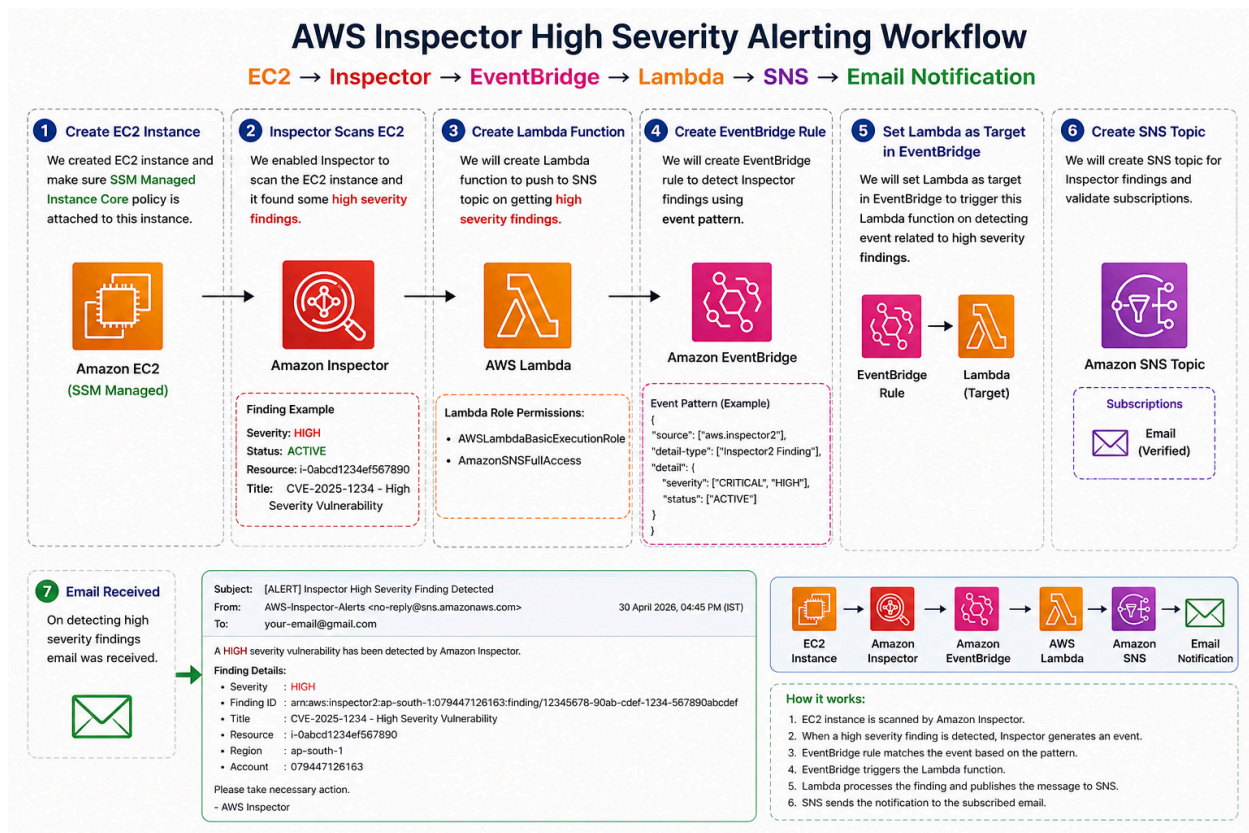


Cloud-Native Vulnerability Detection & Alerting Pipeline

Project Overview:

Designed and implemented an event-driven security monitoring pipeline using Amazon Inspector, Amazon EventBridge, AWS Lambda, and Amazon SNS to automatically detect and notify on high-severity vulnerabilities in EC2 workloads.

The solution continuously scans compute resources, filters critical findings in real time, and triggers alerts without manual intervention—ensuring faster response to security risks.



