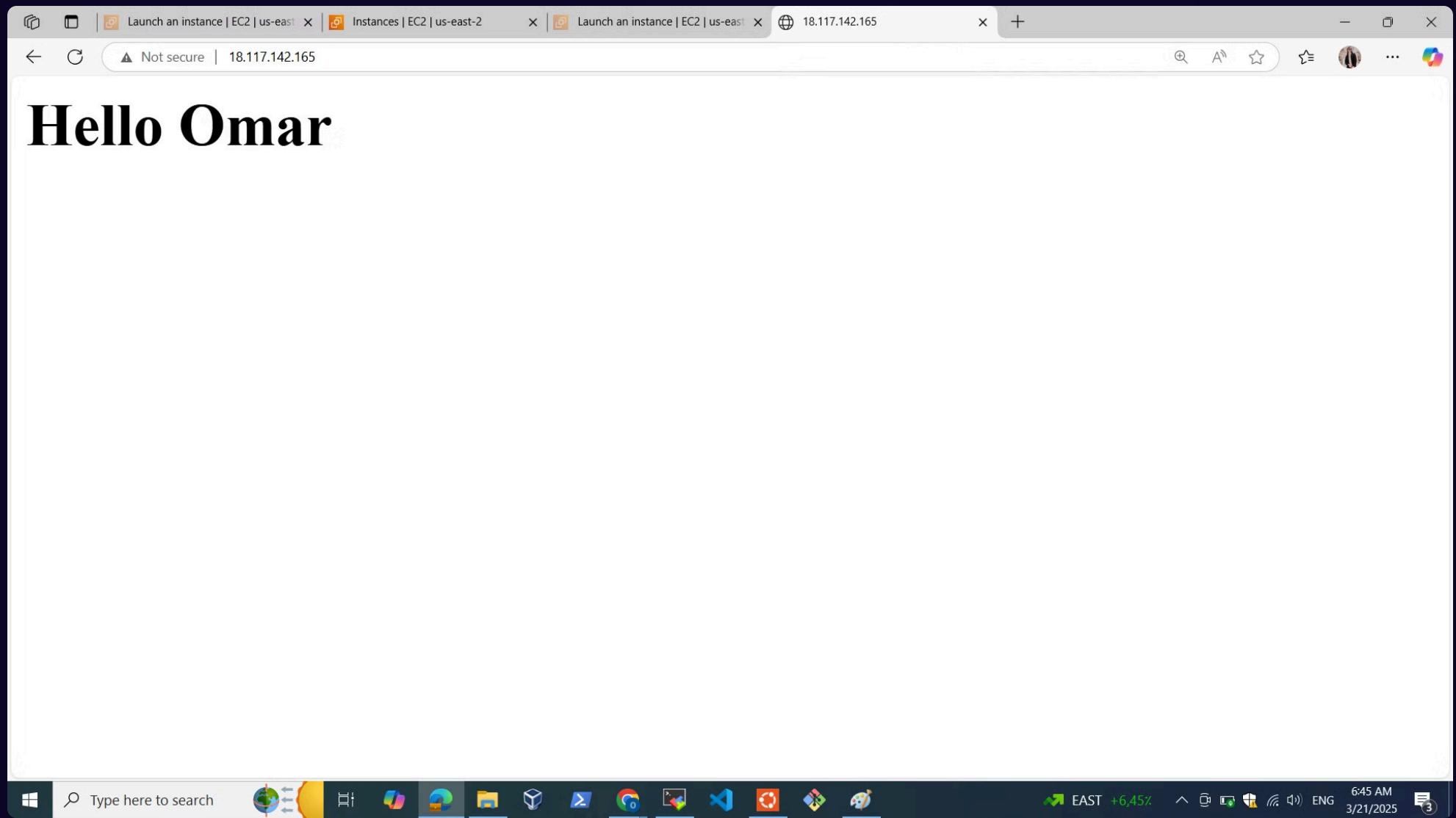


# AWS Project Documentation

This document provides a comprehensive overview of the AWS infrastructure components

 by Omar Abdelwahab

# Step-1: EC2 Instance Apache Configuration Check



# Step-2: Application Load Balancer (ALB) Setup

The Application Load Balancer (ALB) is set up with listener rules and target group associations to effectively distribute incoming traffic across multiple EC2 instances.

