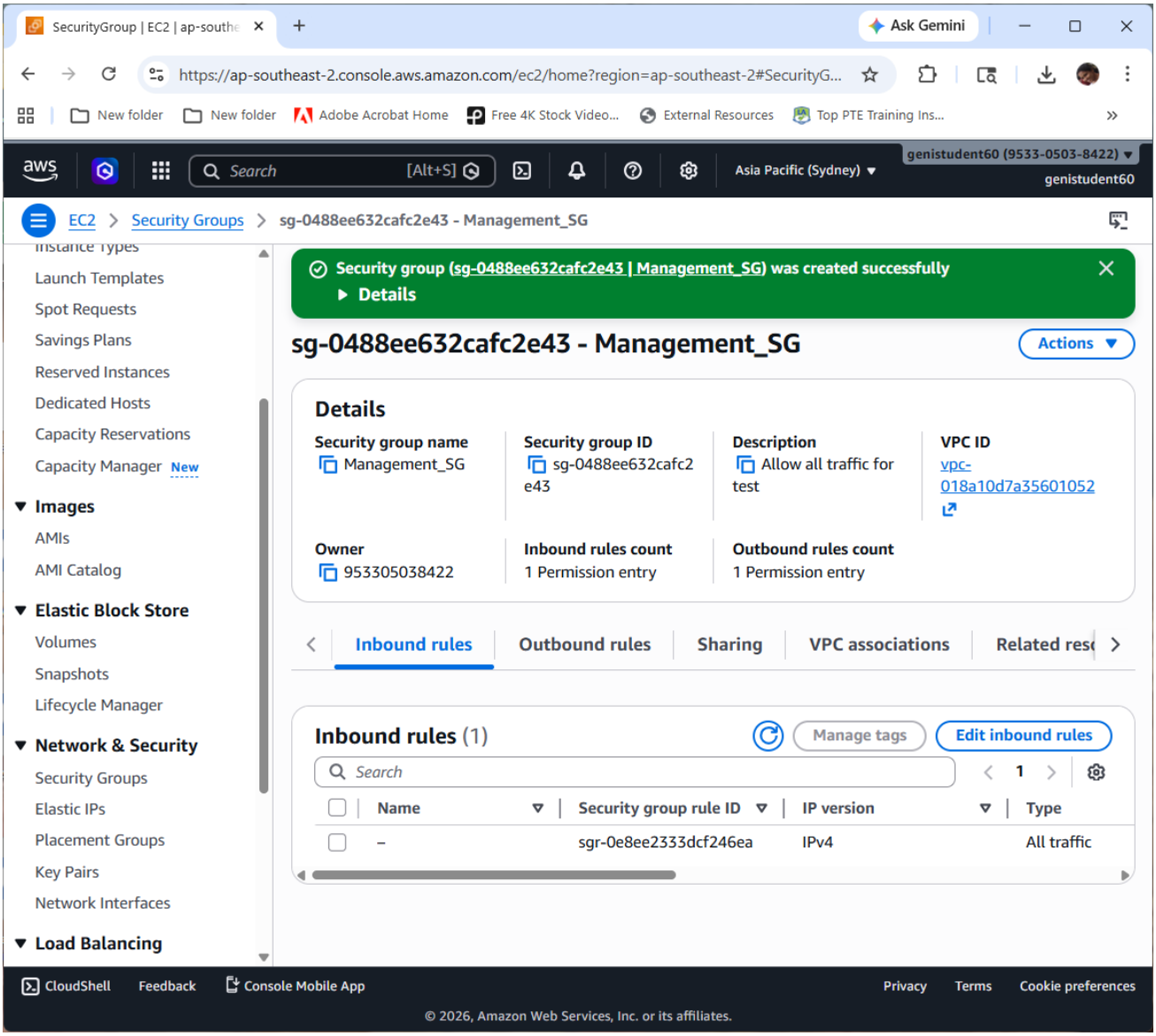
## Task 5: Security Group Configuration

Created a security group allowing inbound access for setup; this will be restricted later, following best practices. Access rules were restricted to required ports only to minimise security risks instead of allowing open access.

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Security Groups
sg-0488ee632cafc2e43 - Management_SG
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Lifecycle Manager
Network & Security
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
Load Balancing
Security group (sg-0488ee632cafc2e43 | Management_SG) was created successfully
Details
sg-0488ee632cafc2e43 - Management_SG
Actions
Details
Security group name
Management_SG
Security group ID
sg-0488ee632cafc2e43
Description
Allow all traffic for test
VPC ID
vpc-018a10d7a35601052
Owner
953305038422
Inbound rules count
1 Permission entry
Outbound rules count
1 Permission entry
Inbound rules
Outbound rules
Sharing
VPC associations
Related res
Inbound rules (1)
Manage tags
Edit inbound rules
Search
1
Name
Security group rule ID
IP version
Type
–
sgr-0e8ee2333dcf246ea
IPv4
All traffic
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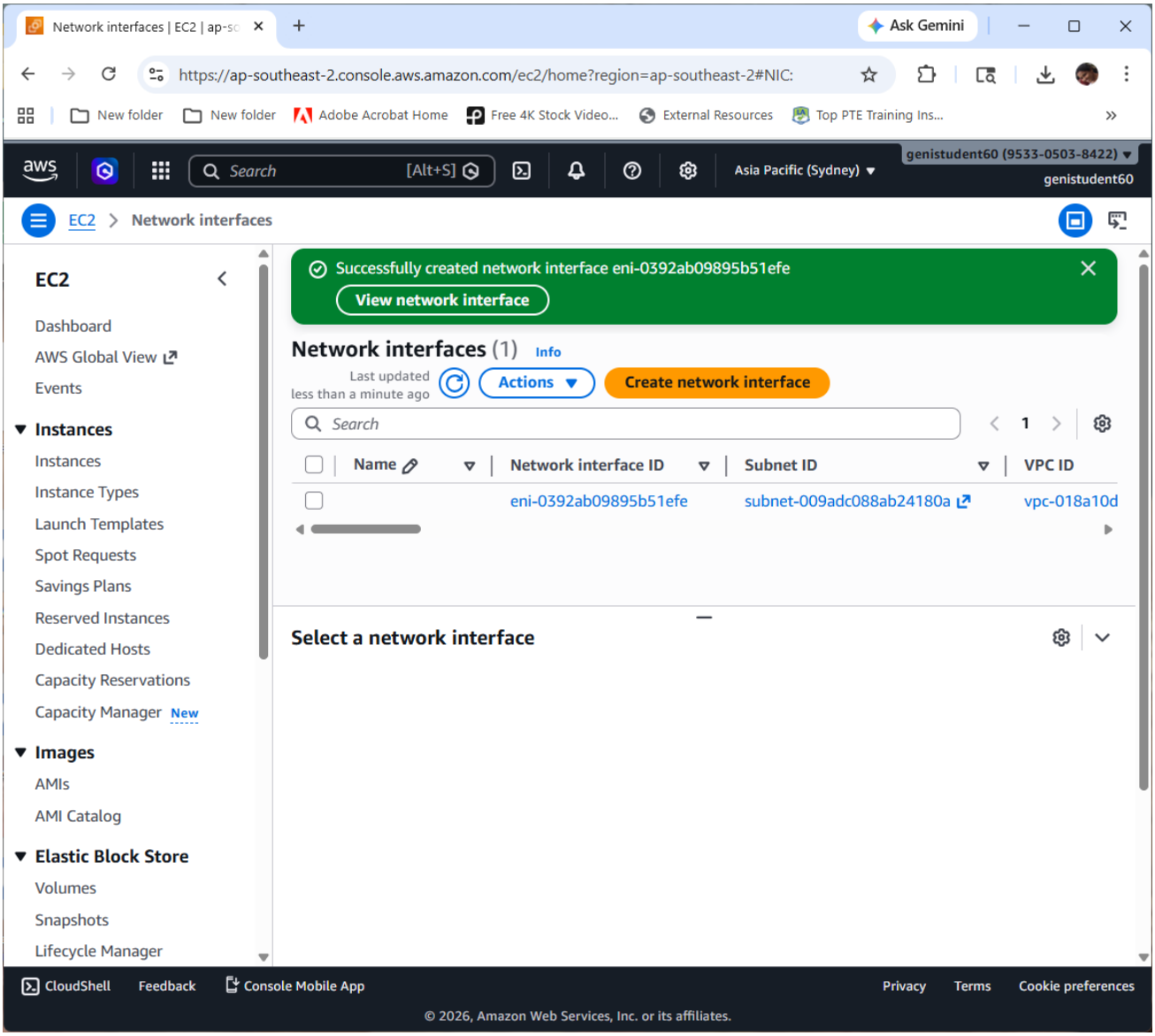
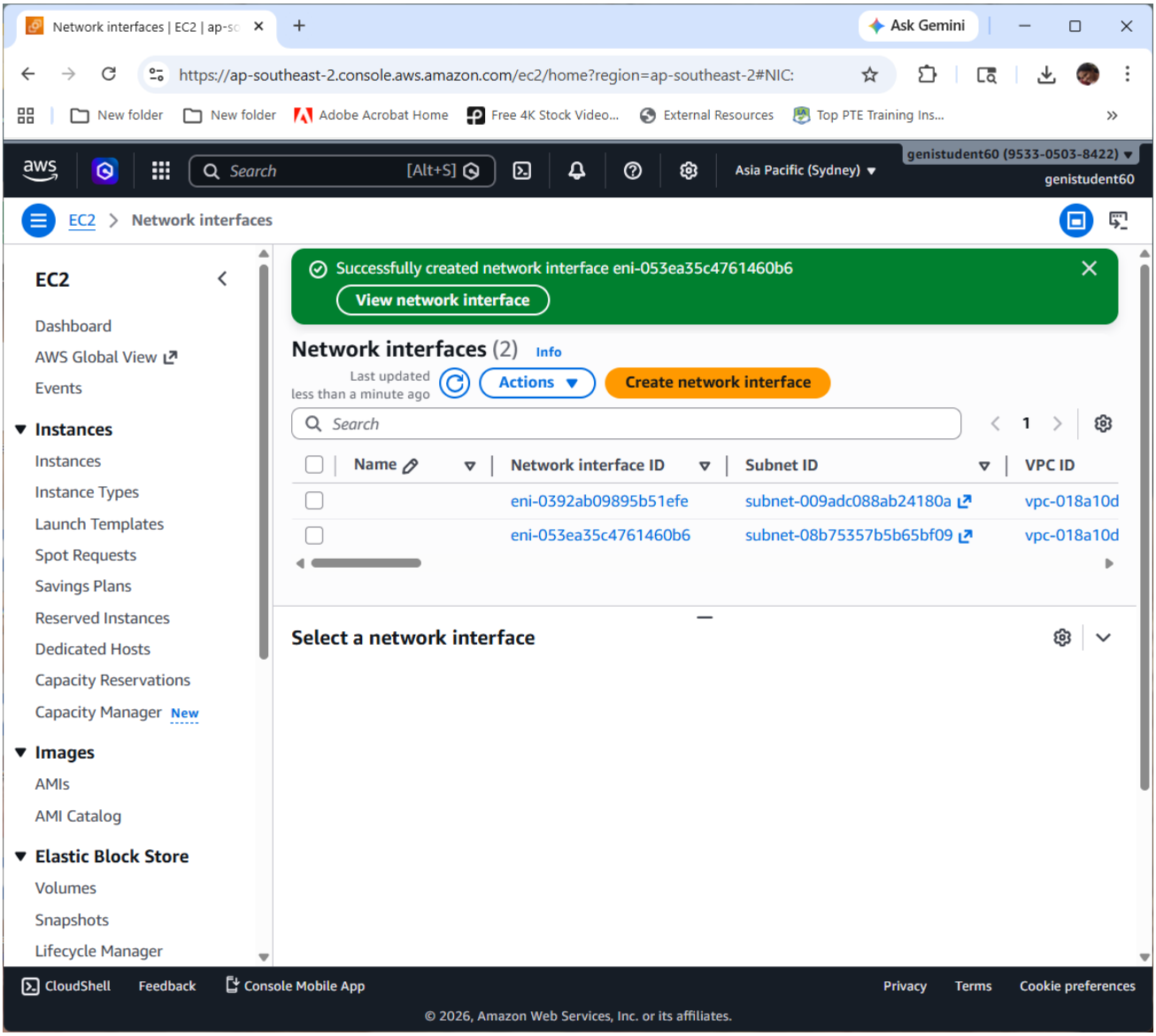
## Task 6: ENI Configuration

Created ENIs for each subnet and disabled source/destination check to allow FortiGate to route traffic. ENIs were used to manage network interfaces more effectively and support proper traffic routing through the firewall.