Tools & Services Used

- Amazon EC2
- Amazon Inspector
- Amazon EventBridge
- AWS Lambda

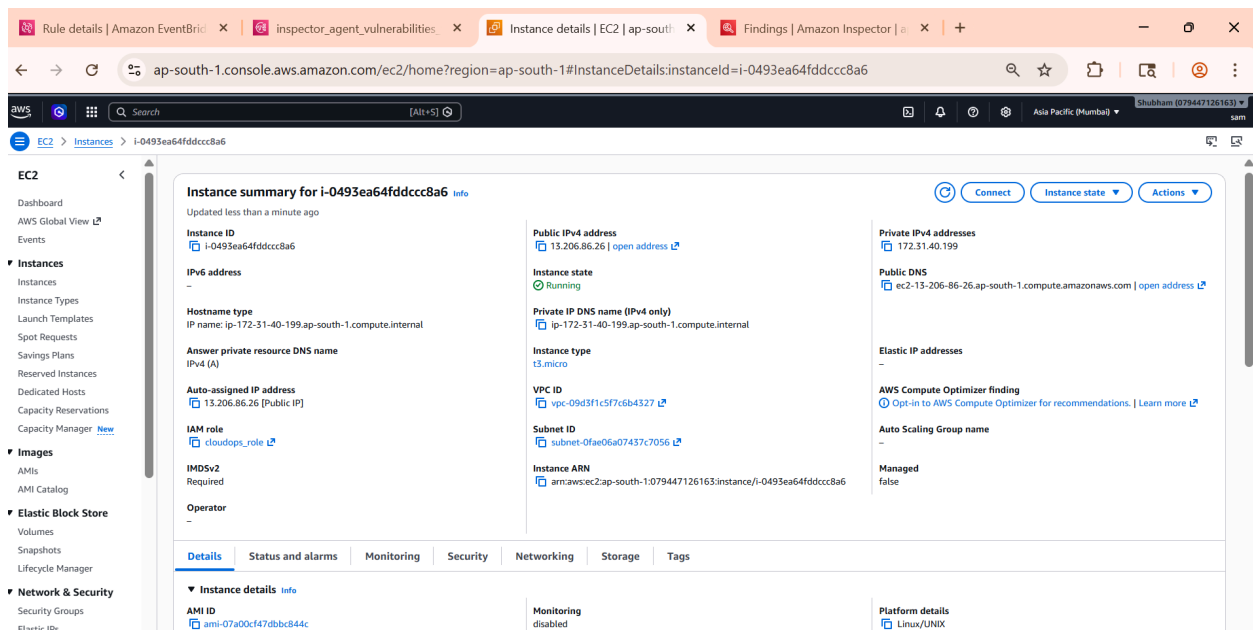
- Amazon SNS
- AWS Systems Manager

Outcomes / Impact

- ⚡ Reduced vulnerability detection-to-notification time to near real-time
- 🔍 Improved visibility into critical security findings
- 🚫 Eliminated manual monitoring effort
- 📊 Enabled proactive remediation workflows
- 🌱 Built a scalable, event-driven security automation pipeline

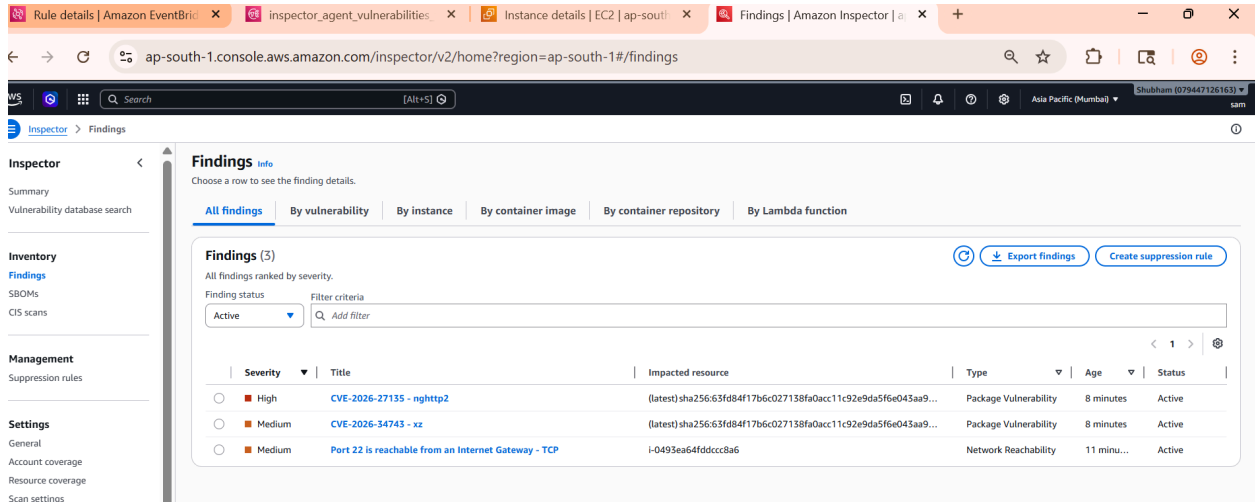
Step 1 — EC2 Setup

Created an EC2 instance and attached an IAM role with **AmazonSSMManagedInstanceCore** policy to enable Systems Manager integration and secure management.



