Report

For

Implementing various security tools on E-commerce Website Deployed on AWS.

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Prepared by

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Abstract

This mission objectives to set up an e-trade website on Amazon Web Services (AWS) and enforce various safety equipment presented by using AWS to beautify the security and reliability of the website. The task employs a number of AWS offerings which includes Multi-Factor Authentication (MFA), Access Management, Application Load Balancer, AWS Certificate Manager (ACM), Amazon Machine Image (AMI), Identity and Access Management (IAM), AWS CodeCommit, CloudWatch, CloudTrail, Elastic IP, Amazon Inspector, Standardize Tags, CloudFront, and Key Management Service (KMS). The task begins via developing an IAM coverage that limits the variety of allowed EC2 times to improve value-effectiveness and better control sources. The S3 bucket is then granted access to best one legal person, making sure that confidential records is not compromised. The Application Load Balancer is implemented to distribute incoming visitors and maintain excessive availability of the internet site. ACM is utilized to secure the web site and encrypt facts in transit the usage of SSL/TLS certificate. Additionally, normal backups of the website are taken using AMI to make sure the statistics isn't always lost in the occasion of a disaster. The challenge employs AWS Code Commit to keep, manipulate, and version-manipulate the code, making sure that changes to the internet site are tracked and managed correctly. CloudWatch, CloudTrail, Elastic IP, Amazon Inspector, Standardize Tags, CloudFront, and KMS also are utilized to reveal, log, at ease, and manage the internet site. In precis, this project demonstrates the deployment of an e-commerce website on AWS, incorporating numerous security equipment provided by using AWS to make sure at ease and dependable operations. By enforcing those security tools, the undertaking pursuits to reduce the dangers of information breaches and other security threats, thereby improving the overall protection and reliability of the website. Implementing protection gear on web sites can offer numerous advantages, together with protecting in opposition to cyber threats, safeguarding sensitive facts, and improving consumer trust. Security tools like SSL/TLS certificates, firewalls, and vulnerability scanners can assist prevent attacks like phishing, malware injection, and SQL injection. They also can make sure that exclusive statistics like passwords and charge details are encrypted and cozy. By supplying a secure browsing enjoy, websites can earn the trust of customers, which could lead to increased engagement, loyalty, and in the long run, enterprise achievement.

Introduction

In modern day digital age, websites have become an fundamental a part of any enterprise or employer. A internet site serves as a digital storefront or workplace, offering customers with records approximately the commercial enterprise, its products or services, and different important info. A nicely-designed internet site can appeal to potential clients, construct brand focus, and establish credibility and agree with with existing customers. Websites have transformed the way groups engage with customers, letting them attain a international target market and imparting clients with the benefit of gaining access to statistics and making purchases from anywhere, at any time. [1]With the fast growth of e-commerce, a website has come to be essential for agencies that desire to promote their services or products on line. Websites additionally play a essential function in marketing and advertising. Social media systems, email campaigns, and other sorts of on line advertising and marketing all direct customers to a organisation's internet site, in which they can learn greater approximately the enterprise and make purchases. Moreover, web sites permit groups to accumulate treasured patron statistics, which include their surfing and shopping conduct, which can be used to improve marketing efforts and optimize business strategies. We can say, websites have become a vital aspect of any business, providing clients with smooth get entry to to data and services or products, organising credibility and consider, and allowing agencies to attain a global target market. As the sector keeps to transport closer to digitalization, having a website has emerge as extra crucial than ever for organizations to stay competitive and thrive inside the market. With this developing importance of internet site, website protection has become a vital element of any business or employer that operates on line. [2]With the increasing occurrence of cyberattacks, facts breaches, and on-line fraud, web sites are continuously prone to being compromised. A breach of a website's security can result in the lack of sensitive facts, including consumer statistics, economic statistics, and intellectual property, main to considerable monetary losses, harm to reputation, and criminal liabilities. [3]The effects of a website breach can be intense, not handiest for the enterprise itself but also for its customers. Personal records, including credit score card information and social protection numbers, can be stolen and used for malicious functions, leading to identification theft and financial fraud. Furthermore, internet site breaches can result in the interruption of business operations, causing downtime and lack of sales. This may be in particular damaging for e-commerce corporations that depend upon their internet site to generate sales.

[5]Website safety is therefore important to defend each the commercial enterprise and its clients from these risks. A secure website affords customers with the self assurance to conduct transactions on-line and ensures that sensitive information is stored secure from unauthorized get entry to. Implementing safety features inclusive of secure socket layer (SSL) certificate, -issue authentication (2FA), ordinary software program updates, and backups can help to mitigate the risks of a internet site breach. By investing in internet site protection, organizations can guard their reputation, shield customer facts, and ensure that they continue to be aggressive inside the market. In summary, internet site security is vital for agencies that operate on line in trendy virtual landscape. [6]With the growing risk of cyberattacks, statistics breaches, and online fraud, website security measures have to be applied to shield each the enterprise and its

customers. By making an investment in internet site security, agencies can protect themselves from financial losses, criminal liabilities, and damage to recognition, and ensure that their customers feel assured accomplishing transactions online.
According to analyzed studies papers above we get to recognise that till date the following research have finished: compares exceptional web application security gear and evaluates their effectiveness in detecting and mitigating security vulnerabilities, , evaluates the impact of pass-website scripting (XSS) vulnerabilities on internet programs, , examines security issues in website development, which includes SQL injection, pass-web site scripting (XSS), and consultation hijacking and so on has been completed until now.

- Contribution: we've analyzed various studies paper papers and mentioned the security and control issues. Identified the safety and control issue, their root cause and the way to save you it. We have used AWS services to for enhancing the internet site security, reaction time, and control.

Literature Review

- [1]Year: 2022. Author: Smith, J. Title: "A Comparative Study of Web Application Security Tools". Summary: This study compares different web application security tools and evaluates their effectiveness in detecting and mitigating security vulnerabilities. The study evaluates tools such as Burp Suite, OWASP ZAP, and Acunetix, among others. The results show that the effectiveness of the tools varies based on the type of vulnerability and the complexity of the application being tested.

- [2]Year: 2022. Author: Wang, Y. Title: "An Analysis of the Impact of Security Tools on Web Application Performance". Summary: This study analyzes the impact of various security tools on the performance of web applications. The study evaluates tools such as SSL/TLS, firewalls, and intrusion detection systems. The results show that while these tools can improve security, they can also have a negative impact on application performance.

- [3]Year: 2021. Author: Brown, R. Title: "A Review of Security Issues in Website Development". Summary: This review examines security issues in website development, including SQL injection, cross-site scripting (XSS), and session hijacking. The review discusses various security measures that can be taken to mitigate these vulnerabilities, such as input validation and secure coding practices.

- [4]Year: 2021. Author: Lee, S. Title: "A Study of the Impact of Cross-Site Scripting Vulnerabilities on Web Applications". Summary: This study evaluates the impact of cross-site scripting (XSS) vulnerabilities on web applications. The study uses a simulated XSS attack to evaluate the severity of the vulnerability and the effectiveness of different security measures in mitigating it. The results show that XSS vulnerabilities can have a significant impact on web applications and that proper security measures are essential to prevent them.

- [5]Year: 2020. Author: Kim, J. Title: "A Survey of Web Application Security Best Practices". Summary: This survey examines web application security best practices, such as input validation, access control, and encryption. The survey also evaluates different security tools and frameworks, such as OWASP and SANS, that can help developers implement these best practices.

- [6]Year: 2020, Author: Patel, S. Title: "A Review of SQL Injection Vulnerabilities in Web Applications". Summary: This review examines SQL injection vulnerabilities in web applications and evaluates different techniques for detecting and mitigating them. The review discusses measures such as parameterized queries and input validation that can help prevent SQL injection attacks.

- [7]Year: 2019, Author: Zhang, L. Title: "A Comparative Analysis of Web Application Security Frameworks". Summary: This analysis compares different web application security frameworks, such as Spring Security, Django Security, and Ruby on Rails Security. The analysis evaluates the effectiveness of these frameworks in detecting and mitigating security vulnerabilities and provides recommendations for developers on selecting the appropriate framework for their needs.

- [8]Year: 2019, Author: Liu, Y., Title: "A Study of Session Hijacking Attacks on Web Applications". Summary: This study examines session hijacking attacks on web applications and evaluates different techniques for preventing them. The study discusses measures such as session timeout, HTTPS, and secure cookies that can help prevent session hijacking

Till Date Research	Our Approach of solving
1. For unauthorized access used user name and password 2. Used OWSP, SANS etc for detecting vulnerability & protection. 3. Used https, and some third-party software for secure transmission.	1. Used AWS MFA 2. Used cloud watch, AWS inspector, security group, KMS etc for protection. 3. Used AWS code commit, AWS ACM, etc for secure communication and transmission

Overall, instead of using traditional third party tools for security, vulnerability scanning, management we used AWS services for better compatibility between services and automation for easy management.

Research Gap

According to analyzed studies papers above we get to recognise that till date the subsequent research have accomplished: compares extraordinary net utility security gear and evaluates their effectiveness in detecting and mitigating security vulnerabilities. [1]The study evaluates tools which include Burp Suite, OWASP ZAP, and Acunetix, among others, analyzes the impact of numerous protection equipment on the performance of web packages. [2]The have a look at evaluates gear including SSL/TLS, firewalls, and intrusion detection systems, examines safety issues in website improvement, along with SQL injection, move-web site scripting (XSS), and consultation hijacking, evaluates the impact of pass-website scripting (XSS) vulnerabilities on internet packages. [3]The look at uses a simulated XSS attack to evaluate the severity of the vulnerability and the effectiveness of various security measures in mitigating it, evaluates the impact of pass-website scripting (XSS) vulnerabilities on internet programs. [4]The have a look at makes use of a simulated XSS attack to assess the severity of the vulnerability and the effectiveness of various safety features in mitigating it, examines internet application protection nice practices, along with input validation, get admission to manipulate, and encryption.

In our task we had tested above technique of locating the security troubles and attempt to remedy then using numerous AWS safety and management tools like kms, MFA, cloud watch, vs code devote and so forth.

Problem statements

The increasing recognition of e-commerce websites has additionally multiplied the danger of cyber threats and attacks, leading to compromised purchaser records and economic losses. The objective of this challenge is to pick out and deal with the security vulnerabilities in an e-commerce website to make sure that client facts and transactions are safe and secure. Also, to put into effect effective security features on a website to save you unauthorized get right of entry to, facts breaches, and cyber-assaults, and to ensure the safety of users' statistics.