The screenshot shows the AWS EC2 Load Balancers console with the following details:

- Load balancer type:** Application
- Status:** Active
- VPC:** vpc-0563bb4fcf5b0dff5
- Availability Zones:** us-east-2c (use2-az3), us-east-2a (use2-az1), us-east-2b (use2-az2)
- Load balancer ARN:** arn:aws:elasticloadbalancing:us-east-2:590183986373:loadbalancer/app/omar-LB/b7235661ecff871e
- DNS name:** omar-LB-200319457.us-east-2.elb.amazonaws.com (A Record)

**Listeners and rules:** (1) Info

| Protocol:Port | Default action   | Rules  | ARN | Security policy | Default SSL/TLS certificate | mTLS           | Trust          |
|---------------|--|--------|-----|-----------------|-----------------------------|----------------|----------------|
| HTTP:80       | Forward to target group<br>• omar-tg: 1 (100%)<br>• Target group stickiness: Off | 1 rule | ARN | Not applicable  | Not applicable              | Not applicable | Not applicable |

At the bottom, the status bar shows: © 2025, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences. ESRS +6,27% 7:11 AM 3/21/2025 3.

# Auto Scaling Group Configuration

The Auto Scaling Group is configured to automatically adjust the number of EC2 instances up to 3 instances based on demand, ensuring high availability and optimal resource utilization.

The screenshot shows the AWS Management Console interface for creating a launch template. The top navigation bar includes tabs for 'Create Auto Scaling group | EC2' (active), 'Create launch template | EC2', and 'Target groups | EC2 | us-east-2'. The address bar shows the URL: <https://us-east-2.console.aws.amazon.com/ec2/home?region=us-east-2#CreateTemplate>. The top right corner shows the user 'omar1' and the region 'United States (Ohio)'. The main content area is titled 'EC2 > Launch templates > Create launch template'. On the left, there are sections for 'Metadata response hop limit' (set to 2), 'Allow tags in metadata' (set to 'Don't include in launch template'), and 'User data - optional' (containing a bash script to install and configure Apache). On the right, the 'Summary' section details the configuration: Software Image (AMI) is Amazon Linux 2023 AMI 2023.6.2...read more; Virtual server type (instance type) is t2.micro; Firewall (security group) is launch-wizard-1; Storage (volumes) is 1 volume(s) - 8 GiB. A callout box provides information about the Free tier. At the bottom right are 'Cancel' and 'Create launch template' buttons. The bottom of the screen shows the Windows taskbar with various pinned icons and the system tray.

# Step-3: RDS-EC2 Connectivity Verification

Network configuration ensures that the EC2 instance can successfully connect to the RDS database instance, enabling seamless data retrieval and storage operations.

The screenshot displays two windows illustrating the connectivity between an Amazon RDS database and an Amazon EC2 instance.

**Left Window: AWS RDS Database Configuration**

This window shows the configuration details for the RDS database "omar-db".

| Endpoint & port  | Networking  | Security   |
|--|---|--|
| Endpoint: omar-db.cte2i620gyof.us-east-2.rds.amazonaws.com<br>Port: 3306 | Availability Zone: us-east-2a<br>VPC: <a href="#">vpc-0563bb4fcf5b0dff5</a><br>Subnet group: default-vpc-0563bb4fcf5b0dff5<br>Subnets:<br>- subnet-0b9a3e69a1f463bc1<br>- subnet-042a39d8fccbaaae<br>- subnet-0acbb3f88188a77b4<br>Network type: IPv4 | VPC security groups:<br>- rds-ec2-1 (sg-0273bc8b13a972fb) (Active)<br>- launch-wizard-1 (sg-012ce659a830f30a4) (Active)<br>Publicly accessible: No<br>Certificate authority: <a href="#">Info</a> (rds-ca-rsa2048-g1)<br>Certificate authority date: May 22, 2061, 03:04 (UTC+03:00)<br>DB instance certificate expiration date: March 21, 2026, 07:18 (UTC+02:00) |

