Cloud Security and Optimization Review Report

Intelligent Cloud Infrastructure Review with GenAI Assistance

1. Introduction

This report presents a cloud infrastructure security and optimization review using GenAI-assisted analysis. The objective is to identify potential security risks, operational inefficiencies, and recommend improvements.

2. Problem Statement

Organizations require better visibility into cloud infrastructure usage, security risks, and operational inefficiencies. Full automation is out of scope; hence, GenAI is used only to assist in analysis and decision-making.

3. Scope of the Review

- Cloud infrastructure review (AWS – conceptual)
- Security risk identification
- Cost and performance optimization
- GenAI-assisted insights (advisory only)

4. Assumptions & Constraints

- GenAI is used only for advisory analysis
- No real production data is used
- Inputs include sample configurations and documentation
- Final output is a technical review report

5. Cloud Architecture Overview

The architecture consists of EC2 instances deployed within a VPC, secured using security groups and IAM roles. Docker containers are used for application deployment, with monitoring enabled via CloudWatch.

6. Security Risk Analysis

Identified risks include:

- Public SSH access exposing instances to attacks
- Over-permissive security group rules
- Lack of encryption for storage volumes
- Public IP exposure increasing attack surface

7. Optimization Analysis

Identified inefficiencies include:

- Improper instance sizing
- Lack of monitoring and alerting
- Manual scaling of resources

8. GenAI-Assisted Insights

GenAI was used to analyze infrastructure configurations and summarize risks. All outputs were manually reviewed before documentation.

9. Recommendations

- Restrict SSH access using specific IP ranges
- Apply least-privilege IAM policies
- Enable encryption for data at rest
- Implement monitoring and auto-scaling

10. Conclusion

This review highlights key security and optimization opportunities within the cloud infrastructure. GenAI-assisted analysis provides valuable insights while maintaining human oversight.