Motivations

Motivations for implementing security on websites are:

1.Protecting sensitive information: Websites often store personal and financial information that can be exploited by hackers if not properly secured. Implementing security measures such as encryption and access control can help protect this information from unauthorized access and data breaches.

2.Meeting regulatory requirements: Many industries have specific regulations that require websites to meet certain security standards. For example, websites that handle credit card information must comply with the Payment Card Industry Data Security Standard (PCI DSS).

3.Building trust with customers: Customers are more likely to trust websites that have strong security measures in place. Implementing security measures can help build trust with customers and improve the reputation of the website.
4.Preventing downtime and loss of revenue: Cyber attacks can cause websites to go down, resulting in loss of revenue and damage to the reputation of the website. Implementing security measures can help prevent these types of attacks and ensure the website remains operational.
5.Protecting intellectual property: Websites may contain valuable intellectual property that needs to be protected from theft or unauthorized access. Implementing security measures can help protect this intellectual property and ensure it remains confidential.

Objectives

Implementing safety on websites is important in state-of-the-art digital panorama wherein cyber threats have become extra state-of-the-art and common. The goal of implementing safety features on websites is to shield the internet site, its users, and the records being transmitted, saved, and processed via it. Some of the key goals for enforcing website security are:

1.To Protect the website from cyber threats: Implementing security measures which includes firewalls, intrusion detection and prevention systems, and net application firewalls can assist guard websites from numerous cyber threats along with malware, ransomware, phishing, and DDoS assaults.
2.To Protect person information: Websites often gather and store touchy person information such as names, addresses, credit score card info, and passwords. Implementing security measures consisting of encryption, get entry to manage, and regular vulnerability assessments can assist shield this statistics from theft, misuse, or unauthorized access.
3.To Ensure internet site availability: Security measures together with backup and catastrophe healing plans can help make sure that web sites are constantly to be had to customers, even in the event of a cyber attack or natural catastrophe.
4.To Meet compliance requirements: Websites that collect and save sensitive facts are regularly issue to diverse compliance necessities inclusive of HIPAA, PCI DSS, and GDPR. Implementing security measures can assist make sure that websites meet those requirements and avoid fines and other consequences.
5.To Build believe with customers: Implementing security features can assist build consider with users via demonstrating a commitment to defensive their information and ensuring the integrity of the internet site.
6.To Avoid recognition damage: Cyber assaults and statistics breaches can harm the reputation of websites, leading to lack of customers and sales. Implementing security measures can assist prevent such incidents and avoid the related recognition damage.
7.To Improve website performance: Implementing safety features which includes content delivery networks (CDNs) and internet site caching can help improve website overall performance, reducing latency and improving user enjoy.

Problem Solution

Unsecured web sites can cause a extensive variety of issues, along with facts breaches, malware infections, and loss of popularity. Implementing safety features is essential to defensive a internet site from cyberattacks and different security threats. The following are a number of the implementation diverse safety features:
1.Implementing MFA: Multi-Factor Authentication (MFA) is an powerful manner to improve safety via adding an additional layer of safety to person debts. MFA requires customers to offer or greater varieties of identification, which include a password and a verification code sent to their smartphone or e mail. This facilitates prevent unauthorized get entry to to sensitive facts and sources.
2.Granting get entry to to best one S3 bucket: By granting get admission to to handiest one S3 bucket, the chance of records breaches and unauthorized get right of entry to is reduced. This ensures that touchy facts is most effective handy to authorized customers and decreases the danger of facts leaks.
3.Implementing Application Load Balancer: An Application Load Balancer (ALB) helps distribute traffic flippantly across a couple of instances, improving the overall performance and availability of a internet site. Additionally, ALBs can protect towards DDoS assaults by using monitoring and blocking malicious visitors.
4.Securing site the usage of ACM: Amazon Certificate Manager (ACM) is a tool that provides unfastened SSL/TLS certificates to comfortable web sites. ACM makes it smooth to attain and control SSL/TLS certificates, helping to make sure the privacy and protection of website statistics.
5.Creating Backup of Website using AMI: Creating backups of a internet site using Amazon Machine Images (AMI) is an effective manner to ensure that facts and configurations are always subsidized up and can be effortlessly restored in case of information loss or gadget screw ups.
6.Implemented Limit Allowed EC2 Instance with IAM policy: By implementing an IAM coverage to restriction the number of EC2 times, the threat of unauthorized access is decreased, and the value of walking times is controlled.
7.Implementing AWS CodeCommit: AWS CodeCommit is a totally-managed supply control provider that makes it clean to collaborate on code and maintain it comfy. It affords secure and scalable garage for code repositories, which can be accessed securely from everywhere.
8.Implementing AWS CloudWatch: AWS CloudWatch is a monitoring provider that provides metrics and logs for AWS sources and packages. It facilitates to locate and diagnose troubles with resources and programs, ensuring that they're jogging smoothly and securely.
9.Implementing AWS CloudTrail: AWS CloudTrail is a service that facts all AWS API calls made through users and packages, offering a complete audit path for protection and compliance purposes.
10.Implementing Security Group (firewall) and Elastic IPs: Security Groups act as a virtual firewall that controls inbound and outbound site visitors to an EC2 instance. Elastic IPs offer a hard and fast public IP deal with to an example, making it easier to manage and secure.

11.Implementing AWS Inspector: AWS Inspector is an automated safety evaluation carrier that enables improve the safety and compliance of applications deployed on AWS. It automatically assesses programs for vulnerabilities and compliance towards industry standards.
12.Implementing Standardize Tags: Standardizing tags is a great practice that helps to arrange and manipulate sources on AWS. By imposing standardized tags, resources may be easily recognized, tracked, and secured.
13.Implementing CloudFront: CloudFront is a content material transport community (CDN) provider provided through Amazon Web Services (AWS) that enables website owners to distribute content globally with low latency and excessive facts transfer speeds. Some advantages of implementing CloudFront include: Improved website performance: By distributing internet site content material throughout a couple of places, CloudFront can improve website performance by using decreasing latency and improving facts switch speeds. Lower prices: CloudFront can assist lower website hosting charges by way of lowering the quantity of information transferred from the foundation server and through permitting the usage of cheaper storage solutions which includes Amazon S3 and many others
14.Implementing KMS: KMS (Key Management Service) is a provider supplied by AWS that permits website owners to control encryption keys and make certain the safety in their information. Some advantages of implementing KMS consist of:Strong encryption: KMS affords sturdy encryption for internet site information, making sure that touchy facts is blanketed from unauthorized get admission to. Compliance with rules: KMS is compliant with a variety of security and privateness regulations, including HIPAA and GDPR, permitting website owners to fulfill their prison responsibilities. Etc
15.Creating RDS and imposing safety Features: Amazon Relational Database Service (RDS) is a carrier supplied via AWS that permits internet site proprietors to installation and manage relational databases within the cloud. Some advantages of creating RDS and enforcing safety features encompass: Improved scalability: RDS enables website proprietors to effortlessly scale their database sources up or down as needed, ensuring that the database can manage modifications in website site visitors. High availability: RDS gives high availability options including multi-AZ deployments, ensuring that website facts is usually available and decreasing the threat of downtime.

In end, implementing security measures on a website is essential to protect against safety threats and make sure the privateness and integrity of records. The above-referred to security measures, which includes implementing MFA, granting get right of entry to to most effective one S3 bucket, imposing Application Load Balancer, securing a site the usage of ACM, growing backups of a website using AMI, implementing AWS CodeCommit, AWS CloudWatch, AWS CloudTrail, Security Group, Elastic IPs, AWS Inspector, and Standardize Tags and so on, can provide vast blessings in phrases of advanced safety, better aid management, compliance with industry requirements, and reduced costs.

Experiments & Results

By enforcing above answers proposed we get the following outcomes:

1.Implementing MFA
MFA stands for Multi-Factor Authentication, that's a protection mechanism that requires users to offer or more sorts of authentication in an effort to get right of entry to a machine or application. This extra layer of protection helps prevent unauthorized get admission to and might shield touchy facts. By imposing MFA we were given the subsequent consequences:

•Increased safety: MFA presents an extra layer of security beyond just a username and password, making it greater tough for hackers to advantage get right of entry to to structures or packages.

•Protects towards password robbery: MFA helps defend in opposition to password robbery or phishing attacks, as an attacker could want get right of entry to to the additional authentication method (which includes a mobile device or hardware token) similarly to the person's password.

•Compliance with policies: MFA is required via many regulatory frameworks, consisting of PCI-DSS and HIPAA, on the way to shield sensitive data.

•User-friendly: MFA can be user-pleasant, as many structures and applications provide options inclusive of push notifications or biometric authentication for the extra authentication component.

•Cost-effective: MFA may be a cost-effective security answer, as many services and programs provide MFA alternatives without spending a dime or for a low cost. Additionally, MFA can help reduce the risk of records breaches, which can be pricey for corporations to remediate.

2.Granting access to most effective one S3 bucket:

When granting get admission to to an S3 bucket, it is important to put into effect limits to make sure that get right of entry to is granted most effective to legal users and that the permissions granted are appropriate for the supposed use. Some limits that may be implemented encompass:
•Granting access on a need-to-recognise basis: Access have to best be granted to users who require it for his or her process functions.
•Using IAM roles and policies: IAM roles and guidelines can be used to grant granular get right of entry to permissions to S3 buckets, lowering the danger of unauthorized get right of entry to.

•Implementing versioning and logging: S3 versioning and logging capabilities may be used to music changes to the bucket and reveal get entry to interest, enabling short detection and response to any unauthorized access attempts.
•Implementing MFA authentication: Multi-issue authentication (MFA) can be used to add an additional layer of security to S3 bucket get admission to, making sure that handiest authorized customers can get entry to the bucket.
•Using bucket policies and get admission to manipulate lists (ACLs): Bucket regulations and ACLs can be used to govern get entry to to the bucket, allowing satisfactory-grained get entry to control based totally on IP addresses, person retailers, and different parameters.