**Connected compute resources (1) [Info](#)**  
Connections to compute resources that were created automatically by RDS are shown here. Connections to compute resources that were created manually aren't shown.  
Filter by compute resources  
Resource identifier: i-06e0358128b5e06db  
Resource type: EC2 instance  
Availability Zone: us-east-2a  
VPC security group: rds-ec2-1  
Compute resource security group: ec2-rds-1

**Right Window: MobaXterm Terminal Session**

This window shows a terminal session connected to the EC2 instance (IP: 18.117.142.165). The user is running MySQL and connecting to the RDS database "omar-db".

```
[ec2-user@ip-172-31-11-175 ~]$ mysql -h omar-db.cte2i620gyof.us-east-2.rds.amazonaws.com -P 3306 -u admin -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MySQL connection id is 30
Server version: 8.0.40 Source distribution

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MySQL [(none)]> exit;
Bye
[ec2-user@ip-172-31-11-175 ~]$
```

CloudShell Feedback https://us-east-2.console.aws.amazon.com/vpc/home?region=us-east-2#vpcs:VpcId=vpc-0563bb4fcf5b0dff5 Privacy Terms Cookie preferences UNREGISTERED VERSION - Please support MobaXterm by subscribing to the professional edition here: https://mobaxterm.mobatek.net EAST +6,45% 10:59 AM 3/21/2025 ENG

# DynamoDB Query Interface

The DynamoDB query interface demonstrates the execution of sample queries, showcasing the database's ability to efficiently retrieve and display data.

The screenshot shows the AWS DynamoDB Query Interface in a web browser. The URL is <https://us-east-2.console.aws.amazon.com/dynamodbv2/home?region=us-east-2#item-explorer?operation=QUERY&pk=o1&table=omat-table>. The interface displays a table named "omat-table" with one item returned. The item details are as follows:

| Userid (String) | Address   | Number     | UserName        |
|-----------------|-----------|------------|-----------------|
| o1              | 6 October | 1158070577 | Omar Abdelwahab |

The browser's address bar also lists other AWS services like Auto Scaling groups, Items | Amazon, Target groups, Aurora and RDS, Instances | EC2, and CloudShell.

# Step-4: Lambda Function Logs Overview

An overview of the Lambda function logs in CloudWatch provides key execution metrics and error messages, enabling proactive monitoring and troubleshooting.

The screenshot shows the AWS CloudWatch Log Events interface. The left sidebar navigation includes CloudWatch, Favorites and recents, Dashboards, Alarms, Logs (with Log groups selected), Metrics, X-Ray traces, Events, Application Signals, Network Monitoring, Insights, Settings, Telemetry config, Getting Started, and What's new. The main content area displays log events for the log group /\$LATEST of the omar-lambda function on March 21, 2025. The log entries are:

| Timestamp                | Message   |
|--------------------------|---|
| 2025-03-21T06:36:31.540Z | INIT_START Runtime Version: python:3.13.v31 Runtime Version ARN: arn:aws:lambda:us-east-2::runtime:f713ac0afb982fcdf9bac88eaa00c31352efae870b225c19f1603fe79159a6f1 |
| 2025-03-21T06:36:31.624Z | START RequestId: 5820e56c-e853-4f69-a689-8f529885b8ed Version: \$LATEST   |
| 2025-03-21T06:36:31.626Z | END RequestId: 5820e56c-e853-4f69-a689-8f529885b8ed   |
| 2025-03-21T06:36:31.627Z | REPORT RequestId: 5820e56c-e853-4f69-a689-8f529885b8ed Duration: 2.04 ms Billed Duration: 3 ms Memory Size: 128 MB Max Memory Used: 30 MB Init Duration: 81.28 ms   |

Below the log entries, a message states "No newer events at this moment. Auto retry paused. Resume". The top right of the interface includes buttons for Actions, Start tailing, and Create metric filter, along with a search bar and filter controls for timestamp and display.

