

CLOUD COMPUTING

Building Decoupled Applications by Using Amazon SQS

Task 1: Installing the Image Processing Application

1.1 Logging in to AWS Cloud9 IDE

- You access the Cloud9 IDE using a provided URL and disable temporary AWS credentials to allow usage of IAM roles.

1.2 Downloading Files and Installing the App

- Download the source code (code.zip), unzip it, and install required Node.js modules for the **web server** and **application server** using npm install.

1.3 Configuring Security Group and IAM Role

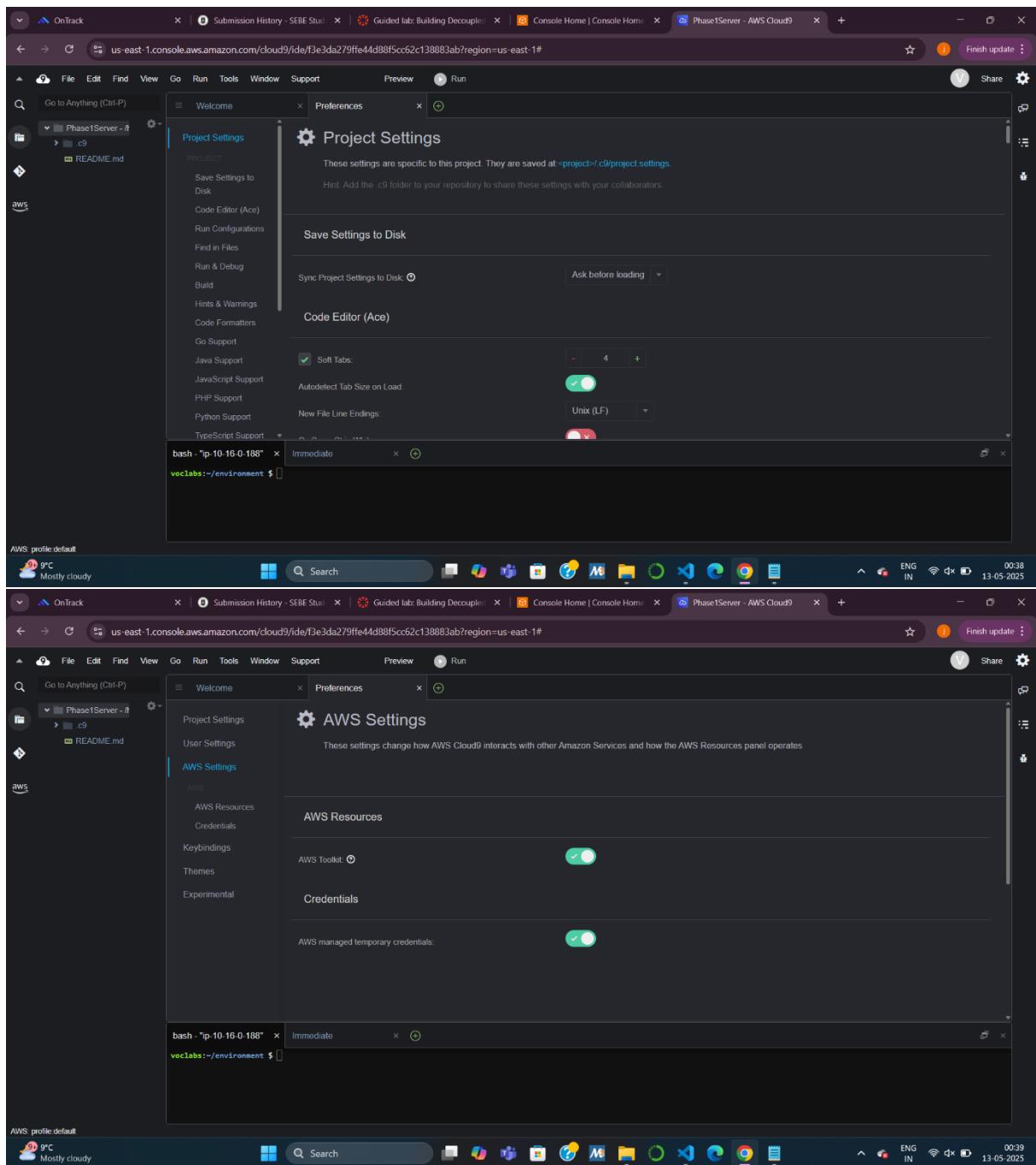
- **Security Group:** Opens ports 8000–8100 for traffic.
- **IAM Role:** Assigns a role with necessary AWS permissions to EC2 instances Phase1Server and Phase2Server.

1.4 Configuring S3 Bucket Permissions

- **Unblock public access** to the S3 bucket and set a **bucket policy** to allow access only from your local IP.

1.5 Configuring and Starting the App

- You edit three config files:
 - **Browser** (config.js)
 - **Web server** (libs/config.js)
 - **App server** (libs/config.js)
- Replace placeholders with actual values like public IP and bucket name.
- Start both servers (npm start) on ports **8008** (web) and **8009** (app).



The screenshot shows the AWS Cloud9 IDE interface. The top navigation bar includes tabs for 'OnTrack', 'Submission History - SERE Studio', 'Console Home | Console Home', and 'Phase1Server - AWS Cloud9'. The main workspace displays a terminal window with the command 'npm -i p 10.16.0-188' and its output. The output shows the extraction of various files from node modules, including 'phase_1/web_server_1/libz/dynamic_helper.js', 'phase_1/web_server_1/libz/config.js', and 'phase_1/web_server_1/libz/mw.js'. It also shows the creation of a 'node_modules' directory and the installation of packages. A warning about the deprecation of 'querystring@0.2.0' is present. The terminal concludes with 'added 97 packages, and audited 98 packages in 5s'. Below the terminal is an 'Immediate (Javascript)' REPL window with the message: 'Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in a browser based javascript environment (iframe). It operates similar to your browser console.' The bottom status bar shows the AWS profile as 'default', the weather as '9°C Mostly cloudy', and the system date and time as '13-05-2025'.

```
npm -i p 10.16.0-188
extracting: phase_1/web_server_1/libz/dynamic_helper.js
extracting: phase_1/web_server_1/libz/config.js
extracting: phase_1/web_server_1/libz/mw.js
extracting: phase_1/web_server_1/views/main_page.mustache
extracting: phase_1/app_server_1/package.json
extracting: phase_1/app_server_1/package-lock.json
extracting: phase_1/app_server_1/yarn.lock
extracting: phase_1/app_server_1/index.js
extracting: phase_1/app_server_1/libz/dynamic_helper.js
extracting: phase_1/app_server_1/libz/config.js
extracting: phase_1/app_server_1/libz/mw.js
veclabs:/environment $ cd phase_1/web_server_1/
veclabs:/environment/phase_1/web_server_1 $ npm install
npm warn deprecated querystring@0.2.0: The querystring API is considered legacy. new code should use the URLSearchParams API instead.

added 97 packages, and audited 98 packages in 5s

19 packages are looking for funding
  run 'npm fund' for details

8 vulnerabilities (3 low, 1 moderate, 4 high)

To address all issues, run:
  npm audit fix

Run 'npm audit' for details.
veclabs:/environment/phase_1/web_server_1 $
```

Immediate (Javascript) (br x)

```
Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in a browser based javascript environment (iframe). It operates similar to your browser console.
```

The screenshot shows two browser windows side-by-side.