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Dedicated Hosts
Capacity Reservations
Capacity Manager New
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Successfully created network interface eni-053ea35c4761460b6
View network interface
Network interfaces (2) Info
Last updated less than a minute ago
Actions
Create network interface
Search
1
Name
Network interface ID
Subnet ID
VPC ID
eni-0392ab09895b51efe
subnet-009adc088ab24180a
vpc-018a10d
eni-053ea35c4761460b6
subnet-08b75357b5b65bf09
vpc-018a10d
Select a network interface
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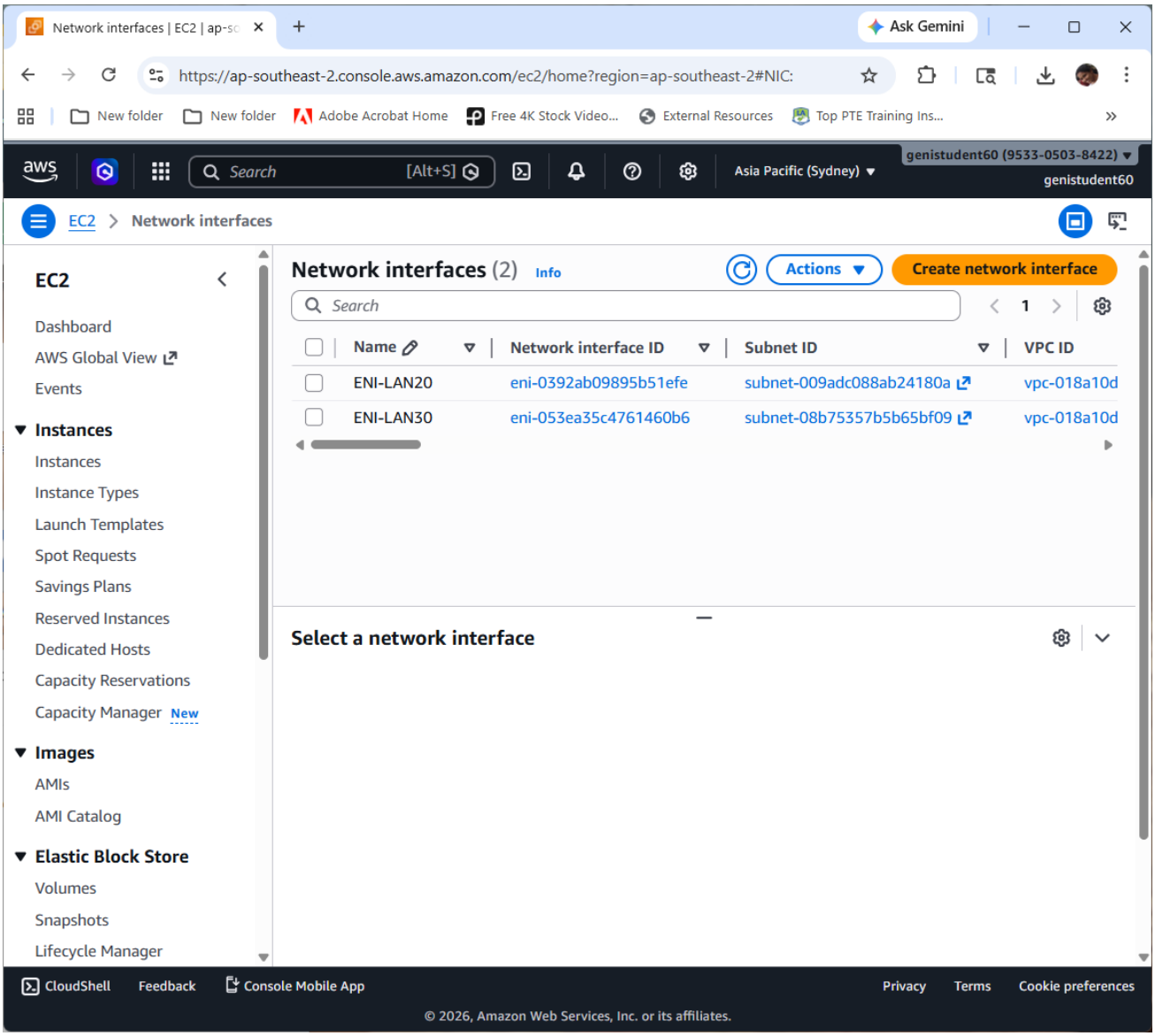
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Network interfaces (2) Info
Actions
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Search
1
Name
Network interface ID
Subnet ID
VPC ID
ENI-LAN20
eni-0392ab09895b51efe
subnet-009adc088ab24180a
vpc-018a10d
ENI-LAN30
eni-053ea35c4761460b6
subnet-08b75357b5b65bf09
vpc-018a10d
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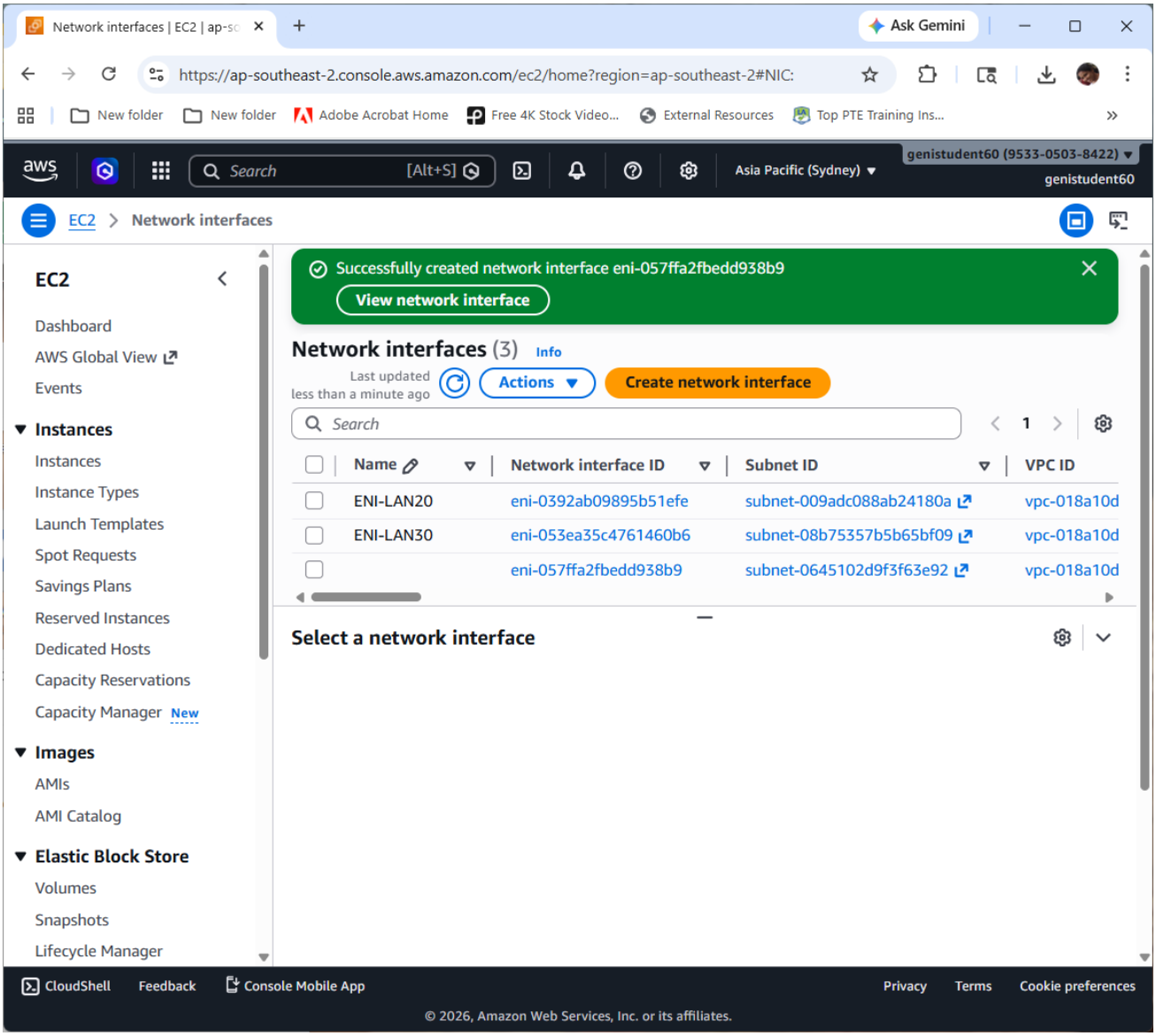
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Successfully created network interface eni-057ffa2fbedd938b9
View network interface
Network interfaces (3) Info
Last updated less than a minute ago
Actions
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1
Name
Network interface ID
Subnet ID
VPC ID
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subnet-009adc088ab24180a
vpc-018a10d
ENI-LAN30
eni-053ea35c4761460b6
subnet-08b75357b5b65bf09
vpc-018a10d
eni-057ffa2fbedd938b9
subnet-0645102d9f3f63e92
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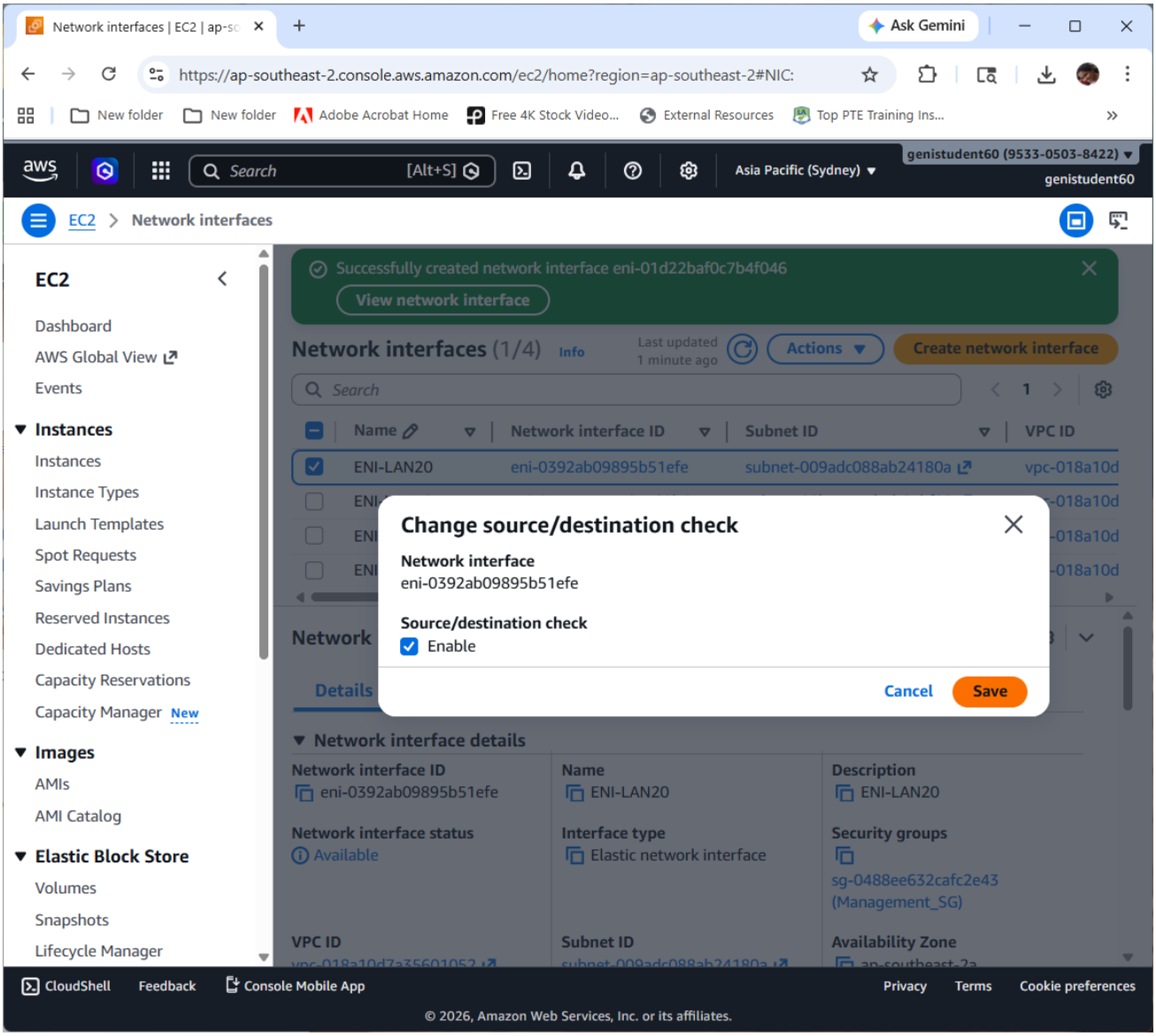
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AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Successfully created network interface eni-01d22baf0c7b4f046
View network interface
Network interfaces (1/4) Info
Last updated 1 minute ago
Actions
Create network interface
Search
Name
Network interface ID
Subnet ID
VPC ID
ENI-LAN20
eni-0392ab09895b51efe
subnet-009adc088ab24180a
vpc-018a10d
Change source/destination check
Network interface
eni-0392ab09895b51efe
Source/destination check
Enable
Cancel
Save
Details
Network interface details
Network interface ID
eni-0392ab09895b51efe
Name
ENI-LAN20
Description
ENI-LAN20
Network interface status
Available
Interface type
Elastic network interface
Security groups
sg-0488ee632cafc2e43 (Management_SG)
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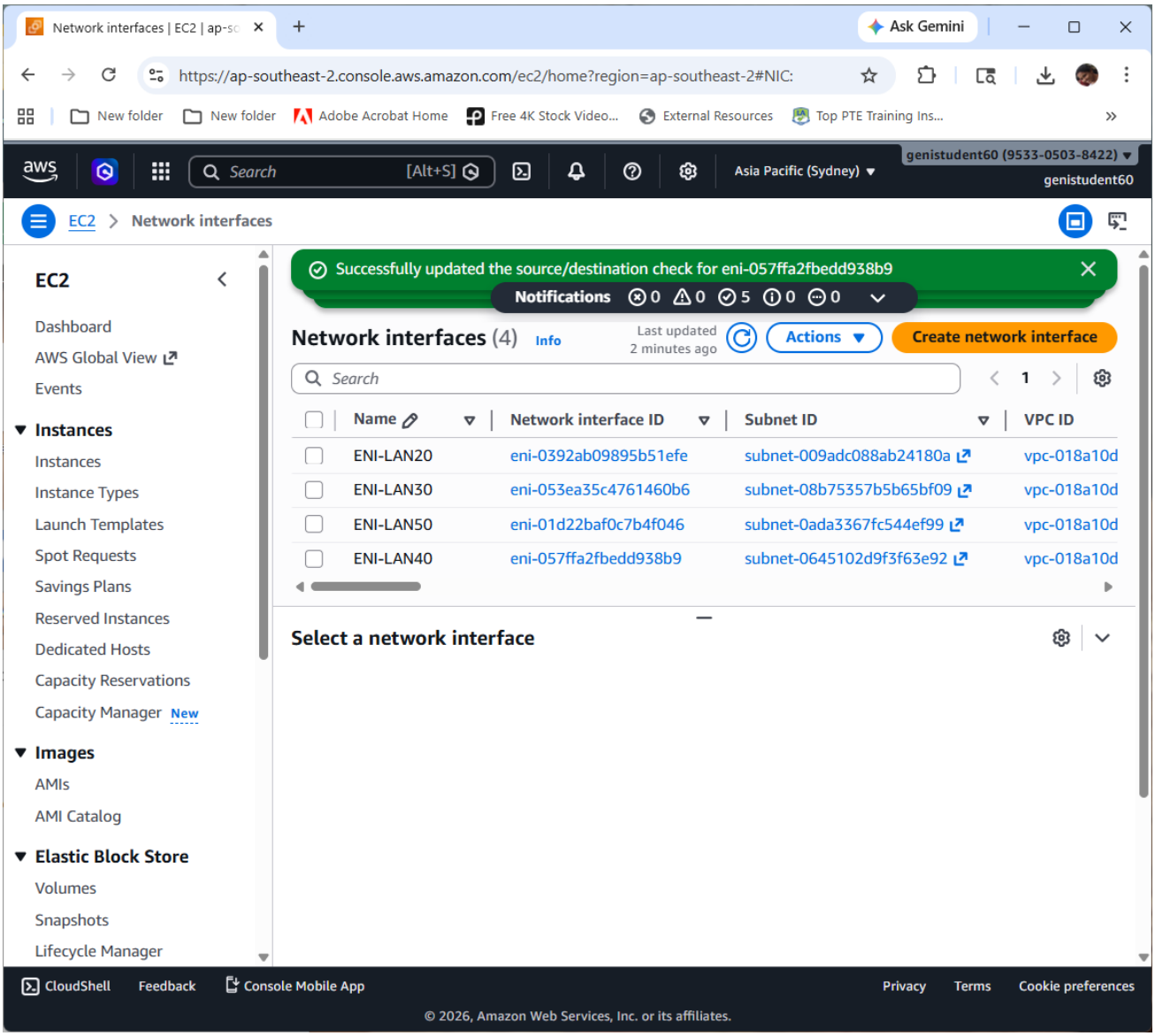
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Capacity Reservations
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Volumes
Snapshots
Lifecycle Manager
Successfully updated the source/destination check for eni-057ffa2fbedd938b9
Notifications 0 0 5 0 0
Network interfaces (4) Info
Last updated 2 minutes ago
Actions
Create network interface
Search
1
Name
Network interface ID
Subnet ID
VPC ID
ENI-LAN20 eni-0392ab09895b51efe subnet-009adc088ab24180a vpc-018a10d
ENI-LAN30 eni-053ea35c4761460b6 subnet-08b75357b5b65bf09 vpc-018a10d
ENI-LAN50 eni-01d22baf0c7b4f046 subnet-0ada3367fc544ef99 vpc-018a10d
ENI-LAN40 eni-057ffa2fbedd938b9 subnet-0645102d9f3f63e92 vpc-018a10d
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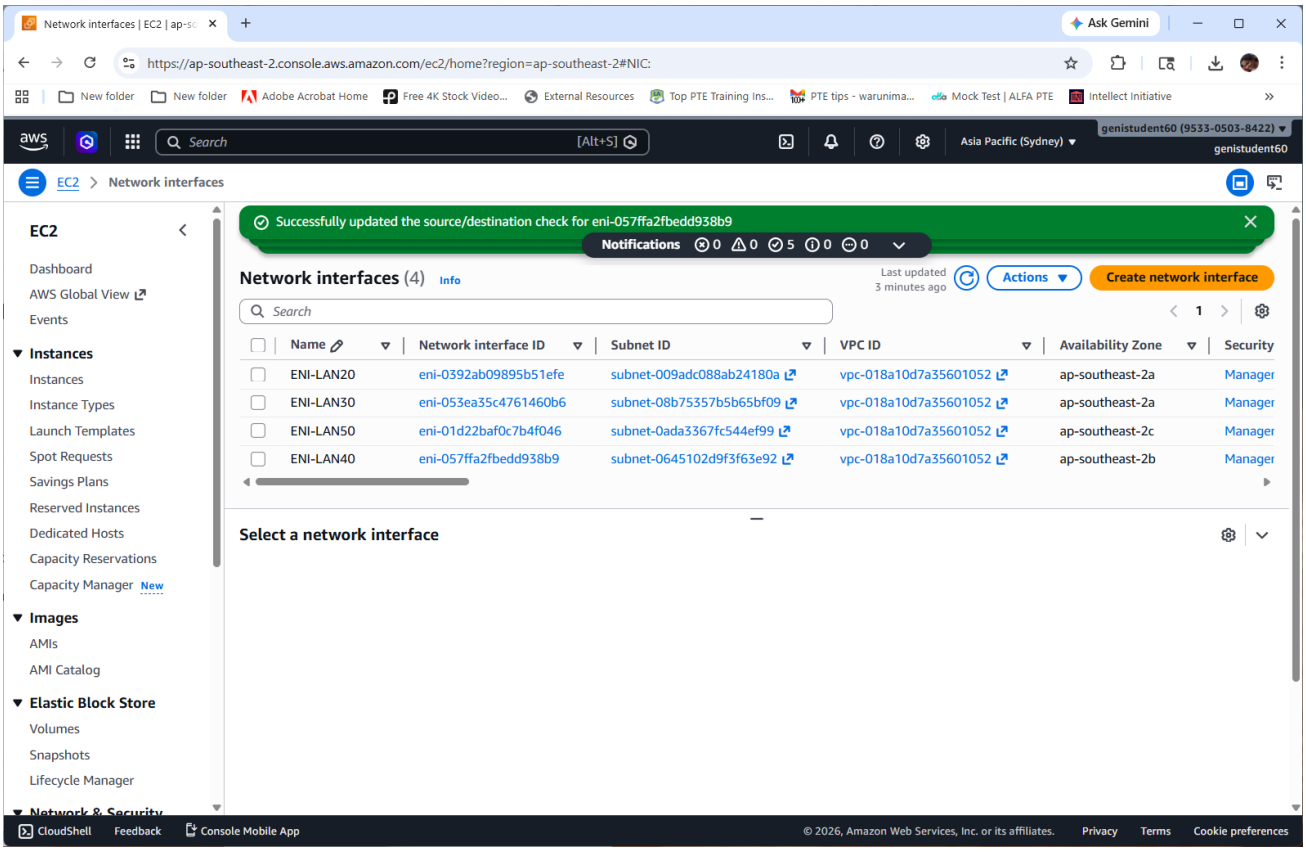
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Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Capacity Manager New
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Network & Security
Network interfaces (4) Info
Last updated 3 minutes ago
Actions
Create network interface
Search
1
Name
Network interface ID
Subnet ID
VPC ID
Availability Zone
Security
ENI-LAN20 eni-0392ab09895b51efe subnet-009adc088ab24180a vpc-018a10d7a35601052 ap-southeast-2a Manager
ENI-LAN30 eni-053ea35c4761460b6 subnet-08b75357b5b65bf09 vpc-018a10d7a35601052 ap-southeast-2a Manager
ENI-LAN50 eni-01d22baf0c7b4f046 subnet-0ada3367fc544ef99 vpc-018a10d7a35601052 ap-southeast-2c Manager
ENI-LAN40 eni-057ffa2fbedd938b9 subnet-0645102d9f3f63e92 vpc-018a10d7a35601052 ap-southeast-2b Manager
Select a network interface
CloudShell
Feedback
Console Mobile App
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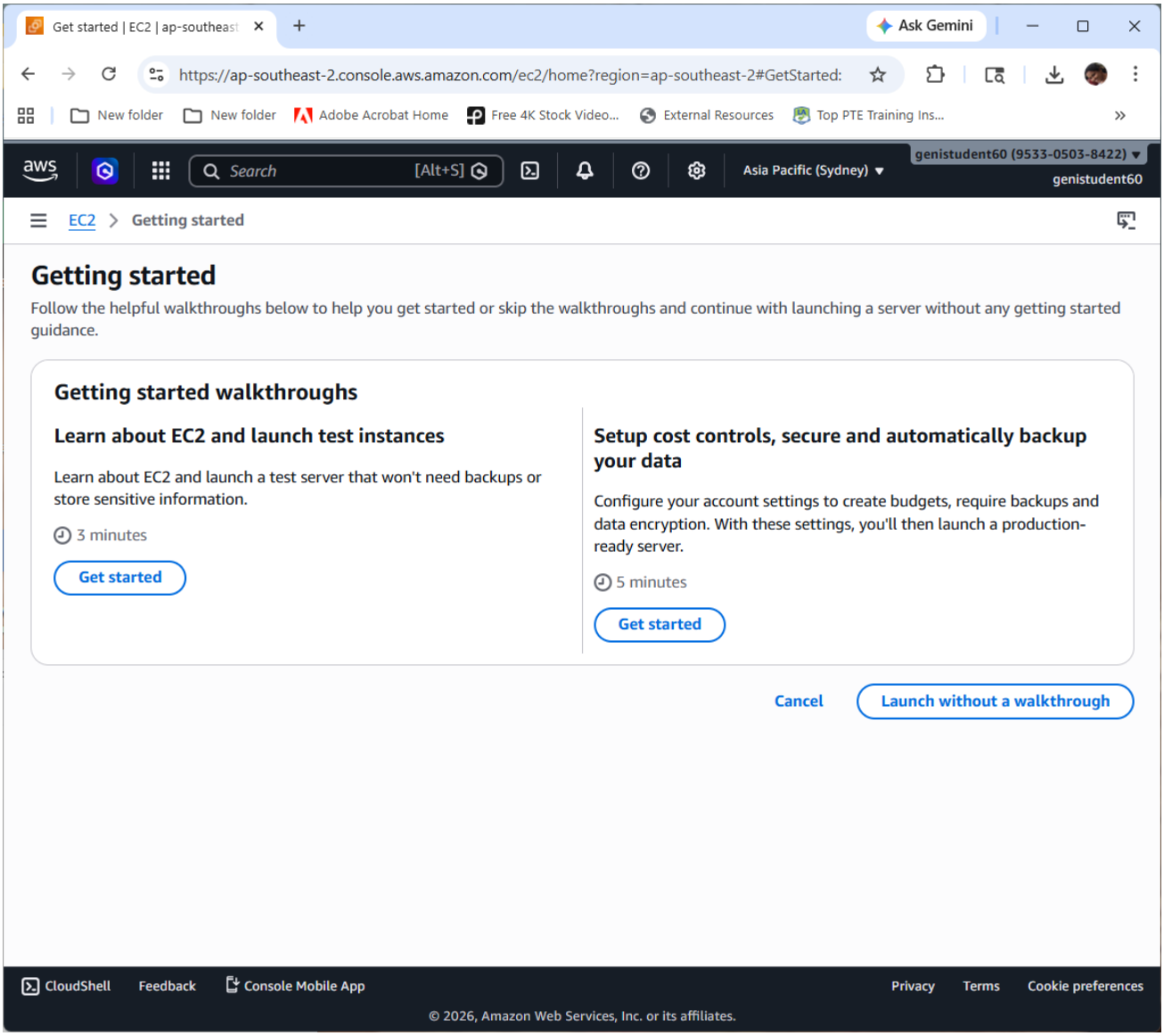
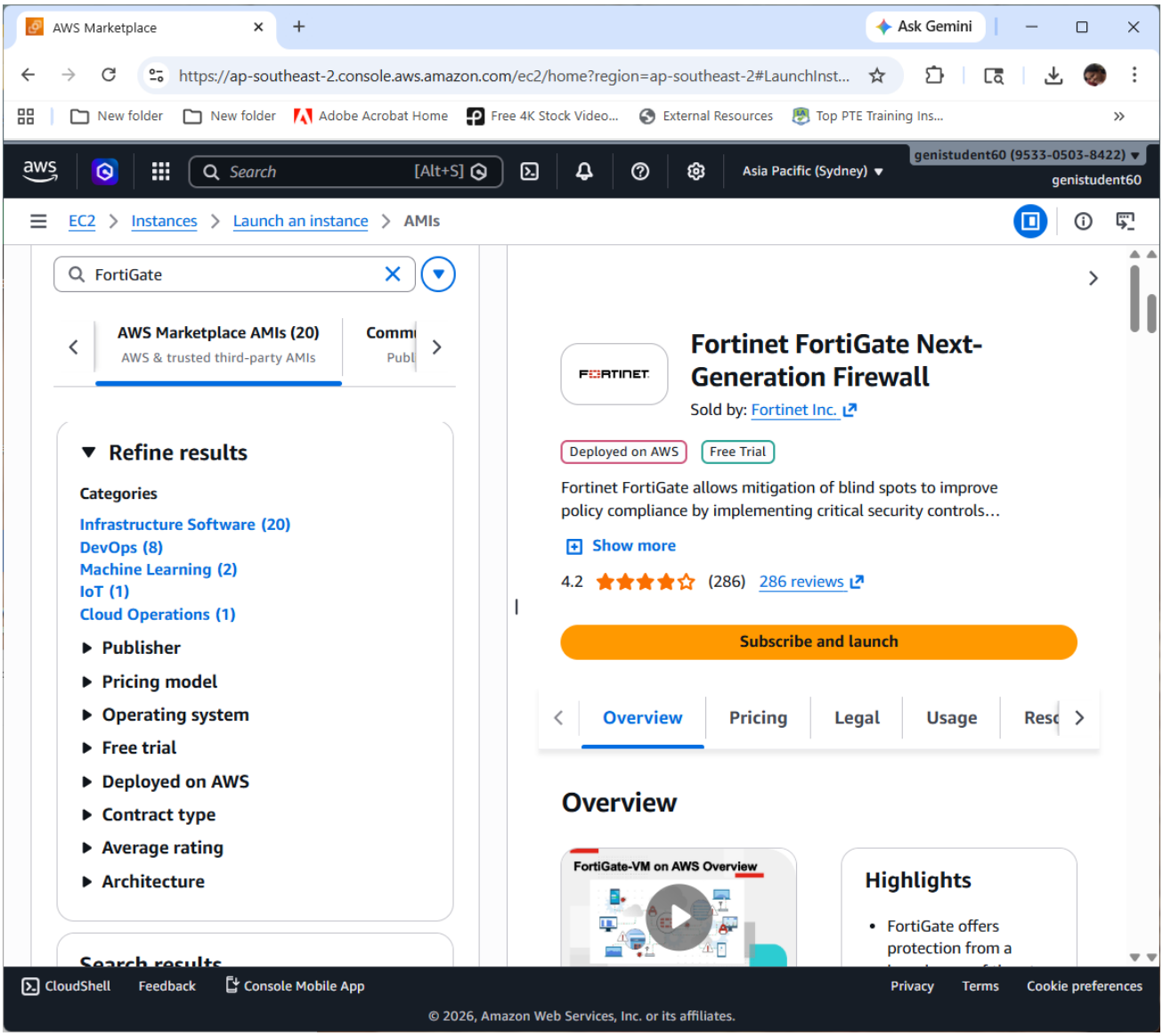
## Task 7: FortiGate Deployment and Configure Routing

Deployed FortiGate with multiple ENIs and assigned an Elastic IP to provide a static public access point, while configuring private subnet traffic to pass through the firewall for inspection instead of direct internet access. FortiGate was used as a central firewall to control and monitor traffic between subnets and external networks.