# Lambda Function Structure with Trigger Configuration

The architecture of the Lambda function, along with its trigger DynamoDB event-driven processing and seamless integration.

The screenshot shows the AWS Lambda console interface for the function 'omar-lambda-function'. The top navigation bar includes tabs for Auto Scaling, CloudWatch, Items | Amazon, Aurora and, omar-lamb..., omar-lamb..., omar-lamb..., 18.117.142..., omar-lb-20..., 3.133.138.2..., and a '+' icon. The main page displays the function overview with a success message: 'The trigger omar-table was successfully added to function omar-lambda-function. The trigger is in a disabled state.' Below this, the 'Function overview' section shows the function name 'omar-lambda-function' and its ARN. It lists triggers associated with a 'DynamoDB' table. A 'Code' tab is selected, showing the code source in an 'EXPLORER' view. The code file 'lambda\_function.py' contains the following Python code:

```
1 import json
2 def lambda_handler(event, context):
3     for record in event['Records']:
4         print(record)
5     return {}
```

# Step-5: S3 to Glacier Data Archival Process

The data archival process from S3 to Glacier demonstrates storage class transitions and lifecycle policies, optimizing storage costs for infrequently accessed data.

The screenshot shows the AWS Management Console interface for managing lifecycle rules in an S3 bucket. The URL in the browser is <https://us-east-2.console.aws.amazon.com/s3/management/omar-bucket11/lifecycle/view?region=us-east-2&bucketType=general&id=omar+to+Glacier>.

**Lifecycle rule configuration:**

- Lifecycle rule name:** omar to Glacier
- Status:** Enabled
- Scope:** Entire bucket
- Prefix:** -
- Object tags:** -
- Minimum object size:** When no minimum object size is specified, the minimum object size for transitions is determined by the lifecycle configuration. [Learn more](#)
- Maximum object size:** -

**Review transition and expiration actions:**

| Action                      | Day 0               | Day 30                                    |
|-----------------------------|---------------------|---|
| Current version actions     | Objects uploaded    | Objects move to Glacier Instant Retrieval |
| Noncurrent versions actions | No actions defined. |   |