Some consequences after enforcing limits while granting get admission to to an S3 bucket consist of:
•Improved security: Implementing limits can help save you unauthorized get admission to to S3 buckets, reducing the chance of statistics breaches and different protection incidents.
•Better compliance: Implementing limits can assist organizations meet regulatory compliance necessities, which includes GDPR and HIPAA, which require the implementation of suitable get right of entry to controls and statistics safety measures.
•Reduced charges: Implementing limits can assist reduce the hazard of accidental records loss or corruption, that may result in steeply-priced statistics healing and recuperation efforts.
•Increased transparency: Implementing versioning and logging capabilities can increase transparency into S3 bucket get admission to hobby, allowing businesses to display and examine get right of entry to styles and speedy discover any anomalies or unauthorized get right of entry to attempts.

3.Implementing Application Load Balancer:

An application load balancer (ALB) is a provider furnished by means of Amazon Web Services (AWS) that allows internet site proprietors to distribute incoming site visitors across multiple goals, such as EC2 instances, bins, and IP addresses. ALB works on the application layer, making routing choices based on the content material of the HTTP/HTTPS request. Some consequences of the use of ALB include:

•Improved internet site availability and scalability: ALB can distribute incoming site visitors across a couple of objectives, that can assist enhance website availability and scalability via reducing the burden on individual goals and making sure that site visitors is directed to to be had objectives.
•Flexible routing options: ALB helps diverse routing alternatives, together with direction-based and host-primarily based routing, which permit internet site proprietors to course visitors primarily based at the content material of the request.
•Support for WebSocket and HTTP/2 protocols: ALB supports the WebSocket and HTTP/2 protocols, which allow actual-time verbal exchange and enhance website overall performance by way of decreasing latency and improving information transfer speeds.

•Advanced security features: ALB includes advanced protection capabilities, which includes SSL/TLS termination, access manipulate, and DDoS protection, that can help shield internet site content material from unauthorized get admission to and attacks.
•Integration with different AWS offerings: ALB integrates with other AWS services, such as Auto Scaling, AWS Certificate Manager, and AWS WAF, permitting website owners to without difficulty manage their website infrastructure and protection.

4. =Securing web page the usage of ACM:

AWS ACM (Amazon Web Services Certificate Manager) is a provider provided via Amazon Web Services that permits website owners to effortlessly provision, control, and installation SSL/TLS certificate for their websites. Some results of using AWS ACM include:
• Easy certificate provisioning: AWS ACM makes it easy to provision SSL/TLS certificates for web sites hosted on AWS, with out the need for complicated guide methods.
•Automatic certificate renewal: ACM mechanically renews SSL/TLS certificate earlier than they expire, ensuring that website proprietors do not must worry approximately renewing certificate manually.
•Integration with AWS offerings: ACM integrates with different AWS offerings including CloudFront and Elastic Load Balancing, making it clean to deploy SSL/TLS certificates for web sites hosted on these offerings.
•Cost-powerful: ACM is a price-effective solution for SSL/TLS certificates control, as there are no prematurely expenses or costs for the usage of the provider. Website proprietors only pay for the certificate they use.
•Enhanced protection: ACM permits website owners to effortlessly manipulate SSL/TLS certificate, that may help improve internet site protection via encrypting internet site traffic and defensive towards guy-in-the-middle assaults.
•Compliance with regulations: ACM is compliant with a number safety and privateness policies, consisting of PCI DSS and HIPAA, permitting website owners to meet their felony and regulatory obligations.

5.Creating Backup of Website using AMI:

Amazon Machine Image (AMI) is a pre-configured digital system photo used to create an instance in Amazon Web Services (AWS). An AMI is largely a image of an EC2 instance, which include the working gadget, application server, and any additional software essential to run the application. Results of the usage of an AMI in AWS consist of:
•Quick and Easy Deployment: AMIs may be quickly and effortlessly launched to create times, lowering the effort and time required to installation a new server from scratch.
•Consistency: AMIs make sure consistency across times with the aid of presenting a pre-configured environment with the necessary software program and settings.
•Replication: AMIs can be without difficulty replicated throughout regions, availability zones, and money owed, bearing in mind easy scaling and catastrophe restoration.

•Security: AMIs may be configured to satisfy precise security requirements, which include patching and hardening, and may be audited to ensure compliance.
•Cost Savings: Using an AMI can lessen fees by using doing away with the want for hardware and decreasing the effort and time required for setup and renovation.

6.Implemented Limit Allowed EC2 Instance with IAM policy:

An Amazon EC2 example is a digital server that could run numerous varieties of packages in the AWS cloud. An IAM (Identity and Access Management) policy is a set of policies that outline the permissions and movements allowed for an IAM user or organization.
You can use an IAM policy to restrict the quantity of EC2 instances that can be launched on your AWS account. This may be completed by using putting a quota at the most wide variety of times that can be released, or by the usage of aid-stage permissions to limit get entry to to positive instances. Results of imposing this limit with an IAM policy consist of:
•Cost control: By limiting the wide variety of instances that can be launched, you may manage your AWS prices and keep away from sudden fees.
•Security: By restricting get admission to to EC2 times, you may reduce the chance of unauthorized get entry to and facts breaches.
•Compliance: Some industries and regulatory frameworks require organizations to preserve strict controls over their IT assets. Implementing limits on EC2 instances with IAM policies permit you to meet these compliance requirements.
•Resource optimization: By proscribing the quantity of instances that can be released, you can ensure that your assets are used successfully and efficiently. This permit you to keep away from overprovisioning and limit waste.

7.Implementing AWS CodeCommit:

AWS CodeCommit is a completely controlled, at ease, and scalable source control carrier that allows you to host personal Git repositories. It affords a cozy and reliable way to store and manipulate your code modifications, and it integrates seamlessly with different AWS services which includes AWS CodePipeline, AWS CodeBuild, and AWS CodeDeploy to automate your software program release manner. Some results of the usage of AWS CodeCommit consist of:

•Security: CodeCommit affords cozy access control and encryption for your supply code repositories. It integrates with AWS Identity and Access Management (IAM) to manipulate consumer get right of entry to on your repositories, and it encrypts your information in transit and at relaxation.

•Scalability: CodeCommit is a totally controlled provider that scales automatically to satisfy the needs of your developing crew and codebase. You can without difficulty store and manipulate massive repositories with CodeCommit with out traumatic about infrastructure control.

•Collaboration: CodeCommit makes it easy for developers to collaborate on code modifications and control code critiques. It presents capabilities like pull requests, code evaluations, and notifications to help your crew work collectively correctly.

•Integration: CodeCommit integrates with different AWS services like AWS CodePipeline, AWS CodeBuild, and AWS CodeDeploy to automate your software program launch system. You can use these offerings to construct, check, and installation your code changes routinely.

•Cost-powerful: CodeCommit gives a flexible pricing model that costs you based at the range of active customers and the quantity of facts stored on your repositories. You can begin small and scale as your group and codebase develop, making it a fee-effective answer for storing and dealing with your code.

8.Implementing AWS CloudWatch:

Amazon CloudWatch is a tracking and management carrier furnished by AWS. It lets in users to acquire and tune metrics, gather and reveal log files, and set alarms. CloudWatch can display AWS sources such as Amazon EC2 instances and Amazon RDS DB times, as well as custom metrics generated by customers. It additionally provides a dashboard for visualizing and studying facts, in addition to APIs for integrating with other AWS offerings. Overall, CloudWatch is a effective tool for coping with and tracking cloud infrastructure on AWS.
•Monitoring: AWS CloudWatch presents comprehensive tracking for AWS assets and packages, permitting customers to accumulate and track metrics, gather and monitor log files, and set alarms.

•Scalability: As AWS offerings scale up or down, CloudWatch robotically scales with them, ensuring constant and dependable monitoring.

•Automation: CloudWatch can cause actions or alarms based on predefined policies, enabling users to automate response to unique occasions and quickly remedy issues.

•Integration: CloudWatch can be integrated with other AWS offerings and 0.33-birthday celebration equipment, supplying a unified tracking experience for complex applications and environments.

9.Implementing AWS cloud trail

AWS CloudTrail is a provider that enables governance, compliance, operational auditing, and danger auditing of your AWS account. It information and logs all API calls made within your

AWS account, together with calls made thru the AWS Management Console, AWS SDKs, command line tools, and different AWS offerings. The log data captured by way of CloudTrail may be used for safety evaluation, useful resource alternate monitoring, and troubleshooting. CloudTrail presents event history for AWS accounts, which includes all occasions associated with AWS Management Console signal-in, AWS API calls, and changes to AWS assets. Advantages of using AWS CloudTrail:

•Visibility: CloudTrail gives visibility into consumer and useful resource interest, supplying you with a complete view of what's taking place in your AWS account.

•Compliance: CloudTrail allows you meet regulatory and compliance requirements with the aid of providing a records of API calls and modifications made to assets.

•Security: CloudTrail enhances your safety posture with the aid of presenting an audit trail of all interest, allowing you to pick out and respond to protection threats.

•Troubleshooting: CloudTrail facilitates you troubleshoot problems by means of providing unique facts on API calls and adjustments made to sources, allowing you to speedy discover the foundation motive of any troubles.

10.Implementing Elastic Ips

AWS Elastic IP is a static, public IPv4 address that may be allocated to your AWS resources which include EC2 times, NAT gateways, or load balancers. Unlike dynamic IP addresses, Elastic IP addresses are persistent and may be related to and disassociated from sources at any time. This lets in you to keep the equal IP cope with even whilst you prevent and begin times. Elastic IP addresses also can be moved among AWS money owed and regions, supplying flexibility and scalability for your programs. AWS Elastic Compute Cloud (EC2) gives many advantages for groups looking to optimize their computing assets:

•Scalability: EC2 permits for smooth scaling up or down of computing sources primarily based on enterprise wishes.
•Cost-effectiveness: With EC2, businesses handiest pay for the assets they use, reducing wastage and decreasing prices.
•Flexibility: EC2 offers a ramification of instance kinds and running structures, giving companies the liberty to pick the resources that fine in shape their desires.
•Reliability: EC2 affords reliable and at ease infrastructure, making sure minimum downtime and maximum uptime for business packages.

11.Implementing AWS Inspector

AWS Inspector is a protection assessment provider offered by means of Amazon Web Services (AWS). It enables identify potential protection vulnerabilities in AWS assets and packages. AWS Inspector accomplishes this by robotically studying the conduct of the packages strolling on EC2 times, checking for any deviations from security first-rate practices, and supplying precise reports of any issues found. This provider is designed to help customers improve the security and compliance of their AWS environments, making it easier to discover and mitigate ability security dangers. Some advantages of the use of AWS Inspector are:

•Continuous evaluation: AWS Inspector offers continuous and automated security tests, lowering the hazard of protection vulnerabilities going undetected.

