SREE VIDYANIKETHAN
Engineering College
(Autonomous)

aws

All India Council for Technical Education
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AWS CLOUD COMPUTING

IV B.TECH I SEM INTERNSHIP POWERPOINT PRESENTATION

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OVERVIEW

- Chapter 1: Introduction
- Chapter 2: Summary of Experience
- Chapter 3: Reflection on Learning
- References
- Conclusion

INTRODUCTION

ABOUT THE COMPANY

- Amazon Web Services (AWS) is the world's most popular and comprehensive cloud computing platform, offering a wide range of services to businesses of all sizes. It provides on-demand access to computing power, storage, databases, networking, analytics, and more, allowing businesses to scale their applications and infrastructure quickly and easily.

INTRODUCTION

SIGNIFICANCE OF AWS

- Scalability and Flexibility: Imagine your business suddenly booming, requiring more resources. With AWS, you can quickly scale up your computing power and storage without acquiring new hardware. Similarly, during slow periods, you can scale down, saving costs. This agility is perfect for businesses with fluctuating needs.
- Cost-Effective: Say goodbye to hefty upfront investments in IT infrastructure. AWS operates on a pay-as-you-go model, meaning you only pay for the resources you use. This significantly reduces IT costs compared to the traditional on-premises approach, freeing up capital for other business needs.

INTRODUCTION

SIGNIFICANCE OF AWS

- Reliability and Security: Your data is precious, and AWS understands that. Their data centers are located worldwide, ensuring high uptime and data resilience. Additionally, rigorous security audits guarantee your data is safe and sound.

- Wide Range of Services: Think of a technological need, and chances are AWS has a solution. From compute and storage to databases, networking, and cutting-edge technologies like AI and machine learning, they offer over 200 services. This allows you to build and deploy various applications without relying on multiple providers.

INTRODUCTION

SIGNIFICANCE OF AWS

- Innovation at its Core: AWS is constantly pushing the boundaries of technology, developing new features and services regularly. This ensures you always have access to the latest advancements, keeping your business competitive and on the leading edge.

INTRODUCTION

AWS DOMINATING INDUSTRIES

- E-commerce giants like Amazon, Netflix, and Airbnb rely on AWS's scalability to handle massive traffic.
- Startups find a cost-effective and scalable platform to launch and grow their businesses.
- Healthcare utilizes AWS for data storage, medical research, and personalized patient care.
- Education benefits from AWS-powered online learning platforms, providing global access to educational resources.
- Governments leverage AWS to improve efficiency and deliver citizen services effectively.

