

Lex Course Link: [TOC - AWS Authentication, Automation and Integration Services | Lex \(infosysapps.com\)](https://infosysapps.com/TOC-AWS-Authentication-Automation-and-Integration-Services)

Objective Day-1

Authentication

Automation

Authentication – who / user id / password -- MFA

Authorization – what they can access// authorized.

→ Enable security and manage identities.

AWS IAM (Identity and Access Management)

- Fine grained access – specific permissions / from what IP // what duration
- Multifactor Authentication (MFA) – more secure // 2 layer authentication
- Analyze access.
- Corporate AD Integration
- Centrally manage users.
- Easily integrated.
- Share credentials – not required.
- Free to use –you have to pay for creating resources (RDS/EC2)
- Global Service

Accessing IAM

Account owner can access.

- AWS management console – user id // password // MFA required if enabled.



Sign in as IAM user

Account ID (12 digits) or account alias

IAM user name

Password

☒ Remember this account

Sign in

[Sign in using root user email](#)

[Forgot password?](#)



- ➔ AWS CLI commands – access key id & secret access key
- ➔ AWS SDK - access key id & secret access key

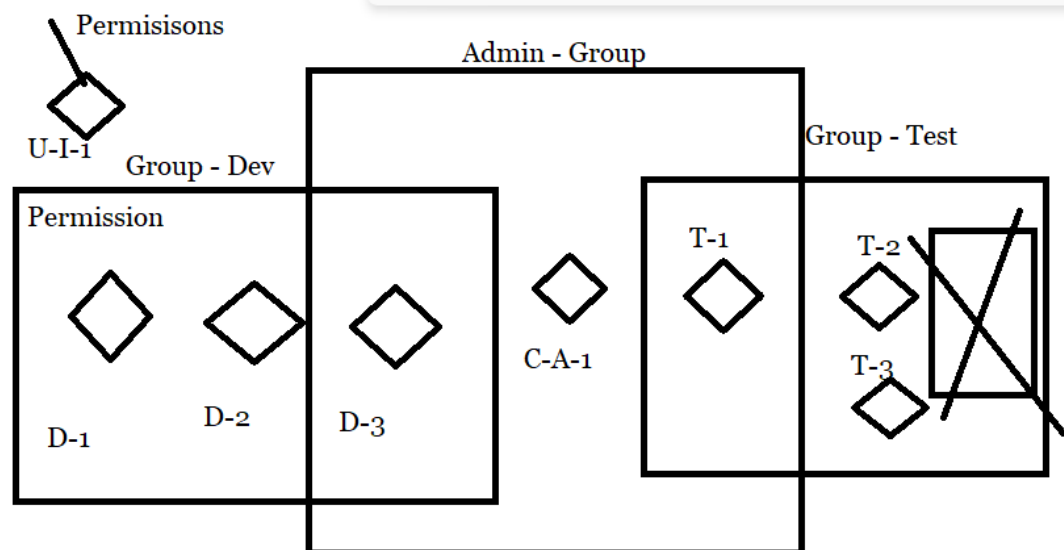
IAM Resources

A. IAM User

- Manage individual user.
- User id // password // MFA
- Programmatically – access key id // secret access key
- By default – **No permission // Nothing**

B. IAM Group

- Manage group of users and permissions at group level
- Group of similar users
- A user can be part of multiple groups
- A group cannot have another group



IAM Policy

- ➔ Define Permissions // create and manage permissions.
- ➔ Written in JSON format.

Action – what can be performed.

Resources – AWS resources on which you want to perform the action like S3/DynamoDB/EC2/RDS