Top Window (AWS Cloud9):

- Address bar: us-east-1.console.aws.amazon.com/cloud9/ide/f3e3da279ffe44d88f5cc62c138883ab?region=us-east-1#
- File menu: File, Edit, Find, View, Go, Run, Tools, Window, Support, Preview, Run.
- Search bar: Go to Anything (Ctrl+P).
- File tree:
 - Phase1Server - #
 - phase_1
 - phase_2
 - code.zip
 - README.md
- Code editor:

```
bash - "ip-10-16-0-180"  x  npm - "ip-10-16-0-188"  x
voclabs:/environment/phase_1/app_server_1$ 
voclabs:/environment/phase_1/app_server_1$ npm install
npm warn deprecated queryString@0.2.0: The queryString API is considered Legacy. new code should use the URLSearchParams API instead.

added 144 packages, and audited 145 packages in 5s

26 packages are looking for funding
  run `npm fund` for details

9 vulnerabilities (3 low, 1 moderate, 5 high)

To address all issues, run:
  npm audit fix

Run `npm audit` for details.
voclabs:/environment/phase_1/app_server_1$
```
- Terminal: Immediate Javascript (br x)
- Information: Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in a browser based javascript environment (iframe). It operates similar to your browser console.
- Bottom status bar: AWS profile: default, 9°C Mostly cloudy, ENG IN, 00:48, 13-05-2025.

Bottom Window (AWS EC2 Instances):

- Address bar: us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Instances:instanceState=running
- File menu: Search, Alt+S.
- Instances tab: Instances (1/2) Info, Last updated less than a minute ago, Connect, Instance state, Actions, Launch instances.
- Filter: Instance state = running, Clear filters.
- Table:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
aws-cloud9-P...	i-0cf59e3a1efde244a	Running	t2.small	2/2 checks passed	View alarms +	us-east-1b	ec2-3-80-
8883ab	i-08c7697de6bf0c231	Running	t2.small	2/2 checks passed	View alarms +	us-east-1b	ec2-44-21-
- Instance details for i-08c7697de6bf0c231:
 - Details tab selected.
 - Instance summary:
 - Instance ID: i-08c7697de6bf0c231
 - Public IPv4 address: 44.205.17.224 | open address
 - Private IPv4 addresses: 10.16.0.188
 - Public IPv4 DNS: ec2-44-205-17-224.compute-1.amazonaws.com | open address
- Bottom status bar: © 2025, Amazon Web Services, Inc. or its affiliates., Privacy, Terms, Cookie preferences, ENG IN, 00:50, 13-05-2025.

Screenshot of the AWS Cloud9 interface showing the EC2 Security Groups page.

EC2 > Security Groups > sg-065a43cf642568dd - aws-cloud9-Phase1Server-f3e3da279ffe44d88f5cc62c138883ab-InstanceSecurityGroup-JYYkXp2sueLe

Details

Security group name	Security group ID	Description
aws-cloud9-Phase1Server-f3e3da279ffe44d88f5cc62c138883ab-InstanceSecurityGroup-JYYkXp2sueLe	sg-065a43cf642568dd	Security group for AWS Cloud9 environment aws-cloud9-Phase1Server-f3e3da279ffe44d88f5cc62c138883ab
Owner	Inbound rules count	Outbound rules count
139985211991	2 Permission entries	1 Permission entry

Inbound rules (2)

Name	Security group rule ID	IP version	Type	Protocol	Port range
-	sgr-085f7423016bfa12d	IPv4	SSH	TCP	22
-	sgr-09a5e2ab51394e910	IPv4	SSH	TCP	22

Edit inbound rules

Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules

Security group rule ID	Type	Protocol	Port range	Source	Description - optional
sgr-085f7423016bfa12d	SSH	TCP	22	Custom	35.172.155.96/27
sgr-09a5e2ab51394e910	SSH	TCP	22	Custom	35.172.155.192/27
-	Custom TCP	TCP	8000 - 8100	Anyw...	0.0.0.0/0

Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Buttons: Cancel, Preview changes, Save rules

The screenshot shows the 'Modify IAM role' page for an EC2 instance. The instance ID is i-08c7697de6bf0c231. A warning message at the bottom states: '⚠ If you choose No IAM Role, any IAM role that is currently attached to the instance will be removed. Are you sure you want to remove from the selected instance?' Buttons for 'Cancel' and 'Update IAM role' are visible.

Instance ID: i-08c7697de6bf0c231 (aws-cloud9-Phase1Server-f3e3da279ffe44d88f5cc62c138883ab)

IAM role

Select an IAM role to attach to your instance or create a new role if you haven't created any. The role you select replaces any roles that are currently attached to your instance.

Choose IAM role Create new IAM role

⚠ If you choose No IAM Role, any IAM role that is currently attached to the instance will be removed. Are you sure you want to remove from the selected instance?

Cancel Update IAM role



OnTrack Submission History - SEBE Stud Modify IAM role | EC2 | us-east Phase1Server - AWS Cloud9

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#ModifyIAMRole:instanceId=i-08c7697de6bf0c231

aws Search [Alt+S] United States (N. Virginia) voclabs/user3904332=s224001588@deakin.edu.au @ 1399-8521-1991

EC2 Instances i-08c7697de6bf0c231 Modify IAM role

Modify IAM role Info

Attach an IAM role to your instance.

Instance ID
i-08c7697de6bf0c231 (aws-cloud9-Phase1Server-f3e3da279ffe44d88f5cc62c138883ab)

IAM role
Select an IAM role to attach to your instance or create a new role if you haven't created any. The role you select replaces any roles that are currently attached to your instance.

c144539a373693310271517t1w139985211991-Ec2InstanceProfile-k36pz1eoPGEz

Cancel Update IAM role

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OnTrack Submission History - SEBE Stud Instances | EC2 | us-east-1 Phase1Server - AWS Cloud9

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Instances:

aws Search [Alt+S] United States (N. Virginia) voclabs/user3904332=s224001588@deakin.edu.au @ 1399-8521-1991

EC2 Instances

Instances (1/2) Info Last updated less than a minute ago

Find Instance by attribute or tag (case-sensitive) All states

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
i-0cf59e3a1efde244a	i-0cf59e3a1efde244a	Running	t2.small	2/2 checks passed	View alarms +	us-east-1b	ec2-3-80-
aws-cloud9-P...	i-08c7697de6bf0c231	Running	t2.small	2/2 checks passed	View alarms +	us-east-1b	ec2-44-2

i-0cf59e3a1efde244a (aws-cloud9-Phase2Server-6adfb14e4ce5447f834be3721ff9b373)

Details Status and alarms Monitoring Security Networking Storage Tags

Instance summary Info

Instance ID i-0cf59e3a1efde244a	Public IPv4 address 3.80.162.206 open address	Private IPv4 addresses 10.16.0.61
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-3-80-162-206.compute-1.amazonaws.com open address
Hostname type IP name: ip-10-16-0-61.ec2.internal	Private IP DNS name (IPv4 only) ip-10-16-0-61.ec2.internal	

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OnTrack Submission History - SEBE Studio ModifyInboundSecurityGroup Phase1Server - AWS Cloud9

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#ModifyInboundSecurityGroupRulessecurityGroupId=sg-0d7fa6ed16e02f097

aws Search [Alt+S] United States (N. Virginia) voclabs/user3904332=s224001588@deakin.edu.au @ 1399-8521-1991

EC2 > Security Groups > sg-0d7fa6ed16e02f097 - aws-cloud9-Phase2Server-6adfb14e4ce5447f834be3721ff9b373-InstanceSecurityGroup-rytauYHy8j1E > Edit inbound rules

Edit inbound rules Info

Inbound rules control the incoming traffic that's allowed to reach the instance.