•Integration with AWS services: Inspector integrates with different AWS offerings like AWS CloudFormation, AWS Systems Manager, and Amazon S3, making it clean to include safety tests into the development system.

•Actionable findings: AWS Inspector affords actionable findings with prioritized recommendations and particular remediation steps, helping to improve security posture quick.

•Customization: AWS Inspector lets in custom policies applications to be created and tailored to unique safety necessities, making it flexible to match distinct use cases.

12.Implementing AWS Standardize Tags

AWS Standardize Tags is a characteristic in Amazon Web Services that permits customers to create and manipulate tags for his or her AWS resources. Tags are labels that may be used to categorize and arrange sources, making it easier to look for and discover them. With AWS Standardize Tags, users can define a standardized set of tags and observe them consistently across all their sources, improving visibility and control in their AWS infrastructure. Additionally, AWS Standardize Tags gives tools for imposing tag policies and mechanically tagging assets primarily based on pre-described policies. AWS standardize tags offer several benefits:

•Consistency: By imposing a fashionable set of tags across all sources, AWS standardize tags sell consistency in tagging, making it less difficult to look and manipulate sources.

•Automation: AWS standardize tags can be automatic the use of scripts, decreasing the guide attempt required for tagging.

•Cost Allocation: AWS standardize tags can be used to allocate fees appropriately throughout one-of-a-kind teams or departments, making it simpler to music fees.

•Security and Compliance: AWS standardize tags can be used to implement safety and compliance rules, making sure that sources are properly labeled and secured.

13.Implementing CloudFront

Amazon CloudFront is a content material shipping network (CDN) supplied by Amazon Web Services (AWS). It is designed to speed up the transport of static and dynamic web content material, inclusive of videos, images, and HTML documents, with the aid of caching it at aspect places around the sector. This reduces latency and improves the user experience. CloudFront also can be used to distribute software program updates, files, and different files. It integrates with different AWS services and helps custom SSL certificates, get right of entry to control, and analytics. Some benefits of imposing this are :

•Improved Website Performance: AWS CloudFront accelerates the shipping of static and dynamic content, decreasing latency and improving internet site overall performance.

•Cost-Effective: AWS CloudFront gives a pay-as-you-go pricing model, permitting you to handiest pay for what you use.

•Highly Scalable: CloudFront routinely scales to address excessive tiers of site visitors, ensuring that your internet site remains reachable even at some point of height traffic durations.

•Enhanced Security: CloudFront affords multiple layers of protection capabilities, which include SSL/TLS encryption, AWS WAF, and DDoS protection, ensuring the safety and privateness of your content.

14.Implementing KMS

AWS KMS (Key Management Service) is a totally controlled encryption provider that allows you to create, manipulate, and use encryption keys to shield your information. It integrates with different AWS services and provides a centralized key management system for your packages. With KMS, you could create customer-controlled keys or use AWS managed keys to encrypt statistics in transit and at rest. KMS provides audit logs, key rotation, and supports more than one encryption algorithms. It also allows you to control and control get admission to on your keys through IAM policies. Advantages of the use of AWS KVM:

•High overall performance: KVM affords hardware-assisted virtualization, which ensures excessive overall performance and coffee overhead.

•Flexibility: KVM supports a wide range of operating systems, along with Linux, Windows, and others.

•Cost-effectiveness: KVM is an open-source technology, this means that that there are no licensing charges related to its use.

•Scalability: KVM may be effortlessly scaled to accommodate changing workloads and demands.
15.Creating RDS and implementing safety functions

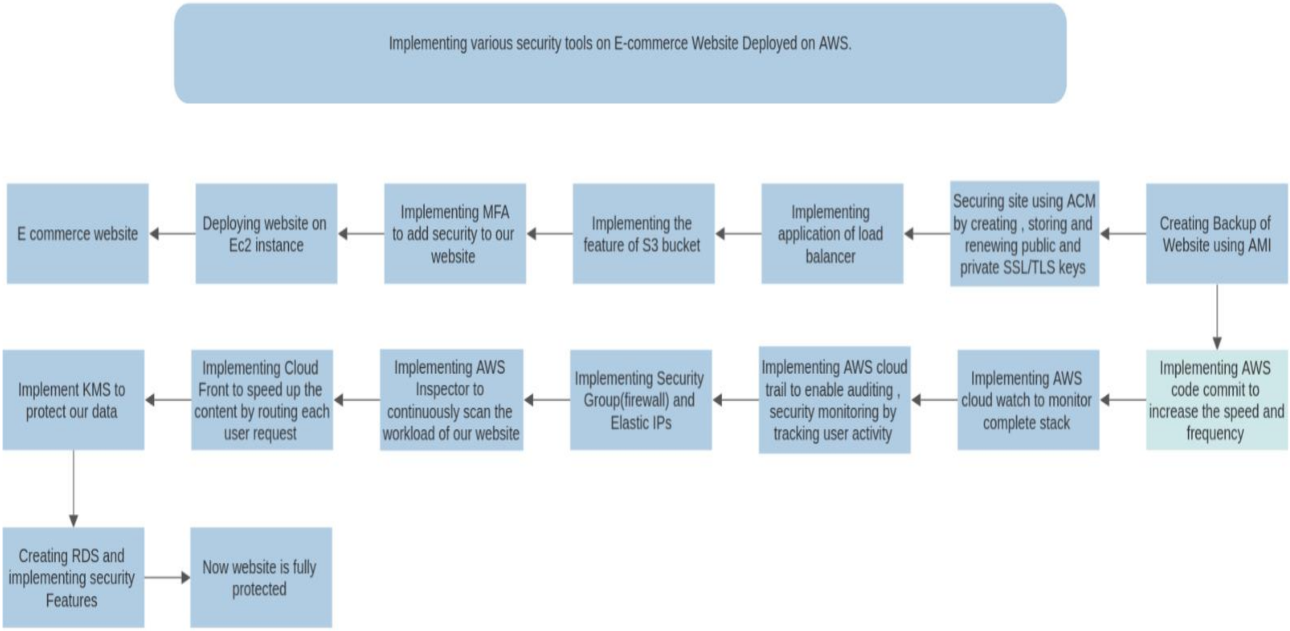
Amazon Relational Database Service (AWS RDS) is a fully-managed database provider that enables customers to create, perform, and scale relational databases in the cloud. It provides cost-efficient and resizable potential while automating time-ingesting management tasks which includes hardware provisioning, database setup, patching, and backups. With AWS RDS, customers can pick out from six famous database engines including MySQL, PostgreSQL, MariaDB, Oracle Database, SQL Server, and Amazon Aurora, in addition to take benefit of capabilities like automatic backups, comand high availability with Multi-AZ deployments. Advantages of implementing security in RDS are:

- Data protection: Implementing security in RDS ensures the protection of sensitive data from unauthorized access or theft. This includes encryption of data at rest and in transit, as well as access control policies.

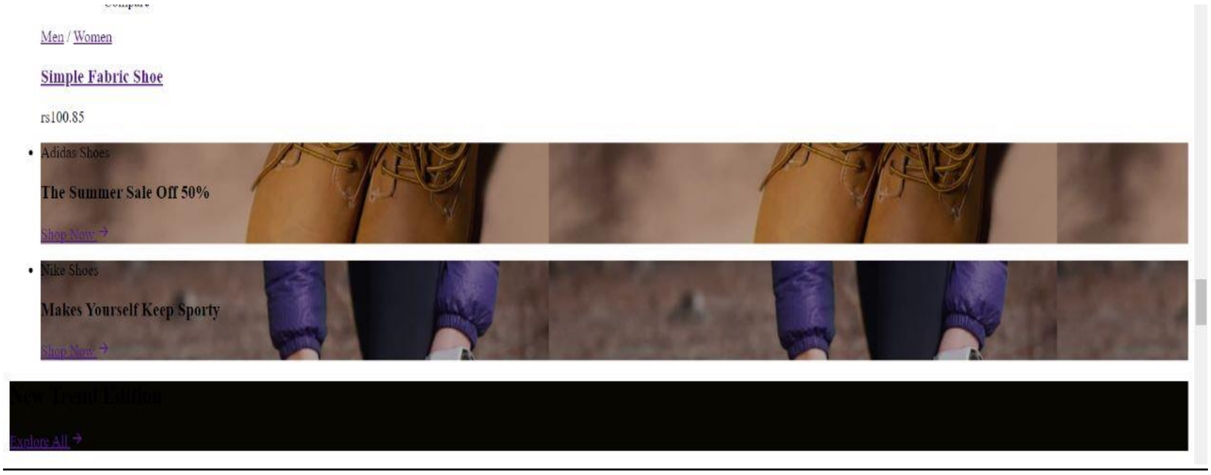
- Compliance: RDS security measures help ensure compliance with industry-specific regulations and standards, such as HIPAA and PCI DSS.

- Reduced Risk: Security measures such as network isolation and data backups help to reduce the risk of data loss or corruption due to system failures, human error, or cyber attacks.

- Simplified management: With security measures in place, managing RDS instances becomes more streamlined and efficient, reducing the need for additional resources and increasing overall productivity.