**Delete expired object delete markers or incomplete multipart uploads:**

- Expired object delete markers:** -
- Incomplete multipart uploads:** -

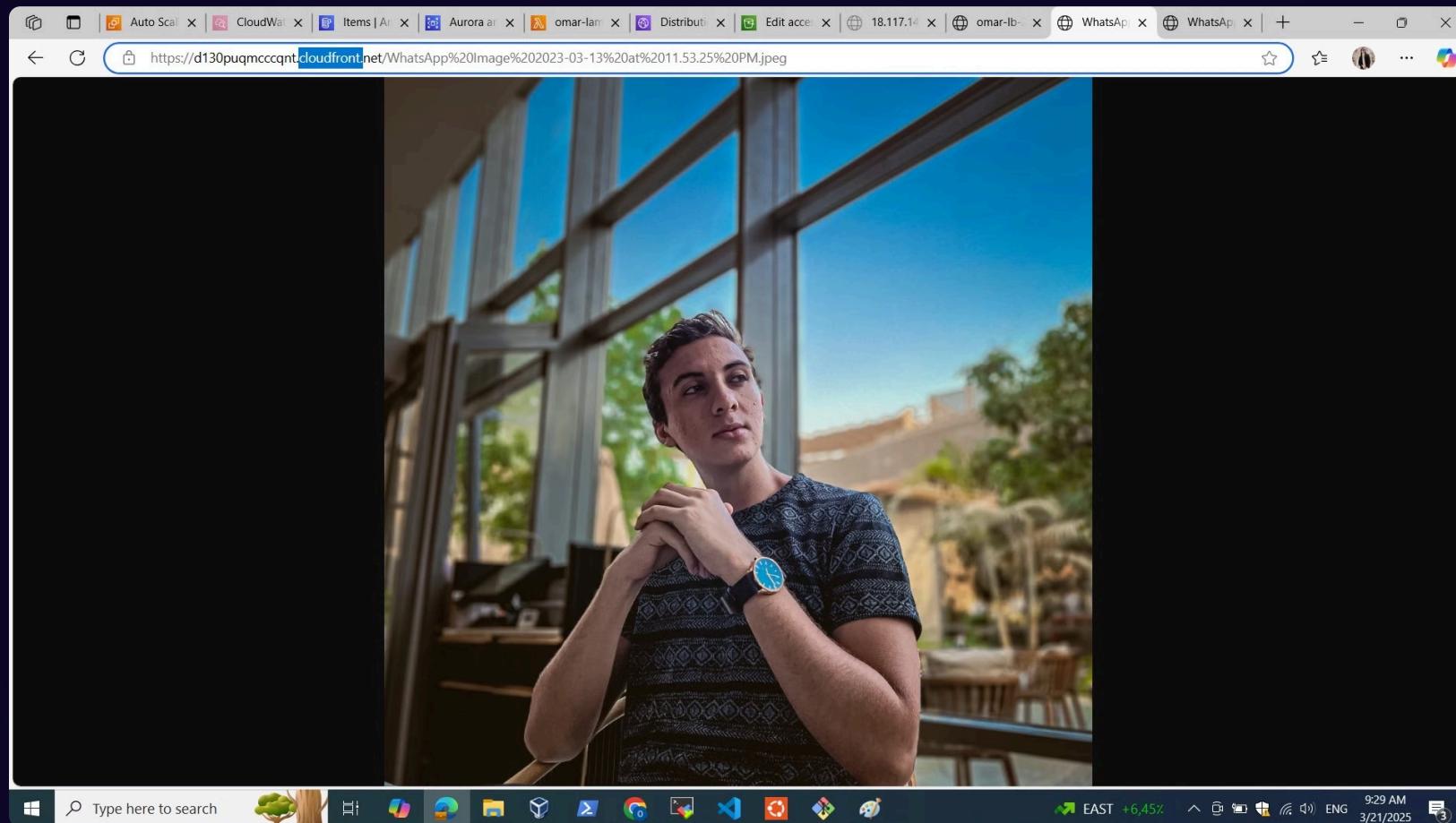
At the bottom, there are links for CloudShell, Feedback, and various system status indicators including temperature (13°C), language (عربية), and date/time (8:51 AM, 3/21/2025).

# Step-6: CloudFront Distribution

The CloudFront distribution configuration and the access link for accessing content from s3 bucket through the CDN ensures fast and reliable content delivery to users worldwide.

The screenshot shows the AWS CloudFront distribution configuration page for distribution ID E1FOW7JCIWB6ZN. The left sidebar includes sections for CloudFront, Distributions, Policies, Functions, Static IPs, VPC origins, Telemetry (Monitoring, Alarms, Logs), Reports & analytics (Cache statistics, Popular objects, Top referrers, Usage, Viewers), Security (Origin access, Field-level encryption), and Key management (Public keys). The main content area displays the 'Origins' tab, which lists a single origin: 'omar-bucket11.s3.us-east-2.amazonaws.com'. The 'Origin groups' section below it indicates 'No origin groups'.

# CloudFront Access link Check



# Step-7: SNS Configuration

The screenshot shows the AWS SNS console for the 'omar-Alerts' topic. A success message is displayed: "Message published to topic omar-Alerts successfully. Message ID: d6975b52-0b1f-501f-b4a3-3b0511700d7b Request ID: c6f07636-51cd-536b-8402-16614ba2def0". Below this, the 'Details' section shows the topic's name, ARN, and type. The 'Subscriptions' tab is selected, displaying one confirmed subscription to an email address: omarviolin604@gmail.com.

| ID   | Endpoint                | Status    | Protocol |
|--|-------------------------|-----------|----------|
| <a href="#">bb5d65fe-3067-41ea-85aa-9ca1c32290b0</a> | omarviolin604@gmail.com | Confirmed | EMAIL    |

9:41 ⏱ ...