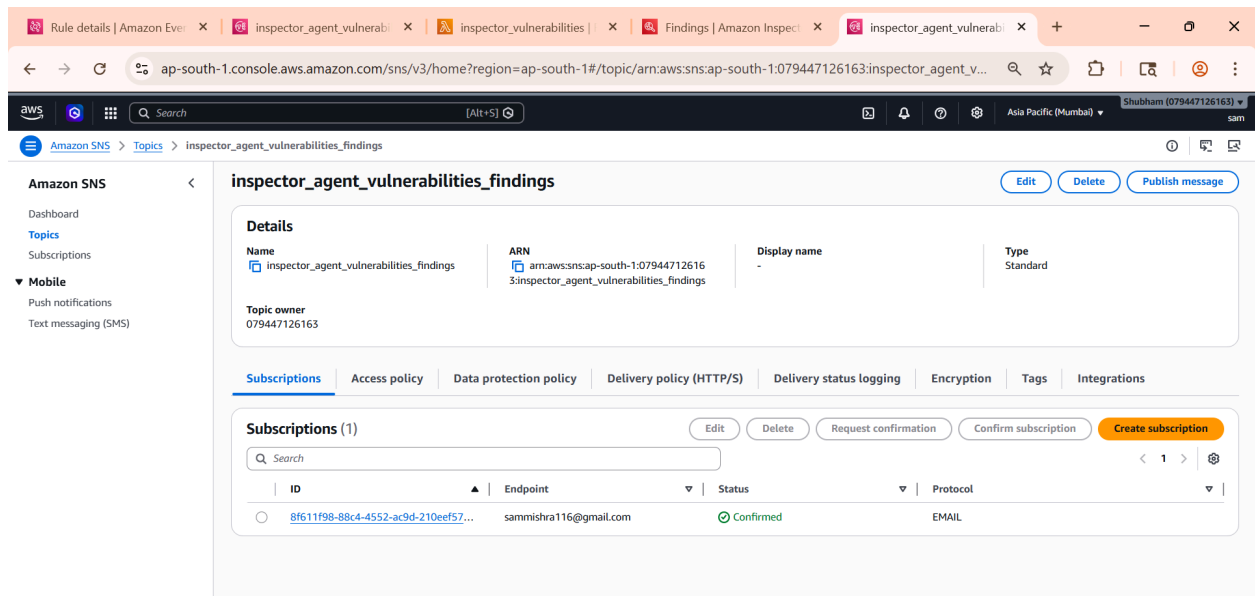
Step 2 — Enable Vulnerability Scanning

Enabled Amazon Inspector to continuously scan the EC2 instance and identify vulnerabilities, including HIGH severity findings.



Step 3 — SNS Topic Configuration (Corrected Order)

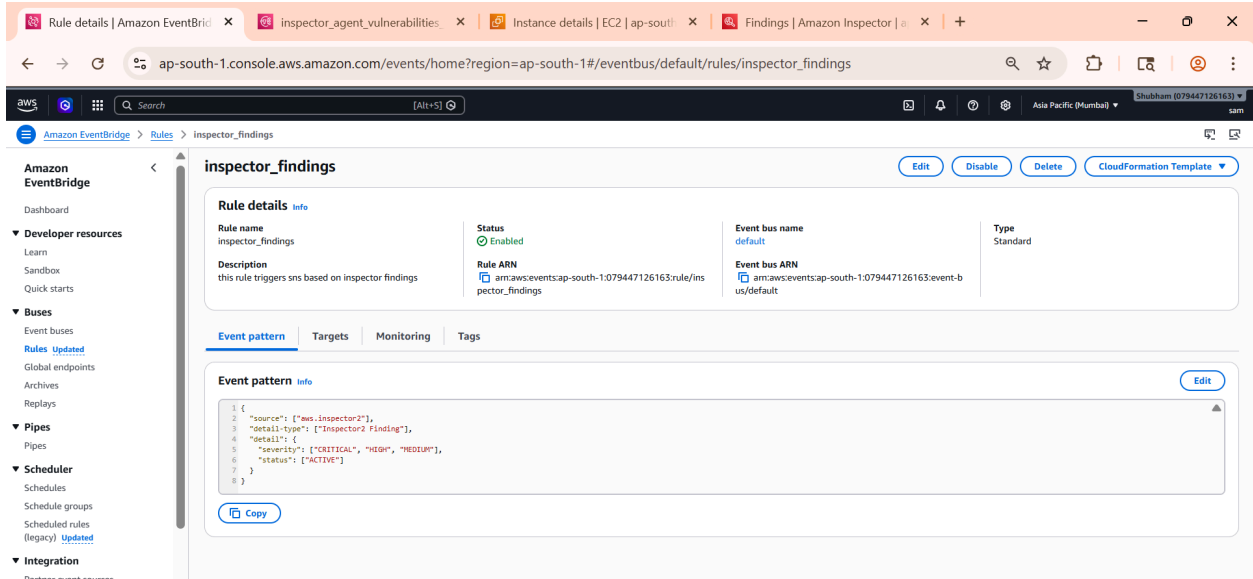
Created an SNS topic for vulnerability alerts and configured email subscriptions. Verified subscription via confirmation email.