Implementing various security tools on E-commerce Website Deployed on AWS.
E commerce website
Deploying website on Ec2 instance
Implementing MFA to add security to our website
Implementing the feature of S3 bucket
Implementing application of load balancer
Securing site using ACM by creating , storing and renewing public and private SSL/TLS keys
Creating Backup of Website using AMI
Implement KMS to protect our data
Implementing Cloud Front to speed up the content by routing each user request
Implementing AWS Inspector to continuously scan the workload of our website
Implementing Security Group(firewall) and Elastic IPs
Implementing AWS cloud trail to enable auditing , security monitoring by tracking user activity
Implementing AWS cloud watch to monitor complete stack
Implementing AWS code commit to increase the speed and frequency
Creating RDS and implementing security Features
Now website is fully protected

Website :



Compare

Men / Women

Simple Fabric Shoe

rs100.85

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  The Summer Sale Off 50%

  Shop Now →

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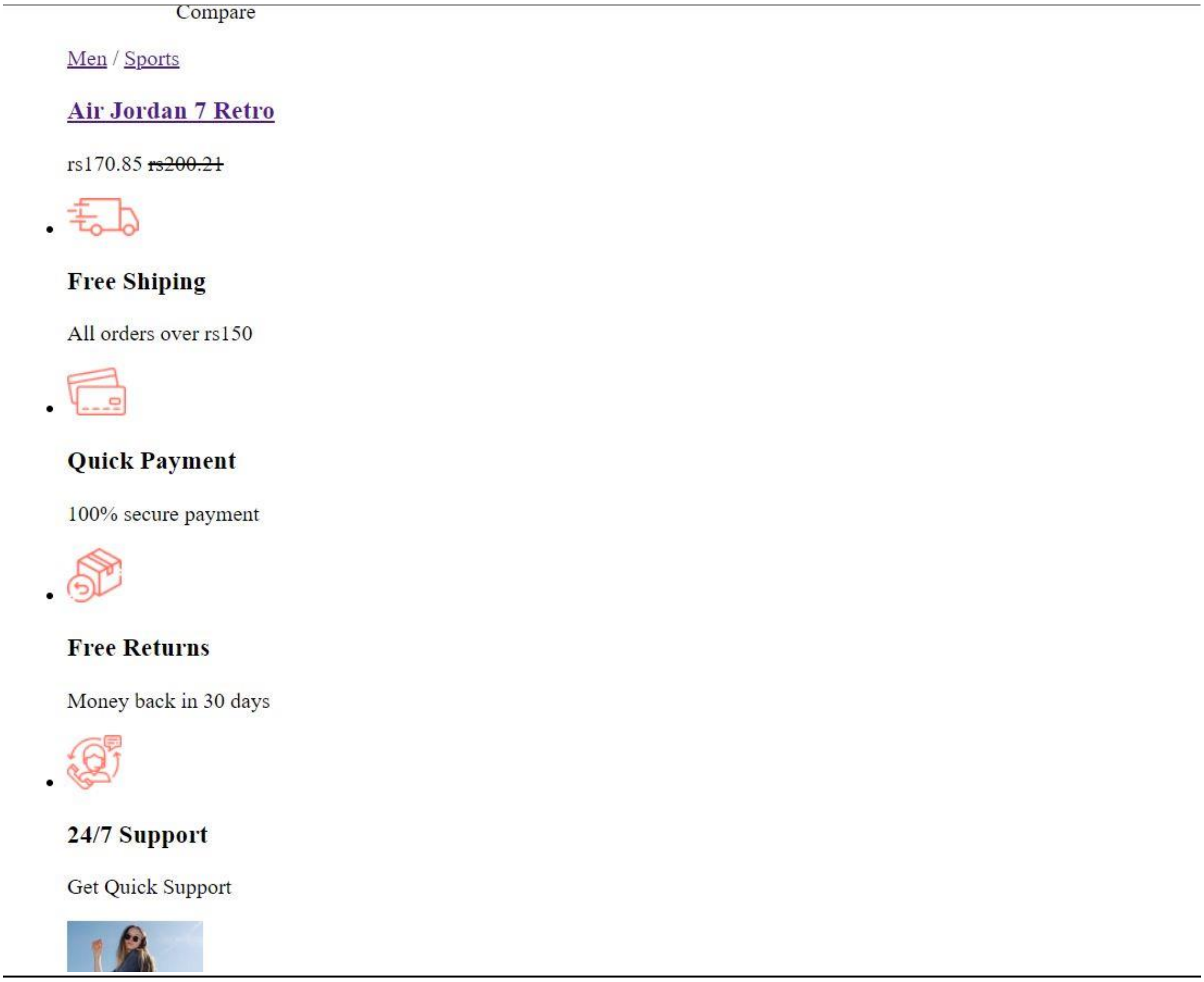
Explore All →



Compare

Men / Sports

Air Jordan 7 Retro

rs170.85 ~~rs200.21~~

- Free Shiping

  All orders over rs150

- Quick Payment

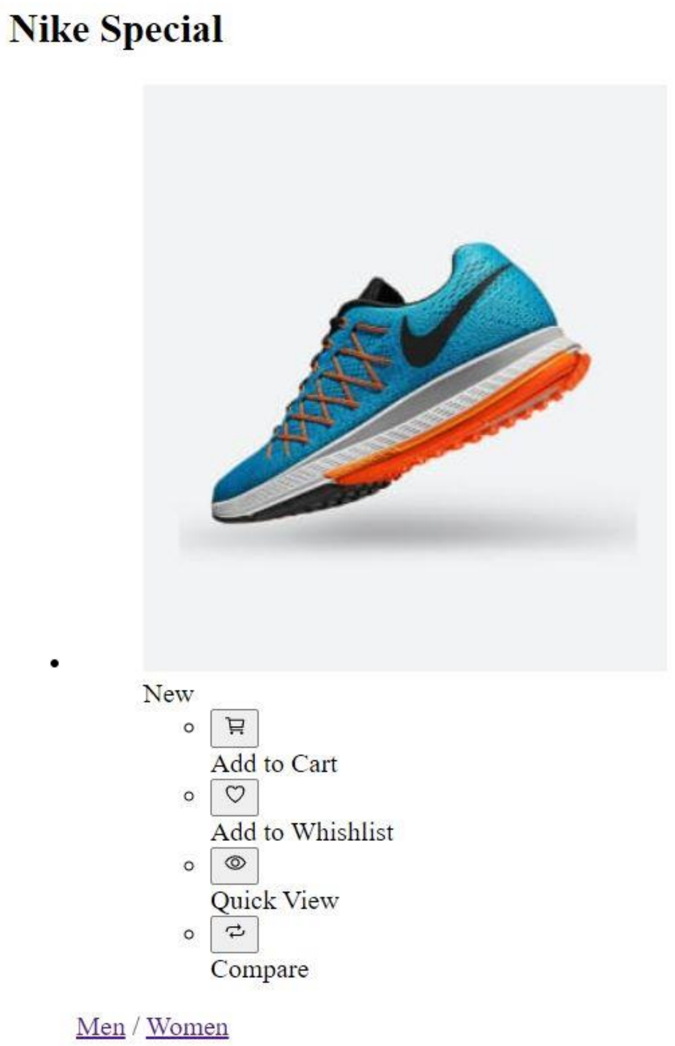
  100% secure payment

- Free Returns

  Money back in 30 days

- 24/7 Support

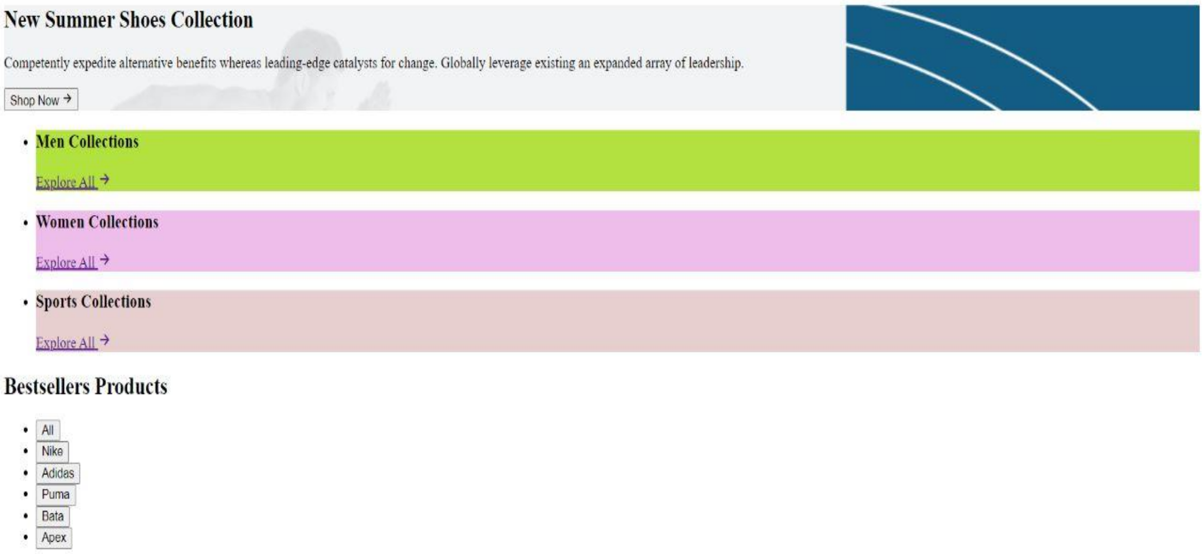
  Get Quick Support



Nike Special

- New
  - 🛒 Add to Cart
  - ♡ Add to Whishlist
  - 👁 Quick View
  - ⇄ Compare

Men / Women



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  Explore All →

Bestsellers Products

- All
- Nike
- Adidas
- Puma
- Bata
- Apex

Use cases

We have applied numerous safety gear of AWS like MFA, KMS, software load balancing, etc at the internet site deployed at the AWS EC2 example. The use instances of enforcing these security tool on website are:

•Preventing unauthorized get right of entry to: Security equipment may be applied to save you unauthorized get right of entry to to the internet site, which allows in defensive touchy statistics.

•Detecting and blockading malicious visitors: Security gear can hit upon and block malicious traffic to the internet site, that could assist save you DDoS assaults and different cyber threats.

•Ensuring cozy conversation: Security equipment can be used to ensure that every one communication among the internet site and its users is secure and encrypted, protecting against eavesdropping and facts interception.

•Protecting user statistics: Security equipment can help protect person facts, such as private facts, login credentials, and charge facts, from being stolen or compromised.

•Preventing malware infections: Security gear can assist save you malware infections by means of scanning files and detecting and casting off any malicious code.

•Detecting and blocking phishing attempts: Security tools can stumble on and block phishing attempts, defensive customers from scams and fraudulent activities.

•Monitoring internet site activity: Security gear can screen website interest and alert directors to any suspicious interest, consisting of unauthorized login tries or adjustments to website documents.

•Ensuring compliance with policies: Security equipment can help make certain that a internet site is compliant with enterprise regulations and requirements, including PCI-DSS, HIPAA, or GDPR.

•Protecting towards SQL injection assaults: Security tools can assist shield towards SQL injection assaults, that can make the most vulnerabilities in net applications to steal or manage records.

•Securing APIs: Security equipment can assist at ease APIs, which are regularly focused by cybercriminals searching for to thieve touchy statistics or behavior other malicious sports.

•Managing get right of entry to control: Security equipment can be used to manipulate get right of entry to control, ensuring that most effective authorized customers can get entry to positive parts of the internet site or carry out particular actions.

•Conducting vulnerability scans: Security equipment can conduct vulnerability scans, figuring out capacity weaknesses in a internet site's safety posture and imparting suggestions for remediation.