AWS Marketplace
Ask Gemini
https://ap-southeast-2.console.aws.amazon.com/ec2/home?region=ap-southeast-2#LaunchInst...
New folder
New folder
Adobe Acrobat Home
Free 4K Stock Video...
External Resources
Top PTE Training Ins...
Search
[Alt+S]
Asia Pacific (Sydney)
genistudent60 (9533-0503-8422)
genistudent60
EC2 > Instances > Launch an instance > AMIs
FortiGate
AWS Marketplace AMIs (20)
AWS & trusted third-party AMIs
Refine results
Categories
Infrastructure Software (20)
DevOps (8)
Machine Learning (2)
IoT (1)
Cloud Operations (1)
Publisher
Pricing model
Operating system
Free trial
Deployed on AWS
Contract type
Average rating
Architecture
Fortinet FortiGate Next-Generation Firewall
Sold by: Fortinet Inc.
Deployed on AWS
Free Trial
Fortinet FortiGate allows mitigation of blind spots to improve policy compliance by implementing critical security controls...
Show more
4.2
(286)
286 reviews
Subscribe and launch
Overview
Pricing
Legal
Usage
Overview
FortiGate-VM on AWS Overview
Highlights
FortiGate offers protection from a
CloudShell
Feedback
Console Mobile App
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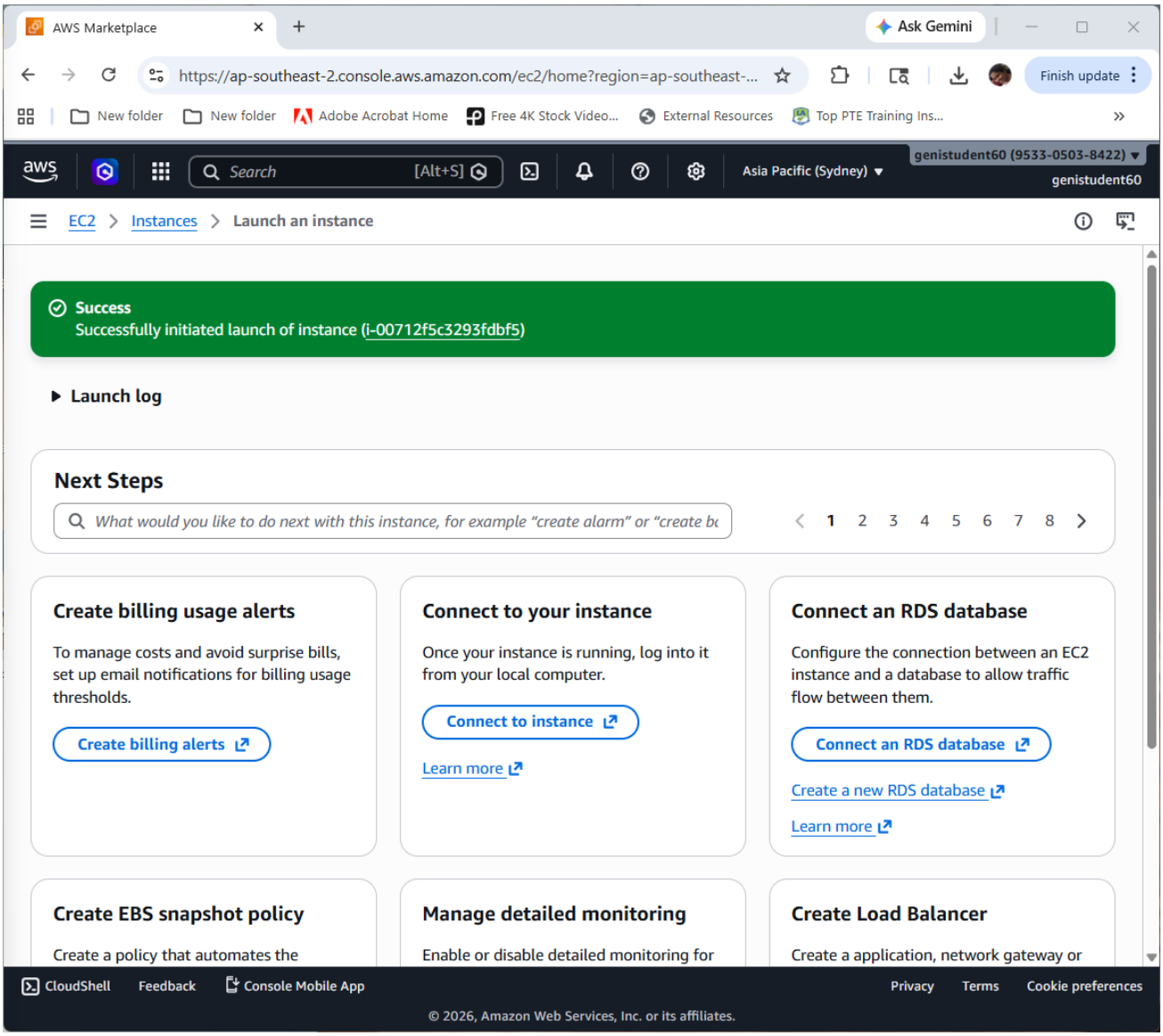
AWS Marketplace
Ask Gemini
https://ap-southeast-2.console.aws.amazon.com/ec2/home?region=ap-southeast-...
Finish update
New folder
New folder
Adobe Acrobat Home
Free 4K Stock Video...
External Resources
Top PTE Training Ins...
aws
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Asia Pacific (Sydney)
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genistudent60
EC2
Instances
Launch an instance
Success
Successfully initiated launch of instance (i-00712f5c3293fdbf5)
Launch log
Next Steps
What would you like to do next with this instance, for example "create alarm" or "create bc
1 2 3 4 5 6 7 8
Create billing usage alerts
To manage costs and avoid surprise bills, set up email notifications for billing usage thresholds.
Create billing alerts
Connect to your instance
Once your instance is running, log into it from your local computer.
Connect to instance
Learn more
Connect an RDS database
Configure the connection between an EC2 instance and a database to allow traffic flow between them.
Connect an RDS database
Create a new RDS database
Learn more
Create EBS snapshot policy
Create a policy that automates the
Manage detailed monitoring
Enable or disable detailed monitoring for
Create Load Balancer
Create a application, network gateway or
CloudShell
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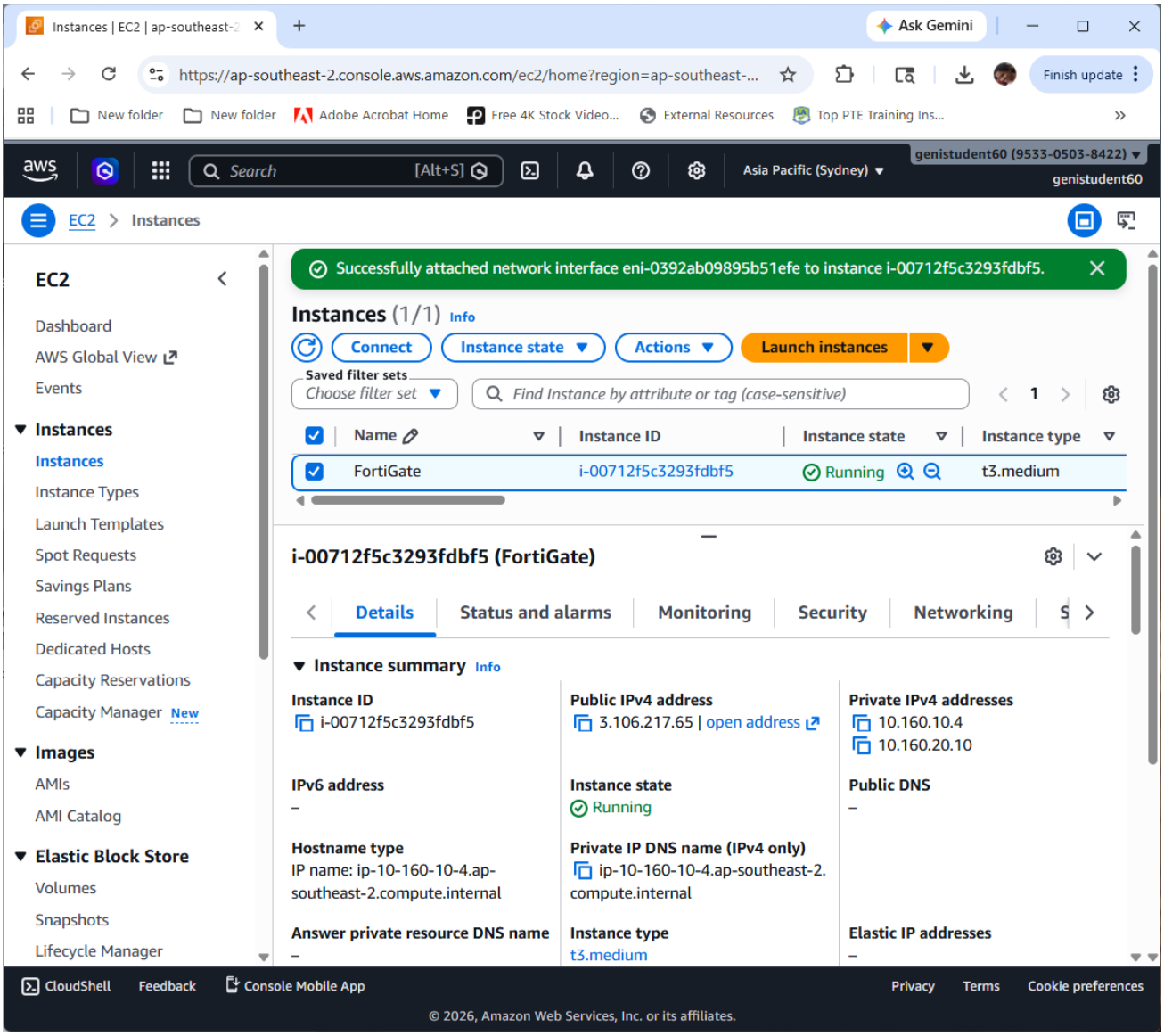
Instances | EC2 | ap-southeast-2
Ask Gemini
https://ap-southeast-2.console.aws.amazon.com/ec2/home?region=ap-southeast-...
Finish update
New folder
New folder
Adobe Acrobat Home
Free 4K Stock Video...
External Resources
Top PTE Training Ins...
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genistudent60
EC2 > Instances
EC2
Dashboard
AWS Global View
Events
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Capacity Manager New
Images
AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Successfully attached network interface eni-0392ab09895b51efe to instance i-00712f5c3293fdbf5.
Instances (1/1) Info
Connect
Instance state
Actions
Launch instances
Saved filter sets
Choose filter set
Find Instance by attribute or tag (case-sensitive)
Name
Instance ID
Instance state
Instance type
FortiGate
i-00712f5c3293fdbf5
Running
t3.medium
i-00712f5c3293fdbf5 (FortiGate)
Details
Status and alarms
Monitoring
Security
Networking
Instance summary Info
Instance ID
i-00712f5c3293fdbf5
Public IPv4 address
3.106.217.65 | open address
Private IPv4 addresses
10.160.10.4
10.160.20.10
IPv6 address
–
Instance state
Running
Public DNS
–
Hostname type
IP name: ip-10-160-10-4.ap-southeast-2.compute.internal
Private IP DNS name (IPv4 only)
ip-10-160-10-4.ap-southeast-2.compute.internal
Answer private resource DNS name
–
Instance type
t3.medium
Elastic IP addresses
–
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Feedback
Console Mobile App
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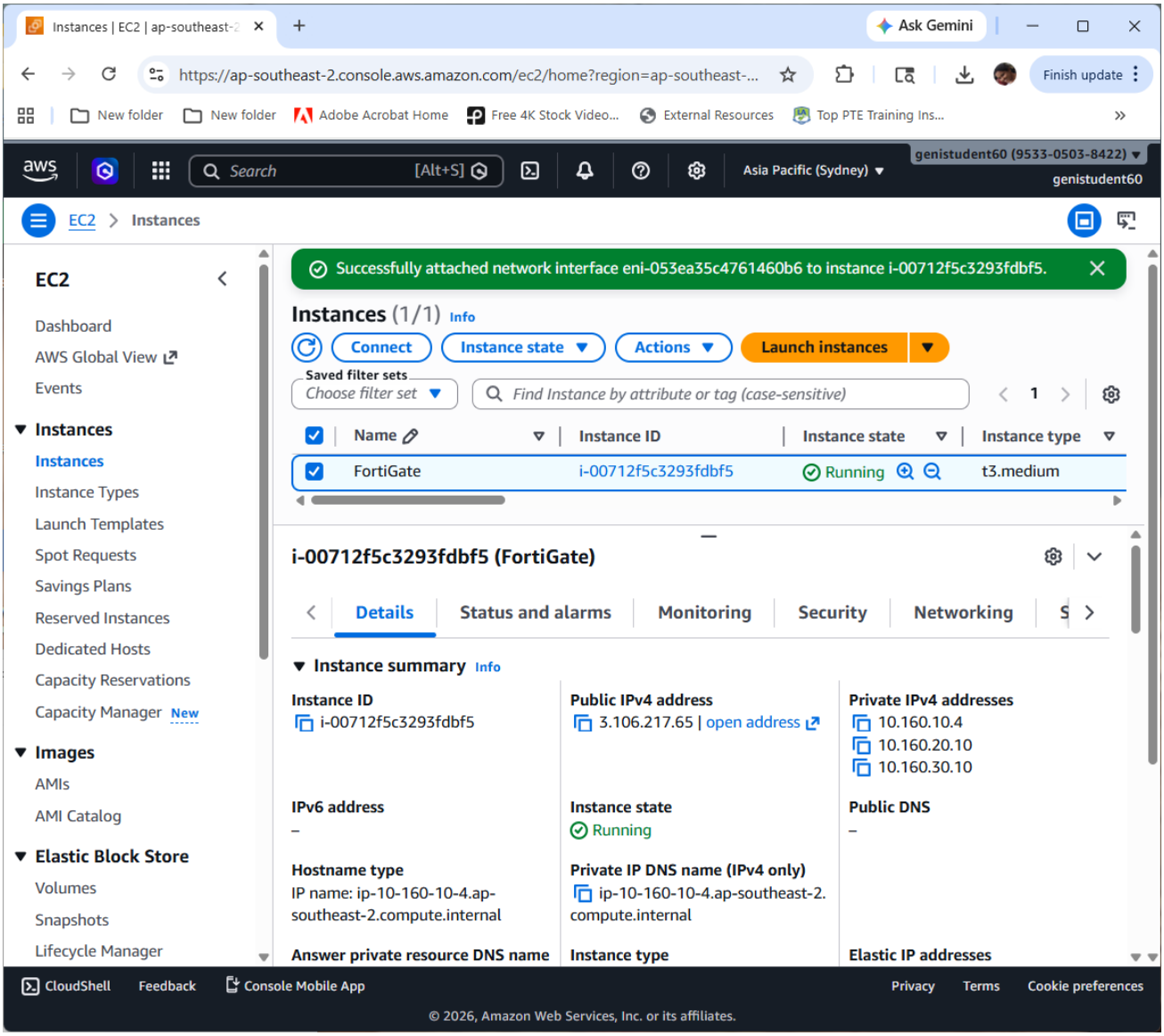
Instances | EC2 | ap-southeast-2
Ask Gemini
https://ap-southeast-2.console.aws.amazon.com/ec2/home?region=ap-southeast-...
Finish update
New folder
New folder
Adobe Acrobat Home
Free 4K Stock Video...
External Resources
Top PTE Training Ins...
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EC2 > Instances
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AWS Global View
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Instances
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Volumes
Snapshots
Lifecycle Manager
Successfully attached network interface eni-053ea35c4761460b6 to instance i-00712f5c3293fdbf5.
Instances (1/1) Info
Connect
Instance state
Actions
Launch instances
Saved filter sets
Choose filter set
Find Instance by attribute or tag (case-sensitive)
Name
Instance ID
Instance state
Instance type
FortiGate
i-00712f5c3293fdbf5
Running
t3.medium
i-00712f5c3293fdbf5 (FortiGate)
Details
Status and alarms
Monitoring
Security
Networking
Instance summary Info
Instance ID
i-00712f5c3293fdbf5
Public IPv4 address
3.106.217.65 | open address
Private IPv4 addresses
10.160.10.4
10.160.20.10
10.160.30.10
IPv6 address
–
Instance state
Running
Public DNS
–
Hostname type
IP name: ip-10-160-10-4.ap-southeast-2.compute.internal
Private IP DNS name (IPv4 only)
ip-10-160-10-4.ap-southeast-2.compute.internal
Answer private resource DNS name
Instance type
Elastic IP addresses
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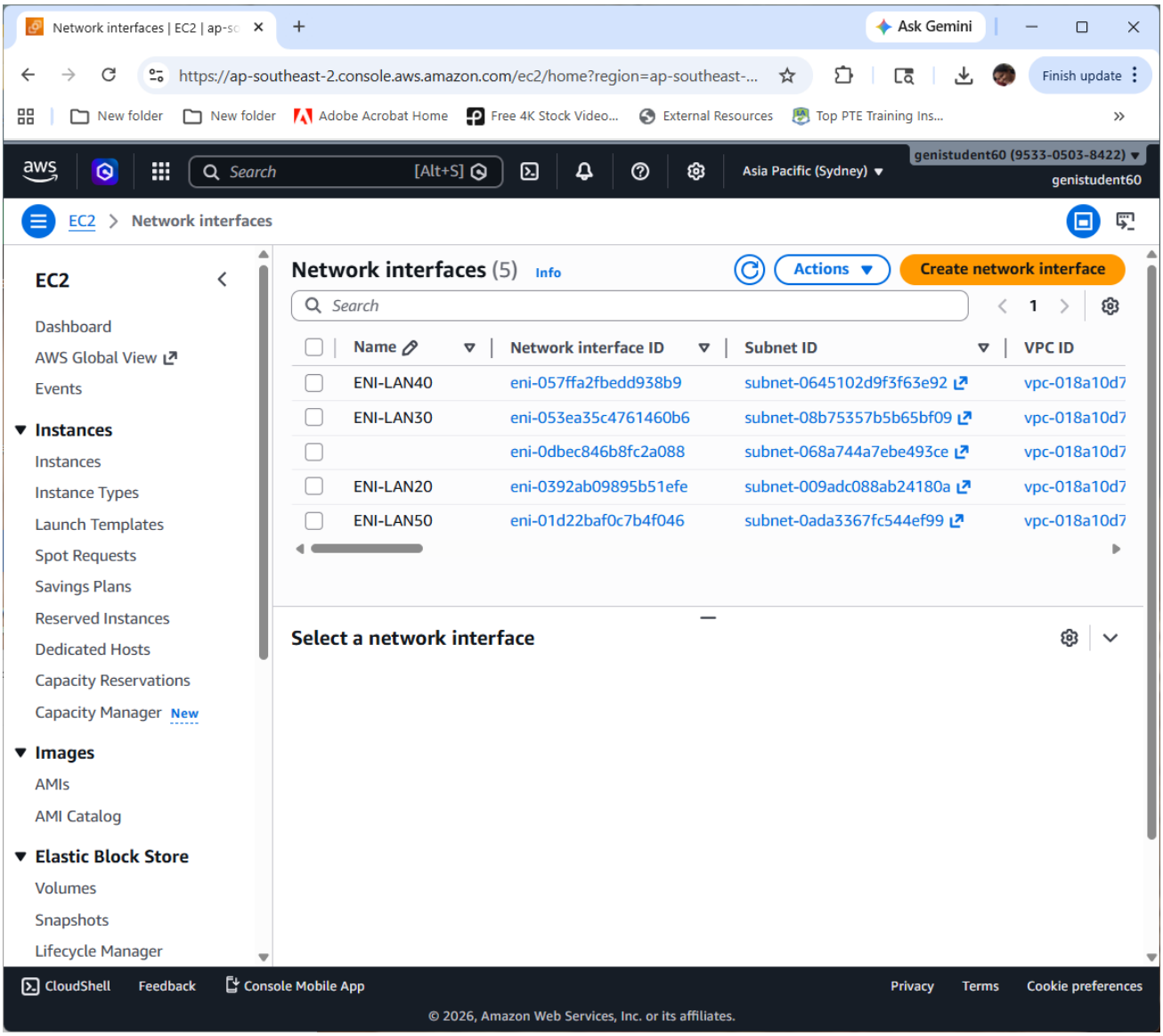
Network interfaces | EC2 | ap-so
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Snapshots
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Network interfaces (5) Info
Actions
Create network interface
Search
1
Name
Network interface ID
Subnet ID
VPC ID
ENI-LAN40
eni-057ffa2fbedd938b9
subnet-0645102d9f3f63e92
vpc-018a10d7
ENI-LAN30
eni-053ea35c4761460b6
subnet-08b75357b5b65bf09
vpc-018a10d7
eni-0dbec846b8fc2a088
subnet-068a744a7ebe493ce
vpc-018a10d7
ENI-LAN20
eni-0392ab09895b51efe
subnet-009adc088ab24180a
vpc-018a10d7
ENI-LAN50
eni-01d22baf0c7b4f046
subnet-0ada3367fc544ef99
vpc-018a10d7
Select a network interface
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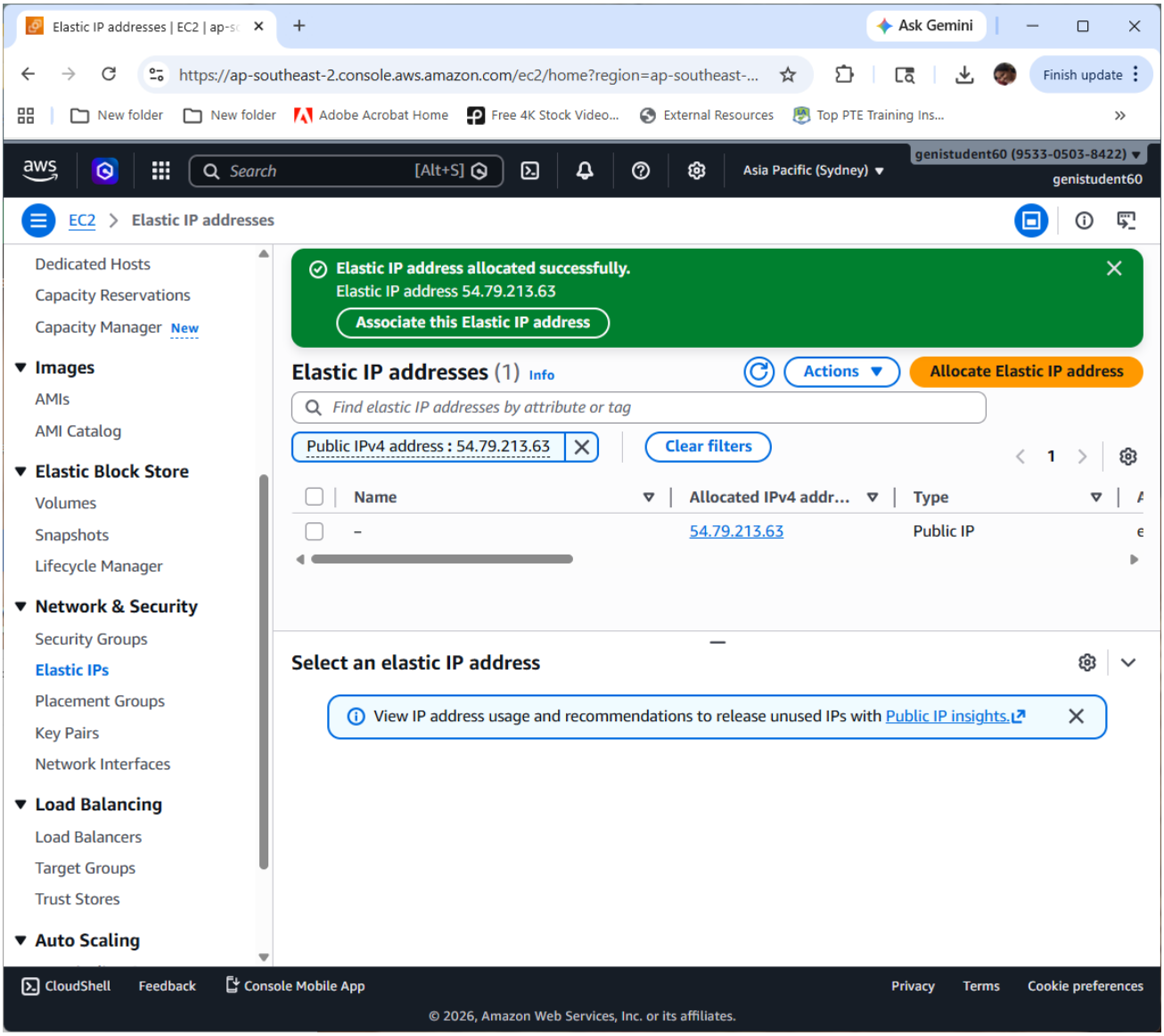
Elastic IP addresses | EC2 | ap-
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Snapshots
Lifecycle Manager
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Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
Load Balancing
Load Balancers
Target Groups
Trust Stores
Auto Scaling
Elastic IP address allocated successfully.
Elastic IP address 54.79.213.63
Associate this Elastic IP address
Elastic IP addresses (1) Info
Actions
Allocate Elastic IP address
Find elastic IP addresses by attribute or tag
Public IPv4 address : 54.79.213.63
Clear filters
1
Name
Allocated IPv4 addr...
Type
-
54.79.213.63
Public IP
Select an elastic IP address
View IP address usage and recommendations to release unused IPs with Public IP insights.
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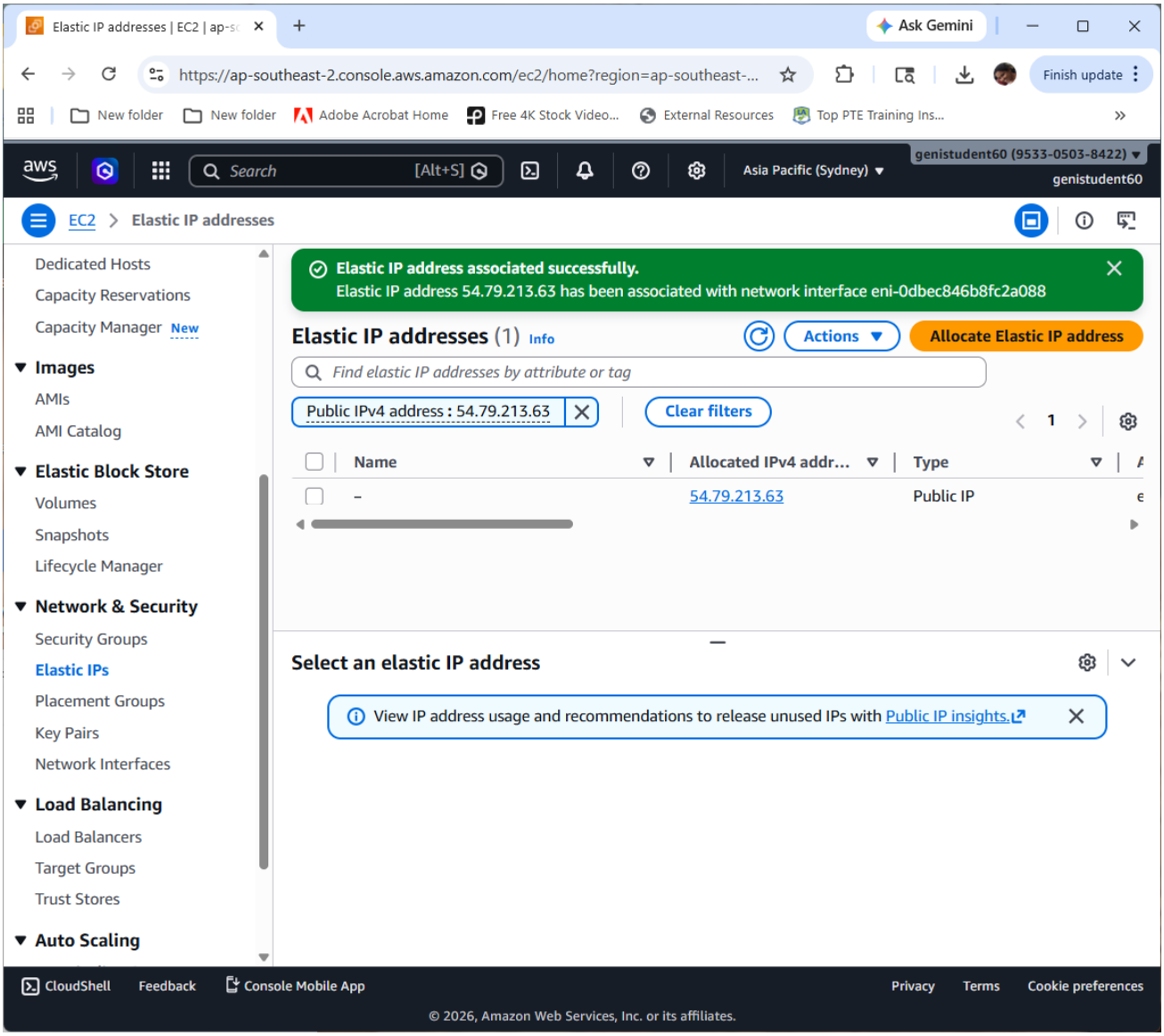
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Network & Security
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
Load Balancing
Load Balancers
Target Groups
Trust Stores
Auto Scaling
Elastic IP address associated successfully.
Elastic IP address 54.79.213.63 has been associated with network interface eni-0dbec846b8fc2a088
Elastic IP addresses (1) Info
Actions
Allocate Elastic IP address
Find elastic IP addresses by attribute or tag
Public IPv4 address : 54.79.213.63
Clear filters
1
Name
Allocated IPv4 addr...
Type
-
54.79.213.63
Public IP
Select an elastic IP address
View IP address usage and recommendations to release unused IPs with Public IP insights.
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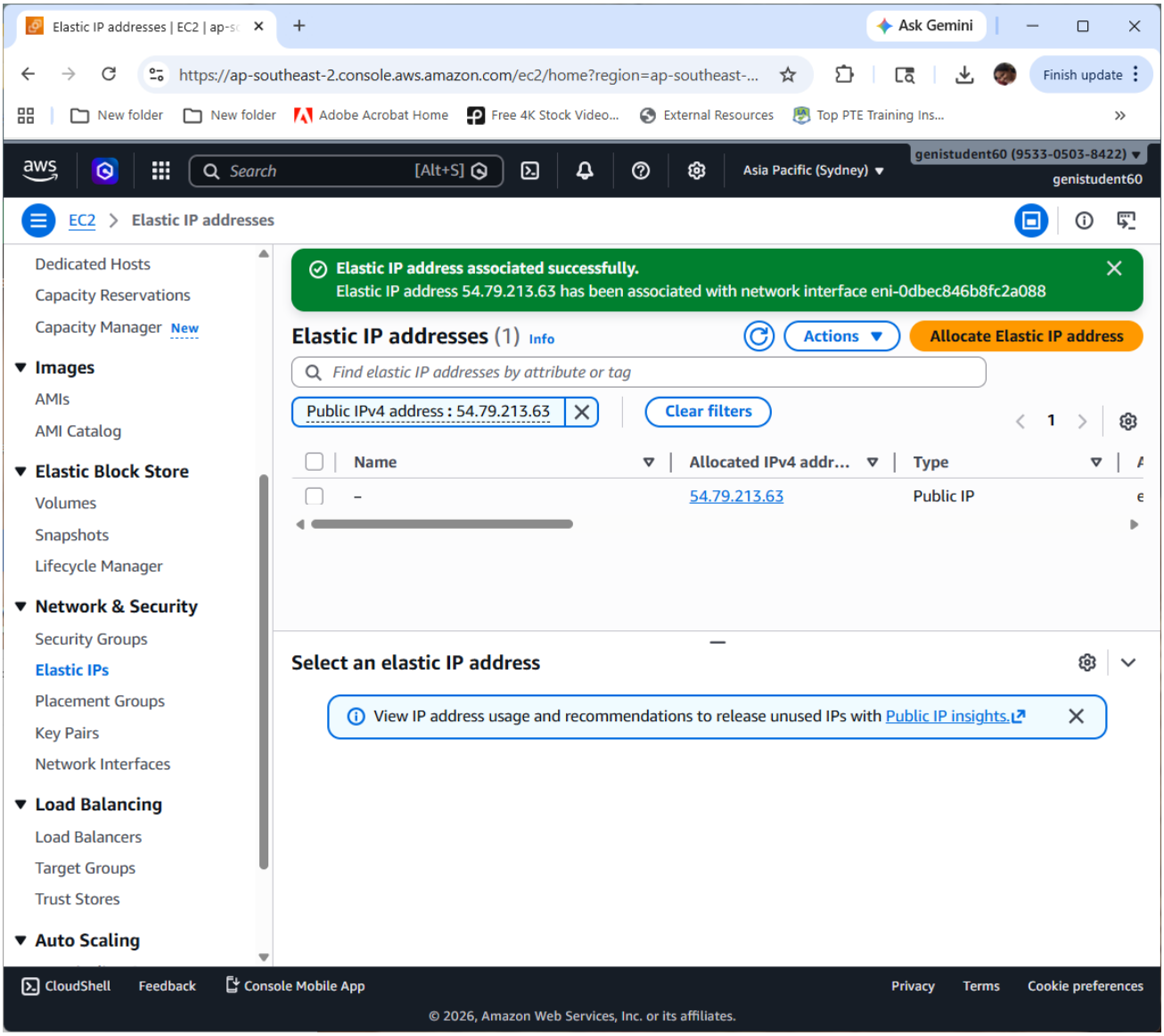
Elastic IP addresses | EC2 | ap-
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https://ap-southeast-2.console.aws.amazon.com/ec2/home?region=ap-southeast-...
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Free 4K Stock Video...
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Top PTE Training Ins...
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EC2
Elastic IP addresses
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Capacity Manager New
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Elastic Block Store
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Snapshots
Lifecycle Manager
Network & Security
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
Load Balancing
Load Balancers
Target Groups
Trust Stores
Auto Scaling
Elastic IP address associated successfully.
Elastic IP address 54.79.213.63 has been associated with network interface eni-0dbec846b8fc2a088
Elastic IP addresses (1) Info
Actions
Allocate Elastic IP address
Find elastic IP addresses by attribute or tag
Public IPv4 address : 54.79.213.63
Clear filters
1
Name
Allocated IPv4 addr...
Type
-
54.79.213.63
Public IP
Select an elastic IP address
View IP address usage and recommendations to release unused IPs with Public IP insights.
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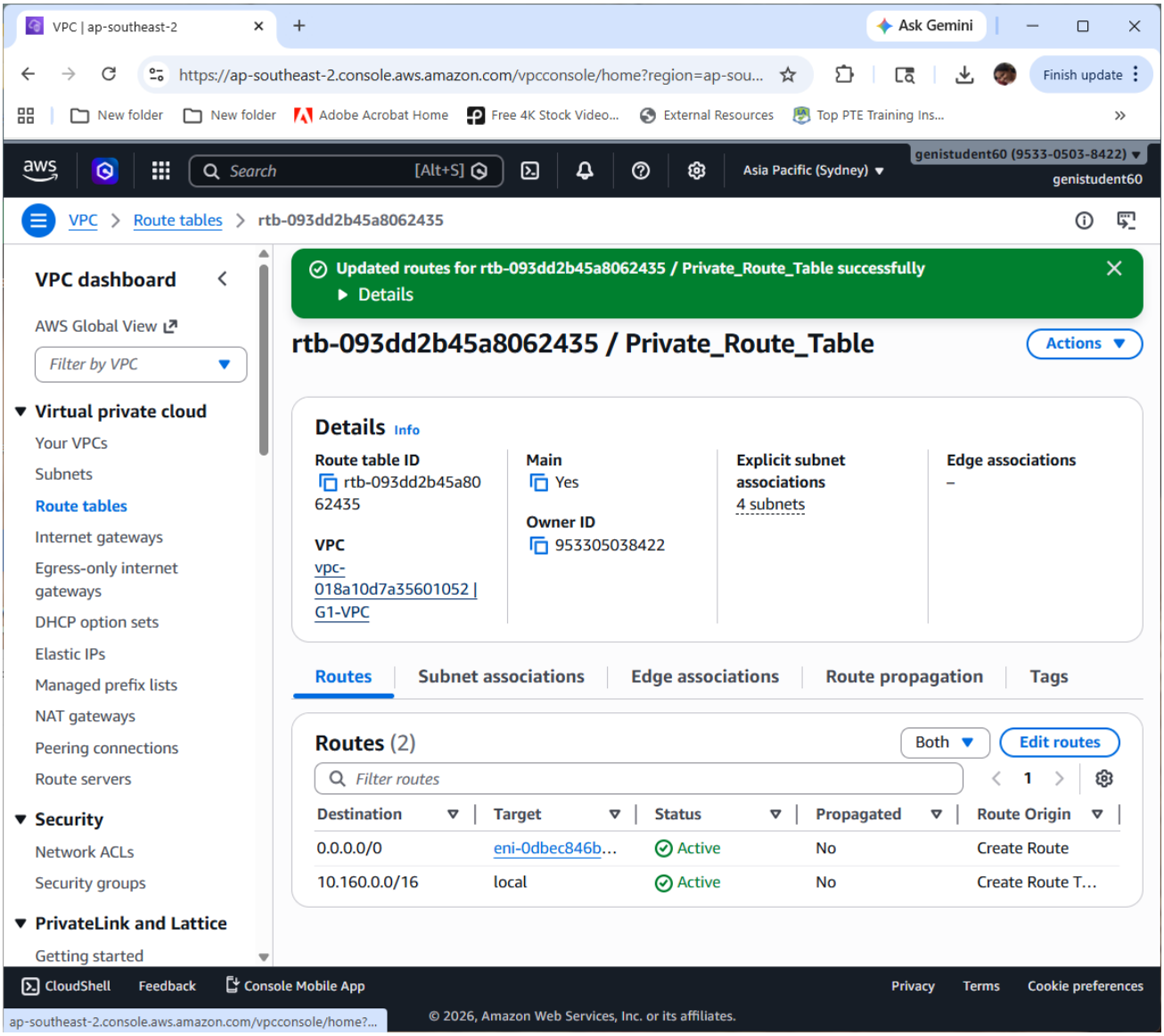
VPC | ap-southeast-2
Ask Gemini
https://ap-southeast-2.console.aws.amazon.com/vpcconsole/home?region=ap-sou...
Finish update
New folder
New folder
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VPC > Route tables > rtb-093dd2b45a8062435
VPC dashboard
AWS Global View
Filter by VPC
Virtual private cloud
Your VPCs
Subnets
Route tables
Internet gateways
Egress-only internet gateways
DHCP option sets
Elastic IPs
Managed prefix lists
NAT gateways
Peering connections
Route servers
Security
Network ACLs
Security groups
PrivateLink and Lattice
Getting started
Updated routes for rtb-093dd2b45a8062435 / Private_Route_Table successfully
Details
rtb-093dd2b45a8062435 / Private_Route_Table
Actions
Details Info
Route table ID
rtb-093dd2b45a8062435
Main
Yes
Explicit subnet associations
4 subnets
Edge associations
–
VPC
vpc-018a10d7a35601052 | G1-VPC
Owner ID
953305038422
Routes
Subnet associations
Edge associations
Route propagation
Tags
Routes (2)
Both
Edit routes
Filter routes
1
Destination
Target
Status
Propagated
Route Origin
0.0.0.0/0
eni-0dbec846b...
Active
No
Create Route
10.160.0.0/16
local
Active
No
Create Route T...
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Feedback
Console Mobile App
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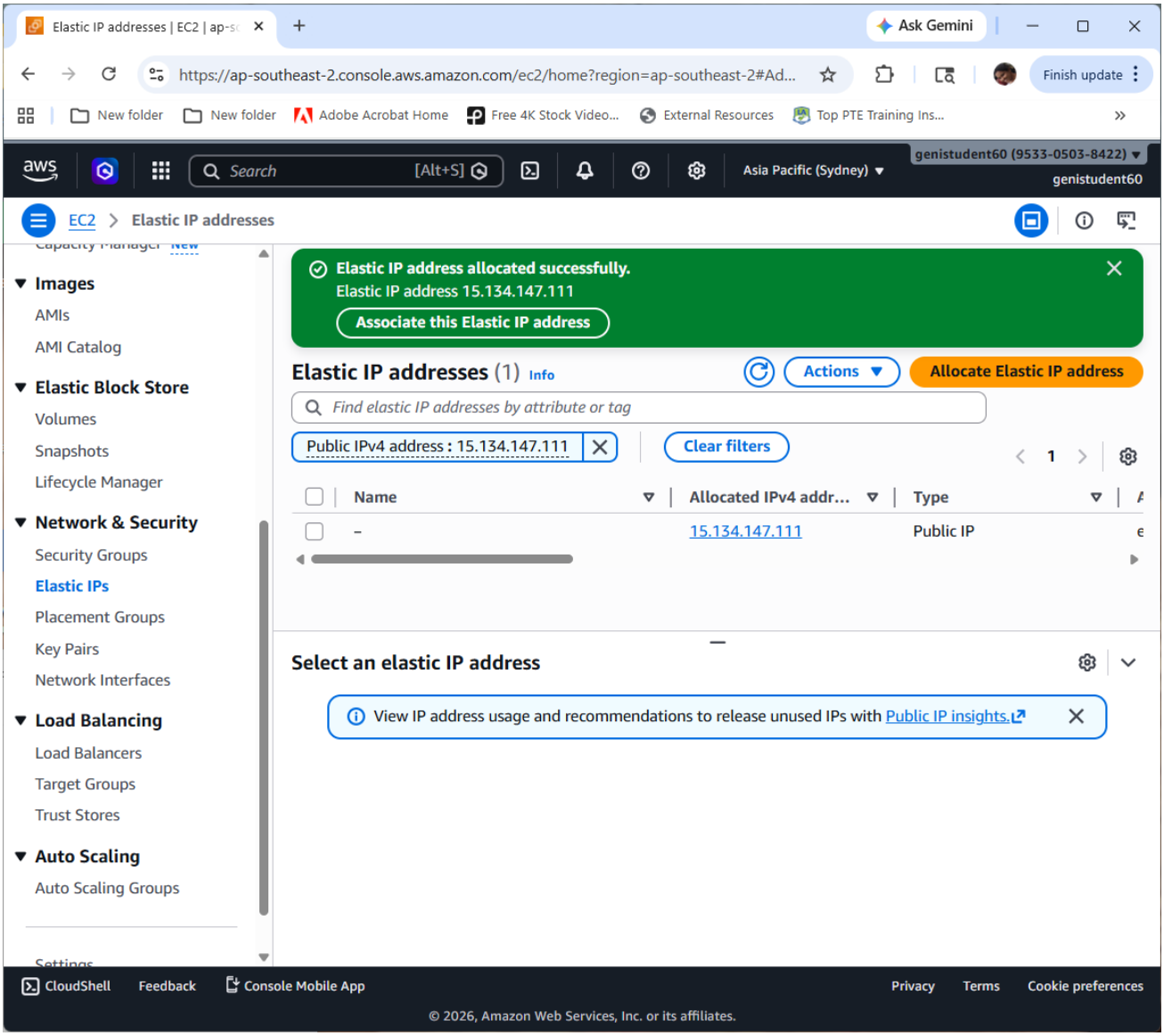
ap-southeast-2.console.aws.amazon.com/vpcconsole/home?...