Step 4 — EventBridge Rule Creation

Configured an EventBridge rule with an event pattern to capture Inspector findings filtered by:

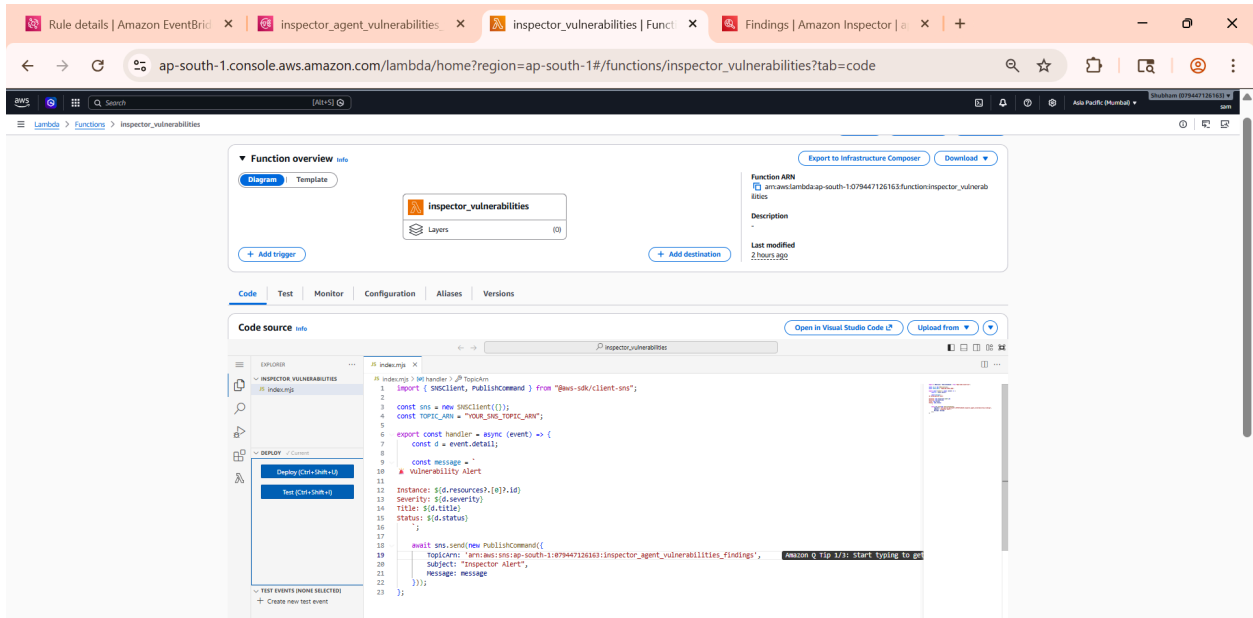
- Severity: HIGH / CRITICAL
- Status: ACTIVE



Step 5 — Lambda Function (Optional Processing Layer)