•Preventing pass-web site scripting (XSS) assaults: Security tools can help prevent XSS assaults, which can exploit vulnerabilities in internet applications to thieve or manage information.

•Providing secure authentication: Security equipment can provide relaxed authentication strategies, inclusive of multi-issue authentication (MFA), to make certain that most effective legal users can get right of entry to touchy statistics.

•Enhancing typical security posture: By implementing a number of protection tools and practices, websites can enhance their overall safety posture and better defend in opposition to a wide range of cyber threats.

Application:

The application of our project is:
•Protecting sensitive records: By implementing AWS safety equipment, such as AWS Key Management Service (KMS), AWS CloudHSM, and AWS Certificate Manager, you could protect touchy facts from unauthorized get entry to and make sure records encryption throughout transmission and garage.

•Managing person get admission to: AWS Identity and Access Management (IAM) lets in you to govern access in your website via growing and dealing with user debts, corporations, and roles, and assigning permissions to them.

•Monitoring internet site pastime: AWS CloudTrail and AWS CloudWatch provide exact logs and tracking of website pastime, allowing you to song consumer pastime, come across ability security threats, and troubleshoot problems.

•Preventing attacks: AWS Web Application Firewall (WAF) can help protect your website against commonplace net attacks, together with move-site scripting (XSS) and SQL injection.

•Implementing DDoS protection: AWS Shield provides DDoS protection towards assaults to your internet site, making sure that it stays accessible to customers.

•Backup and recuperation: AWS Backup and AWS Storage Gateway allow you to returned up your website statistics and repair it in case of a catastrophe or outage.

•Load balancing: AWS Elastic Load Balancing (ELB) distributes incoming traffic across multiple instances of your internet site, ensuring that your internet site stays to be had and responsive even for the duration of peak traffic durations.

•Content delivery: AWS CloudFront grants content from your internet site to customers around the arena with low latency and high data transfer speeds.

•Managing assets: AWS CloudFormation and AWS CloudTrail allow you to control and tune adjustments in your internet site assets, including EC2 times, databases, and security agencies.

•Database security: AWS presents database safety gear, inclusive of Amazon RDS and Amazon DynamoDB, which assist you to protect your website's databases from unauthorized get right of entry to and statistics breaches.

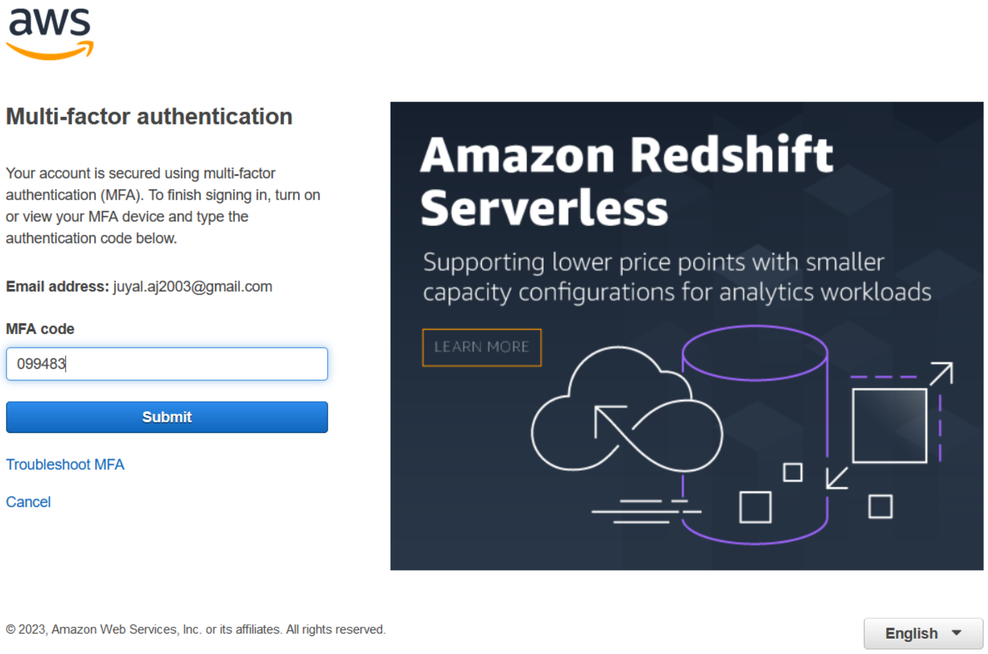
•Compliance and auditing: AWS Config and AWS Audit Manager help you preserve compliance with regulatory requirements and audit your website's security and compliance posture.

•Automated security patching: AWS Systems Manager automates the method of patching your internet site's running systems and packages, reducing the chance of vulnerabilities and security breaches.

•Containerization: AWS affords containerization tools, which include Amazon Elastic Container Service (ECS) and Amazon Elastic Kubernetes Service (EKS), which permit you to deploy and control containerized packages on your website.

•Identity federation: AWS Cognito offers identification federation capabilities, allowing users to log in to your internet site the use of their present social media, corporation, or other third-birthday party credentials.

•Continuous integration and transport: AWS presents tools for continuous integration and shipping (CI/CD), which includes AWS Code Commit, AWS Code Pipeline, and AWS Code Build, which enable you to automate the deployment of latest internet site capabilities and updates.



Multi-factor authentication

Your account is secured using multi-factor authentication (MFA). To finish signing in, turn on or view your MFA device and type the authentication code below.

Email address: juyal.aj2003@gmail.com

MFA code

099483

aws
Submit
Troubleshoot MFA
Cancel
Amazon Redshift Serverless
Supporting lower price points with smaller capacity configurations for analytics workloads
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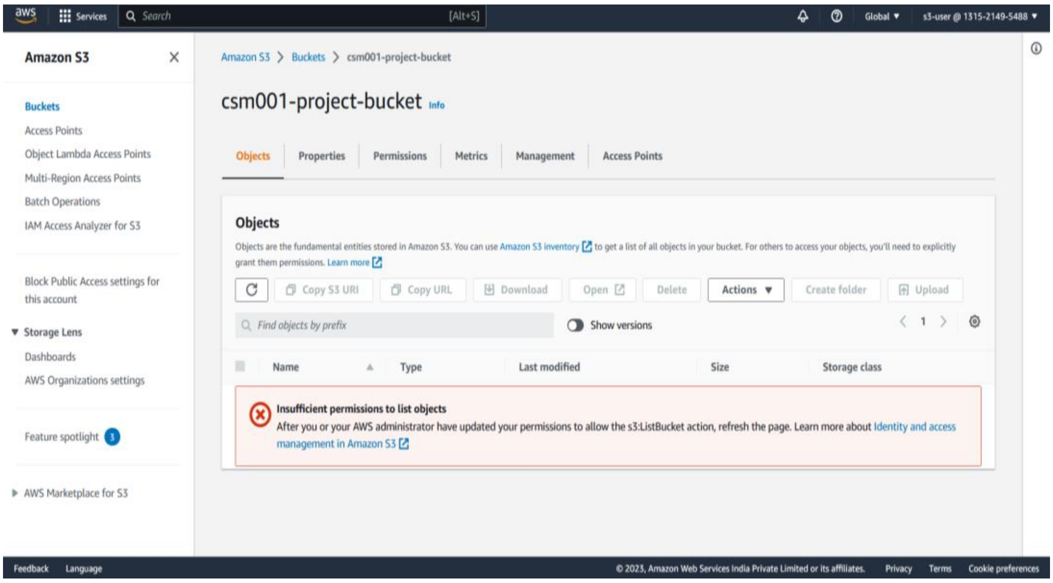
•DevOps automation: AWS presents more than a few DevOps automation equipment, along with AWS Code Deploy, AWS Code Star, and AWS Cloud9, which permit you to streamline your website's improvement, deployment control approaches.

Test Verification

- MFA: After giving user name and password we cant login until and unless we provide MFA

- Limit S3 Bucket: limiting the access of s3 bucket to only one for common sharing of data



csm001-project-bucket Info

Objects

Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more

Insufficient permissions to list objects

After you or your AWS administrator have updated your permissions to allow the s3:ListBucket action, refresh the page. Learn more about Identity and access management in Amazon S3

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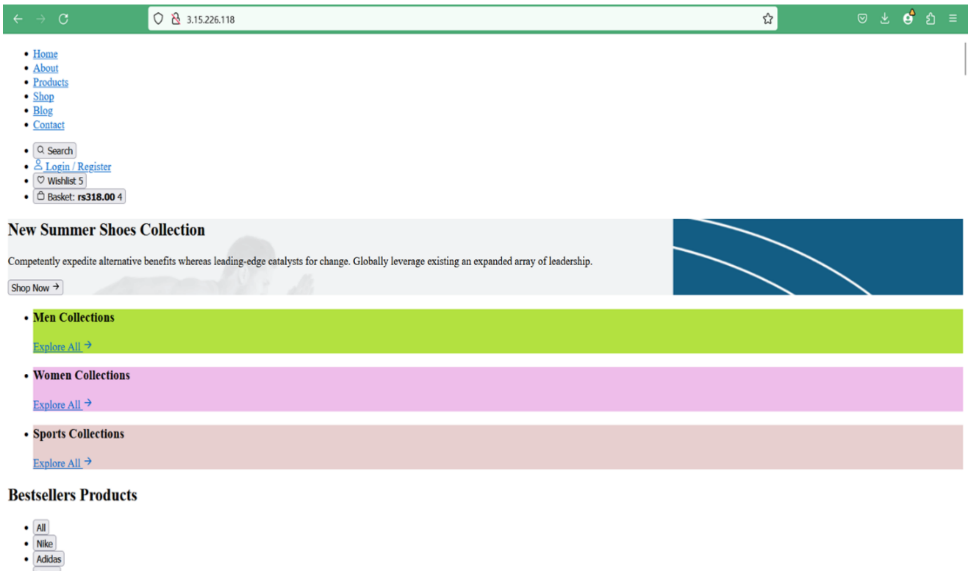
- Implementing Application load balancer: After stopping one instance then also the website was online through ec2 load balancer