Elastic IP addresses | EC2 | ap-
Ask Gemini
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Finish update
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EC2
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AMIs
AMI Catalog
Elastic Block Store
Volumes
Snapshots
Lifecycle Manager
Network & Security
Security Groups
Elastic IPs
Placement Groups
Key Pairs
Network Interfaces
Load Balancing
Load Balancers
Target Groups
Trust Stores
Auto Scaling
Auto Scaling Groups
Settings
Elastic IP address allocated successfully.
Elastic IP address 15.134.147.111
Associate this Elastic IP address
Elastic IP addresses (1) Info
Actions
Allocate Elastic IP address
Find elastic IP addresses by attribute or tag
Public IPv4 address : 15.134.147.111
Clear filters
1
Name
Allocated IPv4 addr...
Type
-
15.134.147.111
Public IP
Select an elastic IP address
View IP address usage and recommendations to release unused IPs with Public IP insights.
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Feedback
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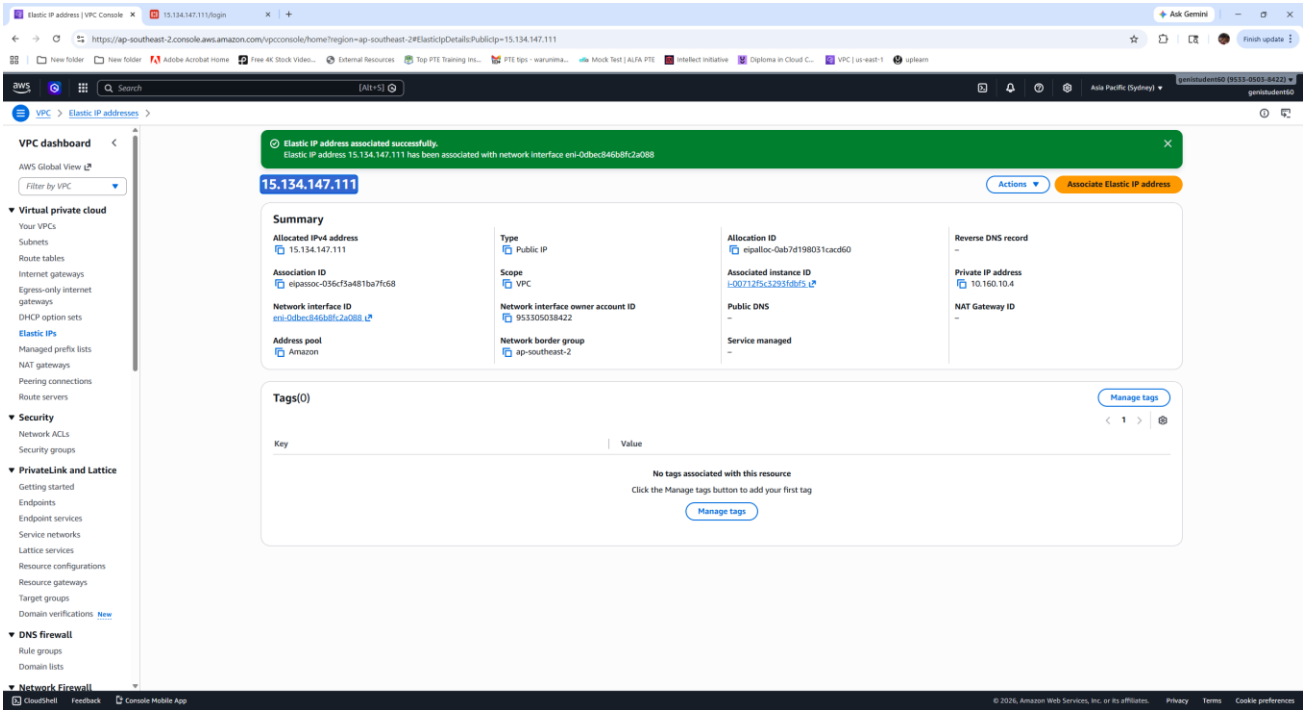
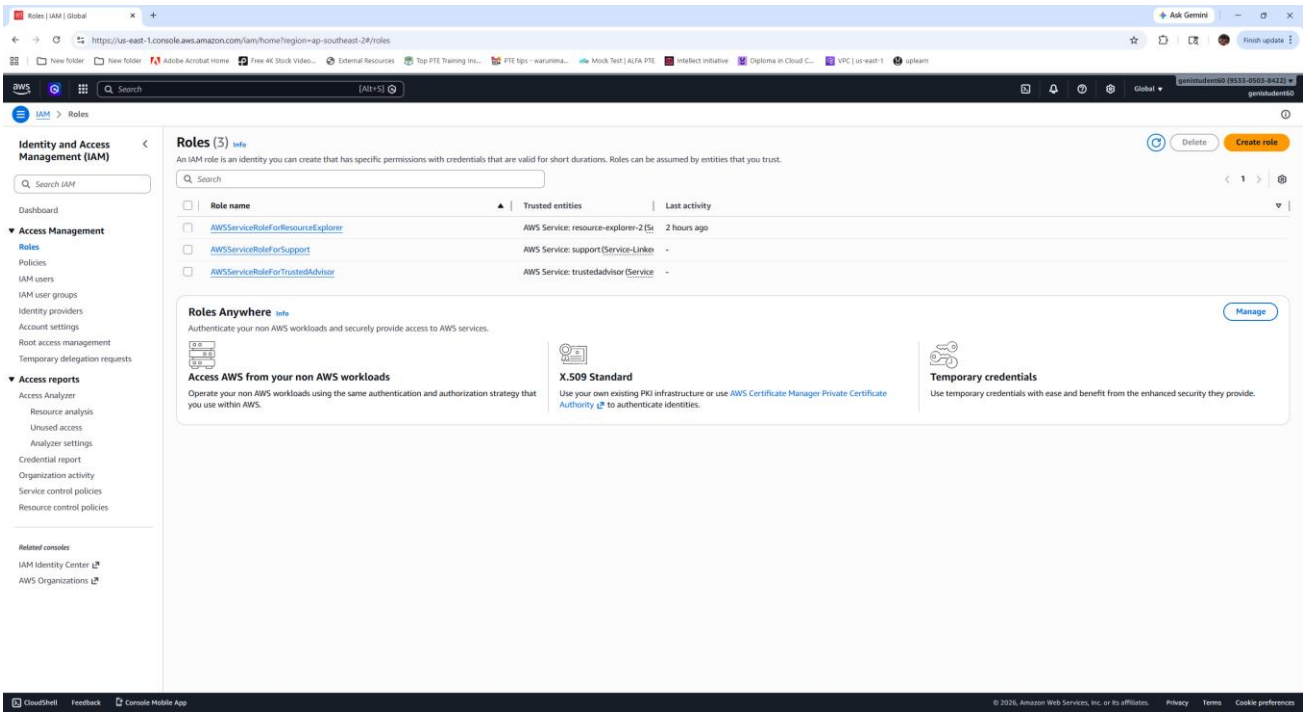
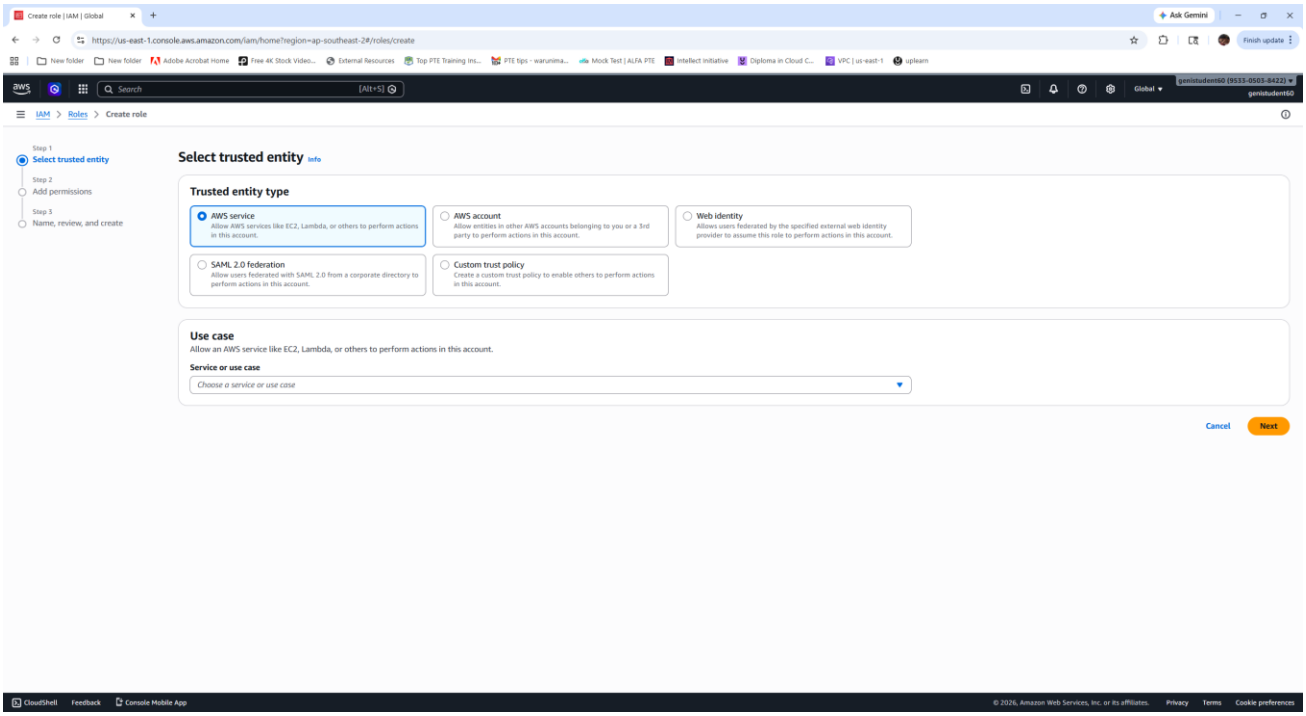
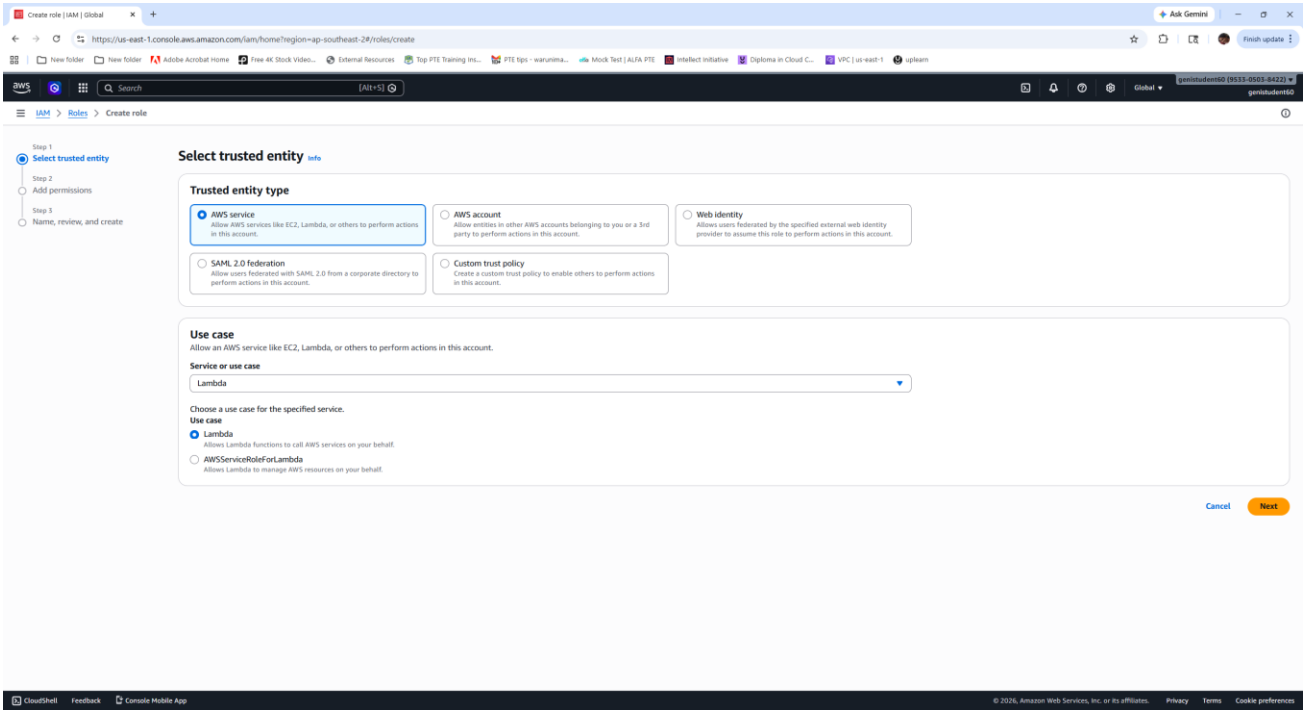

Elastic IP address associated successfully.
Elastic IP address 15.134.147.111 has been associated with network interface eni-0dbec846b8fc2a088
15.134.147.111
Actions
Associate Elastic IP address
Summary
Allocated IPv4 address
15.134.147.111
Type
Public IP
Allocation ID
eipalloc-0ab7d198031cacd60
Reverse DNS record
Association ID
eipassoc-056cf5a481ba7fc68
Scope
VPC
Associated instance ID
i-00712f5c3293fdbf5
Private IP address
10.160.10.4
Network interface ID
eni-0dbec846b8fc2a088
Network interface owner account ID
953305038422
Public DNS
NAT Gateway ID
Address pool
Amazon
Network border group
ap-southeast-2
Service managed
Tags(0)
Manage tags
Key
Value
No tags associated with this resource
Click the Manage tags button to add your first tag
Manage tags
VPC dashboard
AWS Global View
Filter by VPC
Virtual private cloud
Your VPCs
Subnets
Route tables
Internet gateways
Egress-only internet gateways
DHCP option sets
Elastic IPs
Managed prefix lists
NAT gateways
Peering connections
Route servers
Security
Network ACLs
Security groups
PrivateLink and Lattice
Getting started
Endpoints
Endpoint services
Service networks
Lattice services
Resource configurations
Resource gateways
Target groups
Domain verifications
DNS firewall
Rule groups
Domain lists
Network Firewall

## Task 8: AWS Lambda Automation

Used Lambda to automatically start and stop the FortiGate instance based on a scheduled time. This automation helps reduce operational costs by ensuring the firewall runs only during required hours.