Hi PwC Inbox



# SNS Delivery Check



AWS Notificatio... 9:41 AM  
to me ▾



This is a test message from Omar

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

[https://sns.us-east-2.amazonaws.com/unsubscribe.html?  
SubscriptionArn=arn:aws:sns:us-east-2:590183986373:omar-Alerts:bb5d65fe-3067-41ea-85aa-9ca1c32290b0&Endpoint=omarviolin604@gmail.com](https://sns.us-east-2.amazonaws.com/unsubscribe.html?SubscriptionArn=arn:aws:sns:us-east-2:590183986373:omar-Alerts:bb5d65fe-3067-41ea-85aa-9ca1c32290b0&Endpoint=omarviolin604@gmail.com)

Please do not reply directly to this email. If Made with Gamma  
questions or comments regarding this email, please contact

# Step-7: CloudWatch Setup

The screenshot shows the AWS CloudWatch Metrics Alarm configuration page for a 'CPU-Warning' alarm. The left sidebar navigation includes 'CloudWatch' (selected), 'Dashboards', 'Alarms' (with 1 In alarm, 1 OK, 0 Disabled actions), 'Logs', 'Metrics' (X-Ray traces, Events, Application Signals, Network Monitoring, Insights), and 'CloudShell'. The main content area displays the 'CPU-Warning' alarm details:

**Details**

| Name                                  | CPU-Warning   |
|---------------------------------------|---|
| Type                                  | Metric alarm  |
| Description                           | CPU utilization greater than 70%                            |
| State                                 | Insufficient data   |
| Threshold                             | CPUUtilization > 70 for 1 datapoints within 5 minutes       |
| Last state update                     | 2025-03-21 07:51:57 (UTC)                                   |
| Actions                               | Actions enabled   |
| Namespace                             | AWS/EC2   |
| Metric name                           | CPUUtilization  |
| AutoScalingGroupName                  | omar-AS   |
| Statistic                             | Average   |
| Period                                | 5 minutes   |
| Datapoints to alarm                   | 1 out of 1  |
| Missing data treatment                | Treat missing data as missing                               |
| Percentiles with low samples evaluate |   |
| ARN                                   | arn:aws:cloudwatch:us-east-2:590183986373:alarm:CPU-Warning |

**Timeline**: Click timeline to see the state change at the selected time. The timeline shows a single grey bar from 5:00 to 7:45, indicating 'Insufficient data'.

**Actions**: View, Actions, Explore related.

**Logs**: Log groups, Log Anomalies, Live Tail, Logs Insights, Contributor Insights.

**Metrics**: X-Ray traces, Events, Application Signals, Network Monitoring, Insights.

**CloudShell**: Feedback.

# Step-7: Route 53 DNS

The screenshot shows the AWS Route 53 DNS console for the domain `omartest.com`. The left sidebar navigation includes:

- Route 53
- Hosted zones
- Health checks
- Profiles
- IP-based routing
- Traffic flow
- Domains
- Resolver
- DNS Firewall
- Application Recovery Controller

The main content area displays the following information:

**Record for omartest.com was successfully created.**  
Route 53 propagates your changes to all of the Route 53 authoritative DNS servers within 60 seconds. Use "View status" button to check propagation status.