Inbound rules	Type	Protocol	Port range	Source	Description - optional
sgr-0cee7e19fcfd365681	SSH	TCP	22	Custom	35.172.155.192/27
sgr-0d339ea6240d88311	SSH	TCP	22	Custom	35.172.155.96/27
-	Custom TCP	TCP	8000 - 8100	Anywhere	0.0.0.0/0

Add rule

⚠ Rules with source of 0.0.0.0/0 or ::/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Cancel Preview changes Save rules

CloudShell Feedback

9°C Mostly cloudy

Ontrack Submission History - SEBE Studio Modify IAM role | EC2 | us-east-1 Phase1Server - AWS Cloud9

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#ModifyIAMRoleinstanceId=i-0cf59e3a1efde244a

aws Search [Alt+S] United States (N. Virginia) voclabs/user3904332=s224001588@deakin.edu.au @ 1399-8521-1991

EC2 > Instances > i-0cf59e3a1efde244a > Modify IAM role

Modify IAM role Info

Attach an IAM role to your instance.

Instance ID: i-0cf59e3a1efde244a (aws-cloud9-Phase2Server-6adfb14e4ce5447f834be3721ff9b373)

IAM role

Select an IAM role to attach to your instance or create a new role if you haven't created any. The role you select replaces any roles that are currently attached to your instance.

c144539a373693310271517t1w139985211991-Ec2InstanceProfile-k36p21eoPGEZ Create new IAM role

Cancel Update IAM role

Screenshot of the AWS S3 console showing the General purpose buckets list.

Account snapshot - updated every 24 hours (All AWS Regions)

Storage lens provides visibility into storage usage and activity trends. Metrics don't include directory buckets. [Learn more](#)

General purpose buckets (2) [Info](#) All AWS Regions

Buckets are containers for data stored in S3.

Name	AWS Region	IAM Access Analyzer	Creation date
c144539a373693310271517t1w1599 852119-phase1bucket-ao1y02agfuyc	US East (N. Virginia) us-east-1	View analyzer for us-east-1	May 13, 2025, 00:19:41 (UTC+10:00)
c144539a373693310271517t1w1399 852119-phase2bucket-wzpmzgbwign	US East (N. Virginia) us-east-1	View analyzer for us-east-1	May 13, 2025, 00:19:41 (UTC+10:00)

Amazon S3

- General purpose buckets
- Directory buckets
- Table buckets
- Access Grants
- Access Points
- Object Lambda Access Points
- Multi-Region Access Points
- Batch Operations
- IAM Access Analyzer for S3

Block Public Access settings for this account

Storage Lens

- Dashboards
- Storage Lens groups
- AWS Organizations settings

Feature spotlight [11]

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Screenshot of the AWS S3 Bucket Permissions Overview page for bucket `c144539a3736933l0271517t1w1399852119-phase1bucket-ao1y02agfuyc`.

Permissions overview

Block public access (bucket settings)

Block all public access: On

Bucket policy

The bucket policy, written in JSON, provides access to the objects stored in the bucket. Bucket policies don't apply to objects owned by other accounts. [Learn more](#)

Edit Block public access (bucket settings)

Block public access (bucket settings)

Block all public access:

- Block public access to buckets and objects granted through new access control lists (ACLs)**
S3 will block public access permissions applied to newly added buckets or objects, and prevent the creation of new public access ACLs for existing buckets and objects. This setting doesn't change any existing permissions that allow public access to S3 resources using ACLs.
- Block public access to buckets and objects granted through any access control lists (ACLs)**
S3 will ignore all ACLs that grant public access to buckets and objects.
- Block public access to buckets and objects granted through new public bucket or access point policies**
S3 will block new bucket and access point policies that grant public access to buckets and objects. This setting doesn't change any existing policies that allow public access to S3 resources.
- Block public and cross-account access to buckets and objects through any public bucket or access point policies**
S3 will ignore public and cross-account access for buckets or access points with policies that grant public access to buckets and objects.

[Cancel](#) [Save changes](#)

Screenshot of the AWS Cloud9 IDE interface showing two tabs open:

- Submission History - SEBE Studio**: Shows a list of recent submissions.
- Edit bucket policy - S3 bucket**: A modal window titled "Edit bucket policy" for the bucket "c144539a3736933l10271517t1w1399852119-phase1bucket-ao1y02agfuyc". The policy JSON is as follows:

```

1 Version: "2012-10-17",
2 Statement: [
3     {
4         Sid: "PublicRead",
5         Effect: "Allow",
6         Principal: "*",
7         Action: "s3:*",
8         Resource: "arn:aws:s3:::c144539a3736933l10271517t1w1399852119-phase1bucket-ao1y02agfuyc/*",
9         Condition: {
10             "IpAddress": {
11                 "aws:SourceIp": "103.224.53.5/32"
12             }
13         }
14     }
15 ]
16

```

The right side of the modal shows options for "Edit statement", "Remove", "Add actions", and "Choose a service".

Phase1Server - AWS Cloud9: This tab contains a terminal window with the following content:

```

bash - "ip-10-16-0-188"  x  bash - "ip-10-16-0-188"  x  JS config.js  x
1 //Following configuration parameters are critical to the proper functioning of the application.
2 Do not replace any other values except those mentioned in the lab (aside you are following
3 */
4
5 //GLOBAL
6 CONFIG = {};
7
8 CONFIG.STATUS_STR_ARR = [
9     "Got original image",
10    "Saved original image to s3",
11    "Generated processed image url",
12    "App server got original image buffer",
13    "Processed image",
14    "Saved adjusted to s3",
15    "Complete"
16 ];
17
18 CONFIG.FULL_URL_STR = "http://[Public IPv4 address of Phase1 EC2]:8000/upload";
19 CONFIG.FULL_IMAGE_PATH_STR = "https://[Phase1bucket].s3.amazonaws.com";
20 CONFIG.FULL_IMAGE_URL_STR = "http://[Public IPv4 address of Phase1 EC2]:8000/get-image-url";
21

```

Below the terminal is an "Immediate Javascript (br x)" REPL window:

```

Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in
a browser based javascript environment (iframe). It operates similar to your browser console.
>

```

The bottom status bar shows the AWS profile as "default", the date as "13-05-2025", and the time as "01:08".