Create role | IAM | Global
https://us-east-1.console.aws.amazon.com/iam/home?region=ap-southeast-2#/roles/create
IAM > Roles > Create role
Step 1
Select trusted entity
Step 2
Add permissions
Step 3
Name, review, and create
Select trusted entity Info
Trusted entity type
AWS service
Allow AWS services like EC2, Lambda, or others to perform actions in this account.
AWS account
Allow entities in other AWS accounts belonging to you or a 3rd party to perform actions in this account.
Web identity
Allows users federated by the specified external web identity provider to assume this role to perform actions in this account.
SAML 2.0 federation
Allow users federated with SAML 2.0 from a corporate directory to perform actions in this account.
Custom trust policy
Create a custom trust policy to enable others to perform actions in this account.
Use case
Allow an AWS service like EC2, Lambda, or others to perform actions in this account.
Service or use case
Lambda
Choose a use case for the specified service.
Use case
Lambda
Allows Lambda functions to call AWS services on your behalf.
AWSServiceRoleForLambda
Allows Lambda to manage AWS resources on your behalf.
Cancel
Next
CloudShell
Feedback
Console Mobile App
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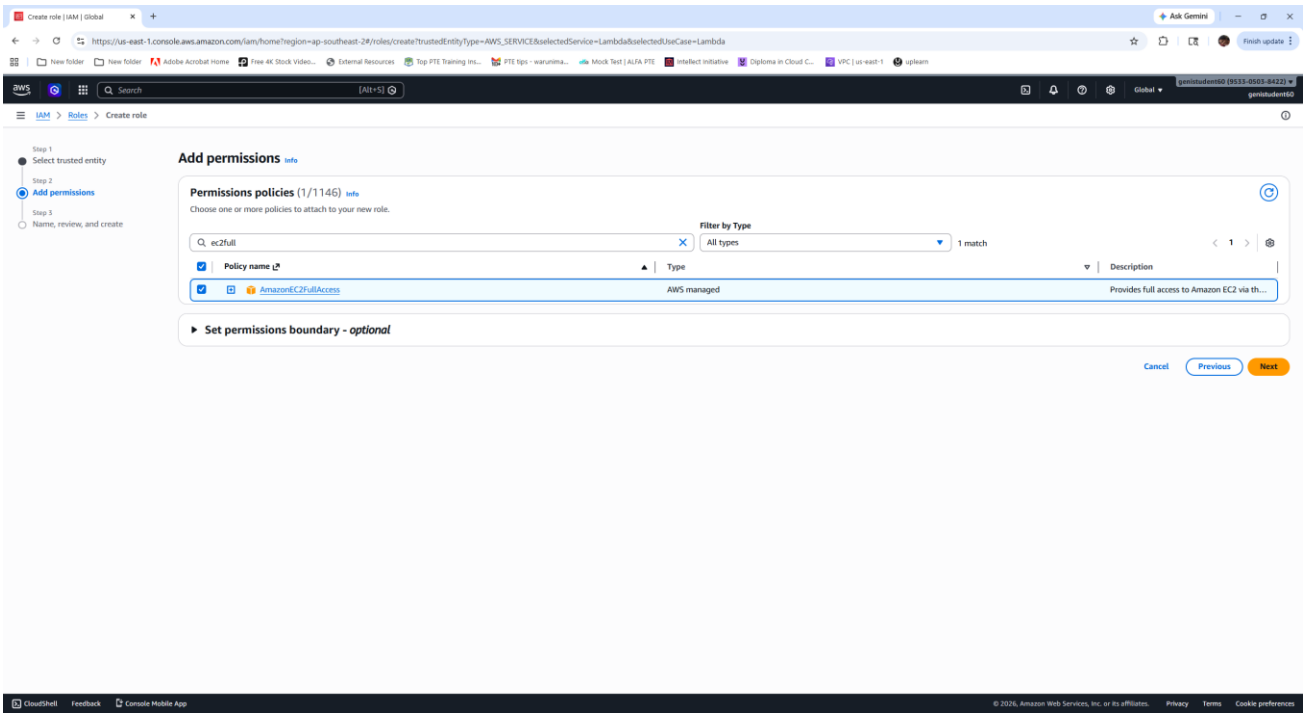
Privacy
Terms
Cookie preferences


Create role | IAM | Global
https://us-east-1.console.aws.amazon.com/iam/home?region=ap-southeast-2#/roles/create?trustedEntityType=AWS_SERVICE&selectedService=Lambda&selectedUseCase=Lambda
IAM > Roles > Create role
Step 1
Select trusted entity
Step 2
Add permissions
Step 3
Name, review, and create
Add permissions Info
Permissions policies (1/1146) Info
Choose one or more policies to attach to your new role.
Filter by Type
ec2full
All types
1 match
Policy name
Type
Description
AmazonEC2FullAccess
AWS managed
Provides full access to Amazon EC2 via th...
Set permissions boundary - optional
Cancel
Previous
Next
CloudShell
Feedback
Console Mobile App
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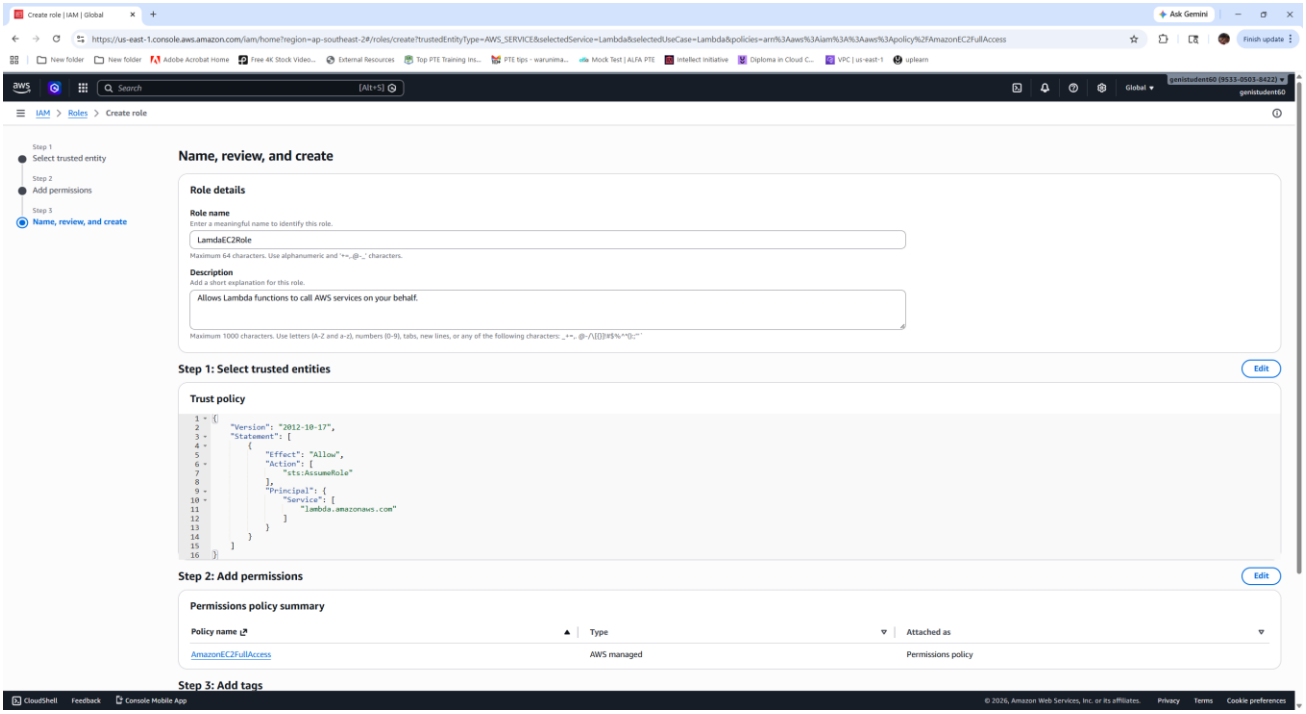
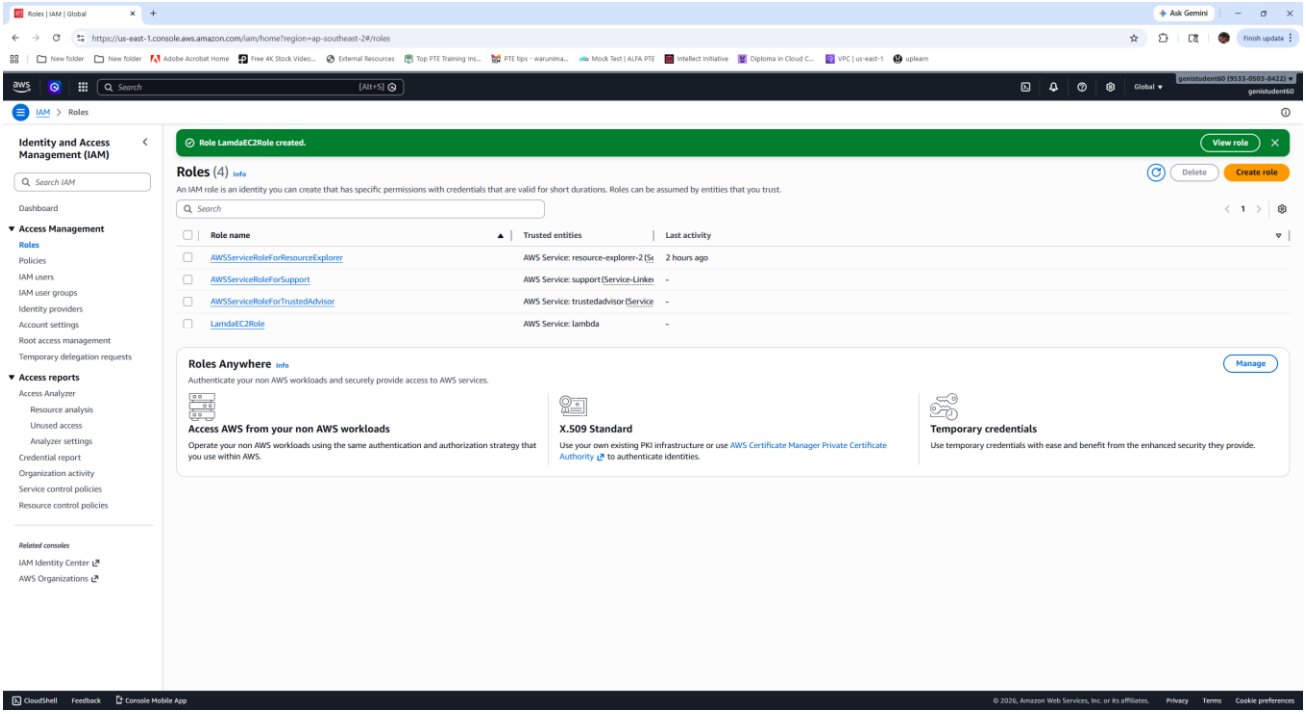
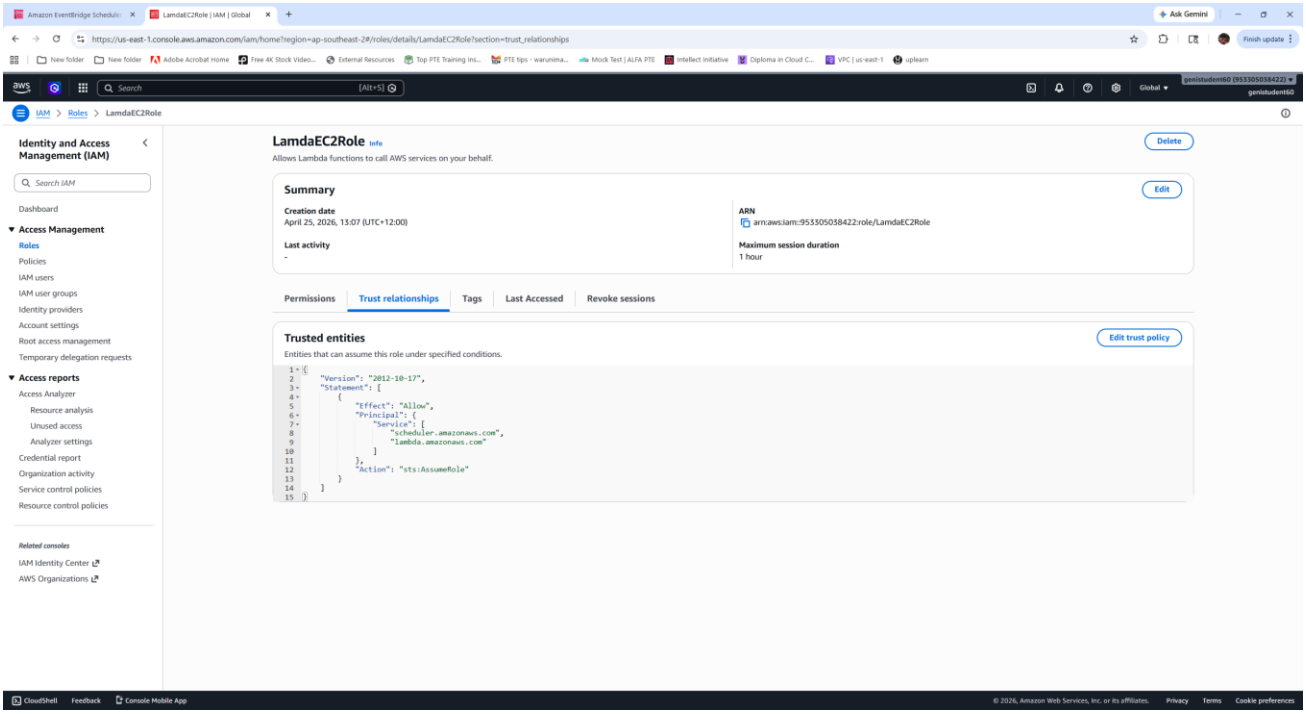
Terms
Cookie preferences


Name, review, and create
Role details
Role name
LamdaEC2Role
Description
Allows Lambda functions to call AWS services on your behalf.
Step 1: Select trusted entities
Trust policy
{
"Version": "2012-10-17",
"Statement": [
{
"Effect": "Allow",
"Action": [
"sts:AssumeRole"
],
"Principal": {
"Service": [
"lambda.amazonaws.com"
]
}
}
]
}
Step 2: Add permissions
Permissions policy summary
Policy name
Type
Attached as
AmazonEC2FullAccess
AWS managed
Permissions policy
Step 3: Add tags


Role LamdaEC2Role created.
View role
Roles (4)
Delete
Create role
Role name
Trusted entities
Last activity
AWSServiceRoleForResourceExplorer
AWS Service: resource-explorer-2
2 hours ago
AWSServiceRoleForSupport
AWS Service: support
AWSServiceRoleForTrustedAdvisor
AWS Service: trustedadvisor
LamdaEC2Role
AWS Service: lambda
Roles Anywhere
Manage
Access AWS from your non AWS workloads
X.509 Standard
Temporary credentials