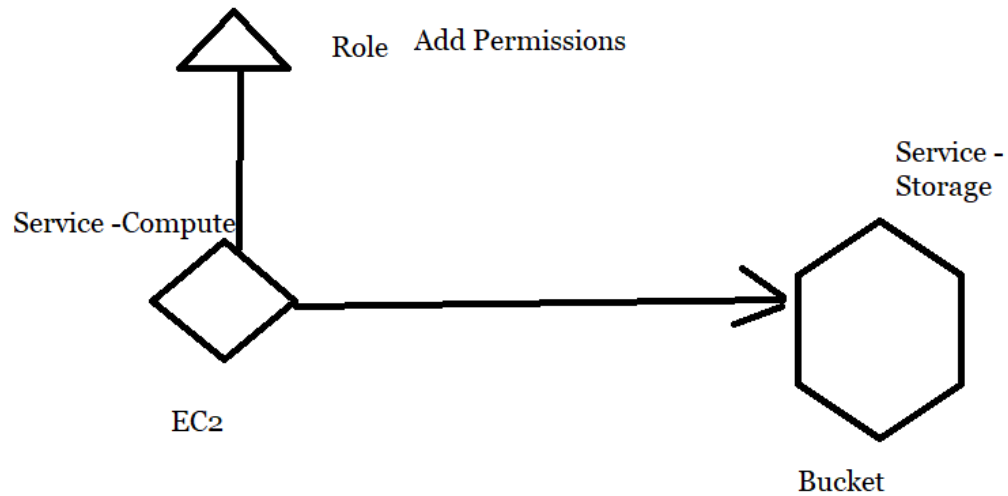
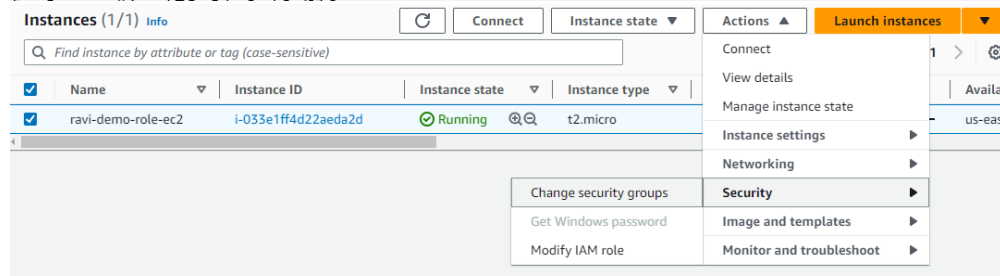
Effect – Allow // Deny

IAM Role

- ➔ Manage permissions.
- ➔ To communicate between AWS services

```
[ec2-user@ip-172-31-6-16 ~]$ aws s3 ls
```

Unable to locate credentials. You can configure credentials by running "aws configure".



Demo - [Labguide on IAM - Viewer Page](#) | [Lex \(infosysapps.com\)](#)

Automation

- ➔ Deployment
- ➔ Infrastructure Provisioning
- ➔ Configuration Management
- ➔ Reduce Manual Efforts
- ➔ Reduce Manual Errors
- ➔ Ensure Uniformity

AWS Elastic Beanstalk

- ➔ Platform as a service
- ➔ Server Upgrades // Maintenance
- ➔ Deploy your web apps
- ➔ Different Version of your applications
- ➔ Autoscaling // Load Balancing

Deployment Policies

Rolling Deployment

Rolling with Additional Batch

All at Once – Down Time

Immutable – New Auto Scaling

Blue/Green Deployment

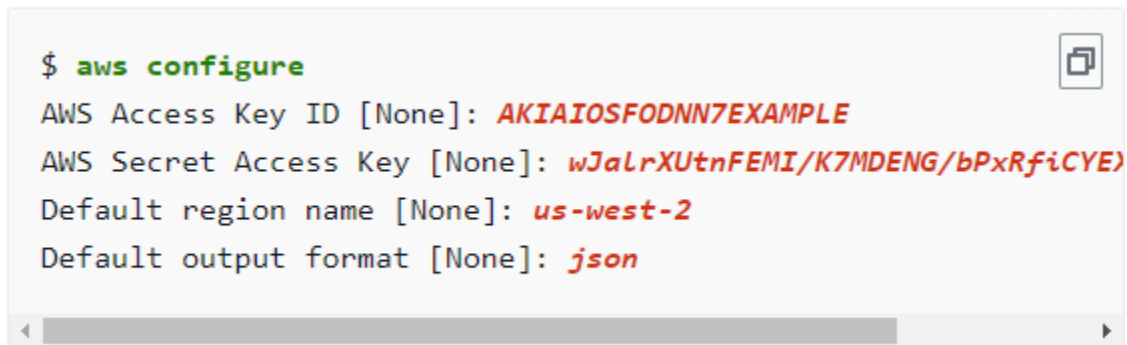
Environment (Old Version) → Clone this environment → Update New Version → Swap the url