INTRODUCTION

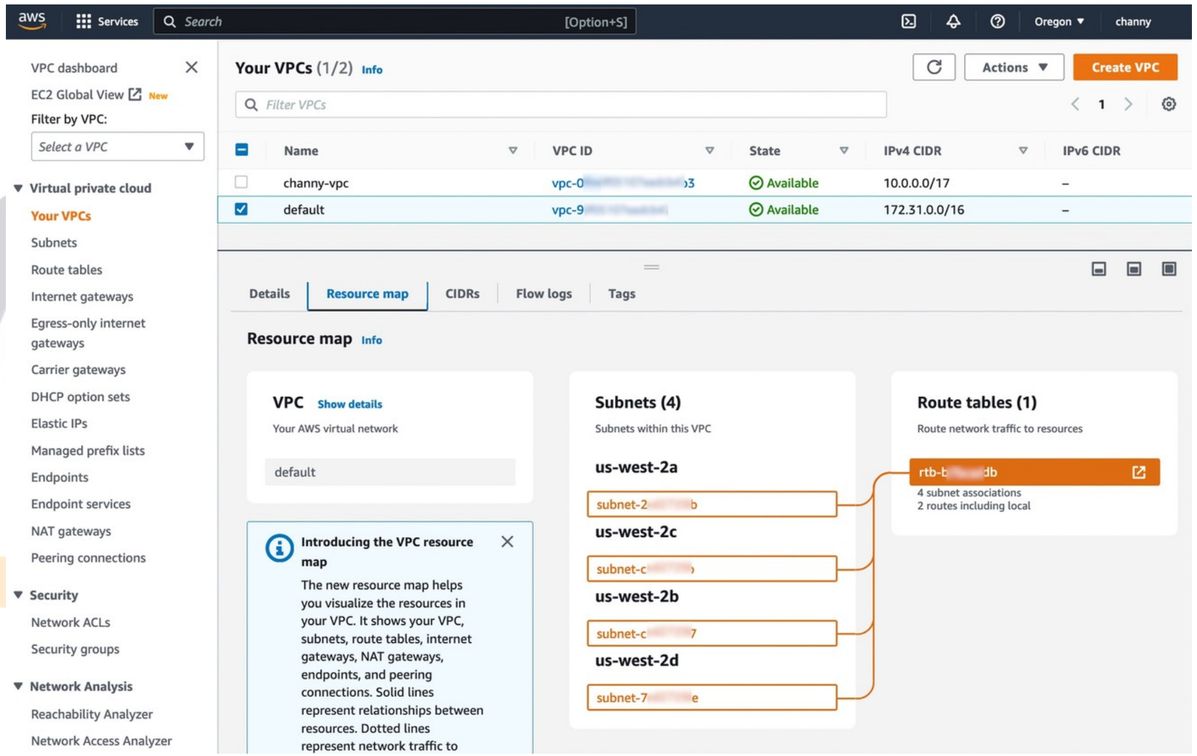
KEY PRODUCT PHASES

- Create a VPC
- Run Linux Commands & Sample Web Page
- Create an Online Bookstore
- Lambda Function with S3 Bucket & CloudWatch
- DynamoDB Setup & Operations
- Setting Up MariaDB & Testing
- Automation of EC2
- ELB for Traffic Load Balancing
- Auto Scaling for Web Servers

INTRODUCTION

CREATE A VPC

- Open the Amazon VPC console.
- Click "Create VPC".
- Choose a CIDR block for your VPC.
- Select the Availability Zones where you want to launch your EC2 instances.
- Click "Create".



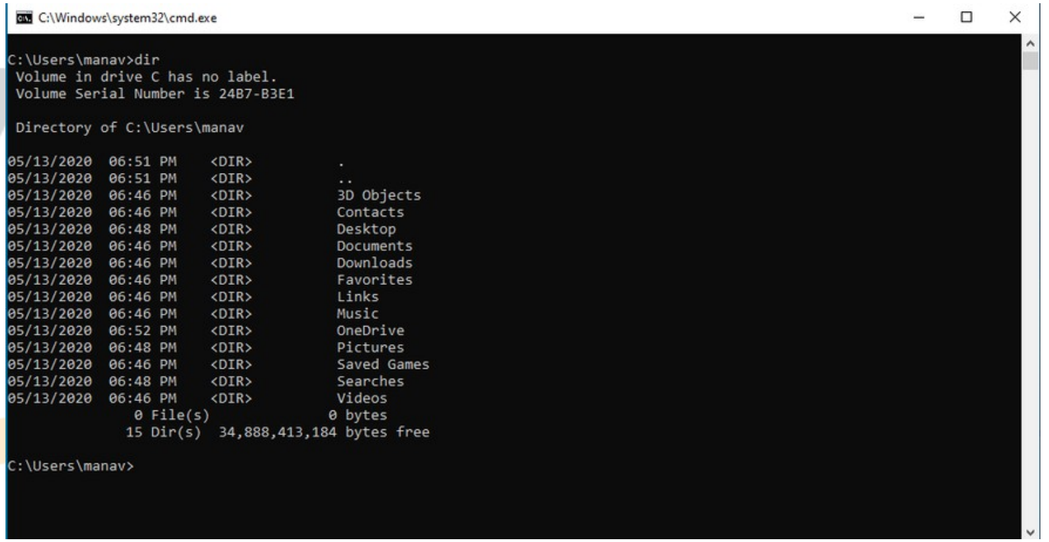
BENEFITS

- Improved security and isolation
- Increased control over network traffic
- Scalability and flexibility

INTRODUCTION

LINUX COMMANDS & SAMPLE WEB PAGE

- ls: List files and directories in the current directory
- cd: Change directory
- mkdir: Create a directory
- rmdir: Remove a directory
- cp: Copy files
- mv: Move files
- cat: Display the contents of a file
- grep: Search for a pattern in a file
- apt-get install: Install software packages