The screenshot shows the AWS Cloud9 IDE interface. At the top, there are three tabs: "OnTrack", "Submission History - SERE Studio", and "Phase1Server - AWS Cloud9". The main area has a file browser on the left showing a directory structure for "Phase1Server - ft" containing "phase_1", "phase_2", "aws", "code.zip", and "README.md". The central pane displays the content of "JS config.js". The terminal at the bottom shows an "Immediate Javascript (br)" REPL with a welcome message.

```
1  /*Following configuration parameters are critical to the proper functioning of the application.
2  Do not replace any other values except those mentioned in the lab Guide you are following
3  */
4
5 //GLOBAL
6 CONFIG = {};
7
8 CONFIG.STATUS_STR_ARR = [
9   "Not original image",
10  "Saved original image to s3",
11  "App server received image url",
12  "App server got original image buffer",
13  "Processed image",
14  "Image adjusted to s3",
15  "Complete"
16 ];
17
18
19 CONFIG.FULL_URL_STR = "http://44.205.17.224:8008/upload";
20 CONFIG.FULL_IMAGE_PATH_STR = "https://c144539a3736033110271517tlu1399852119-phase1bucket-ac1y02agfuyc.s3.amazonaws.com";
21
```

Below the code editor is an "Immediate Javascript (br)" REPL window with the following content:

```
Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in
a browser based javascript environment (iframe). It operates similar to your browser console.
> |
```

The status bar at the bottom indicates "AWS profile: default", "9°C Mostly cloudy", and system information like "ENG IN" and "01:05 13-05-2025".

```
1 //Following configuration parameters are critical to the proper functioning of the application.
2 //Do not replace any other values except those mentioned in the lab Guide you are following
3 //
4 //GLOBAL
5 // CONFIG = {};
6 // CONFIG_SECRET_STR = "secret_squirrel";
7 //
8 //CONFIG.DYNAMO = {};
9 //CONFIG.DYNAMO.API_VERSION_STR = "2012-08-10";
10 //CONFIG.DYNAMO.REGION_STR = "us-east-1";
11 //
12 //CONFIG.DYNAMO.IMAGE_TABLE_NAME_STR = "ImagesTablePhase1";
13 //
14 //CONFIG.PROCESSING_URL_STR = "http://44.205.17.224:8009/process";
15 //
16 //CONFIG.S3 = {};
17 //CONFIG.S3.VERSION_STR = "2006-03-01";
18 //CONFIG.S3.REGION_STR = "us-east-1";
19 //CONFIG.S3.IMAGE_BUCKET_NAME_STR = "[Phase1Bucket]";
20 //
21 //
22 // (Ignore the commented code below)
23 //CONFIG.DYNAMO.PROFILE_STR = "default";
24 //CONFIG.S3.PROFILE_STR = "default";
25 
```

Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in a browser based javascript environment (iframe). It operates similar to your browser console.

JavaScript (browser)

```
16:50 JavaScript Spaces: 4
```

```
1 //Following configuration parameters are critical to the proper functioning of the application.
2 //Do not replace any other values except those mentioned in the lab Guide you are following
3 //
4 //GLOBAL
5 // CONFIG = {};
6 // CONFIG_SECRET_STR = "secret_squirrel";
7 //
8 //CONFIG.DYNAMO = {};
9 //CONFIG.DYNAMO.API_VERSION_STR = "2012-08-10";
10 //CONFIG.DYNAMO.REGION_STR = "us-east-1";
11 //
12 //CONFIG.DYNAMO.IMAGE_TABLE_NAME_STR = "ImagesTablePhase1";
13 //
14 //CONFIG.PROCESSING_URL_STR = "http://44.205.17.224:8009/process";
15 //
16 //CONFIG.S3 = {};
17 //CONFIG.S3.VERSION_STR = "2006-03-01";
18 //CONFIG.S3.REGION_STR = "us-east-1";
19 //CONFIG.S3.IMAGE_BUCKET_NAME_STR = "[Phase1Bucket]";
20 //
21 //
22 // (Ignore the commented code below)
23 //CONFIG.DYNAMO.PROFILE_STR = "default";
24 //CONFIG.S3.PROFILE_STR = "default";
25 
```

Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in a browser based javascript environment (iframe). It operates similar to your browser console.

JavaScript (browser)

```
21:00 JavaScript Spaces: 4
```

OnTrack Submission History - SEBE Studio c144539a3736933102715171 Phase1Server - AWS Cloud9

File Edit Find View Go Run Tools Window Support Preview Run

Go to Anything (Ctrl-P)

Phase1Server - / phase_1 app_server_1 libs JS config.js JS dynamo_helper.js JS mw.js JS s3_helper.js node_modules static js JS config.js JS init.js JS jquery.min.js styles views

```
//GLOBAL
CONFIG = {};
CONFIG.SECRET_STR = "secret_squirrel";
CONFIG.DYNAMO = {};
CONFIG.DYNAMO.API_VERSION_STR = "2012-08-10";
CONFIG.DYNAMO.REGION_STR = "us-east-1";
CONFIG.DYNAMO.IMAGE_TABLE_NAME_STR = "ImageTablePhase1";
CONFIG.S3 = {};
CONFIG.S3.API_VERSION_STR = "2006-03-01";
CONFIG.S3.REGION_STR = "us-east-1";
CONFIG.S3.IMAGE_BUCKET_NAME_STR = "c144539a3736933102715171w1399852119-phase1bucket-a0ly82agfuyc";
16
17 // (Ignore the commented code below)
18 //CONFIG.DYNAMO_PROFILE_STR = "default";
19 //CONFIG.S3_PROFILE_STR = "default";
20
21
```

14:59 JavaScript Spaces: 4

Immediate Javascript (br x)

Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in a browser based javascript environment (iframe). It operates similar to your browser console.

Javascript (browser)

AWS profile default 9°C Mostly cloudy

File Edit Find View Go Run Tools Window Support Preview Run

Go to Anything (Ctrl-P)

Phase1Server - / phase_1 app_server_1 libs JS config.js JS dynamo_helper.js JS mw.js JS s3_helper.js node_modules static js JS config.js JS init.js JS jquery.min.js styles views

```
veclabs:/environment/phase_1/web_server_1 $ npm start
> start
> NODE_ENV=development node index.js
App is listening on port 8088
(node:4843) [DEP0019] DeprecationWarning: We are formalizing our plans to enter AWS SDK for JavaScript (v2) into maintenance mode in 2023.
Please migrate your code to use AWS SDK for JavaScript (v3).
For more information, check the Migration guide at https://a.co/7PdHcy
(Use `node --trace-warnings ...` to show where the warning was created)
```

14:59 JavaScript Spaces: 4

Immediate Javascript (br x)

Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in a browser based javascript environment (iframe). It operates similar to your browser console.

