Deploying a Simple Node.js Application on AWS Elastic Beanstalk (Task 9)

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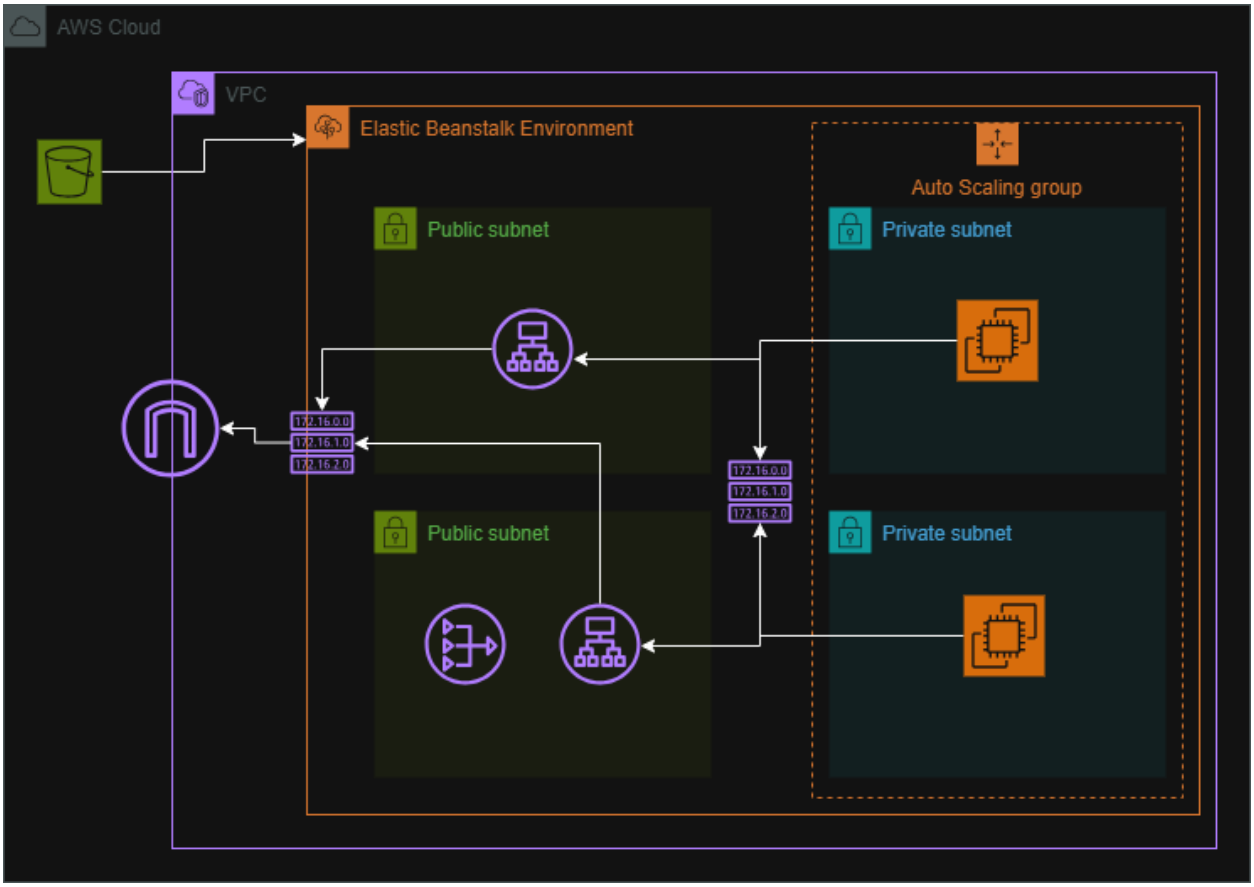
Task Description:

This project involves deploying a simple Node.js application using AWS Elastic Beanstalk. The application is prepared with the required dependencies, packaged into a ZIP file, and uploaded to an Elastic Beanstalk environment running the Node.js platform. Elastic Beanstalk automatically handles provisioning, deployment, and scaling. The environment is monitored through the dashboard, where logs, health, and configuration settings can be managed. The deployment is verified through the provided application URL, with updates deployed as needed.