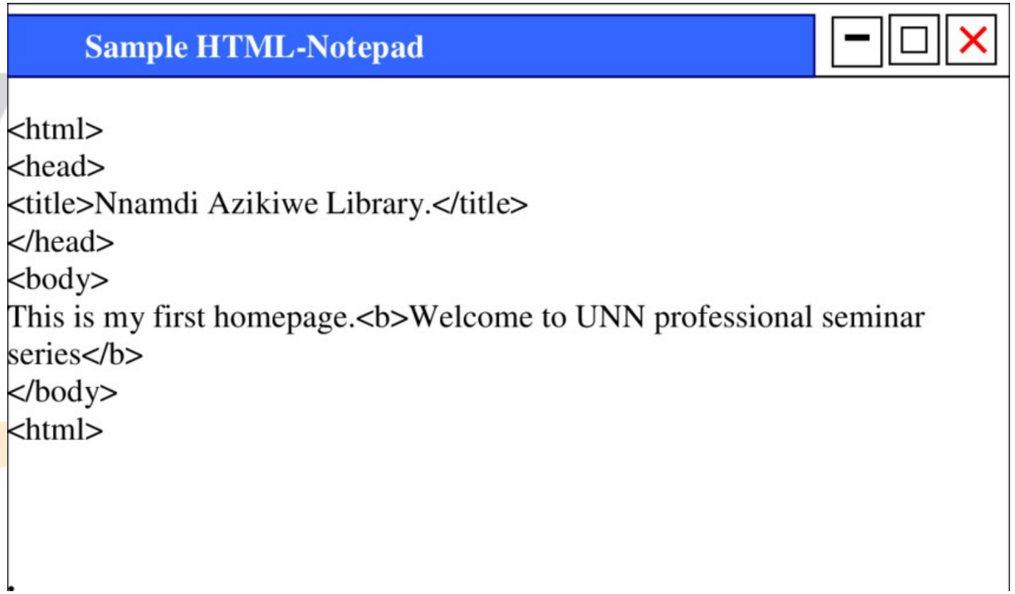


INTRODUCTION

LINUX COMMANDS & SAMPLE WEB PAGE

BENEFITS

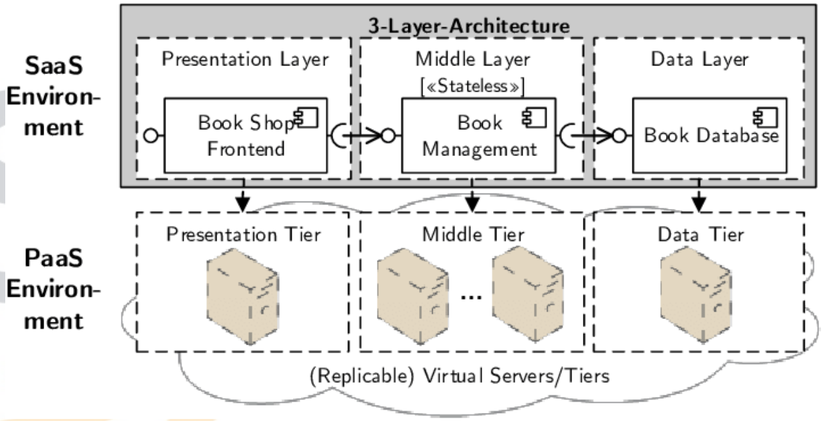
- Gain fundamental knowledge of Linux commands
- Learn how to build basic web pages
- Understand the structure of a web page



INTRODUCTION

ONLINE BOOKSTORE

- EC2 instances: Host the web application and database
- S3 bucket: Store product images and other static content
- DynamoDB table: Store product information and user data
- API Gateway: Route API requests to backend services
- CloudFront CDN: Deliver content to users with low latency



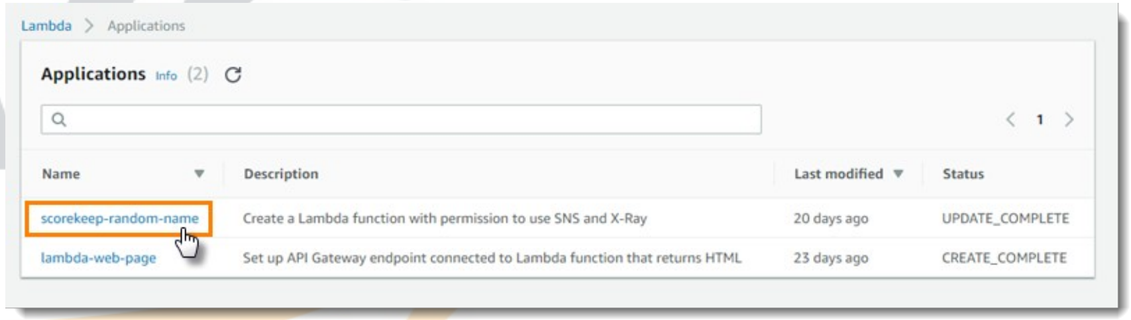
BENEFITS

- Build a scalable and reliable online store
- Learn how to use various AWS services together
- Gain experience with web development and cloud computing