Demo - [Labguide on Elastic Beanstalk - Viewer Page | Lex \(infosysapps.com\)](#)

AWS CLI (Command Line Interface)

- CLI used to automate the resources.
- Can install on Windows/Mac/Linux
- Easy to install.
- Local Machine / Laptop/System → AWS Resources
- Support AWS Services

Download – Software Center (AWS CLI v2)
aws configure



```
$ aws configure
AWS Access Key ID [None]: AKIAIOSFODNN7EXAMPLE
AWS Secret Access Key [None]: wJaLrXUtnFEMI/K7MDENG/bPxRfiCYE
Default region name [None]: us-west-2
Default output format [None]: json
```

SDK - PyCharm – Boto3

AWS CloudFormation

- Infrastructure as a Code (IAC)
- Template
- JSON / YAML
- Single Truth
- Simple English Language – EC2, RDS, SG, AS, ELB
- Dependencies
- Stack – set of Resources
- Designer – Drag & Drop
- Reusability

Demo - [Labguide on Cloud Formation - Viewer Page | Lex \(infosysapps.com\)](#)

CI/CD Tools

Code Commit – Fully Managed, Source Control Service, Multiple Versions (git repository), Secure

Code Build – Compiling and running test cases, produce s/w package to deploy on target machine, Full managed

Code Deploy – Helps and deploy the code to target (ec2 etc.), Maximize performance, if error it will be rollback

Code Pipeline – Release pipeline, Help in rapid delivery, Improve quality

Developing on AWS - Authentication Integration Services and Automation

Day – 2 Lex Course -

https://lex.infosysapps.com/en/app/toc/lex_auth_012653363658407936389/overview

Recap - AWS IAM – Identity and Access Management Resources under

IAM – 1. Users. 2. Groups. 3. Policies (Permissions) - AWS Managed Policies and Customer Managed Policies 4. IAM Roles (Service Roles)

Types of Users – 1. Root User. 2. IAM User. 3. Federated Users -> AWS SSO Mobile and Web Application authentication management – AWS Cognito.

AWS CLI and SDKs (Programmatic Access) – Access and Secret Access Keys. For Root users – Access Keys and Secret Access Keys should not be created.

AWSCLI has to be installed on the system. External AWS Link - <https://aws.amazon.com/cli/>
Infosys S/W house - <http://sparshev2/portals/CCD/Downloads/Pages/Downloads.aspx>

Credentials have to be configured – CLI Command syntax– aws To configure To configure credentials command – aws configure

To interact with services via a Programming Language – AWS SDKs.

<https://aws.amazon.com/tools/> Configure the appropriate SDK based on the Programming Language of choice.

Few Use case – • Creating Multiple IAM Users via the CLI using a bash or shell script.

• A Bash or shell script to terminate all stopped instances in a region. To interact with services via a Programming Language – AWS SDKs. <https://aws.amazon.com/tools/> Configure the appropriate SDK based on the Programming Language of choice. AWS Cloud Formation – Terraform / Ansible Automate Infrastructure by creating Templates. (JSON or YAML) Template Format written in JSON or YAML. High Level Template Structure –

• Description. • Parameters. • Resources. • Outputs. • AWS Template Format Version.

Example – Create a t2.micro instance, with Amazon Linux AMI, region Parameters - Way to provide inputs to AWS CF Template Settings of Parameter – 1. Type 1. String. 2. Number. 3. List. 4. AWS Parameter. 2. Description. 3. Constraints. 4. ConstraintDescription. 5. Min/Max Length 6. Default etc.,

Sample CloudFormation Templates -

<https://aws.amazon.com/cloudformation/resources/templates/> AWS Quick Start -

<https://aws.amazon.com/quickstart/> AWS ElasticBeanstalk – Platform as a Service, Compute Service.

Requirement – You need an EC2 with Python and Apache installed, with a AutoScaling Group and Load Balancer.