Architecture Diagram:

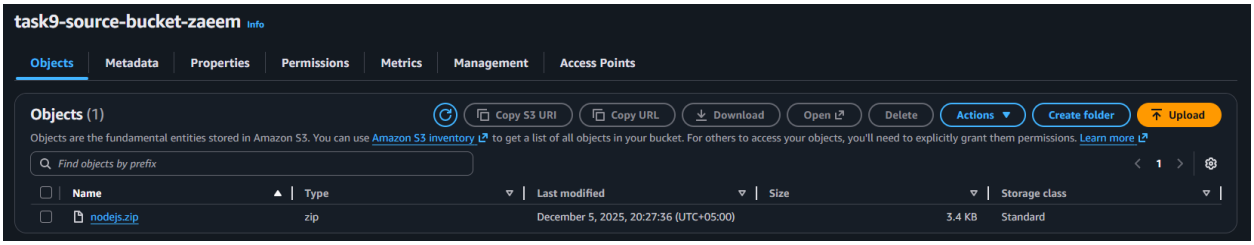


Task8.1: Prepare Node.js application code

- The NodeJS code must be compressed into a ZIP file to be uploaded to the S3 bucket and read by the beanstalk environment.
- The app.js file and the package.json file should be located at the root of the ZIP directory to be read by the beanstalk environment.

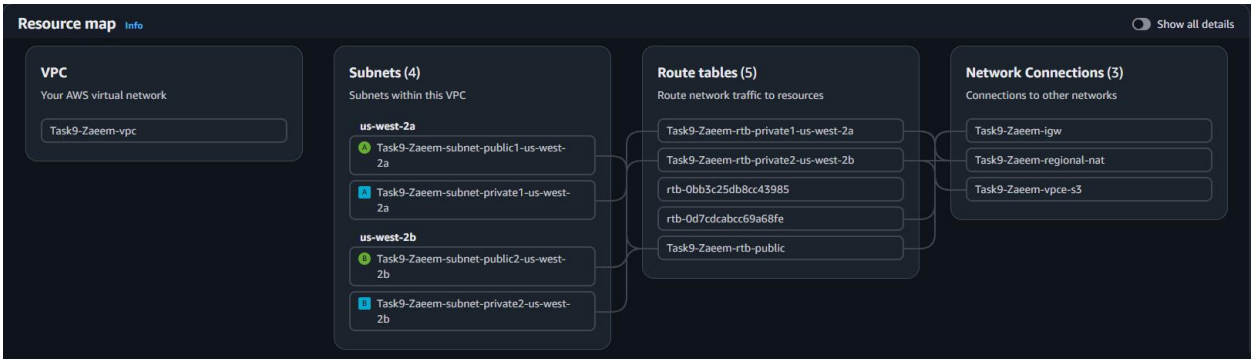
Task8.2: Create an S3 bucket and upload the ZIP

- Create an S3 bucket for the source code:
  - Bucket Type: General Purpose
  - Bucket Name: task9-source-bucket-zaeem
  - Keep the ACL off for simplicity purposes
  - Bucket Versioning: Disabled
  - Default Encryption: SS3-S3
  - Bucket Key: Enabled
- After creation is complete upload the ZIP to the bucket



Task8.3: Create Networking infrastructure to be used by EB

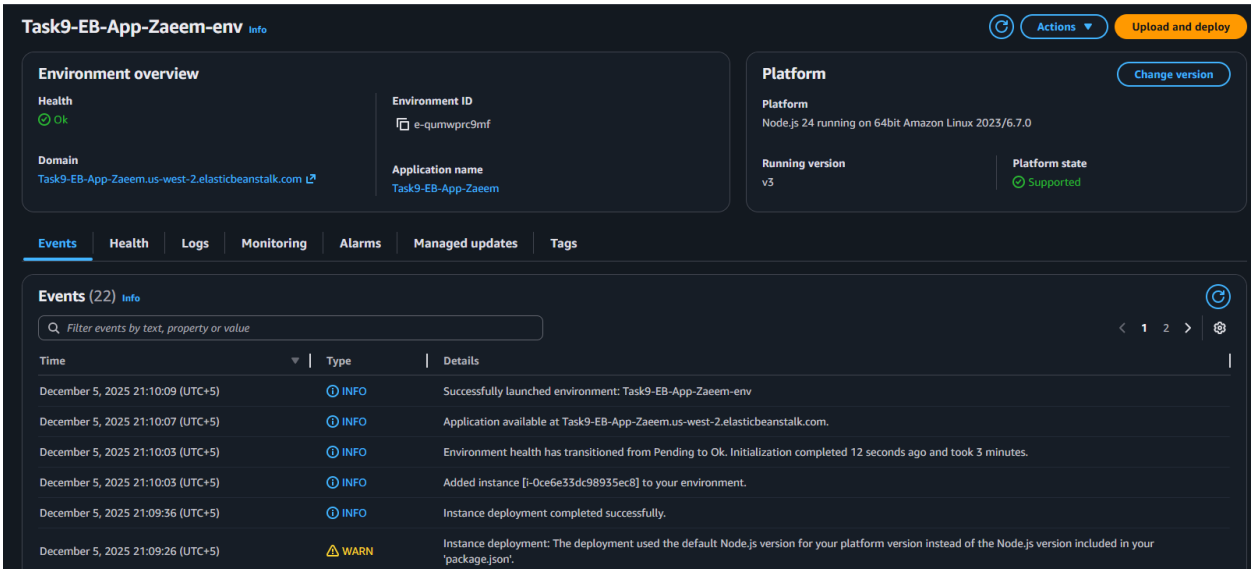
- Create and configure a VPC
    - CIDR Block: 10.0.0.0/16
- Create and configure Subnets
    - Public Subnet A (us-west-2a), CIDR: 10.0.1.0/24
    - Private Subnet A (us-west-2a), CIDR: 10.0.2.0/24
    - Public Subnet B (us-west-2b), CIDR: 10.0.3.0/24
    - Private Subnet A (us-west-2a), CIDR: 10.0.4.0/24
- Create and configure NAT Gateways
    - NAT Gateway A in Public Subnet A
    - NAT Gateway B in Public Subnet B
- Create and configure Internet Gateway
    - Create and attach to the project's VPC
- Create and configure Route Tables
    - Public Route Table, Outbound rule: 0.0.0.0/0 -> IGW, attach to Public SN A&B
    - Private Route Table A, Outbound Rule: 0.0.0.0/0 -> NGW attach to Private SN A
    - Private Route Table B, Outbound Rule: 0.0.0.0/0 -> NGW attach to Private SN B