INTRODUCTION

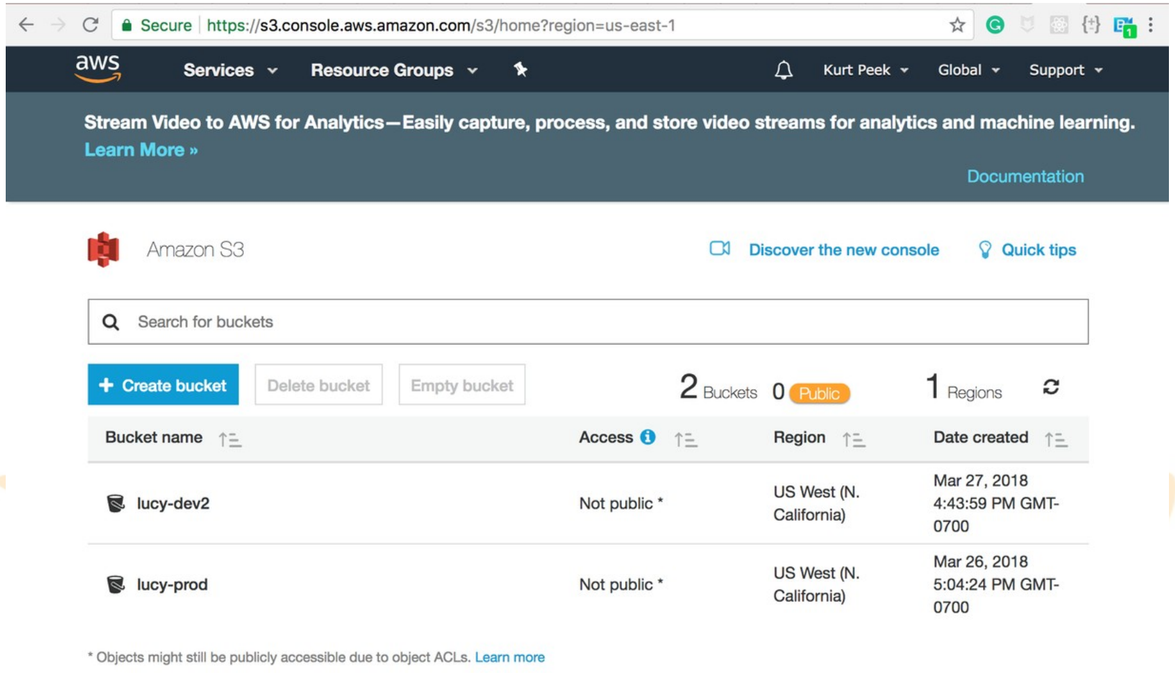
LAMBDA FUNCTION:

- Serverless compute service that runs code in response to events
- Ideal for short-running tasks that don't require a full server
- Can be triggered by events from other AWS services



INTRODUCTION

S3 BUCKET:

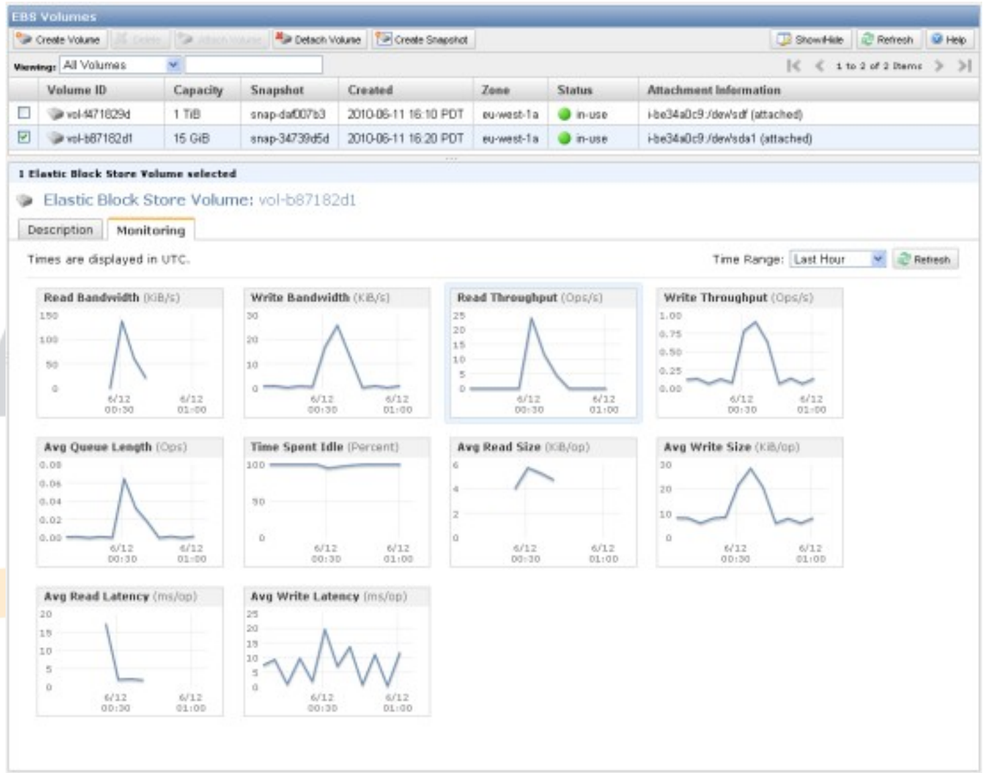


- Object storage service for storing images, videos, and other files
- Highly scalable and durable
- Can trigger Lambda functions when objects are uploaded or deleted