**omartest.com** Info

**Hosted zone details**

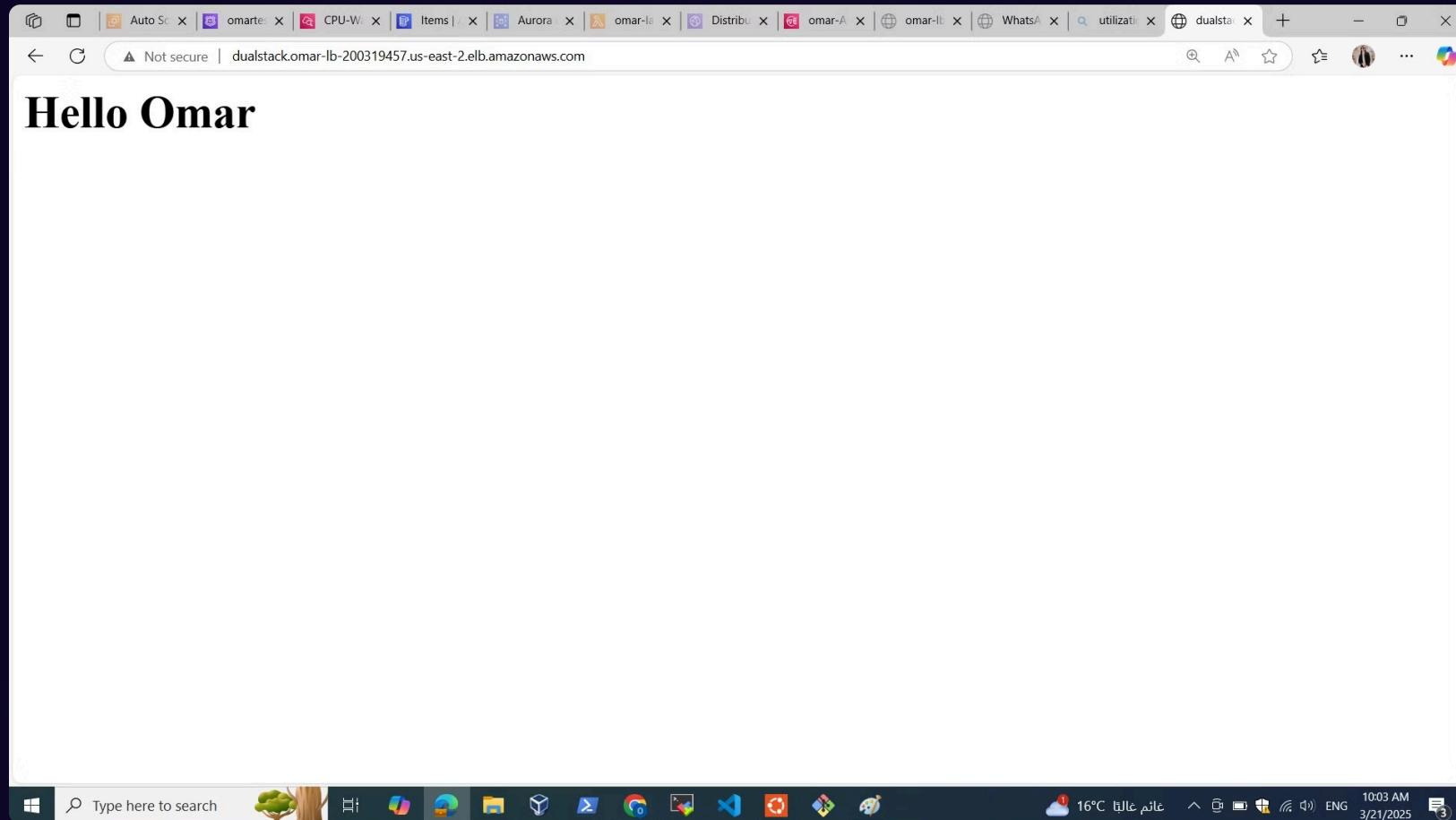
**Records (3)** Info

Automatic mode is the current search behavior optimized for best filter results. [To change modes go to settings.](#)

| Record name  | Type | Routing policy | Alias | Value/Route traffic | TTL (seconds)   | Health status | Evaluate | Record ID |
|--------------|------|----------------|-------|---------------------|---|---------------|----------|-----------|
| omartest.com | A    | Simple         | -     | Yes                 | dualstack.omar-lb-200319457.us-east-2.elb.amazonaws.com.  | -             | -        | Yes       |
| omartest.com | NS   | Simple         | -     | No                  | ns-1579.awsdns-05.co.uk.<br>ns-1002.awsdns-61.net.<br>ns-1356.awsdns-41.org.<br>ns-284.awsdns-35.com. | 172800        | -        | -         |
| omartest.com | SOA  | Simple         | -     | No                  | ns-1579.awsdns-05.co.uk. awsdns-hostmaster.amazonaws.com.   | 900           | -        | -         |