Integration/Messaging Services –

1. SQS – Simple Queue Service – Queue Model (Producers and Consumers)

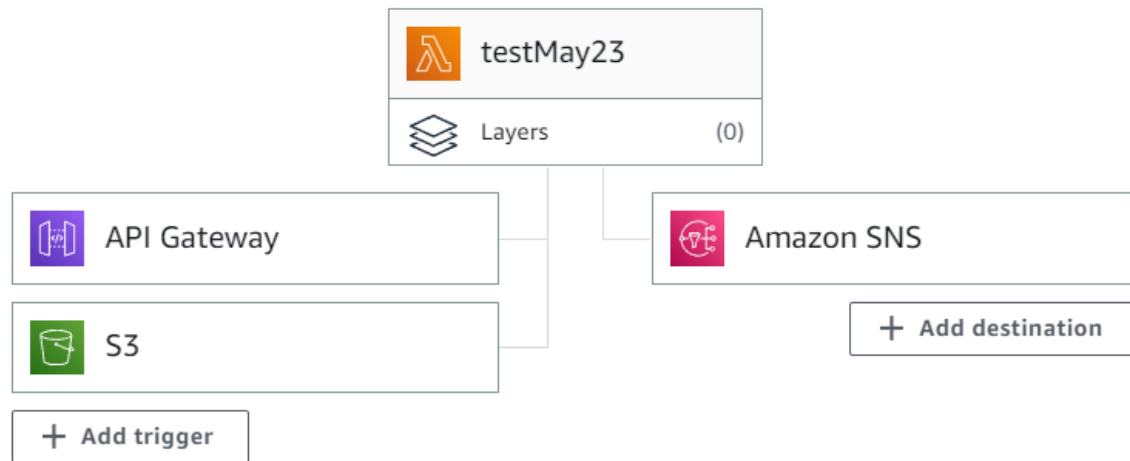
2. SNS – Simple Notification Service – Pub/Sub model (Publisher and Subscriber) 2 patterns of application communication – 1. Synchronous Communication. – Application communicate directly with each other. – tightly coupled 2. Asynchronous Communication. – Application don't communicate directly with each other. – loosely coupled.

SQS – 1. Fully managed AWS service. 2. Scale from 1 message/sec to 10000 messages/sec. 3. No Limit to the number of messages you can store in the queue.

Synchronous and Asynchronous communication – SQS Service – CloudFormation : template and stacks -> Identity Federation in AWS IAM : SSO and Gsuite (AWS Org - created)

LWA : Try out <https://developer.amazon.com/docs/login-with-amazon/web-docs.html>

▼ Function overview [Info](#)



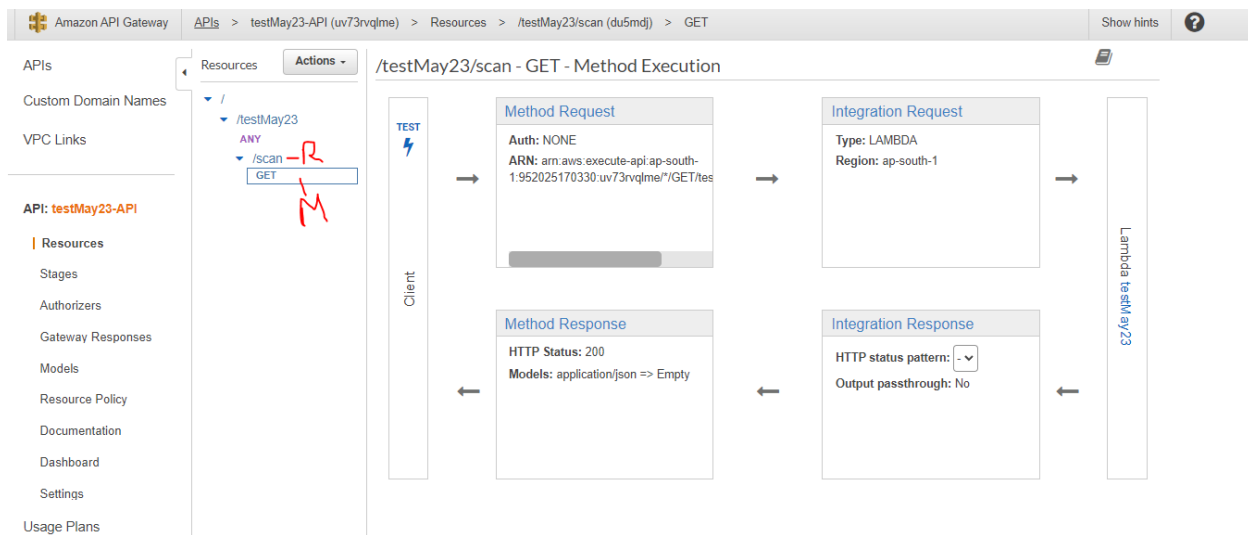
S3 → Object store : upload an object can trigger my Lambda