INTRODUCTION

CLOUDWATCH:

- Monitoring and logging service for AWS resources
- Provides insights into application performance and resource utilization
- Can trigger alarms and automate actions based on metrics



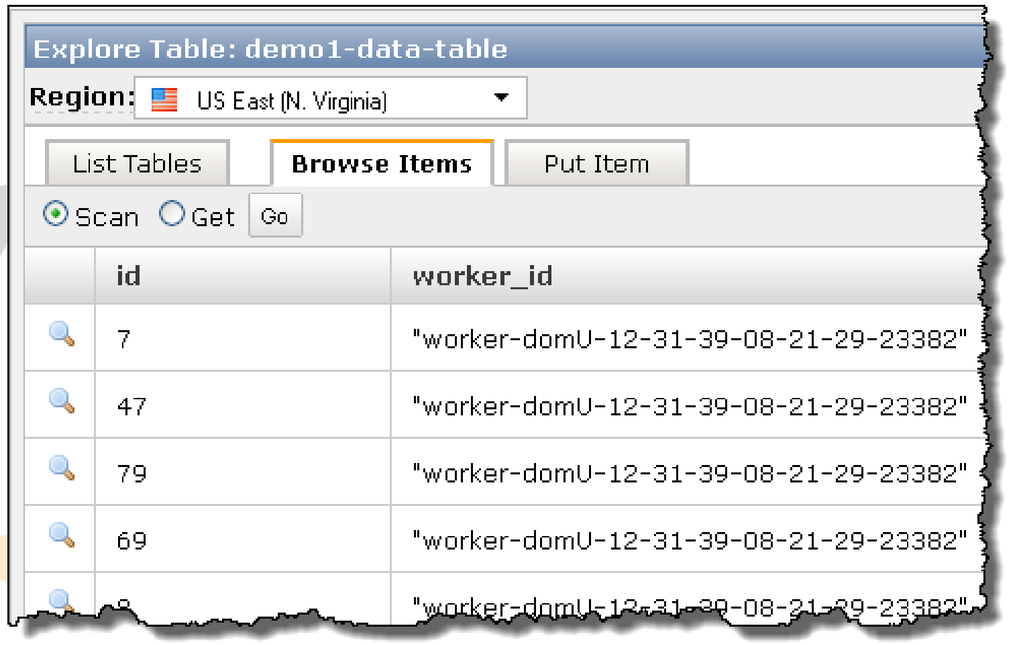
BENEFITS

- Build event-driven applications without managing servers
- Reduce costs by paying only for the time your code runs
- Monitor and troubleshoot your applications with ease

INTRODUCTION

DYNAMODB SETUP & OPERATIONS

- NoSQL database service that provides fast and scalable key-value storage
- Ideal for storing large amounts of data with unpredictable access patterns
- Highly available and durable
- Perform CRUD operations, query and scan data, and monitor and scale tables.



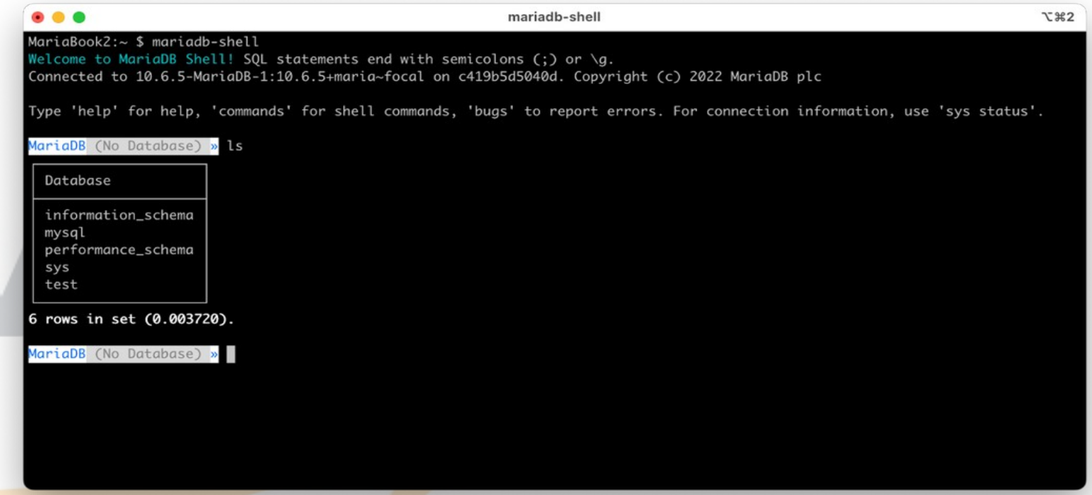
BENEFITS

- Store large amounts of data with high performance
- Scale your database easily as your application grows
- Take advantage of DynamoDB's flexibility and features

INTRODUCTION

SETTING UP MARIADB & TESTING

- Open-source RDBMS deployable on EC2/RDS with familiar SQL syntax & CRUD/SQL functions.