Task8.4: Elastic Beanstalk Application and Environment

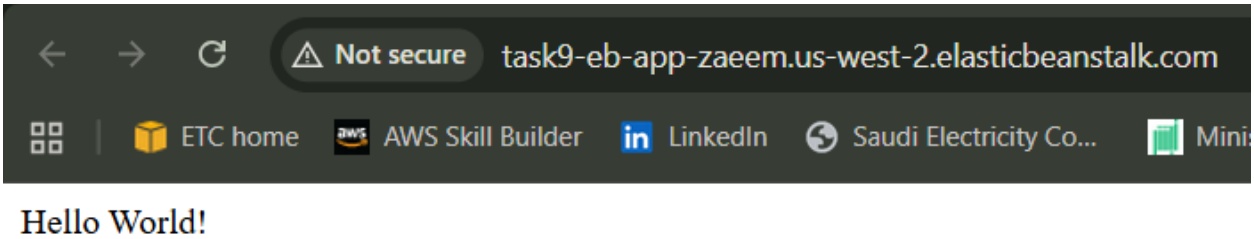
- Create an elastic beanstalk application:
    - Name: Task9-EB-App-Zaeem
    - Description: Task 9 Elastic Beanstalk Application
- Create a beanstalk environment to run the application in
- Configure Environment:
    - Environment Type: Web Server environment
    - Application information: Task9-EB-App-Zaeem
    - Env Name: Task9-EB-App-Zaeem-env
    - Env Domain: Task9-EB-App-Zaeem.us-west-2.elasticbeanstalk.com
    - Platform: NodeJS
    - Application Code: Upload Existing, S3 URL
    - Presets: High Availability
- Configure Service Access:
    - Service Role: Default (AWSServiceRoleForElasticBeanstalk)
    - EC2 Instance Profile: aws-elasticbeanstalk-ec2-role
    - EC2 Keypair: Task9-Zaeem
- Set up networking, database, and tags:
    - VPC: Select the one previously created
    - Instance subnets: Private subnet A & B
- Configure instance traffic and scaling:
    - Root Volume Type: Container Default
    - Monitoring Interval: 5 min
    - EC2 security groups: Task9-EB-EC2-SG-Zaeem
    - ASG Environment type: Load Balancer
    - Min instances: 1, Max instances: 3
    - Fleet Composition: On Demand
    - Architecture: x86_64
    - Instance Types: t3.micro
    - AMI ID: Default
    - Scaling Cooldown: 360s
    - Scaling Trigger: Req Count
    - Statistic: Avg
    - Period: 5min
    - Load Balancer Visibility: Public
    - Load Balancer Subnets: Public Subnets A & B
    - Load balancer type: Application load balancer, Dedicated

- Add listener with port 5000 and Protocol HTTP
- Configure updates, monitoring, and logging
  - Health Reporting: Enhanced
  - CloudWatch Custom Metrics – Instance: Applicationrequests4xx
  - CloudWatch Custom Metrics – Environment: Applicationrequests4xx
  - Managed Platform Updates Weekly: Minor and Patch
  - Instance Replacement: Enabled
  - Email Notification: <my email ID>
  - Deployment Policy: All at once



Task8.5: Testing the Application

- The application is available at the application domain provided



Hello World!