API → front end (**GET**, POST/PUT)

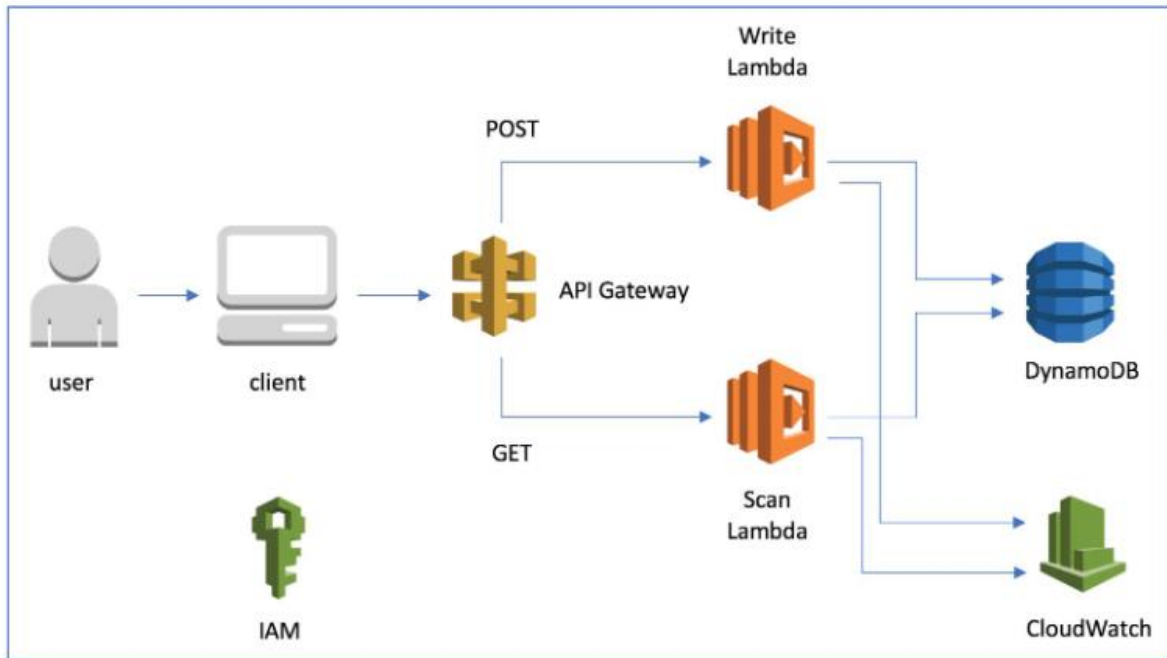
Lambda → FAAS : code

SNS → notification to endpoint (topics – 2 subscribers)