CloudShell Feedback © 2025, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

# Route 53 Link Check



# Step-8: CloudTrail History

The screenshot shows the AWS CloudTrail Event history page. The left sidebar navigation includes CloudTrail, Dashboard, Event history, Insights, Lake (Dashboards, Query, Event data stores, Integrations, Trails), Settings, Pricing, Documentation, Forums, and FAQs. The main content area displays a table of event history with 50+ entries. A blue banner at the top right encourages enabling Network activity events on the Trail or CloudTrail Lake. The table has columns for Event name, Event time, User name, Event source, Resource type, and Resource name. The first few rows show events like PutMetricAlarm, Subscribe, CreateTopic, PutBucketAcl, PutBucketPolicy, PutBucketOwnership..., PutBucketAcl, PutBucketPolicy, PutBucketPublicAcc..., PutBucketPolicy, and PutBucketPolicy, all performed by root user on March 21, 2025, targeting resources monitoring.amazonaws.com, sns.amazonaws.com, sns.amazonaws.com, s3.amazonaws.com, s3.amazonaws.com, s3.amazonaws.com, s3.amazonaws.com, s3.amazonaws.com, s3.amazonaws.com, s3.amazonaws.com, s3.amazonaws.com, and s3.amazonaws.com respectively.

| Event name            | Event time                         | User name | Event source             | Resource type          | Resource name   |
|-----------------------|------------------------------------|-----------|--------------------------|------------------------|---|
| PutMetricAlarm        | March 21, 2025, 09:51:57 (UTC+...) | root      | monitoring.amazonaws.com | AWS::CloudWatch::Alarm | CPU-Warning   |
| Subscribe             | March 21, 2025, 09:37:00 (UTC+...) | root      | sns.amazonaws.com        | AWS::SNS::Subscription | arn:aws:sns:us-east-2:590183986373:omar-Alerts:bb5d65fe-3067-41ea-85aa-9... |
| CreateTopic           | March 21, 2025, 09:36:24 (UTC+...) | root      | sns.amazonaws.com        | AWS::SNS::Topic        | arn:aws:sns:us-east-2:590183986373:omar-Alerts                              |
| PutBucketAcl          | March 21, 2025, 09:25:43 (UTC+...) | root      | s3.amazonaws.com         | AWS::S3::Bucket        | omar-bucket11   |
| PutBucketPolicy       | March 21, 2025, 09:22:18 (UTC+...) | root      | s3.amazonaws.com         | AWS::S3::Bucket        | omar-bucket11   |
| PutBucketPolicy       | March 21, 2025, 09:17:37 (UTC+...) | root      | s3.amazonaws.com         | AWS::S3::Bucket        | omar-bucket11   |
| PutBucketOwnership... | March 21, 2025, 09:10:40 (UTC+...) | root      | s3.amazonaws.com         | -                      | -   |
| PutBucketAcl          | March 21, 2025, 09:07:15 (UTC+...) | root      | s3.amazonaws.com         | AWS::S3::Bucket        | omar-bucket11   |
| PutBucketPolicy       | March 21, 2025, 09:05:42 (UTC+...) | root      | s3.amazonaws.com         | AWS::S3::Bucket        | omar-bucket11   |
| PutBucketPublicAcc... | March 21, 2025, 09:05:38 (UTC+...) | root      | s3.amazonaws.com         | AWS::S3::Bucket        | omar-bucket11   |
| PutBucketPolicy       | March 21, 2025, 09:04:31 (UTC+...) | root      | s3.amazonaws.com         | AWS::S3::Bucket        | omar-bucket11   |
| PutBucketPolicy       | March 21, 2025, 09:03:51 (UTC+...) | root      | s3.amazonaws.com         | AWS::S3::Bucket        | omar-bucket11   |

# Thank You for your time