LamdaEC2Role | IAM | Global
https://us-east-1.console.aws.amazon.com/iam/home?region=ap-southeast-2#/roles/details/LamdaEC2Role?section=trust_relationships
Identity and Access Management (IAM)
Search IAM
Dashboard
Access Management
Roles
Policies
IAM users
IAM user groups
Identity providers
Account settings
Root access management
Temporary delegation requests
Access reports
Access Analyzer
Resource analysis
Unused access
Analyzer settings
Credential report
Organization activity
Service control policies
Resource control policies
Related consoles
IAM Identity Center
AWS Organizations
IAM > Roles > LamdaEC2Role
LamdaEC2Role Info
Allows Lambda functions to call AWS services on your behalf.
Delete
Summary
Edit
Creation date
April 25, 2026, 13:07 (UTC+12:00)
ARN
arn:aws:iam::953305058422:role/LamdaEC2Role
Last activity
-
Maximum session duration
1 hour
Permissions
Trust relationships
Tags
Last Accessed
Revoke sessions
Trusted entities
Edit trust policy
Entities that can assume this role under specified conditions.
{
"Version": "2012-10-17",
"Statement": [
{
"Effect": "Allow",
"Principal": {
"Service": [
"scheduler.amazonaws.com",
"lambda.amazonaws.com"
]
},
"Action": "sts:AssumeRole"
}
]
}
CloudShell
Feedback
Console Mobile App
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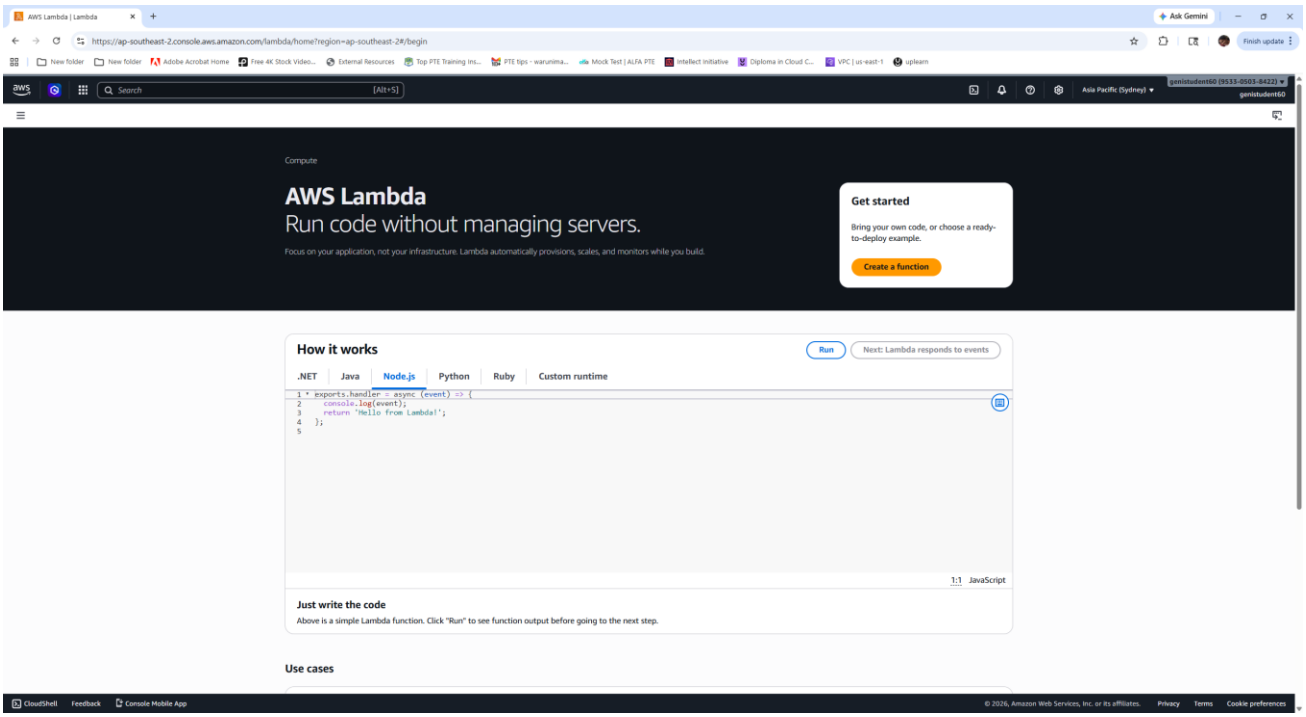
AWS Lambda | Lambda
https://ap-southeast-2.console.aws.amazon.com/lambda/home?region=ap-southeast-2#/begin
Compute
AWS Lambda
Run code without managing servers.
Focus on your application, not your infrastructure. Lambda automatically provisions, scales, and monitors while you build.
Get started
Bring your own code, or choose a ready-to-deploy example.
Create a function
How it works
Run
Next: Lambda responds to events
.NET
Java
Node.js
Python
Ruby
Custom runtime
exports.handler = async (event) => {
console.log(event);
return 'Hello from Lambda!';
};
1:1 JavaScript
Just write the code
Above is a simple Lambda function. Click "Run" to see function output before going to the next step.
Use cases
CloudShell
Feedback
Console Mobile App
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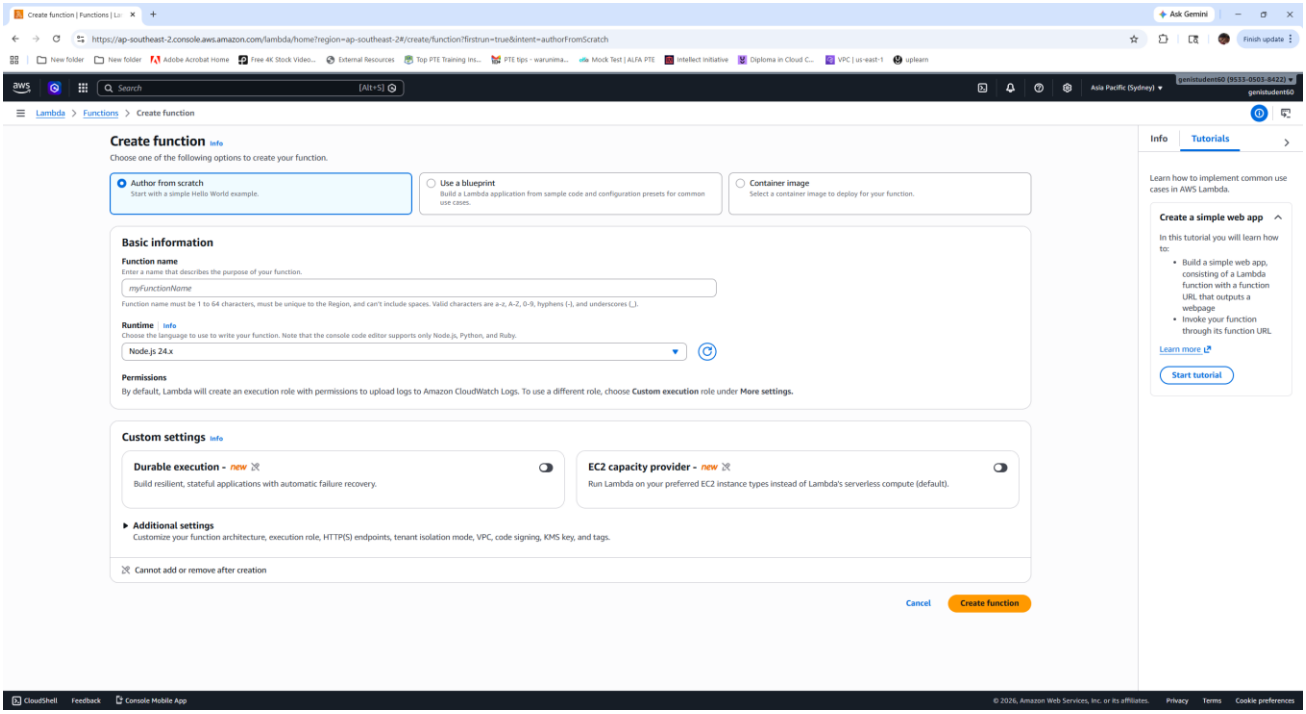
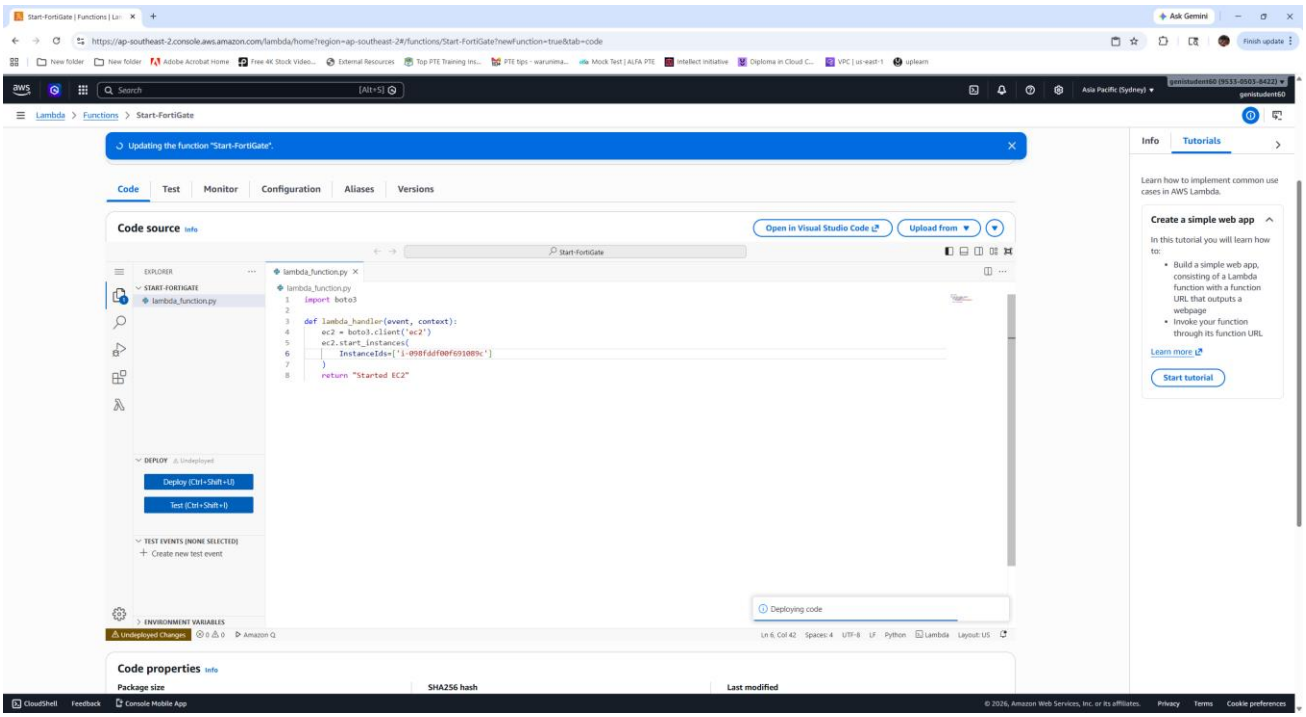
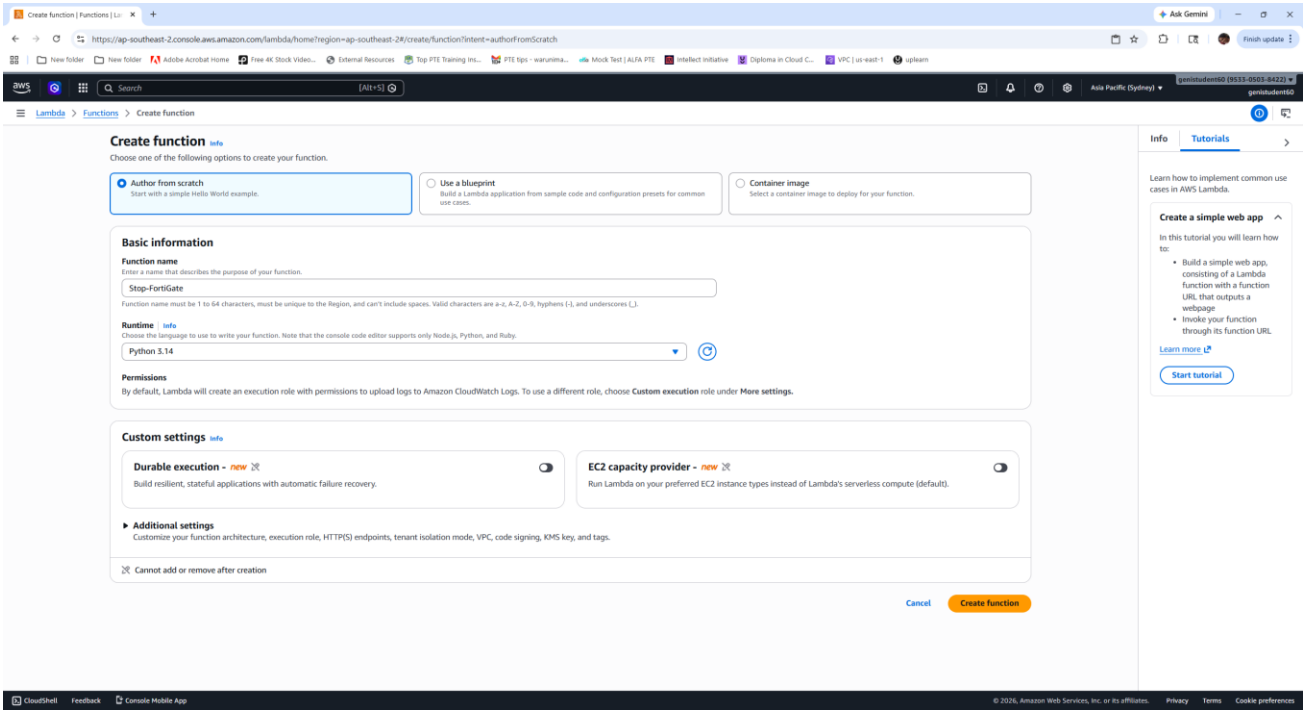
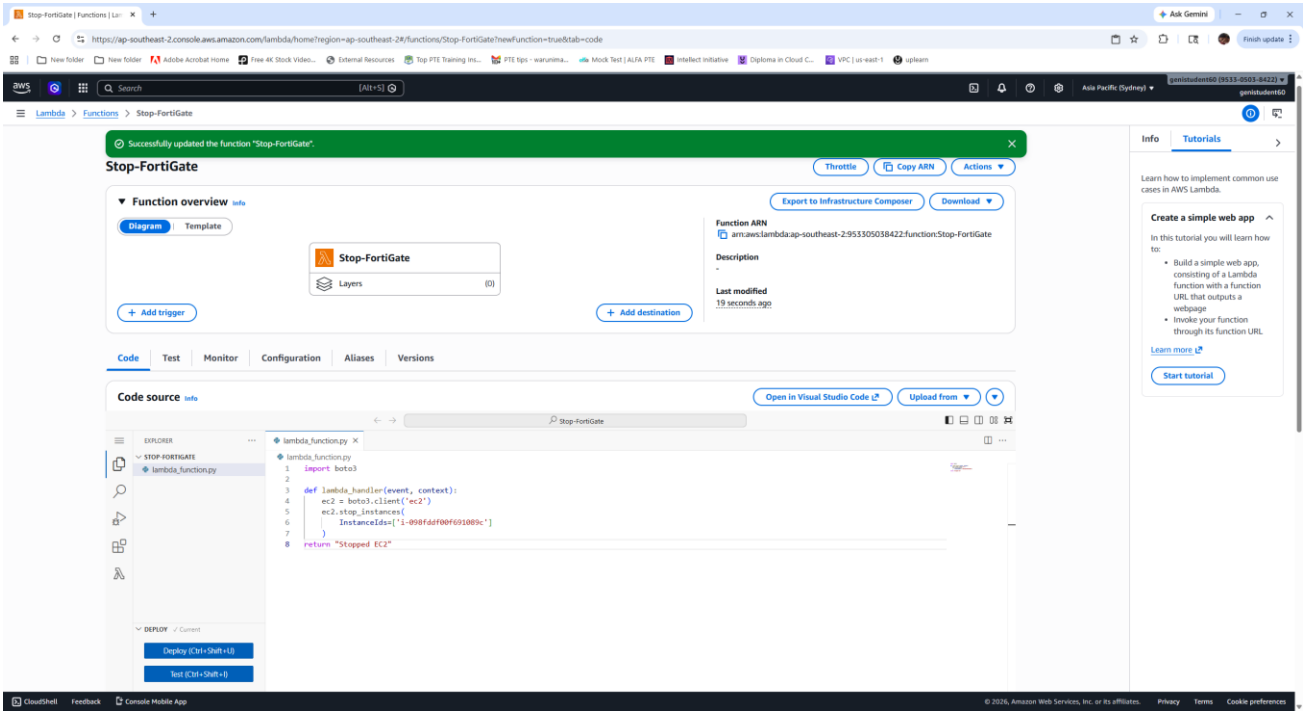
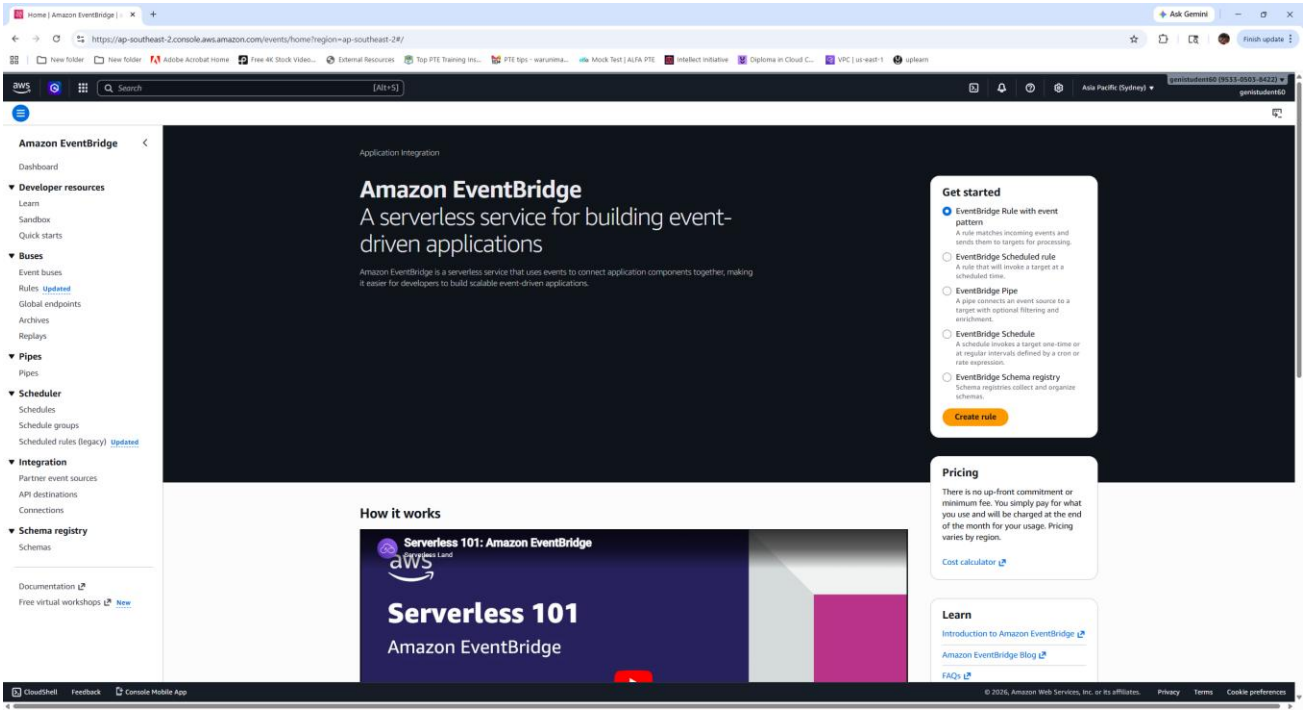
Privacy
Terms
Cookie preferences

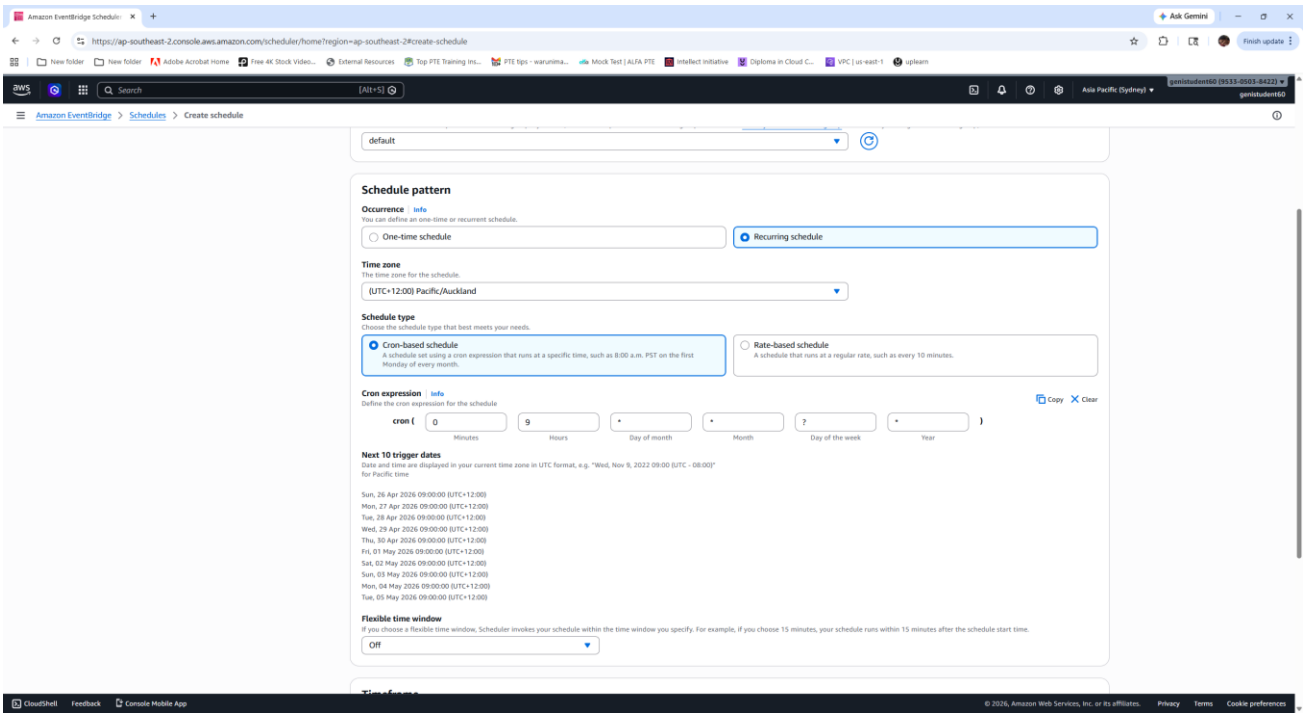

Create function
Choose one of the following options to create your function.
Author from scratch
Use a blueprint
Container image
Basic information
Function name
Runtime
Node.js 24.x
Permissions
Custom settings
Durable execution - new
EC2 capacity provider - new
Additional settings
Cannot add or remove after creation
Cancel
Create function
Info
Tutorials
Create a simple web app
Start tutorial

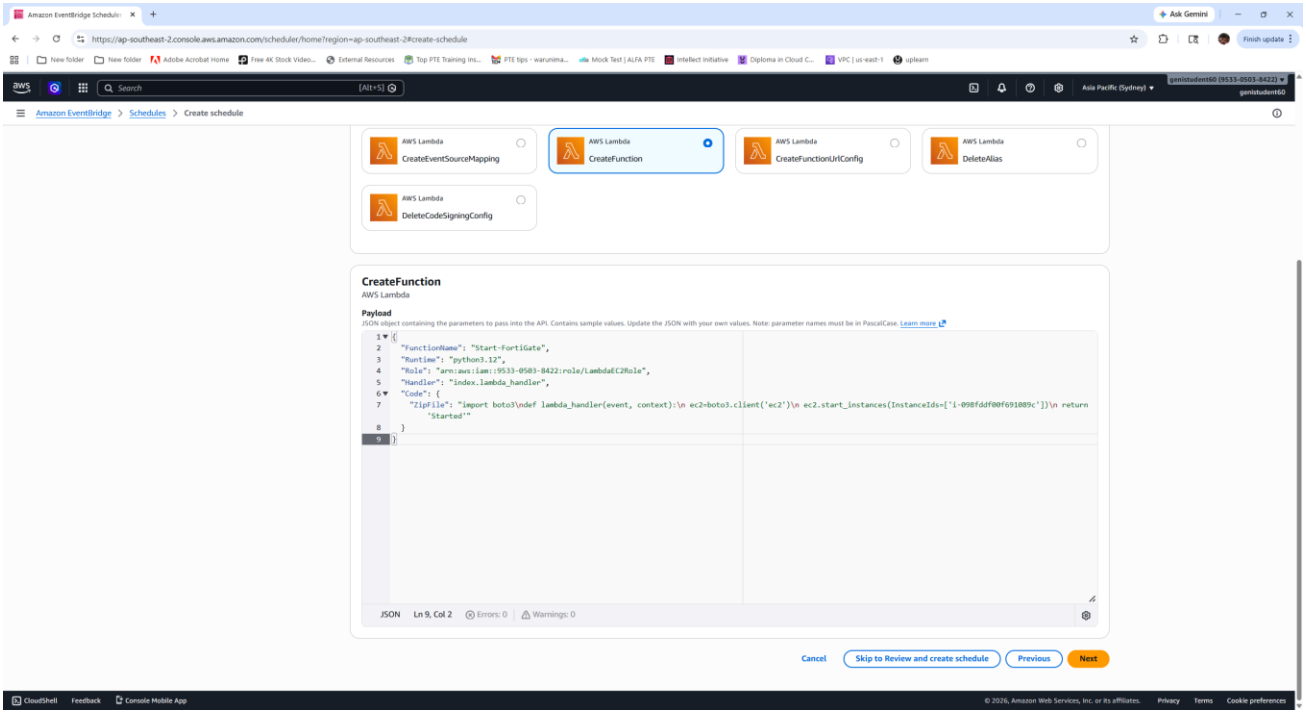

Updating the function "Start-FortiGate".
Code
Test
Monitor
Configuration
Aliases
Versions
Code source
Open in Visual Studio Code
Upload from
Deploy (Ctrl+Shift+U)
Test (Ctrl+Shift+I)
Deploying code
Code properties
Package size
SHA256 hash
Last modified
Info
Tutorials
Create a simple web app
Start tutorial

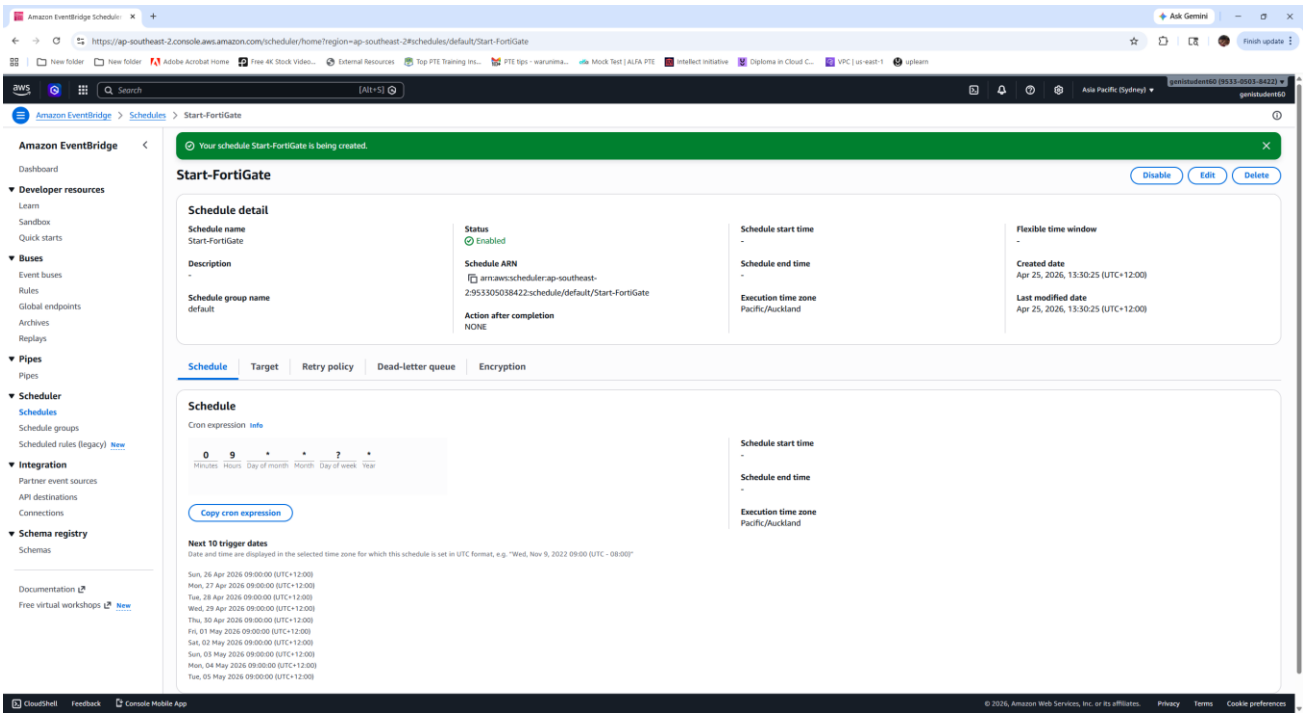

Create function
Choose one of the following options to create your function.
Author from scratch
Use a blueprint
Container image
Basic information
Function name
Stop-FortiGate
Runtime
Python 3.14
Permissions
Custom settings
Durable execution - new
EC2 capacity provider - new
Additional settings
Cannot add or remove after creation
Cancel
Create function
Info
Tutorials
Create a simple web app
Start tutorial

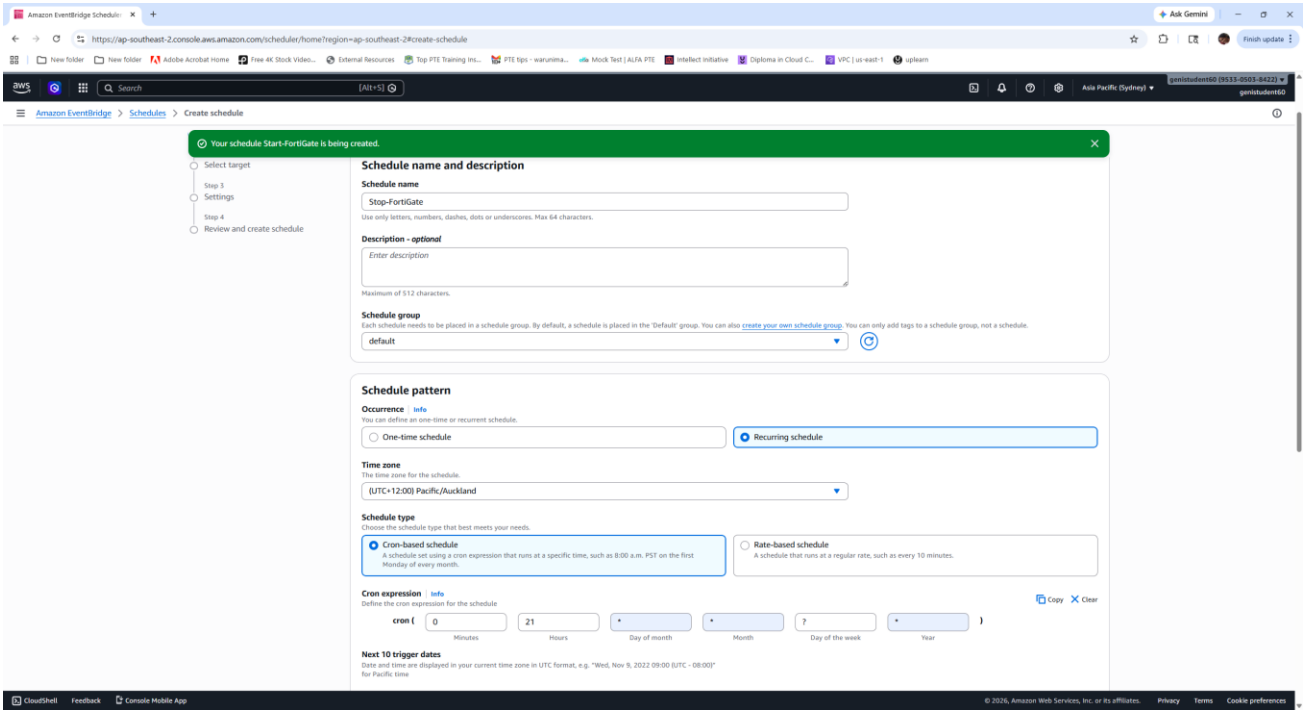

Successfully updated the function "Stop-FortiGate".
Stop-FortiGate
Throttle
Copy ARN
Actions
Function overview
Export to Infrastructure Composer
Download
Diagram
Template
Stop-FortiGate
Layers
Add trigger
Add destination
Function ARN
arn:aws:lambda:ap-southeast-2:953305038422:function:Stop-FortiGate
Description
Last modified
19 seconds ago
Code
Test
Monitor
Configuration
Aliases
Versions
Code source
Open in Visual Studio Code
Upload from
lambda_function.py
import boto3
def lambda_handler(event, context):
ec2 = boto3.client('ec2')
ec2.stop_instances(
InstanceIds=['i-098fddf00f691089c']
)
return "Stopped EC2"
Deploy (Ctrl+Shift+U)
Test (Ctrl+Shift+I)
Info
Tutorials
Create a simple web app
Start tutorial