Javascript (browser)

AWS profile default 9°C Mostly cloudy

```

OnTrack                               Submission History - SEBE Studio | c144539a2736933102715171... | Phase1Server - AWS Cloud9
us-east-1.console.aws.amazon.com/cloud9/ide/f3e3da279fe44d88f5cc62c138883ab?region=us-east-1#
File Edit Find View Go Run Tools Window Support Preview Run
Share Settings
Go to Anything (Ctrl-P)
npm - "ip-10-16-0-188" bash - "ip-10-16-0-188" npm - "ip-10-16-0-188" +
PhaseServer - i
  phase_1
    app_server_1
      libs
        config.js
        dynamo_helper.js
        mw.js
        s3_helper.js
      node_modules
        index.js
        package-lock.json
        package.json
        yarn.lock
  web_server_1
    libs
      config.js
      dynamo_helper.js
      mw.js
      s3_helper.js
    node_modules
    static
      js
        config.js
        init.js
        jquery.min.js
      styles
      views
aws
aws profile default
9°C Mostly cloudy
Search
ENG IN 01:29 13-05-2025
bash - "ip-10-16-0-188" ~
npm - "ip-10-16-0-188" ~
npm - "ip-10-16-0-188" ~
+ vccelabs:/environment $ cd phase_1/app_server_1/
vccelabs:/environment/phase_1/app_server_1 $ npm install
npm warn deprecated querystring@0.2.0: The querystring API is considered Legacy. new code should use the URLSearchParams API instead.
added 144 packages, and audited 145 packages in 5s

26 packages are looking for funding
  run `npm fund` for details

9 vulnerabilities (3 low, 1 moderate, 5 high)

To address all issues, run:
  npm audit fix

Run `npm audit` for details.
vccelabs:/environment/phase_1/app_server_1 $ npm start
> start
> NODE_ENV=development node index.js

App is listening on port 8009
(node:4916) NOTE: We are formalizing our plans to enter AWS SDK for JavaScript (v2) into maintenance mode in 2023.

Please migrate your code to use AWS SDK for JavaScript (v3).
For more information, check the migration guide at https://a.co/7PzHCCy
(Use `node --trace-warnings ...` to show where the warning was created)
| Immediate Javascript (br x)
  Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in a browser based javascript environment (iframe). It operates similar to your browser console.
> |
JavaScript (browser)

```

Task 2: Testing the Application

- Open the web app in a browser using the EC2's public IP and port 8008.
- Upload images and observe them getting processed and displayed.
- Try image deletion and view how the tightly coupled components interact in real time.



Image Tinter

Start checking for images before you upload your first image.

Click Start checking to get your images

Please upload an image (png only) and it will be resized to 300x300 and will become tinted.

No file chosen

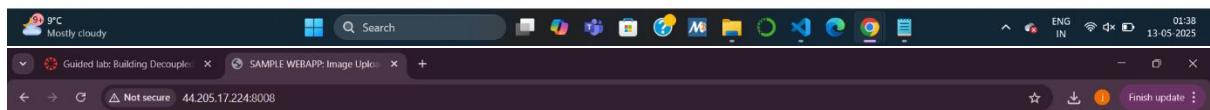


Image Tinter

Start checking for images before you upload your first image.

Click Start checking to get your images

Please upload an image (png only) and it will be resized to 300x300 and will become tinted.

abc.png

Your image has been submitted. Thank you!



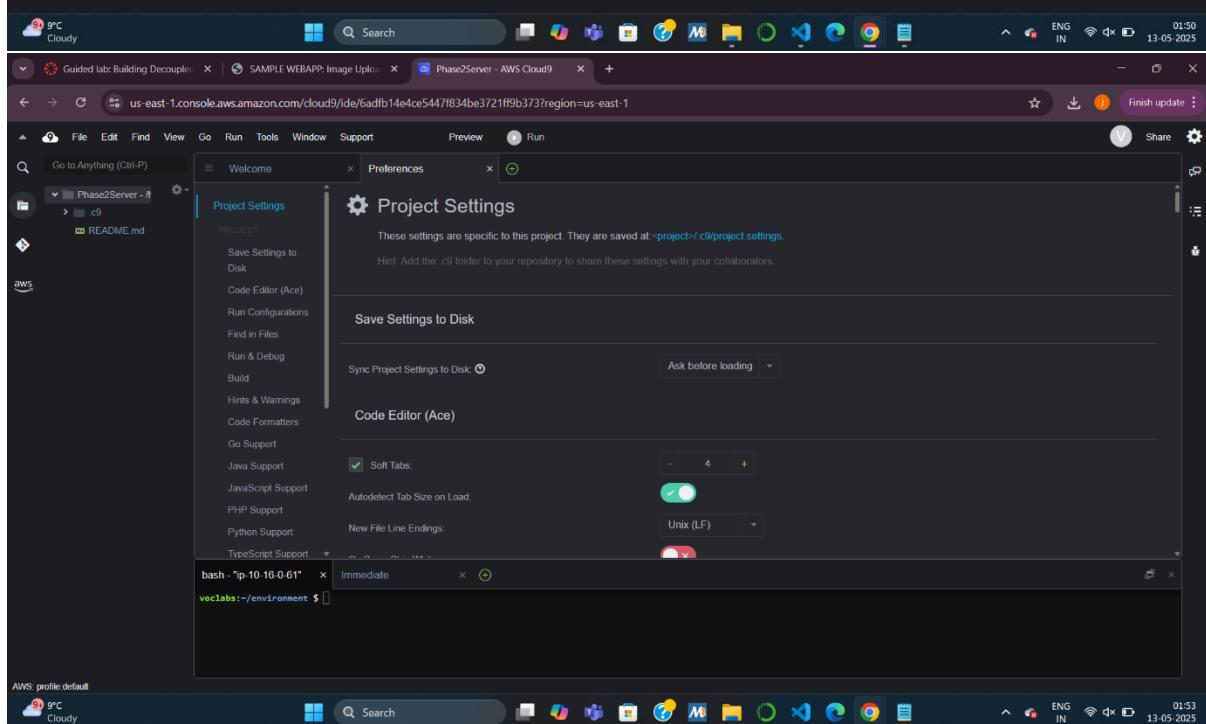
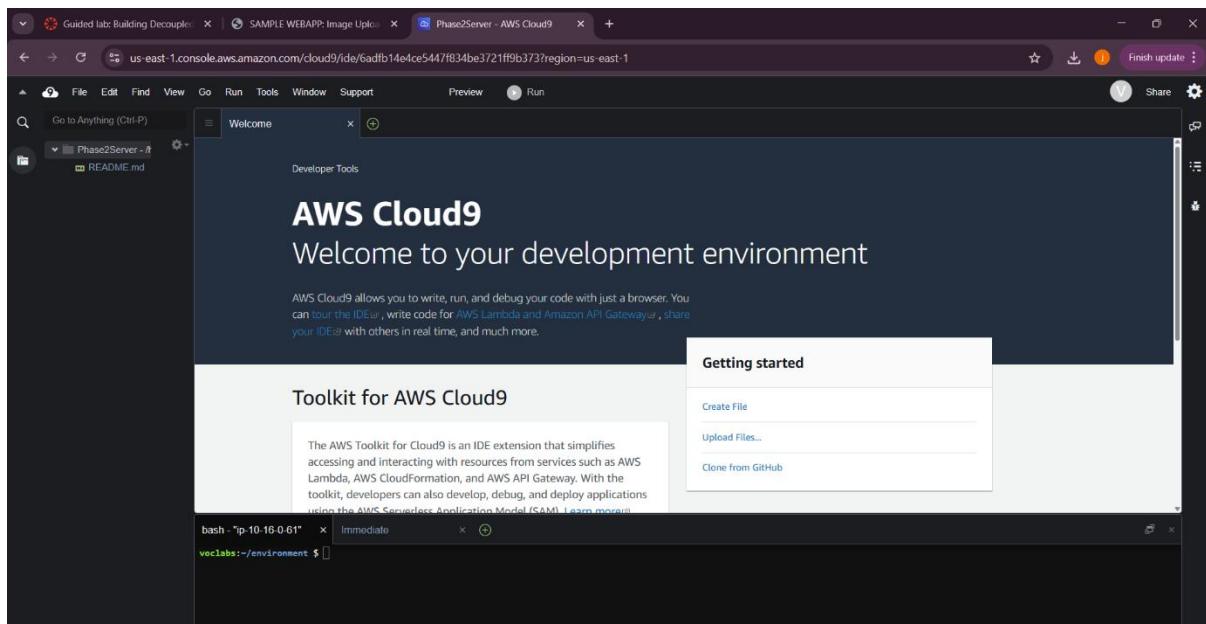
Task 3: Installing the Application in Phase 2