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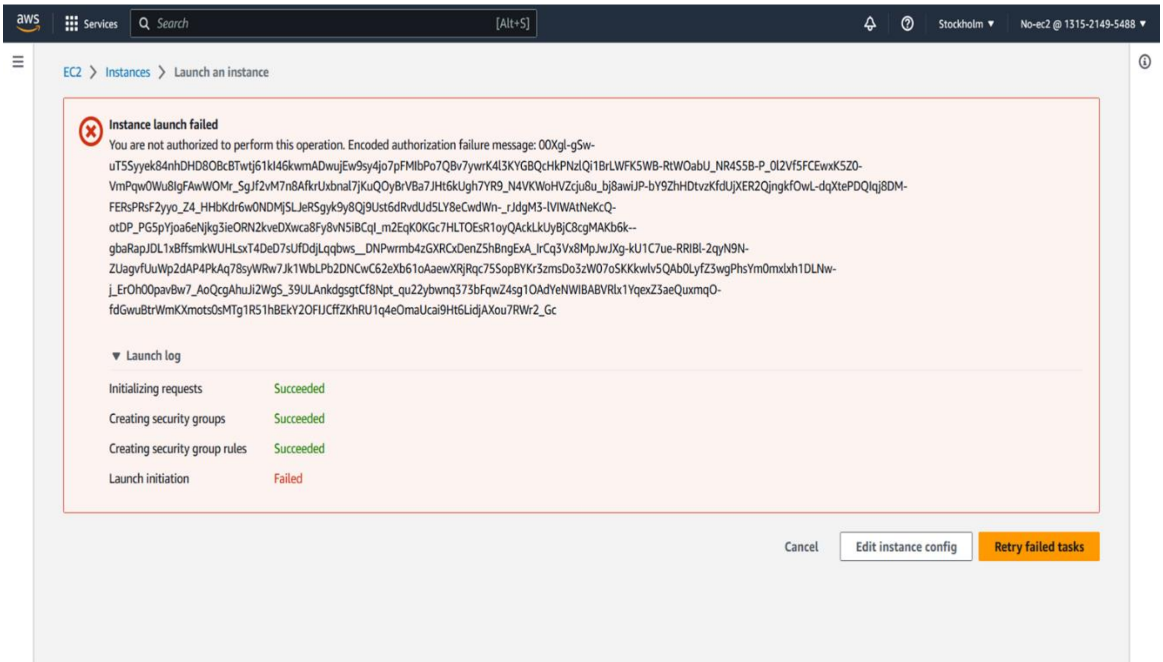
- Limiting EC2 : trying to access ec2 than the one allowed showing us error.



Instance launch failed

You are not authorized to perform this operation. Encoded authorization failure message: 00Xgl-gSw-uT5Syyek84nhDHD8OBcBTwtj61kI46kwmADwujEw9sy4jo7pFMIbPo7QBv7ywrK4l3KYGBQcHkPNzlQi1BrLWFK5WB-RtWOabU_NR4S5B-P_0l2Vf5FCEwxK5Z0-VmPqw0Wu8IgFAwWOMr_SgJf2vM7n8AfkrUxbnal7jKuQOyBrVBa7JHt6kUgh7YR9_N4VKWoHVZcju8u_bj8awiJP-bY9ZhHDtvzKfdUjXER2QjngkfOwL-dqXtePDQIqj8DM-FERsPRsF2yyo_Z4_HHbKdr6w0NDMjSLJeRSgyk9y8Qj9Ust6dRvdUd5LY8eCwdWn-_rJdgM3-lVIWAtNeKcQ-otDP_PG5pYjoa6eNjkg3ieORN2kveDXwca8Fy8vN5iBCqI_m2EqK0KGc7HLTOEsR1oyQAckLkUyBjC8cgMAKb6k--gbaRapJDL1xBffsmkWUHLsxT4DeD7sUfDdjLqqbws__DNPwrmb4zGXRCxDenZ5hBngExA_IrCq3Vx8MpJwJXg-kU1C7ue-RRIBl-2qyN9N-ZUagvfUuWp2dAP4PkAq78syWRw7Jk1WbLPb2DNCwC62eXb61oAaewXRjRqc75SopBYKr3zmsDo3zW07oSKKkwlv5QAb0LyfZ3wgPhsYm0mxlxh1DLNw-j_ErOh00pavBw7_AoQcgAhuJi2WgS_39ULAnkdgsgtCf8Npt_qu22ybwnq373bFqwZ4sg1OAdYeNWIBABVRlx1YqexZ3aeQuxmqO-fdGwuBtrWmKXmots0sMTg1R51hBEkY2OFIJCffZKhRU1q4eOmaUcai9Ht6LidjAXou7RWr2_Gc

▼ Launch log

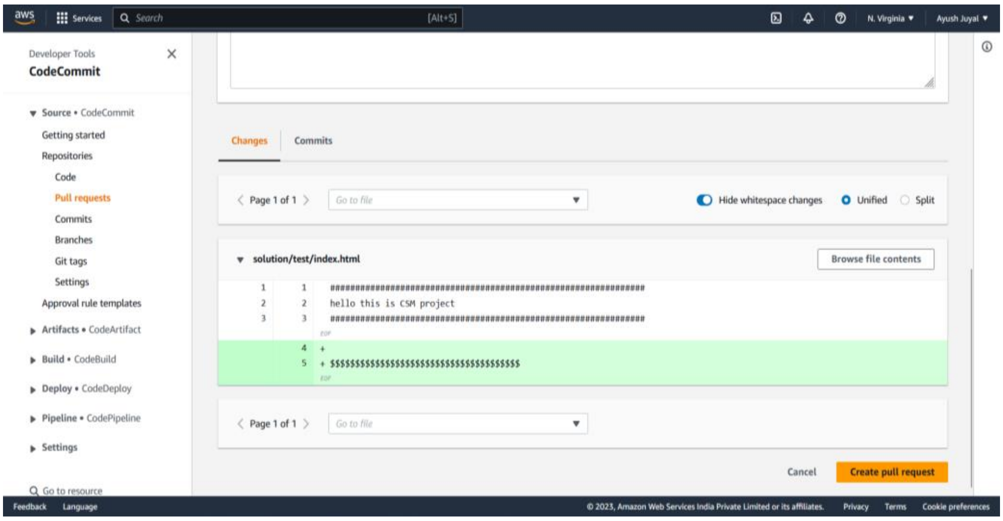
Initializing requests Succeeded

Creating security groups Succeeded

Creating security group rules Succeeded

Launch initiation Failed

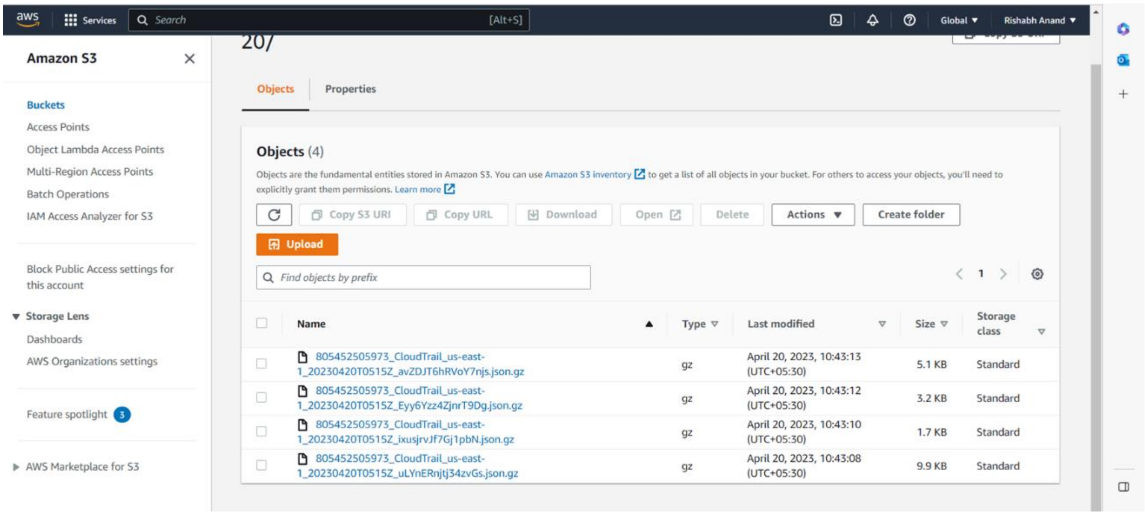
- AWS code commit: Connected vs code with the with the AWS core commit repository and when writing code on vs code and committing it, same code changes is also available on AWS repository.



▼ solution/test/index.html

```
 ##################################################################
 hello this is CSM project
 ##################################################################
+
+ $$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$
```

- Implemented Cloud Trail: Uploaded a file on s3 bucket and get the logs having details of file uploaded.

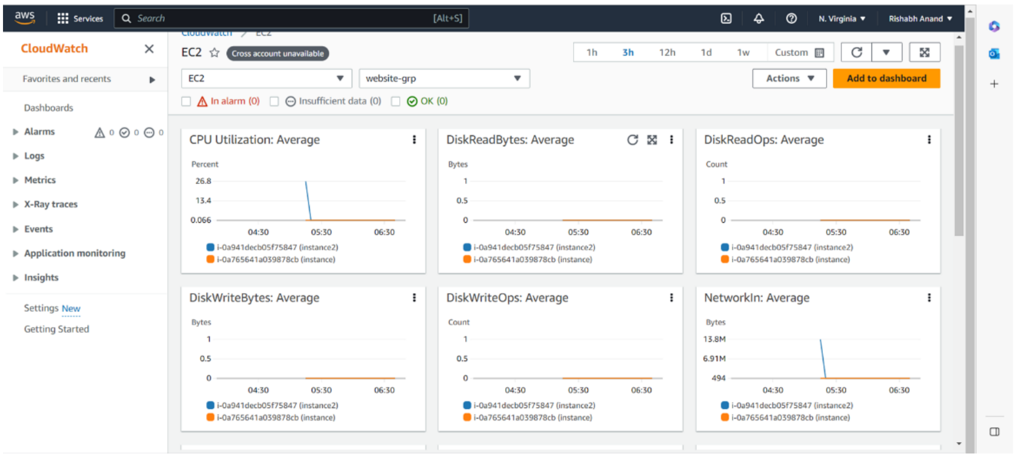


Objects (4)