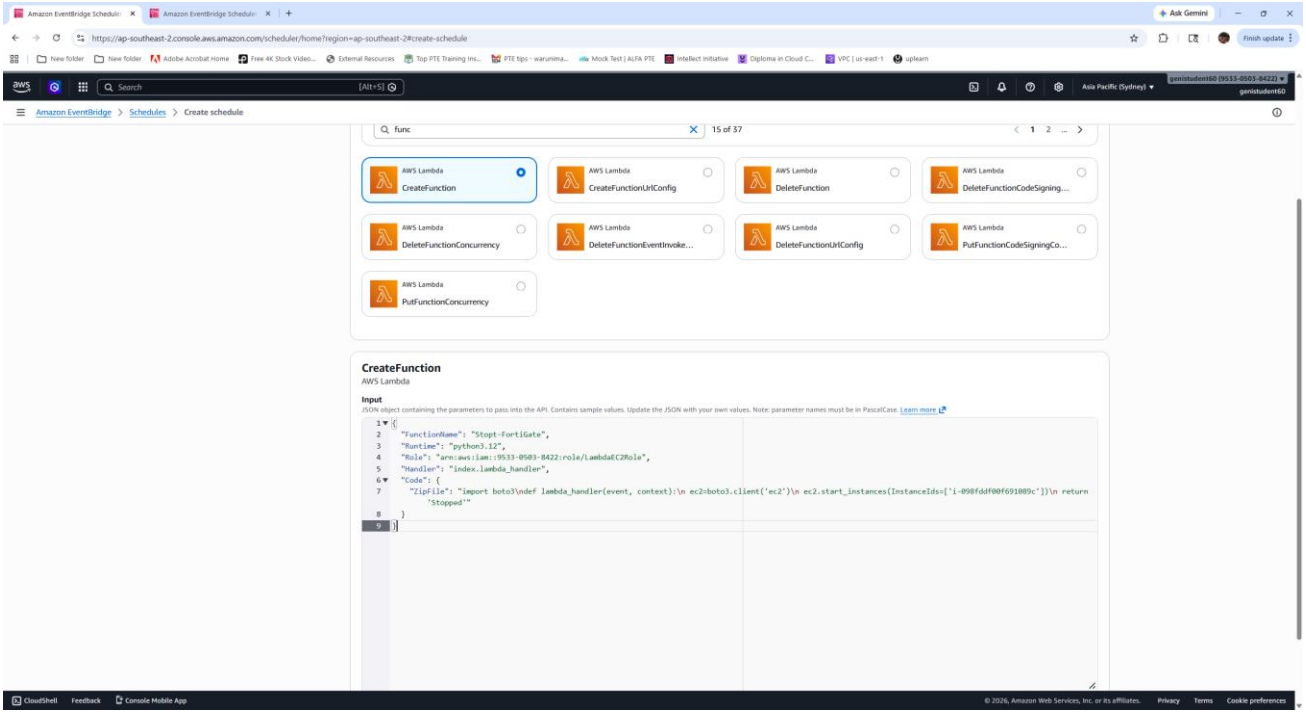

Amazon EventBridge
Application Integration
Amazon EventBridge
A serverless service for building event-driven applications
Amazon EventBridge is a serverless service that uses events to connect application components together, making it easier for developers to build scalable event-driven applications.
Get started
EventBridge Rule with event pattern
EventBridge Scheduled rule
EventBridge Pipe
EventBridge Schedule
EventBridge Schema registry
Create rule
Pricing
There is no up-front commitment or minimum fee. You simply pay for what you use and will be charged at the end of the month for your usage. Pricing varies by region.
Cost calculator
Learn
Introduction to Amazon EventBridge
Amazon EventBridge Blog
FAQs
How it works
Serverless 101: Amazon EventBridge
Serverless 101
Amazon EventBridge

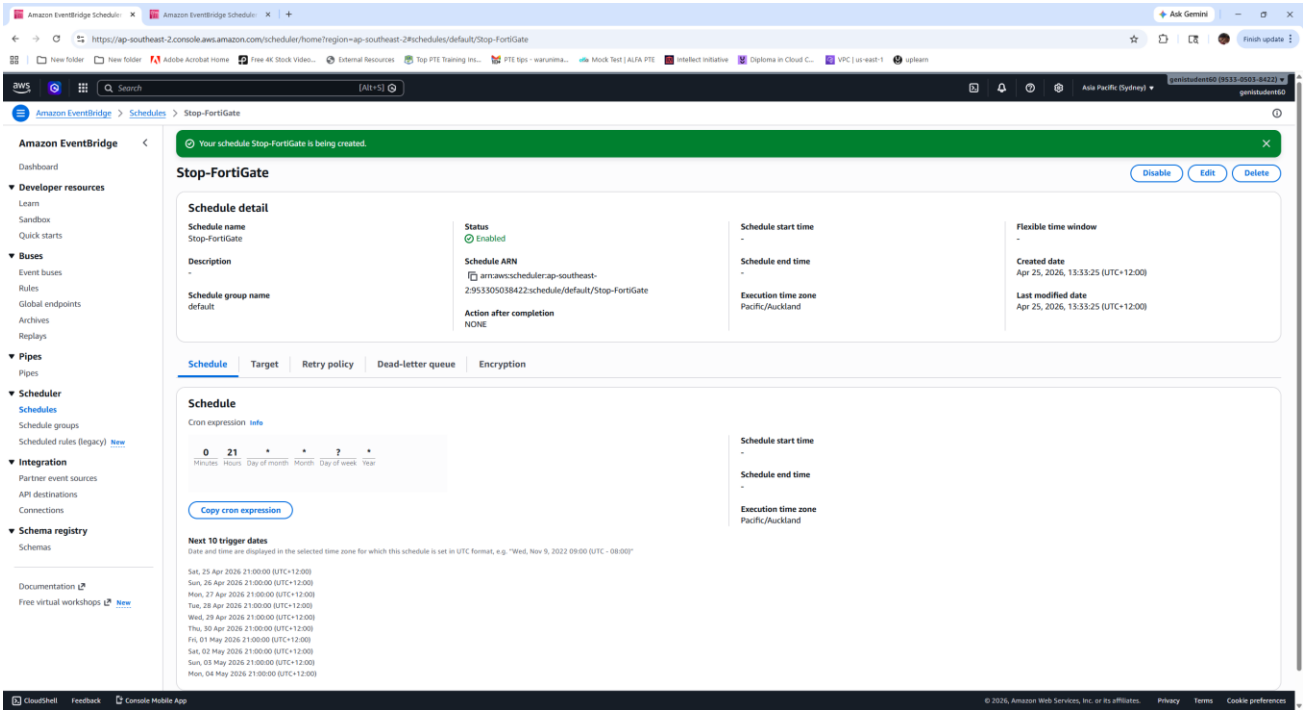

Amazon EventBridge > Schedules > Create schedule
default
Schedule pattern
Occurrence
One-time schedule
Recurring schedule
Time zone
(UTC+12:00) Pacific/Auckland
Schedule type
Cron-based schedule
Rate-based schedule
Cron expression
Next 10 trigger dates
Flexible time window
Off

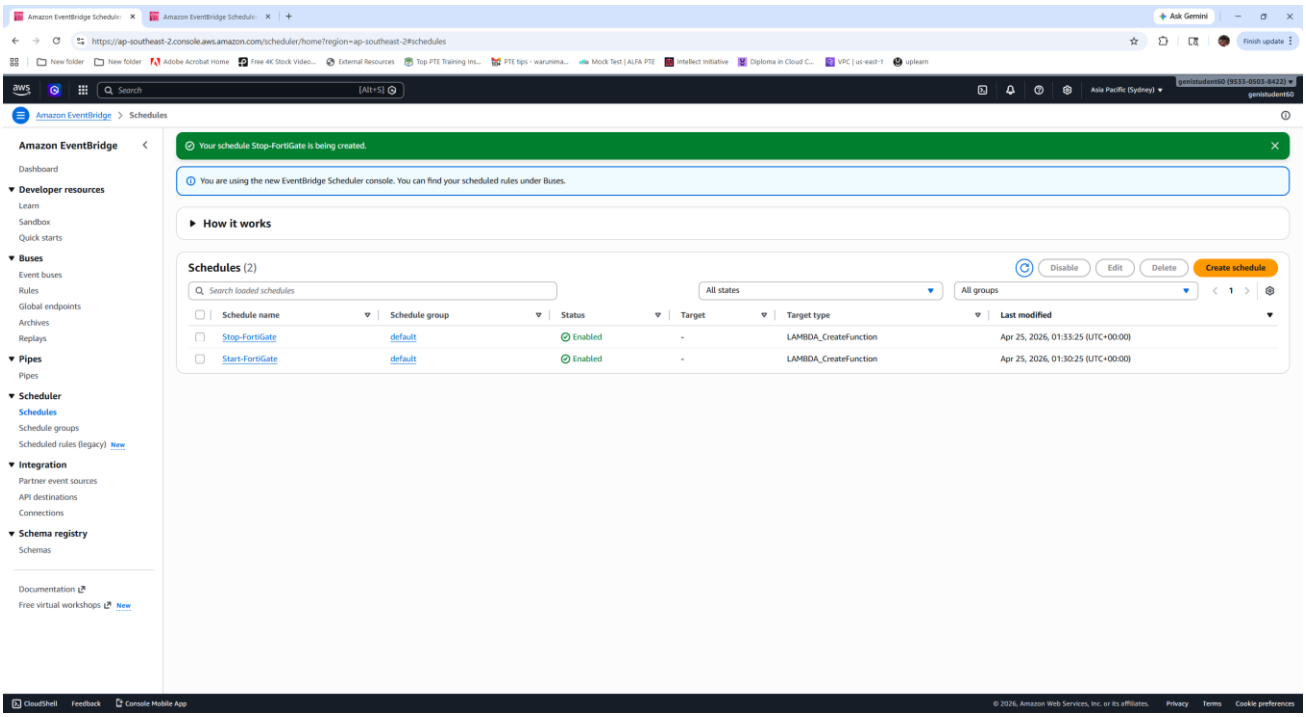

AWS Lambda
CreateEventSourceMapping
AWS Lambda
CreateFunction
AWS Lambda
CreateFunctionUrlConfig
AWS Lambda
DeleteAlias
AWS Lambda
DeleteCodeSigningConfig
CreateFunction
AWS Lambda
Payload
"FunctionName": "Start-FortiGate",
"Runtime": "python3.12",
"Role": "arn:aws:iam::9533-0503-8422:role/LambdaEC2Role",
"Handler": "index.lambda_handler",
"Code": {
"ZipFile": "import boto3\ndef lambda_handler(event, context):\n ec2=boto3.client('ec2')\n ec2.start_instances(InstanceIds=['i-098fddf00f691089c'])\n return
'Started'"
}
JSON Ln 9, Col 2 Errors: 0 Warnings: 0
Cancel
Skip to Review and create schedule
Previous
Next


Amazon EventBridge
Start-FortiGate
Your schedule Start-FortiGate is being created.
Start-FortiGate
Disable
Edit
Delete
Schedule detail
Schedule name
Start-FortiGate
Status
Enabled
Schedule start time
-
Flexible time window
-
Description
-
Schedule ARN
arn:aws:scheduler:ap-southeast-2:953305038422:schedule/default/Start-FortiGate
Schedule end time
-
Created date
Apr 25, 2026, 13:30:25 (UTC+12:00)
Schedule group name
default
Action after completion
NONE
Execution time zone
Pacific/Auckland
Last modified date
Apr 25, 2026, 13:30:25 (UTC+12:00)
Schedule
Target
Retry policy
Dead-letter queue
Encryption
Schedule
Cron expression
0 9 * * ? *
Copy cron expression
Next 10 trigger dates


Your schedule Start-FortiGate is being created.
Schedule name and description
Schedule name
Stop-FortiGate
Description - optional
Enter description
Schedule group
default
Schedule pattern
Occurrence
One-time schedule
Recurring schedule
Time zone
(UTC+12:00) Pacific/Auckland
Schedule type
Cron-based schedule
Rate-based schedule
Cron expression
cron ( 0 21 * * ? * )
Next 10 trigger dates

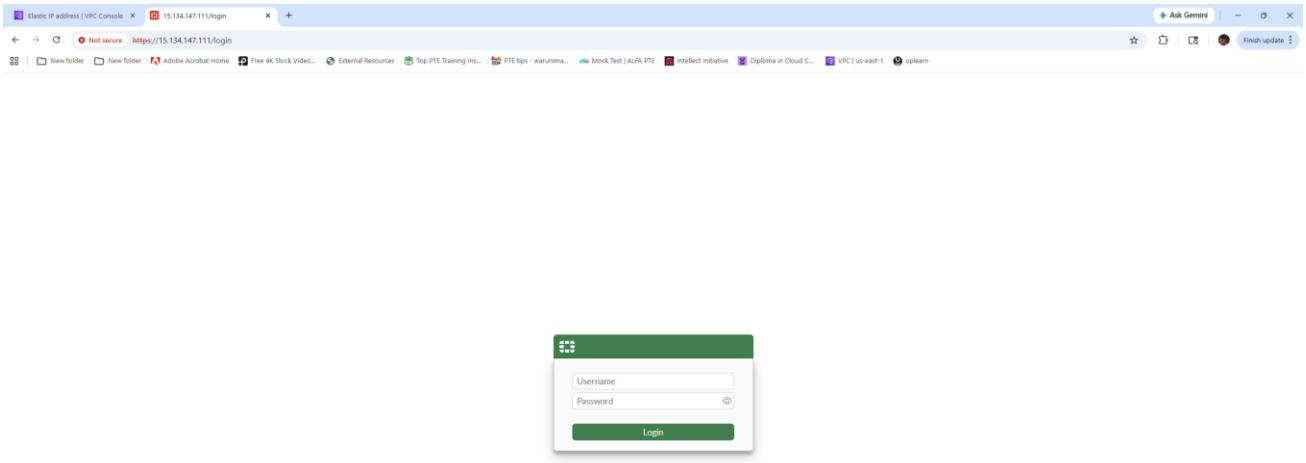

func
15 of 37
CreateFunction
CreateFunctionUrlConfig
DeleteFunction
DeleteFunctionCodeSigning...
DeleteFunctionConcurrency
DeleteFunctionEventInvoke...
DeleteFunctionUrlConfig
PutFunctionCodeSigningCo...
PutFunctionConcurrency
CreateFunction
AWS Lambda
Input
{
"FunctionName": "Stopt-FortiGate",
"Runtime": "python3.12",
"Role": "arn:aws:iam::9533-0503-8422:role/LambdaEC2Role",
"Handler": "index.lambda_handler",
"Code": {
"ZipFile": "import boto3\ndef lambda_handler(event, context):\n ec2=boto3.client('ec2')\n ec2.start_instances(InstanceIds=['i-098fddf00f691089c'])\n return
'Stopped'"
}
}

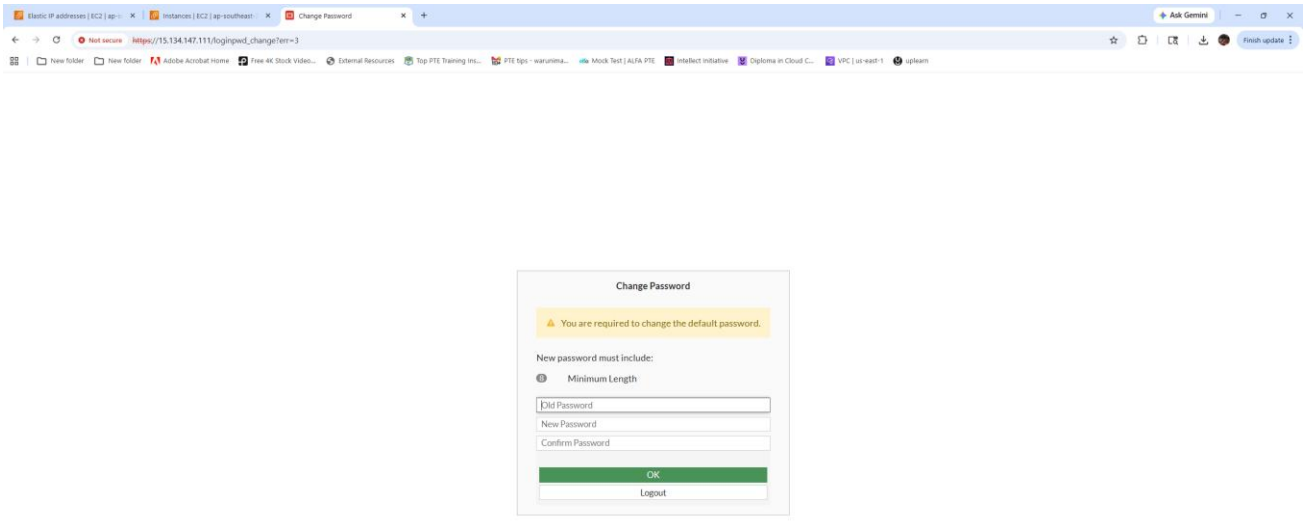

Your schedule Stop-FortiGate is being created.
Stop-FortiGate
Disable
Edit
Delete
Schedule detail
Schedule name
Stop-FortiGate
Description
-
Schedule group name
default
Status
Enabled
Schedule ARN
arn:aws:scheduler:ap-southeast-2:953305038422:schedule/default/Stop-FortiGate
Action after completion
NONE
Schedule start time
-
Schedule end time
-
Execution time zone
Pacific/Auckland
Flexible time window
-
Created date
Apr 25, 2026, 13:33:25 (UTC+12:00)
Last modified date
Apr 25, 2026, 13:33:25 (UTC+12:00)
Schedule
Target
Retry policy
Dead-letter queue
Encryption
Cron expression
0 21 * * ? *
Copy cron expression
Next 10 trigger dates
Sat, 25 Apr 2026 21:00:00 (UTC+12:00)
Sun, 26 Apr 2026 21:00:00 (UTC+12:00)
Mon, 27 Apr 2026 21:00:00 (UTC+12:00)
Tue, 28 Apr 2026 21:00:00 (UTC+12:00)
Wed, 29 Apr 2026 21:00:00 (UTC+12:00)
Thu, 30 Apr 2026 21:00:00 (UTC+12:00)
Fri, 01 May 2026 21:00:00 (UTC+12:00)
Sat, 02 May 2026 21:00:00 (UTC+12:00)
Sun, 03 May 2026 21:00:00 (UTC+12:00)
Mon, 04 May 2026 21:00:00 (UTC+12:00)


Your schedule Stop-FortiGate is being created.
You are using the new EventBridge Scheduler console. You can find your scheduled rules under Buses.
How it works
Schedules (2)
Disable
Edit
Delete
Create schedule
Search loaded schedules
All states
All groups
Schedule name
Schedule group
Status
Target
Target type
Last modified
Stop-FortiGate
default
Enabled
LAMBDA_CreateFunction
Apr 25, 2026, 01:33:25 (UTC+00:00)
Start-FortiGate
default
Enabled
LAMBDA_CreateFunction
Apr 25, 2026, 01:30:25 (UTC+00:00)

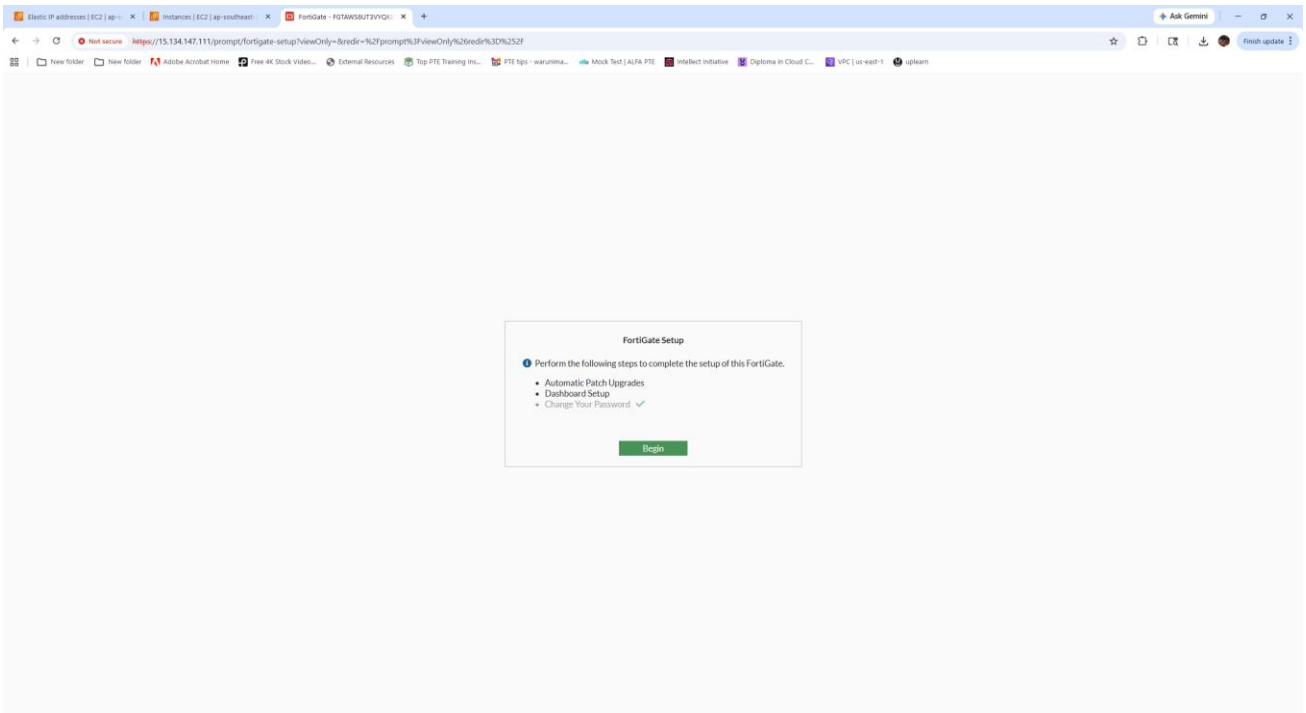
## Task 9: FortiGate Access and Configuration

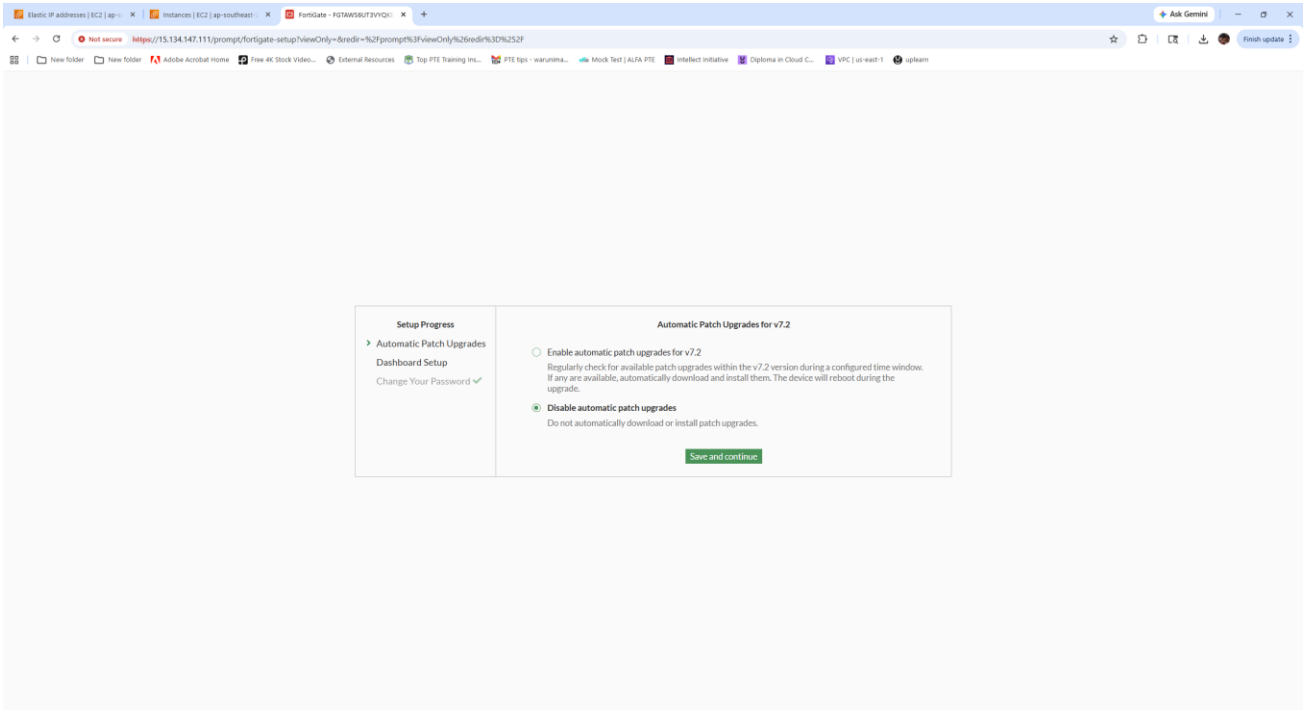
Accessed FortiGate using the Elastic IP and changed the default password for security. Secure access ensures that only authorised users can configure and manage the firewall.