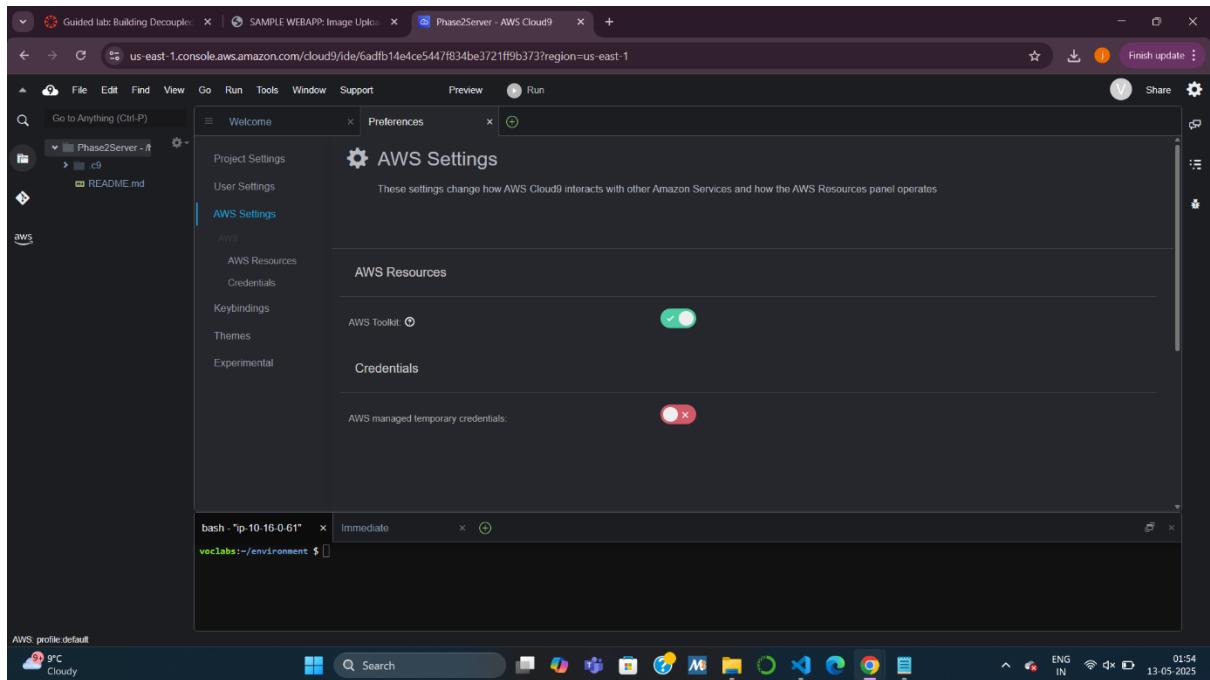
3.1 Logging in to Cloud9

- Access the new Phase 2 Cloud9 IDE and disable temporary credentials like before.

3.2 Downloading Files and Installing the App

- Download and install the application in the **phase_2** directory for both web and app servers.





Guided lab: Building Decoupled Web Applications | SAMPLE WEBAPP: Image Upload | Phase2Server - AWS Cloud9

File Edit Find Go Run Tools Window Support Preview Run

Go Anything (Ctrl-P)

wget -ip 10.16.0.61*

```
extracting: phase_2/web_server_2/libs/dynamo_helper.js
extracting: phase_2/web_server_2/libs/dynamo_helper.js
extracting: phase_2/web_server_2/libs/config.js
extracting: phase_2/web_server_2/libs/mu.js
extracting: phase_2/web_server_2/views/main_page.mustache
extracting: phase_1/web_server_1/package.json
extracting: phase_1/web_server_1/package-lock.json
extracting: phase_1/web_server_1/index.js
extracting: phase_1/web_server_1/style/core.css
extracting: phase_1/web_server_1/style/main.css
extracting: phase_1/web_server_1/static/styles/reset.css
extracting: phase_1/web_server_1/static/js/config.js
extracting: phase_1/web_server_1/static/js/jquery.min.js
extracting: phase_1/web_server_1/static/js/init.js
extracting: phase_1/web_server_1/libs/s3_helper.js
extracting: phase_1/web_server_1/libs/dynamo_helper.js
extracting: phase_1/web_server_1/libs/config.js
extracting: phase_1/web_server_1/libs/mu.js
extracting: phase_1/web_server_1/views/main_page.mustache
extracting: phase_1/app_server_1/package.json
extracting: phase_1/app_server_1/package-lock.json
extracting: phase_1/app_server_1/yarn.lock
extracting: phase_1/app_server_1/index.js
extracting: phase_1/app_server_1/libs/s3_helper.js
extracting: phase_1/app_server_1/libs/dynamo_helper.js
extracting: phase_1/app_server_1/libs/config.js
extracting: phase_1/app_server_1/libs/mu.js
veclabs:/environment $ cd phase_2/web_server_2/
veclabs:/environment/phase_2/web_server_2 $ npm install
```

Immediate Javascript (br X)

Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in a browser based javascript environment (iframe). It operates similar to your browser console.

AWS profile: default

9°C Cloudy

File Edit Find Go Run Tools Window Support Preview Run

Go Anything (Ctrl-P)

bash -ip 10.16.0.61*

```
veclabs:/environment $ cd phase_2/app_server_2/
veclabs:/environment/phase_2/app_server_2 $ npm install
npm warn deprecated queryString@0.2.0: The queryString API is considered Legacy. new code should use the URLSearchParams API instead.

added 144 packages, and audited 145 packages in 6s
26 packages are looking for funding
  run `npm fund` for details

18 vulnerabilities (3 low, 1 moderate, 6 high)

To address all issues, run:
  npm audit fix

Run `npm audit` for details.
veclabs:/environment/phase_2/app_server_2 $
```

Immediate Javascript (br X)

Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in a browser based javascript environment (iframe). It operates similar to your browser console.

AWS profile: default

9°C Cloudy

Instances (1/2) Info

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
aws-cloud9-P...	i-0cf59e3a1efde244a	Running	t2.small	2/2 checks passed	View alarms +	us-east-1b	ec2-3-80-
aws-cloud9-P...	i-08c7697de6bf0c231	Running	t2.small	2/2 checks passed	View alarms +	us-east-1b	ec2-44-2l

i-0cf59e3a1efde244a (aws-cloud9-Phase2Server-6adfb14e4ce5447f834be3721ff9b373)

Instance ID: i-0cf59e3a1efde244a
IPv6 address: -
Hostname type: IP name: ip-10-16-0-61.ec2.internal
Answer private resource DNS name: -
Auto-assigned IP address: VPC ID

Private IPv4 addresses: 10.16.0.61
Public IPv4 DNS: ec2-3-80-162-206.compute-1.amazonaws.com | open address

Elastic IP addresses: -
AWS Compute Optimizer finding: -

Task 4: Configuring Amazon SQS

- Create an **SQS queue** named ImageApp to hold messages that trigger image processing.