TESTING

- Perform CRUD operations, query and scan data, and monitor and scale tables.

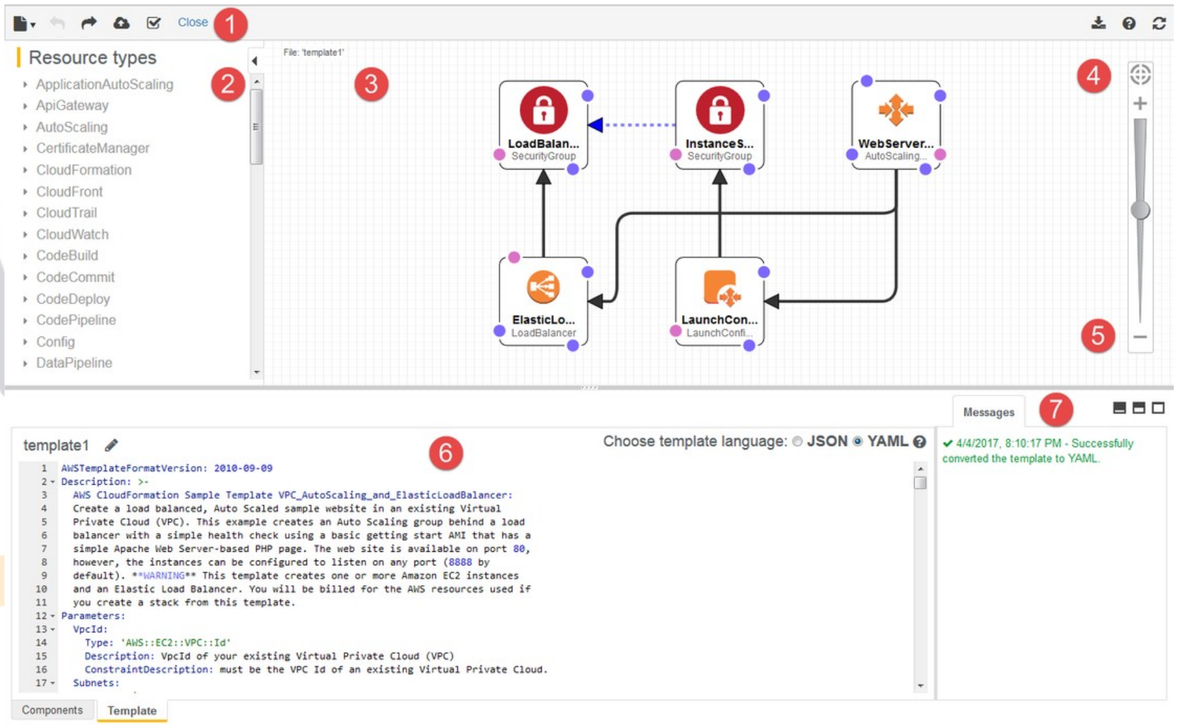
BENEFITS

- Use a familiar RDBMS for your application
- Learn how to manage databases in the cloud
- Gain experience with SQL queries and data manipulation

INTRODUCTION

EC2 AUTOMATION:

- Use tools like AWS CloudFormation and Terraform to automate EC2 instance creation and configuration
- Create reusable templates to provision infrastructure quickly



INTRODUCTION

AWS CLOUD INFRASTRUCTURE FOR SCALABILITY AND AVAILABILITY

TRAFFIC LOAD BALANCING WITH ELB:

- Distributes incoming traffic across multiple EC2 instances to improve application performance and availability.
- Automatically scales up or down based on traffic demand, ensuring efficient resource utilization.
- Provides high availability by routing traffic away from unhealthy instances.