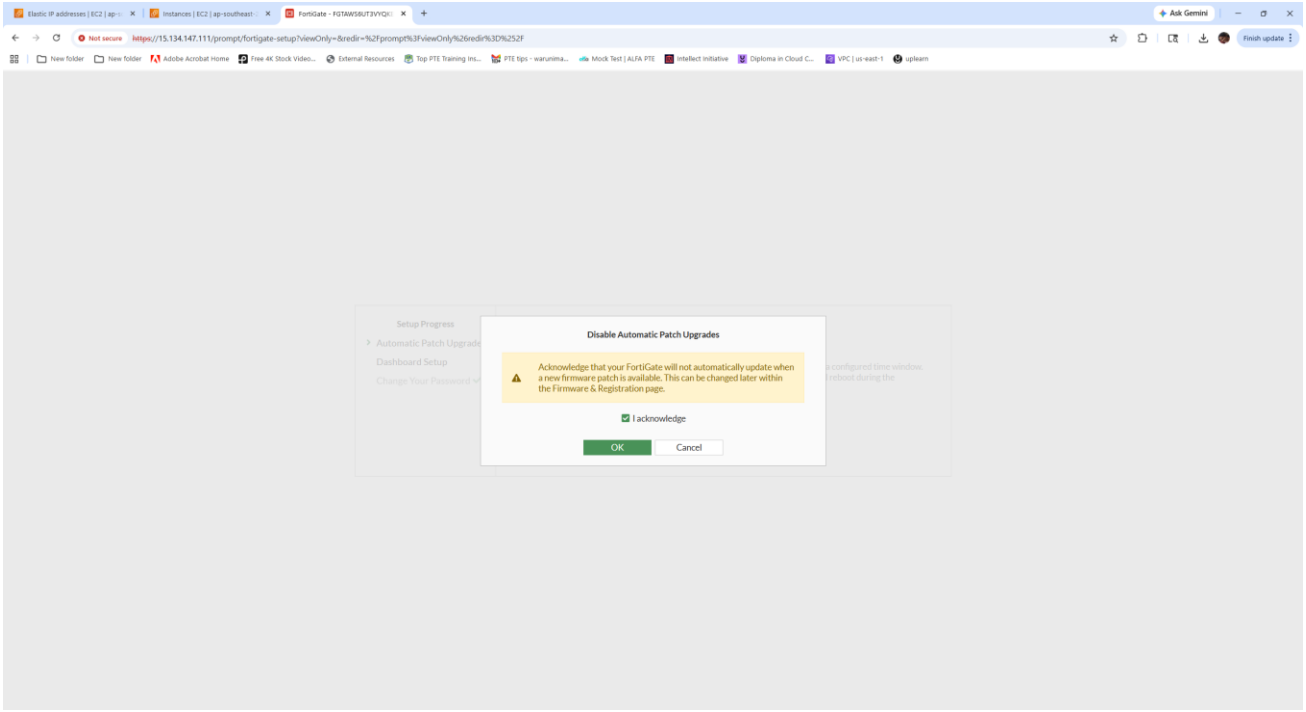


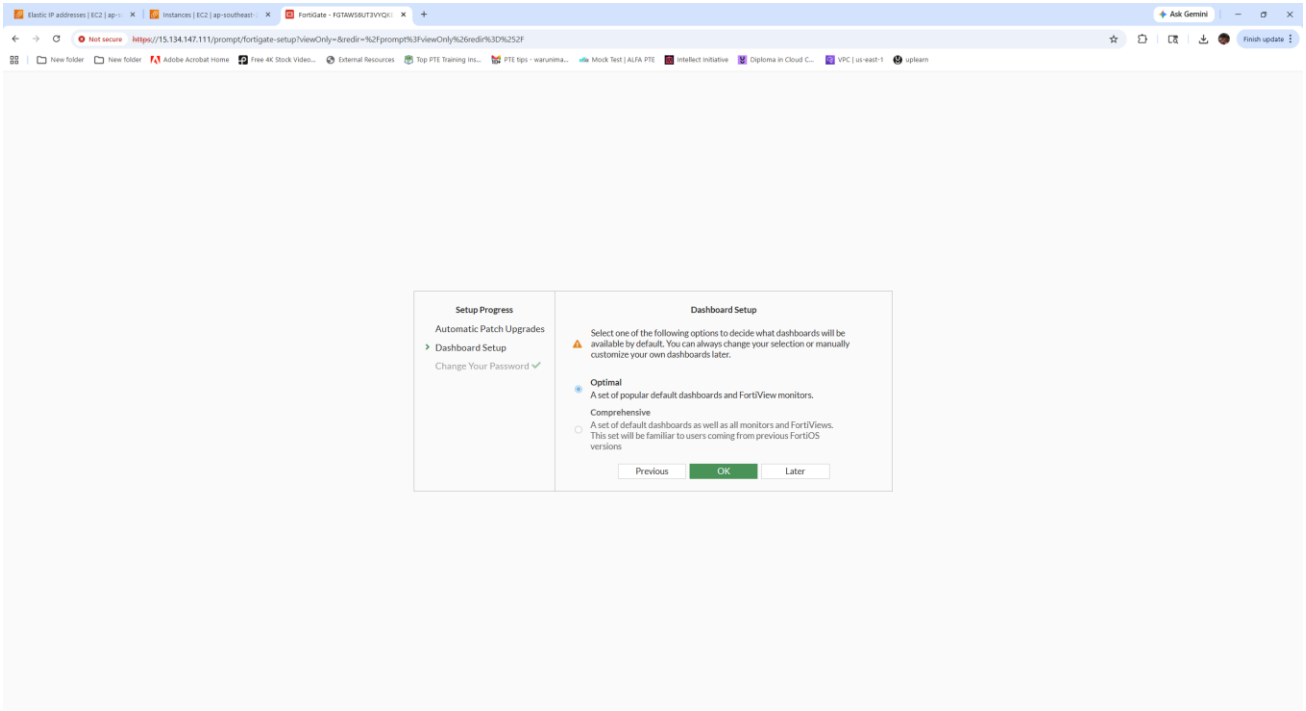



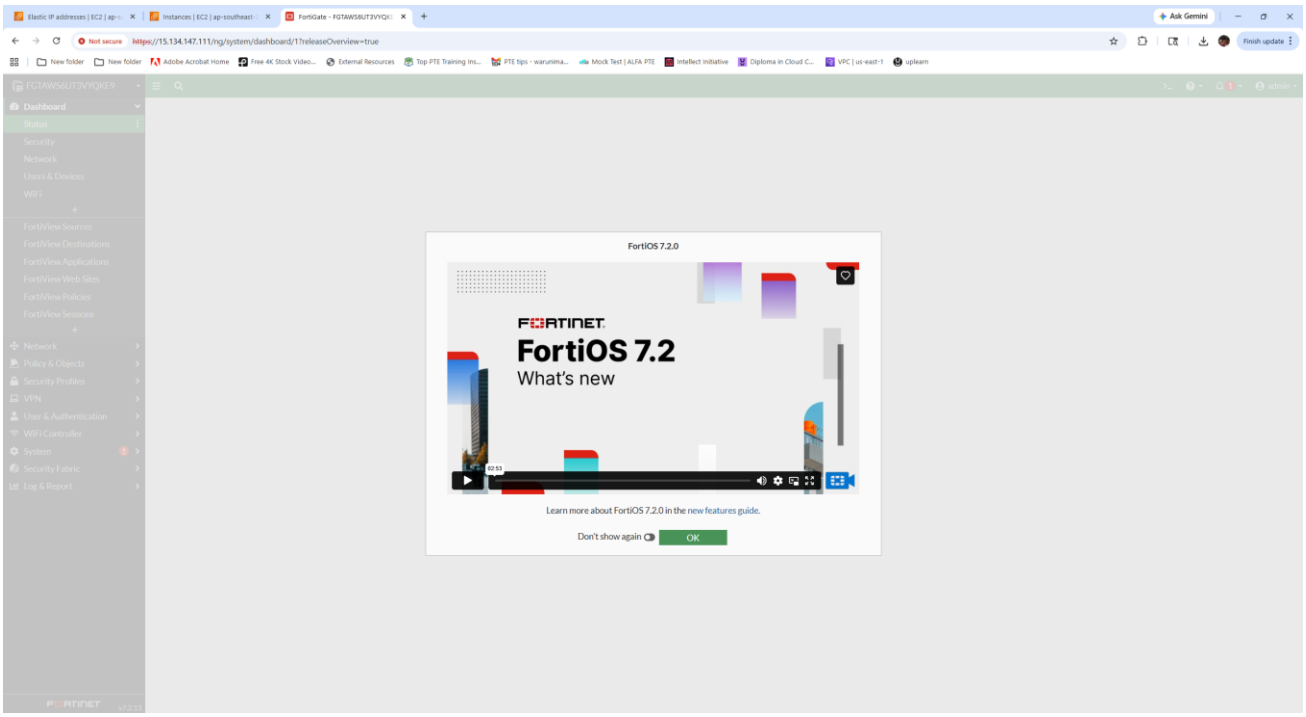

Username
Password
Login

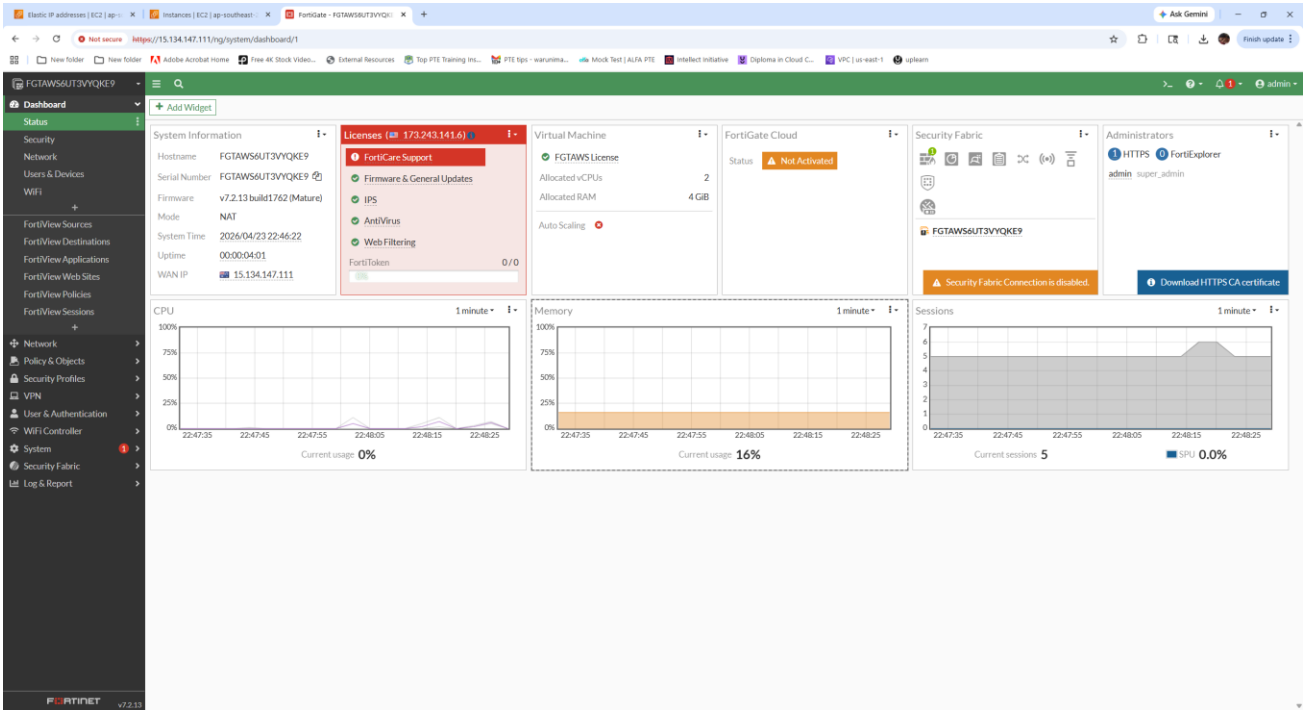

FortiGate Setup
Perform the following steps to complete the setup of this FortiGate.
Automatic Patch Upgrades
Dashboard Setup
Change Your Password
Begin


Setup Progress
Automatic Patch Upgrades
Dashboard Setup
Change Your Password
Automatic Patch Upgrades for v7.2
Enable automatic patch upgrades for v7.2
Regularly check for available patch upgrades within the v7.2 version during a configured time window. If any are available, automatically download and install them. The device will reboot during the upgrade.
Disable automatic patch upgrades
Do not automatically download or install patch upgrades.
Save and continue


Disable Automatic Patch Upgrades
Acknowledge that your FortiGate will not automatically update when a new firmware patch is available. This can be changed later within the Firmware & Registration page.
I acknowledge
OK
Cancel

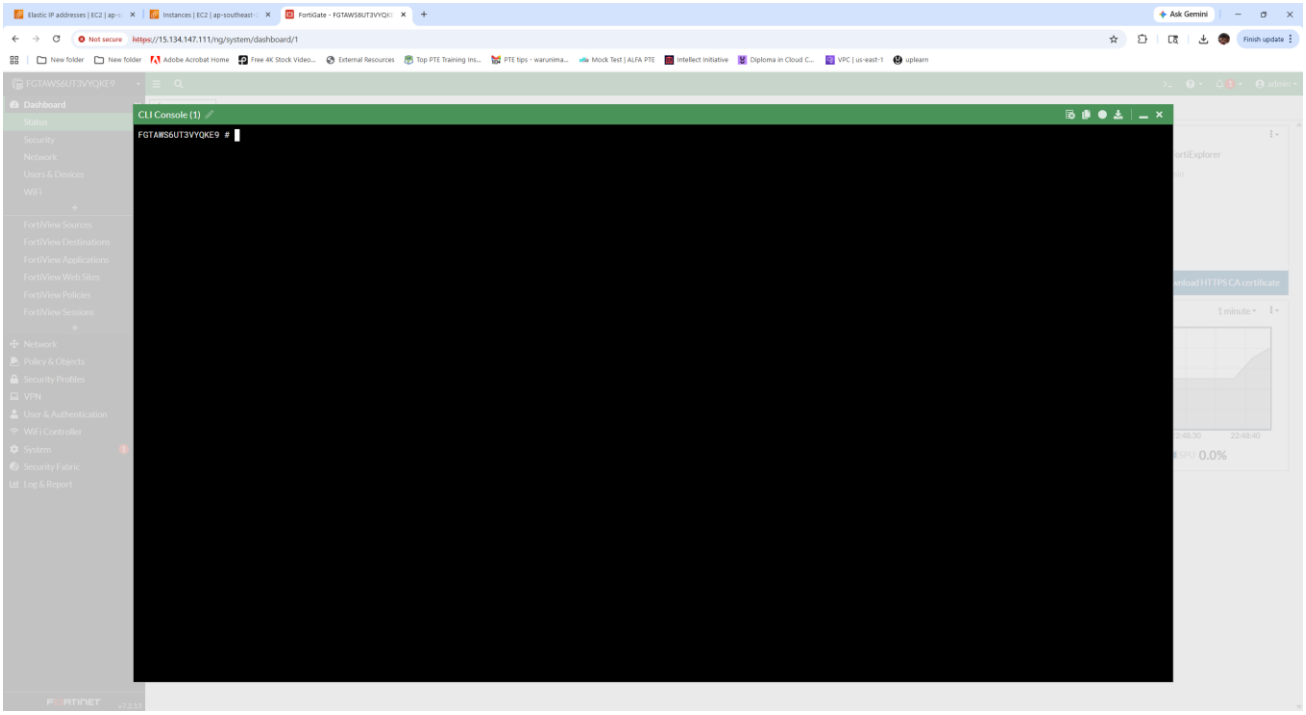

Setup Progress
Automatic Patch Upgrades
Dashboard Setup
Change Your Password
Dashboard Setup
Select one of the following options to decide what dashboards will be available by default. You can always change your selection or manually customize your own dashboards later.
Optimal
A set of popular default dashboards and FortiView monitors.
Comprehensive
A set of default dashboards as well as all monitors and FortiViews. This set will be familiar to users coming from previous FortiOS versions
Previous
OK
Later

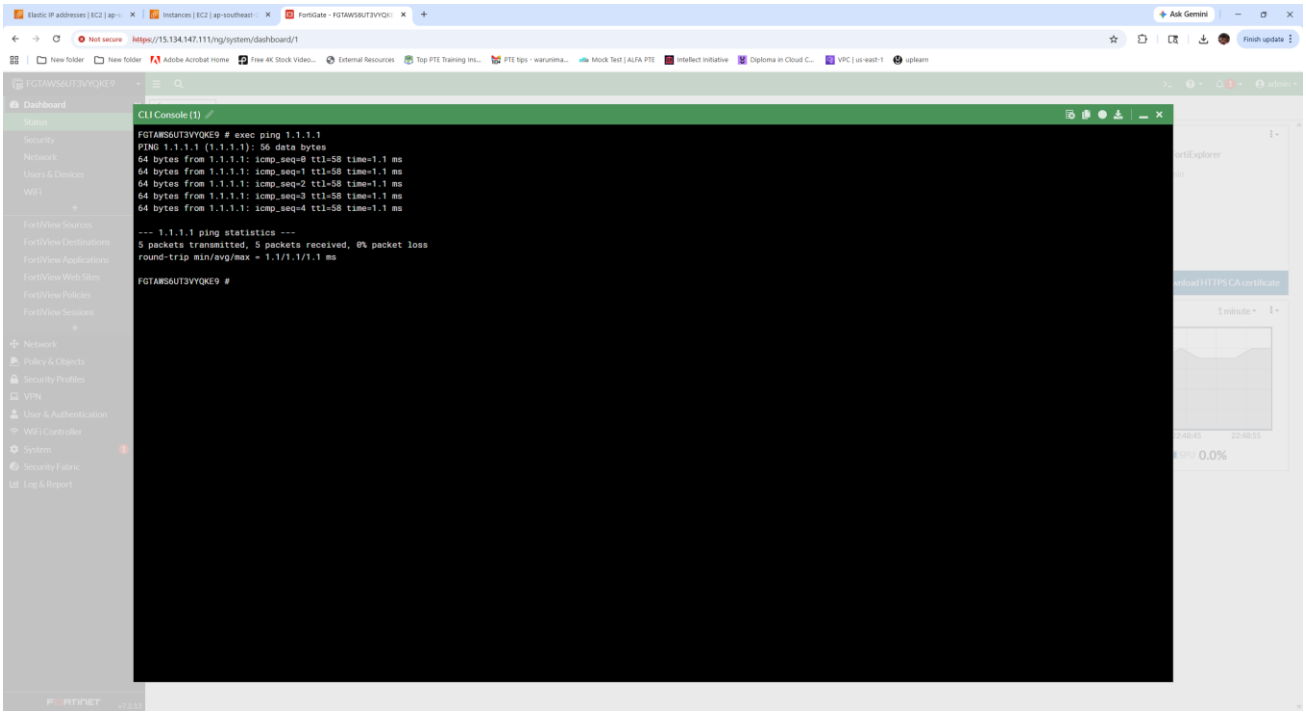

FortiOS 7.2.0
FORTINET
FortiOS 7.2
What's new
Learn more about FortiOS 7.2.0 in the new features guide.
Don't show again
OK


FGTAWS6UT3VYQKE9
Dashboard
Status
Security
Network
Users & Devices
WiFi
FortiView Sources
FortiView Destinations
FortiView Applications
FortiView Web Sites
FortiView Policies
FortiView Sessions
Network
Policy & Objects
Security Profiles
VPN
User & Authentication
WiFi Controller
System
Security Fabric
Log & Report
Add Widget
System Information
Hostname FGTAWS6UT3VYQKE9
Serial Number FGTAWS6UT3VYQKE9
Firmware v7.2.13 build1762 (Mature)
Mode NAT
System Time 2026/04/23 22:46:22
Uptime 00:00:04:01
WAN IP 15.134.147.111
Licenses (173.243.141.6)
FortiCare Support
Firmware & General Updates
IPS
AntiVirus
Web Filtering
FortiToken 0 / 0
Virtual Machine
FGTAWS License
Allocated vCPUs 2
Allocated RAM 4 GiB
Auto Scaling
FortiGate Cloud
Status Not Activated
Security Fabric
FGTAWS6UT3VYQKE9
Security Fabric Connection is disabled.
Administrators
HTTPS FortiExplorer
admin super_admin
Download HTTPS CA certificate
CPU 1 minute
Current usage: 0%
Memory 1 minute
Current usage: 16%
Sessions 1 minute
Current sessions: 5
SPU 0.0%

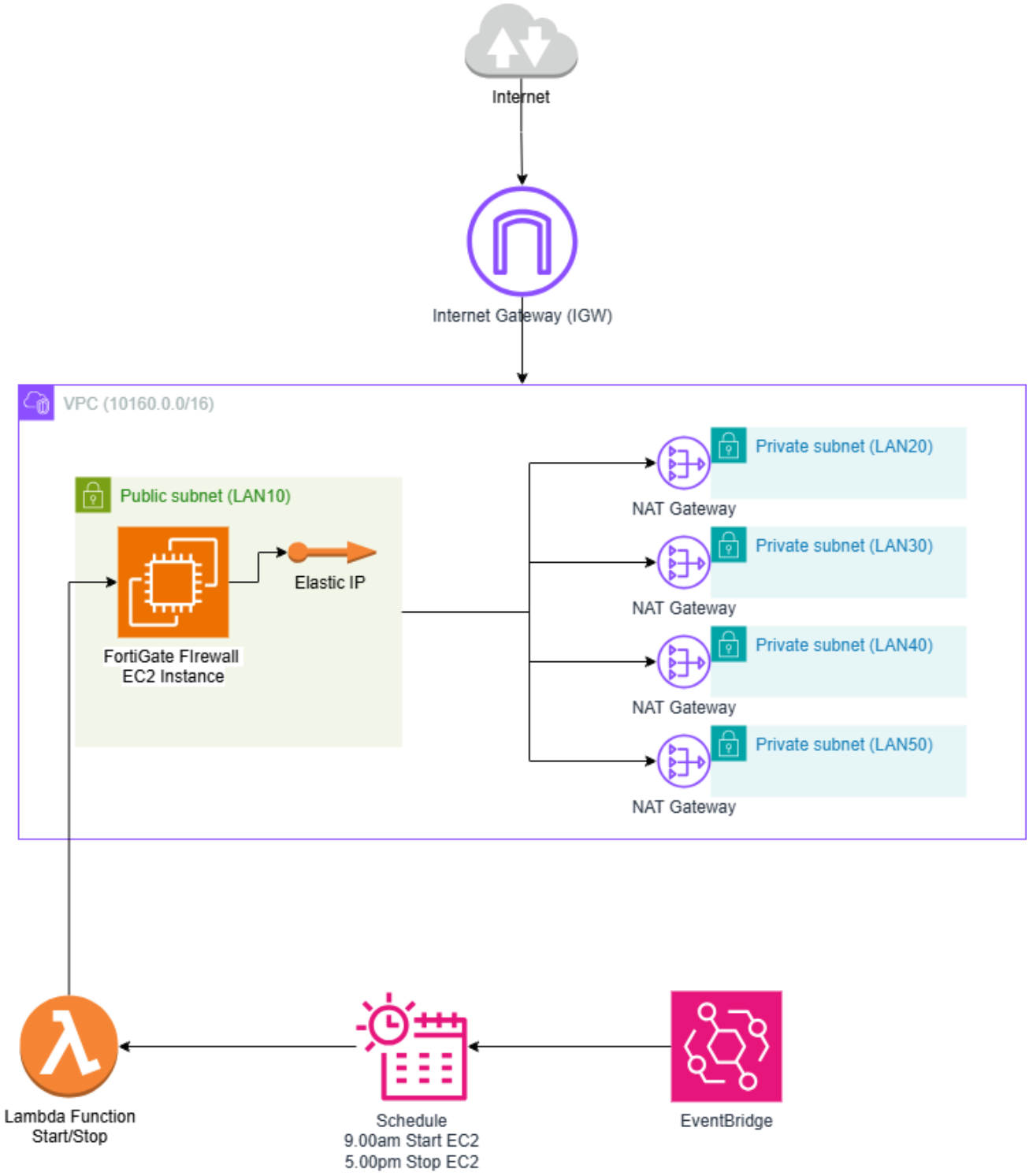
## Task 10: Firewall Verification (Ping Test)

Performed a ping test from FortiGate CLI to confirm internet connectivity and correct configuration. Successful communication confirms that routing and firewall configurations are working as expected.



## Task 11: Architectural Diagram



## Task 12: Reflection Questions

### *Q1: Why can LAN40 and LAN50 not attach to the same FortiGate instance*

LAN40 and LAN50 are placed in different Availability Zones, while a FortiGate instance can only be deployed within a single AZ. Also, network interfaces (ENIs) are tied to the same AZ as the instance, so they cannot connect across zones.

Because of this, a single FortiGate instance cannot directly handle traffic from both LAN40 and LAN50 if they are in different AZs. Each subnet needs to be associated with a firewall within its own zone.

This helped me understand that AWS networking is designed with AZ isolation, so resources are not meant to depend on a single instance across zones.

### *Q2: Best practice for multi-AZ workloads*

For multi-AZ workloads, the main best practice is to distribute resources across different Availability Zones to improve availability and fault tolerance.

Instead of relying on one FortiGate instance, it is better to deploy firewalls in each AZ, usually in an Active-Passive setup. This ensures that if one AZ fails, the other can continue handling traffic.

Another important point is to keep traffic within the same AZ as much as possible to reduce latency and avoid unnecessary cross-zone dependency.

Overall, this approach improves reliability and reduces the risk of downtime.