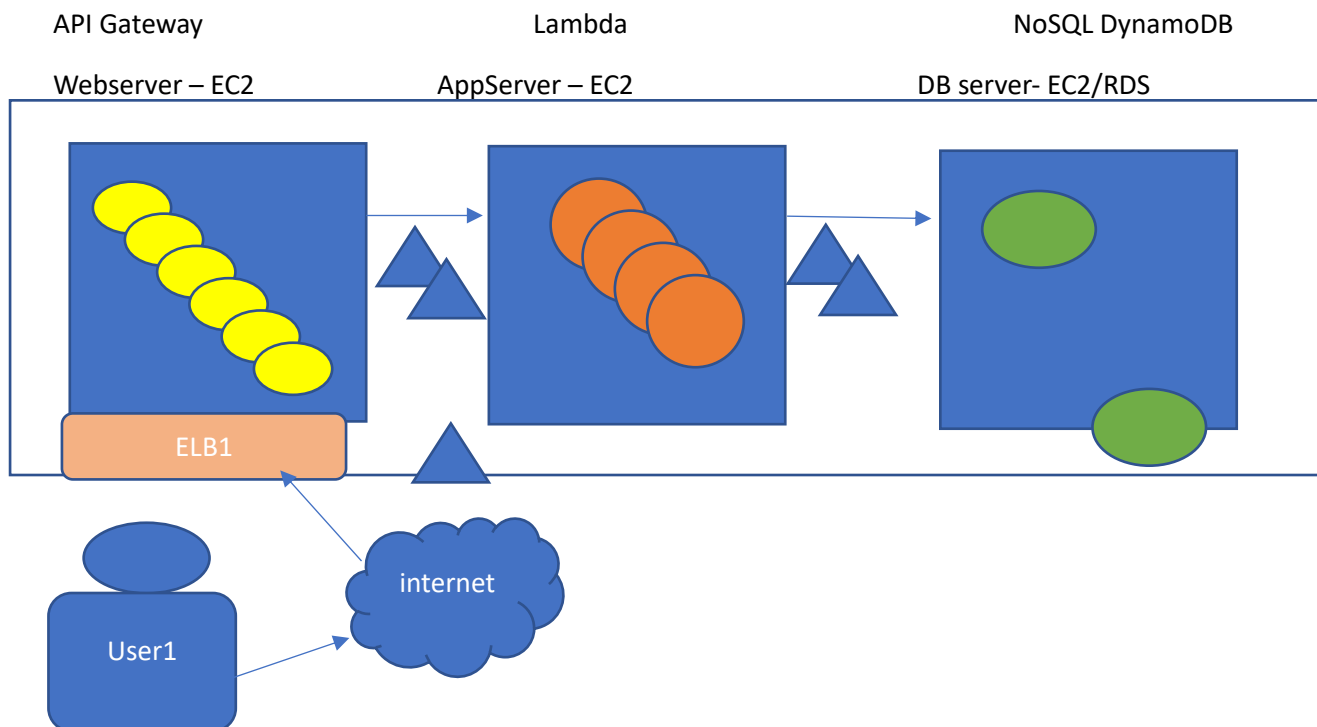
Deploy an API :



Scenario: Architecture with API Gateway-Lambda-DynamoDB serverless app integration



DynamoDB : No SQL – non relational (key:value) datastore



Quiz -> Assessment --> Practice exams --> Internal cert -> Request voucher --> External cert

Refer Full Stack Programs in LEX

1. Full Stack AWS Cloud Practitioner

https://lex.infosysapps.com/en/app/toc/lex_auth_013119023978512384446/overview

External Certi: <https://aws.amazon.com/certification/>

2. Full stack AWS Developer Associate

https://lex.infosysapps.com/en/app/toc/lex_auth_0130837738017341449408/overview

3. Full Stack AWS Solution Architect Associate

https://lex.infosysapps.com/en/app/toc/lex_auth_013098486603939840210/overview

4. Full Stack AWS Systems Operations Associate

https://lex.infosysapps.com/en/app/toc/lex_auth_013098709269618688299/overview

Additional Try out: 10min tutorials https://aws.amazon.com/getting-started/hands-on/?getting-started-all.q=SQS&getting-startedall.q_operator=AND

Take up assessment on Developing on AWS –

Authentication Integration Services and Automation - Final Assessment

https://lex.infosysapps.com/web/en/viewer/iap/lex_auth_012673255052697600554?collectionId=lex_auth_012653363658407936389&collectionType=Course

In case of any queries, please mail us. Wish you a Happy Learning!

Other Important Links:

AWS APN : <https://partnercentral.awsapartner.com/APNSelfRegister> (register with infy emailid)

Free AWS Voucher: <http://modernization/CobaltEnablement/GetVoucher> (use infy vpn)

AWS certathon – win goodies : <http://modernization/aws-cert-a-thon-3>

AWS Certification workflow: <https://aws.amazon.com/certification/>