Application integration

Amazon SQS

A message queuing service

Amazon SQS provides queues for high-throughput, system-to-system messaging. You can use queues to decouple heavyweight processes and to buffer and batch work. Amazon SQS stores messages until microservices and serverless applications process them.

Get started

Learn how to use Amazon SQS by creating a queue, sending a message to the queue, and receiving and processing the message.

Create queue

Pricing (US)

You can get started with Amazon SQS for free. All customers can make 1 million Amazon SQS requests for free each month. Some applications might be able to operate within this Free Tier limit.

Cost calculator

Documentation

How it works

Producers send messages to an Amazon SQS queue, which stores messages and waits for consumers to process them. Consumers include applications, Lambda functions, EC2 instances, and other AWS services.

Task 5: Configuring Amazon SNS

- Create an **SNS topic** uploadnotification and attach a policy to allow S3 to publish messages to it upon new uploads.

New Feature
Amazon SNS now supports High Throughput FIFO topics. [Learn more](#)

Application Integration

Amazon Simple Notification Service

Pub/sub messaging for microservices and serverless applications.

Amazon SNS is a highly available, durable, secure, fully managed pub/sub messaging service that enables you to decouple microservices, distributed systems, and event-driven serverless applications. Amazon SNS provides topics for high-throughput, push-based, many-to-many messaging.

Benefits and features

Create topic

Topic name
A topic is a message channel. When you publish a message to a topic, it fans out the message to all subscribed endpoints.

uploadnotification

Next step

[Start with an overview](#)

Pricing

Amazon SNS has no upfront costs. You pay based on the number of messages you publish, the number of messages you deliver, and any additional API calls for managing topics and subscriptions.

Encryption - optional
Amazon SNS provides in-transit encryption by default. Enabling server-side encryption adds at-rest encryption to your topic.

Access policy - optional info
This policy defines who can access your topic. By default, only the topic owner can publish or subscribe to the topic.

Choose method

Basic
Use simple criteria to define a basic access policy.

Advanced
Use a JSON object to define an advanced access policy.

JSON editor

```
1
```

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CloudShell Feedback
8°C Mostly cloudy
Search
United States (N. Virginia) vocabs/user3904332=s224001588@deakin.edu.au @ 1399-8521-1991
ENG IN 02:17 13-05-2025

CloudShell Feedback
8°C Mostly cloudy
Search
United States (N. Virginia) vocabs/user3904332=s224001588@deakin.edu.au @ 1399-8521-1991
ENG IN 02:18 13-05-2025

Encryption - optional
Amazon SNS provides in-transit encryption by default. Enabling server-side encryption adds at-rest encryption to your topic.

Access policy - optional Info
This policy defines who can access your topic. By default, only the topic owner can publish or subscribe to the topic.

Choose method

Basic
Use simple criteria to define a basic access policy.

Advanced
Use a JSON object to define an advanced access policy.

JSON editor

```

1 {
2     "Version": "2012-10-17",
3     "Id": "S3UploadNotification",
4     "Statement": [
5         {
6             "Sid": "S3 SNS topic policy",
7             "Effect": "Allow",
8             "Principal": {
9                 "Service": "s3.amazonaws.com"
10            },
11            "Action": [
12                "SNS:Publish"
13            ],
14            "Resource": "[SNS-topic-ARN]",
15        }
16    ]
17}
  
```

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Access policy - optional Info
This policy defines who can access your topic. By default, only the topic owner can publish or subscribe to the topic.

Choose method

Basic
Use simple criteria to define a basic access policy.

Advanced
Use a JSON object to define an advanced access policy.

JSON editor

```

9     "Service": "s3.amazonaws.com"
10    },
11    "Action": [
12        "SNS:Publish"
13    ],
14    "Resource": "arn:aws:sns:us-east-1:139985211991:uploadnotification",
15    "Condition": {
16        "ArnLike": {
17            "aws:SourceArn": "arn:aws:s3:::c144539a3736933110271517t1w1399852119-phase2bucket-wzpmzxgbwugn"
18        },
19        "StringEquals": {
20            "aws:sourceaccount": "139985211991"
21        }
22    }
23}
  
```

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Task 6: Configuring S3 Bucket Permissions & Event Notification

- **Unblock public access** and update **bucket policy** with your IP.
- Create an **event notification** to trigger the uploadnotification SNS topic on object creation.

Screenshot of the AWS S3 Bucket Permissions Overview page for bucket `c144539a3736933l0271517t1w1399852119-phase2bucket-wzpmzxgbwugn`.

Permissions overview

Access finding
Access findings are provided by IAM external access analyzers. Learn more about [How IAM analyzer findings work](#). [View analyzer for us-east-1](#)

Block public access (bucket settings)

Public access is granted to buckets and objects through access control lists (ACLs), bucket policies, access point policies, or all. In order to ensure that public access to all your S3 buckets and objects is blocked, turn on Block all public access. These settings apply only to this bucket and its access points. AWS recommends that you turn on Block all public access, but before applying any of these settings, ensure that your applications will work correctly without public access. If you require some level of public access to your buckets or objects within, you can customize the individual settings below to suit your specific storage use cases. [Learn more](#)

Block all public access
 On [Edit](#) [Delete](#)
► Individual Block Public Access settings for this bucket

Bucket policy
The bucket policy, written in JSON, provides access to the objects stored in the bucket. Bucket policies don't apply to objects owned by other accounts. [Learn more](#)

Edit Block public access (bucket settings)

Block public access (bucket settings)

Public access is granted to buckets and objects through access control lists (ACLs), bucket policies, access point policies, or all. In order to ensure that public access to all your S3 buckets and objects is blocked, turn on Block all public access. These settings apply only to this bucket and its access points. AWS recommends that you turn on Block all public access, but before applying any of these settings, ensure that your applications will work correctly without public access. If you require some level of public access to your buckets or objects within, you can customize the individual settings below to suit your specific storage use cases. [Learn more](#)

Block all public access
Turning this setting on is the same as turning on all four settings below. Each of the following settings are independent of one another.

- Block public access to buckets and objects granted through new access control lists (ACLs)**
S3 will block public access permissions applied to newly added buckets or objects, and prevent the creation of new public access ACLs for existing buckets and objects. This setting doesn't change any existing permissions that allow public access to S3 resources using ACLs.
- Block public access to buckets and objects granted through any access control lists (ACLs)**
S3 will ignore all ACLs that grant public access to buckets and objects.
- Block public access to buckets and objects granted through new public bucket or access point policies**
S3 will block new bucket and access point policies that grant public access to buckets and objects. This setting doesn't change any existing policies that allow public access to S3 resources.
- Block public and cross-account access to buckets and objects through any public bucket or access point policies**
S3 will ignore public and cross-account access for buckets or access points with policies that grant public access to buckets and objects.

[Cancel](#) [Save changes](#)

The screenshot shows two nearly identical configurations of an AWS S3 Bucket Policy, displayed side-by-side in the AWS Management Console.