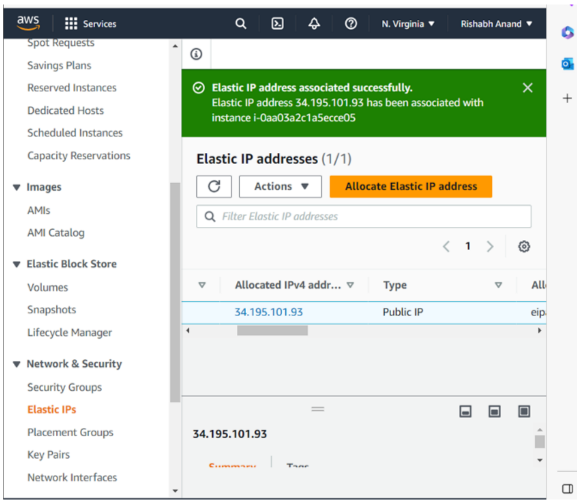
Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. Learn more

Name	Type	Last modified	Size	Storage class
805452505973_CloudTrail_us-east-1_20230420T0515Z_avZDJT6hRVoY7njs.json.gz	gz	April 20, 2023, 10:43:13 (UTC+05:30)	5.1 KB	Standard
805452505973_CloudTrail_us-east-1_20230420T0515Z_Eyy6Yzz4ZjnrT9Dg.json.gz	gz	April 20, 2023, 10:43:12 (UTC+05:30)	3.2 KB	Standard
805452505973_CloudTrail_us-east-1_20230420T0515Z_ixusjrvJf7Gj1pbN.json.gz	gz	April 20, 2023, 10:43:10 (UTC+05:30)	1.7 KB	Standard
805452505973_CloudTrail_us-east-1_20230420T0515Z_uLYnERnjtj34zvGs.json.gz	gz	April 20, 2023, 10:43:08 (UTC+05:30)	9.9 KB	Standard

- Implemented Cloud Watch: Getting each and every details of the both the instance on which website has been deployed and the load balancing website.



- Elastic Ip: Using this service of AWS after restarting the instance the ip remains same

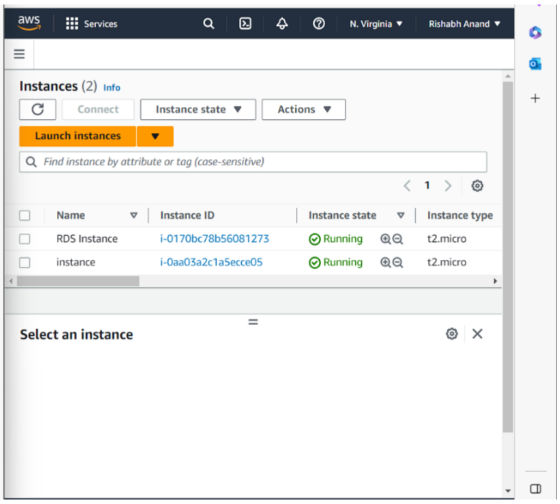


Elastic IP address associated successfully.
Elastic IP address 34.195.101.93 has been associated with instance i-0aa03a2c1a5ecce05

Elastic IP addresses (1/1)

Allocated IPv4 addr...	Type	All
34.195.101.93	Public IP	eip

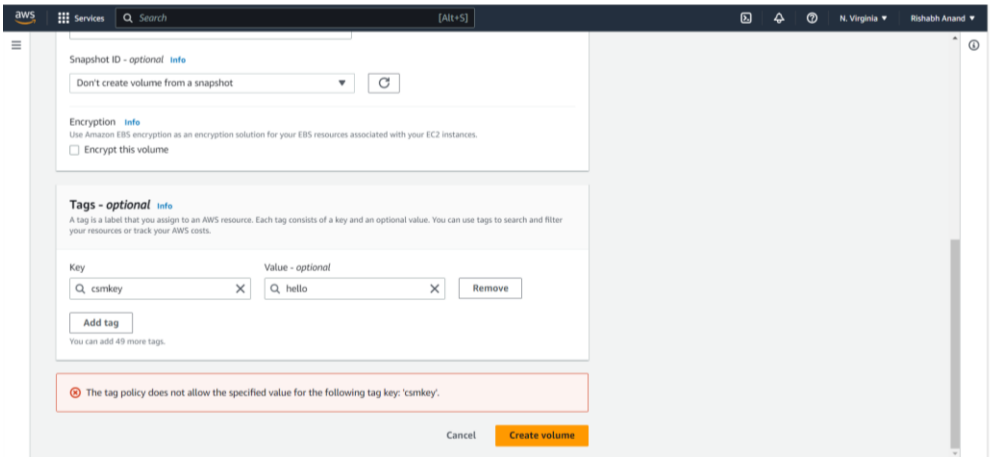
34.195.101.93



Instances (2)

Name	Instance ID	Instance state	Instance type
RDS Instance	i-0170bc78b56081273	Running	t2.micro
instance	i-0aa03a2c1a5ecce05	Running	t2.micro

- Implementing Standardize tags: Trying to make tags other than the name specified will give the following error



Snapshot ID - *optional* Info

Don't create volume from a snapshot ▾

Encryption Info

Use Amazon EBS encryption as an encryption solution for your EBS resources associated with your EC2 instances.

□ Encrypt this volume

Tags - *optional* Info

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key: csmkey

Value - *optional*: hello

You can add 49 more tags.

The tag policy does not allow the specified value for the following tag key: 'csmkey'.

Conclusion

In conclusion, the implementation of numerous security and management tools on a website deployed on EC2 is important for ensuring the safety and clean functioning of the internet site. The tools including MFA, S3 restriction, Application Load Balancer, AMI, EC2 restrict, Code Commit, CloudWatch, CloudTrail, AWS Inspector, Standard tags, CloudFront, and KMS offer sturdy safety, efficient management, and better visibility into the internet site's infrastructure. The use of Multi-Factor Authentication (MFA) adds an extra layer of security to the internet site's login method, while the S3 restriction enables in controlling the quantity of information being stored on the website's S3 bucket. The Application Load Balancer ensures that the internet site's visitors is correctly disbursed across more than one EC2 times, even as the usage of AMI allows in developing a steady environment for the website. Setting EC2 limits allows in stopping surprising costs, at the same time as CodeCommit allows in coping with and storing the website's code securely. CloudWatch and CloudTrail provide actual-time tracking and detailed logs, respectively, bearing in mind higher visibility into the internet site's infrastructure. The use of AWS Inspector and KMS allows in figuring out and dealing with protection risks and defensive touchy records, respectively. Finally, the usage of general tags guarantees that the internet site's assets are prepared and without problems identifiable, even as CloudFront improves the website's overall performance through caching content material closer to the users. Overall, the implementation of those protection and control equipment enables in enhancing the internet site's reliability, availability, and safety, thereby presenting a unbroken experience to its users.

Future Scope

The implementation of diverse security and control equipment on a website deployed on EC2 has end up a need in today's virtual age. As generation advances, the destiny scope of this undertaking is tremendous and consists of diverse opportunities that could decorate the security and performance of the website's infrastructure. In this segment, we can speak some potential future scope of this mission.

•Machine Learning-Based Security: The use of gadget mastering algorithms to investigate network site visitors and identify capacity protection threats can greatly decorate the website's security. This can be done by means of schooling the gadget learning fashions using ancient data from CloudTrail and CloudWatch logs. This can assist in figuring out patterns that would suggest security dangers and cause alerts to mitigate those dangers.

•Serverless Architecture: Serverless structure is a new trend within the industry that could lessen operational costs and enhance the internet site's scalability. By the use of offerings like AWS Lambda and AWS API Gateway, the website can be hosted with out the want for traditional EC2 instances. This can similarly decorate the security of the website by way of reducing the assault floor.

•Blockchain-Based Security: Blockchain era is gaining reputation within the enterprise, and it can be used to beautify the website's security. By using blockchain technology, the internet site can save its touchy information securely and ensure records integrity by growing an immutable audit trail. This may be performed via the usage of offerings like AWS Managed Blockchain.

•Continuous Monitoring and Compliance: Continuous tracking and compliance is vital for ensuring the website's safety posture. By the usage of services like AWS Config, the website's assets may be continuously monitored for compliance with enterprise requirements and fine practices. This can assist in figuring out potential security dangers and making sure the website's compliance with rules which include HIPAA, GDPR, and PCI-DSS.

•Hybrid Cloud: A hybrid cloud structure can be used to leverage the advantages of both public and personal clouds. By using offerings like AWS Outposts, the internet site's infrastructure may be prolonged to the on-premises statistics middle. This can help in decreasing latency and enhancing the website's overall performance whilst ensuring the safety of sensitive information.

In conclusion, the future scope of the challenge is significant, and the opportunities are infinite. The above-referred to destiny scope can substantially enhance the safety, efficiency, and scalability of the internet site's infrastructure. By staying updated with the contemporary traits and technology, the website can hold to offer a continuing experience to its users while ensuring their data's safety and privateness.

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1.

Comments:

1 . Check your report based on the following comments and Respond appropriately, If any comment is not applicable on you, then respond with proper justification.

Done

2 . No need to add a coding screenshot, just add the screenshot of your front end for explaining the working of your project.

Done .

3 . Add your email ids on the first page. (further communication will be done on your email).

Done .

4 . Mail me (vijaysoni200@gmail.com) your updated final report by the appropriate subject line before 5 pm, 26th April in **Word format** by applying the changes suggested to you. No need to submit a duplicate response by all members of the group. Keep in CC the other member of your group while mailing me.

Done .

5 .Highly plagiarised files are shared in groups. If more than 10 then reduce to below 10.

Kept below 10 .

6. Response to these comments and append the same on the last page of your report with your action taken against these comments.

Doing .

7 . Add citation details, where you have used the references especially in Introduction, Literature review and Research gaps section.

Done .

8 .Add the citation? Reference of each figure with its caption.

Done .

9 . In the abstract, the background knowledge on the problem addressed must be added to some extent.

Done .

10 .In the abstract, the wide range of applications and their possible solutions need to be added in a summarized way.

Done .

11 . In the abstract, the problem addressed needs to be justified with more details.

Done by adding screenshots .

12 . In the Introduction section, the drawbacks of some conventional techniques should be described clearly.

Done .

13 .The introduction section can be extended to add the issues in the context of the current work.

Done . written about that .

14 . The introduction section should contain the research gaps in summarized form.

Done .

15 .The proposed work should be described with the help of a flowchart

Drawn the flowchart .

16 . Kindly provide several references to substantiate the claim made in the abstract (that is, provide references to other groups who do or have done research in this area).

Done .

17 . The conclusion should state the scope for future work.

Written .

18 .Discuss the future plans concerning the research state of progress and its limitations.

Discussed how a website can be fully secured ,

Done .