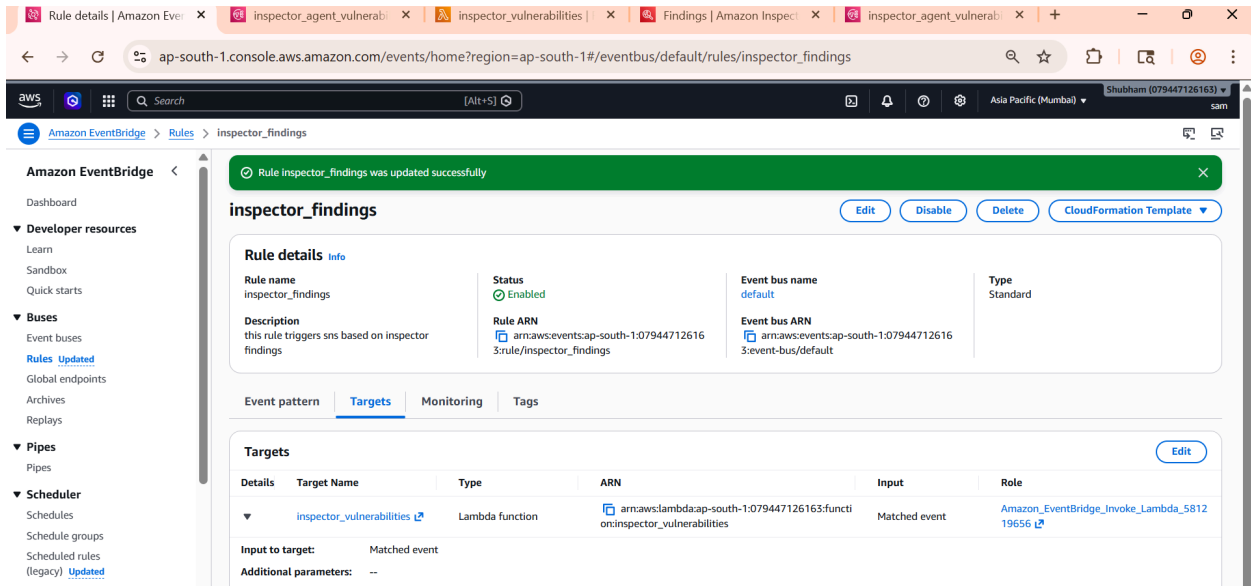
Created a Lambda function to:

- Parse Inspector findings
- Format alert messages
- Forward notifications to SNS



Step 6 — Target Integration

Attached Lambda as the target of the EventBridge rule to trigger processing upon matching Inspector events.



The screenshot shows the Amazon EventBridge console for the 'inspector_findings' rule. A green notification bar at the top indicates 'Rule inspector_findings was updated successfully'. The rule details are as follows:

Field	Value
Rule name	inspector_findings
Status	Enabled
Event bus name	default
Type	Standard
Description	this rule triggers sns based on inspector findings
Rule ARN	arn:aws:events:ap-south-1:079447126163:rule/inspector_findings
Event bus ARN	arn:aws:events:ap-south-1:079447126163:event-bus/default

The 'Targets' section shows a table with the following data:

Details	Target Name	Type	ARN	Input	Role
▼	inspector_vulnerabilities	Lambda function	arn:aws:lambda:ap-south-1:079447126163:function:inspector_vulnerabilities	Matched event	Amazon_EventBridge_Invoke_Lambda_581219656

Input to target: Matched event
Additional parameters: --

Step 7 — Alert Validation

Triggered high-severity findings and verified that email notifications were successfully received via SNS.



Inspector Alert

Inbox



AWS... 13:30

to me



Vulnerability Alert

Instance: arn:aws:ecr:ap-south-1:079447126163:repository/nasa/sha256:63fd84f17b6c027138fa0acc11c92e9da5f6e043aa934c2d12bd5691b0374604
Severity: HIGH
Title: CVE-2026-27135 - nghttp2
Status: ACTIVE

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If you wish to stop receiving notifications from this topic, please click or visit the link below to unsubscribe:

[https://sns.ap-south-1.amazonaws.com/unsubscribe.html?](https://sns.ap-south-1.amazonaws.com/unsubscribe.html?SubscriptionArn=arn:aws:sns:ap-south-1:079447126163:inspector_agent_vulnerabilities_findings:8f611f98-88c4-4552-ac9d-)

[SubscriptionArn=arn:aws:sns:ap-south-1:079447126163:inspector_agent_vulnerabilities_findings:8f611f98-88c4-4552-ac9d-](https://sns.ap-south-1.amazonaws.com/unsubscribe.html?SubscriptionArn=arn:aws:sns:ap-south-1:079447126163:inspector_agent_vulnerabilities_findings:8f611f98-88c4-4552-ac9d-)

Reply

Forward



12