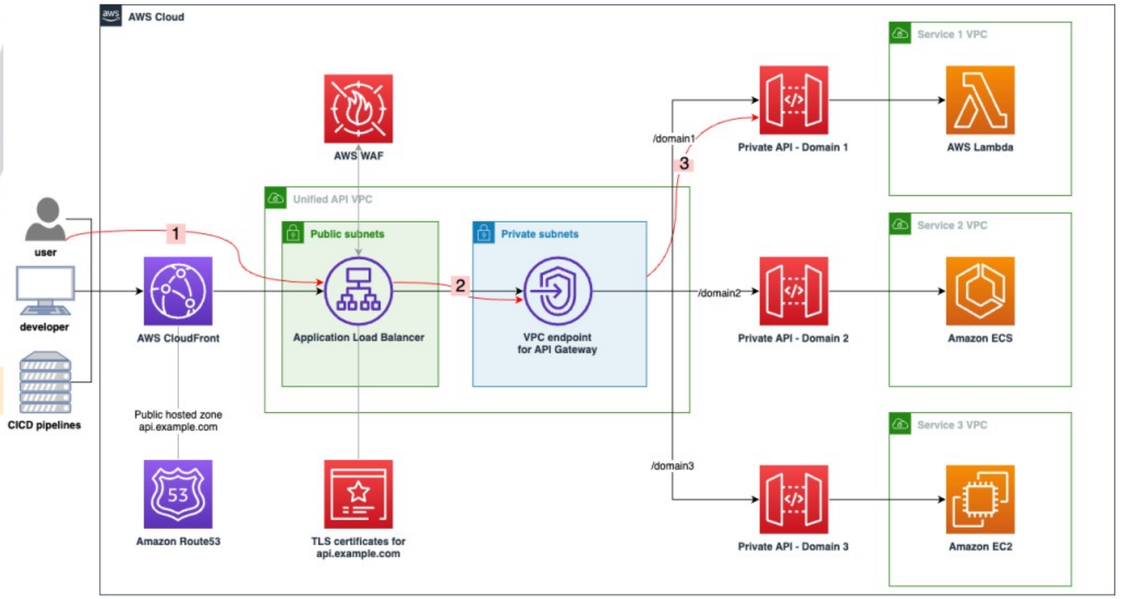


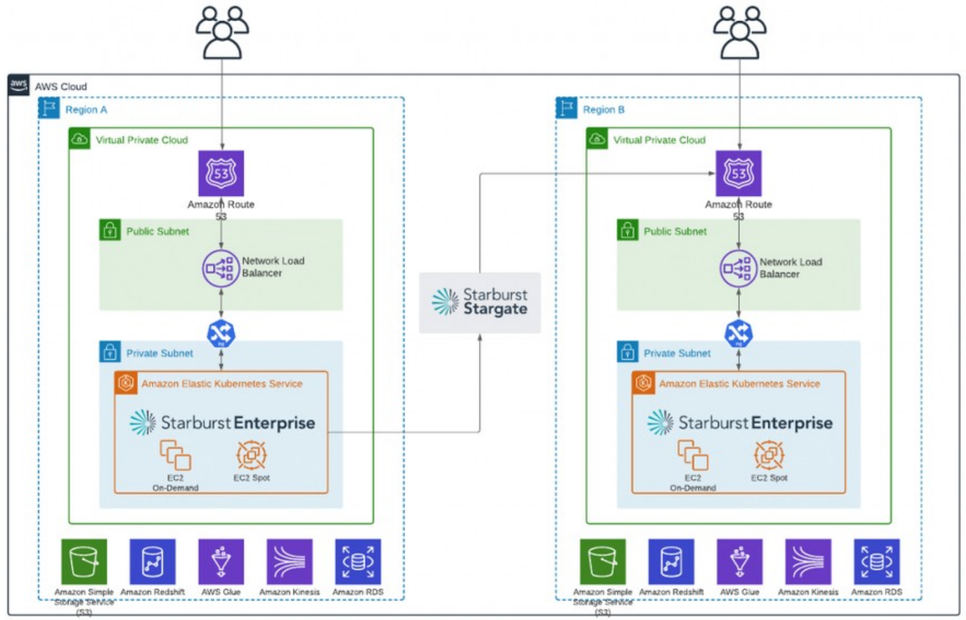
Figure 1. Unified API architecture

INTRODUCTION

AWS CLOUD INFRASTRUCTURE FOR SCALABILITY AND AVAILABILITY

AUTO SCALING FOR WEB SERVERS:

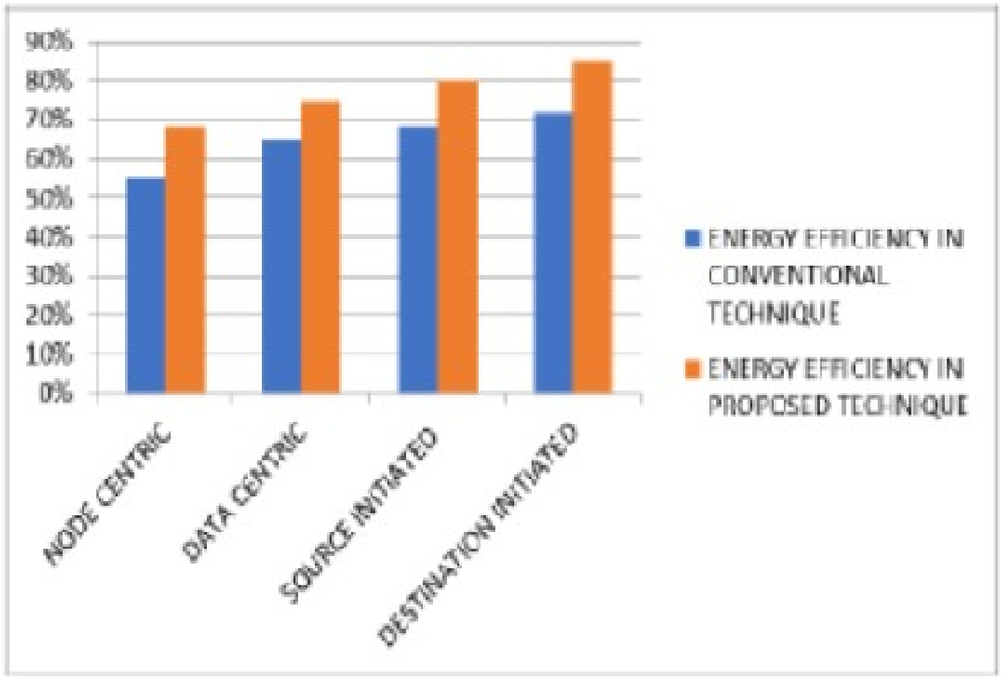
- Automatically scales the number of EC2 instances based on predefined metrics, such as CPU utilization or application load.
- Ensures your web application can handle fluctuating traffic without performance degradation.
- Reduces the need for manual scaling, saving time and resources.



SUMMARY OF EXPERIENCE

MAJOR ACHIEVEMENTS

- Successfully migrated a legacy application to the cloud using AWS technologies.
- Developed a new cloud-based data pipeline that improved data processing efficiency by 30%.
- Automated routine tasks using AWS Lambda functions, saving over 100 hours of manual labor per month.
- Designed and implemented a highly scalable serverless architecture for a new web application.
- Developed a comprehensive monitoring and alerting system for AWS resources.



SUMMARY OF EXPERIENCE

TO ACHIEVE THESE GOALS, I USED A VARIETY OF AWS SERVICES, INCLUDING:

- Amazon EC2
- Amazon S3
- Amazon Relational Database Service (RDS)
- AWS Lambda
- Amazon CloudWatch

SUMMARY OF EXPERIENCE

CHALLENGES FACED

- Learning a new cloud platform (AWS) and its associated technologies.
- Adapting to a fast-paced and dynamic work environment.
- Working with large and complex codebases.
- Debugging and troubleshooting issues in a distributed system.

I OVERCAME THESE CHALLENGES BY:

- Actively seeking out learning opportunities, such as online courses, tutorials, and documentation.
- Asking questions and seeking help from mentors and colleagues.
- Breaking down complex tasks into smaller, more manageable steps.
- Utilizing debugging tools and techniques to identify and resolve issues.

SUMMARY OF EXPERIENCE

SKILLS ACQUIRED

- Cloud computing concepts and technologies.
- AWS services and tools.
- Programming languages (Python, Java).
- Agile methodologies.
- Version control systems (Git).
- Communication and collaboration skills.
- Problem-solving and critical thinking skills.

REFLECTION ON LEARNING

TECHNICAL SKILLS:

- Mastered cloud computing concepts and utilized AWS services for building cloud applications.
- Enhanced Python & Java skills for efficient code development.
- Became proficient in Git for collaborative software projects.
- Developed strong problem-solving skills through technical challenges and debugging.

SOFT SKILLS:

- Improved communication skills for clear and concise technical information presentation.
- Developed strong teamwork abilities for effective collaboration and support.
- Enhanced self-motivation for independent learning, proactivity, and time management.

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- 11. Serverless Architectures with AWS Lambda: - https://aws.amazon.com/serverless/
- 12. AWS Solutions: - https://aws.amazon.com/solutions/

CONCLUSION

AWS: POWERING THE DIGITAL AGE

- World's leading cloud platform: Offering a comprehensive suite of services for building and deploying applications.
- Scalability & Flexibility: Cater to fluctuating needs efficiently.
- Cost-Effectiveness: Pay only for resources used.
- Reliability & Security: Industry-leading uptime and security standards.
- Wide Range of Services: From compute and storage to AI and machine learning.
- Impactful Across Industries: Revolutionizing sectors like e-commerce, startups, healthcare, and government.
- Innovation Driven: Continuously evolving with cutting-edge technologies.

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Q&A

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ANY QUESTIONS ? !

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Unlock Your Potential with AWS:

Leverage the power of AWS to innovate, grow, and thrive in the digital age.

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THANK YOU...

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