Bucket policy details:

- Bucket ARN:** arnaws:s3:::c144539a373693310271517t1w1399852119-phase2bucket-wzpmzxgbwugn
- Policy Type:** Bucket policy
- Version:** 2012-10-17
- Statement:** [

Configuration 1 (Top):

```
1 "Sid": "PublicRead",
2 "Effect": "Allow",
3 "Principal": "*",
4 "Action": "s3:GetObject",
5 "Resource": "arnaws:s3:::c144539a373693310271517t1w1399852119-phase2bucket-wzpmzxgbwugn/*",
6 "Condition": {
7     "IpAddress": {
8         "aws:SourceIp": "[ServerIP]/32"
9     }
10 }
```

Configuration 2 (Bottom):

```
1 "Sid": "PublicRead",
2 "Effect": "Allow",
3 "Principal": "*",
4 "Action": "s3:GetObject",
5 "Resource": "arnaws:s3:::c144539a373693310271517t1w1399852119-phase2bucket-wzpmzxgbwugn/*",
6 "Condition": {
7     "IpAddress": {
8         "aws:SourceIp": "103.224.53.53/32"
9     }
10 }
```

Right-hand sidebar:

- Edit statement:** PublicRead (Remove)
- Add actions:** Choose a service (Filter services)
- Included:** S3
- Available:** AI Operations, AMP, API Gateway
- API Gateway:** API Gateway V2

The screenshot shows the 'Create event notification' configuration page in the AWS S3 console. The top navigation bar includes tabs for 'OnTrack', 'Submission History - SEBE Stud...', 'Create event notification - S3...', 'Phase1Server - AWS Cloud9', and a '+' button. The main header is 'Create event notification' with a 'Finish update' button.

The page displays the 'General configuration' section:

- Event name:** A text input field containing 'Event name'.
- Prefix - optional:** A text input field containing 'images/'.
- Suffix - optional:** A text input field containing '.jpg'.

Below this is the 'Event types' section:

- Object creation:** A list of checked checkboxes for 'All object create events' and 's3:ObjectCreated:*'. To the right, there is a checkbox for 'Put' (s3:ObjectCreated.Put).

The bottom of the page includes a footer with links for 'CloudShell', 'Feedback', and 'CloudWatch Metrics'. The status bar shows the date '02:31 13-05-2025' and system icons.

Screenshot of the AWS S3 console showing the 'Create event notification' configuration page.

General configuration

Event name: SendtoSns
Event name can contain up to 255 characters.

Prefix - optional: Limit the notifications to objects with key starting with specified characters.
images/

Suffix - optional: Limit the notifications to objects with key ending with specified characters.
.jpg

Event types
Specify at least one event for which you want to receive notifications. For each group, you can choose an event type for all events, or you can choose one or more individual events.

Object creation

All object create events
s3:ObjectCreated*

Put
s3:ObjectCreated:Put

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CloudShell Feedback 8°C Mostly cloudy Search 02:31 13-05-2025

OnTrack Submission History - SEBE Stud Create event notification - S3 ... Phase1Server - AWS Cloud9 ... Finish update

Amazon S3 > Buckets > c144539a3736933l10271517t1w1399852119-phase2bucket-wzpmzxgbwugn > Create event notification

Destination

Before Amazon S3 can publish messages to a destination, you must grant the Amazon S3 principal the necessary permissions to call the relevant API to publish messages to an SNS topic, an SQS queue, or a Lambda function. [Learn more](#)

Destination:
 Lambda function
Run a Lambda function script based on S3 events.
 SNS topic
Fanout messages to systems for parallel processing or directly to people.
 SQS queue
Send notifications to an SQS queue to be read by a server.

Specify SNS topic:
 Choose from your SNS topics
 Enter SNS topic ARN

SNS topic:
uploadnotification

Cancel Save changes

CloudShell Feedback 8°C Mostly cloudy Search 02:32 13-05-2025

The image consists of three vertically stacked screenshots of the AWS Simple Queue Service (SQS) console.

- Screenshot 1:** Shows the 'Queues' page with one queue named 'ImageApp'. The queue is of type 'Standard' and was created on '2025-05-13T02:16+10:00'. It has 0 messages available, 0 messages in flight, and is encrypted using 'Amazon SQS key (SSE-SQS)'.
- Screenshot 2:** Shows the 'Subscribe to Amazon SNS topic' dialog for the 'ImageApp' queue. The dialog asks to specify an Amazon SNS topic available for this queue. A dropdown menu shows the option 'arn:aws:sns:us-east-1:139985211991:uploadnotification'.
- Screenshot 3:** Shows the confirmation step of the subscription process. It displays the message 'Subscription successful' and provides a link to 'View in CloudWatch Logs'.

Task 7: Creating SNS Subscriptions

7.1 SQS Subscription

- Subscribe the ImageApp queue to the uploadnotification SNS topic.

7.2 Email Subscription

- Create an **email subscription** to receive alerts on new uploads.
- Confirm it via the email link.

The screenshot shows the AWS SNS Topics page. A blue banner at the top states "New Feature: Amazon SNS now supports High Throughput FIFO topics. Learn more". Below this, the "uploadnotification" topic is listed. The "Subscriptions" tab is selected, showing one subscription entry:

ID	Endpoint	Status	Protocol
1	s24001588@deakin.edu.au	Subscribed	Email

Other tabs include "Access policy", "Data protection policy", "Delivery policy (HTTP/S)", "Delivery status logging", "Encryption", and "Tags".

The screenshot shows the AWS SNS Subscriptions page. A blue banner at the top states "New Feature: Amazon SNS now supports High Throughput FIFO topics. Learn more". Below this, the "Create subscription" section is shown. The "Topic ARN" field contains "arn:aws:sns:us-east-1:139985211991:uploadnotification". The "Protocol" dropdown is set to "Email", and the "Endpoint" field contains "s24001588@deakin.edu.au". A note below says "After your subscription is created, you must confirm it.".

Task 8: Configuring Parameters and Starting the App

- Edit and update config files in:
 - **Browser tier**
 - **Web tier**
 - **App server tier**
- Add real values for public IP, bucket name, and SQS URL.
- Start the web server (port **8007**) and app server (port **8010**).

Guided lab: Building Decoupled Applications with AWS Lambda and API Gateway | What's My IP Address? Network | SAMPLE WEBAPP: Image Upload | Phase2Server - AWS Cloud9

File Edit Find View Go Run Tools Window Support Preview Run

Go to Anything (Ctrl-P)

aws

```
// GLOBAL
CONFIG = {};
CONFIG.SECRET_STR = "secret_squirrel";
CONFIG.DYNAMO = {};
CONFIG.DYNAMO.API_VERSION_STR = "2012-08-10";
CONFIG.DYNAMO.REGION_STR = "us-east-1";
CONFIG.DYNAMO.IMAGE_TABLE_NAME_STR = "ImageTablePhase2";
CONFIG.S3 = {};
CONFIG.S3.API_VERSION_STR = "2006-03-01";
CONFIG.S3.REGION_STR = "us-east-1";
CONFIG.S3.IMAGE_BUCKET_NAME_STR = "c144539a3736933110271517t1w1399852119-phase2bucket-wzpmxgbnqgn";
CONFIG.SQS = {};
CONFIG.SQS.API_VERSION_STR = "2012-11-05";
CONFIG.SQS.HTTPS_URL_STR = "https://eqs.us-east-1.amazonaws.com/139985211991/ImageApp";
CONFIG.SQS.REGION_STR = "us-east-1";

//Ignore the commented code below
//CONFIG.DYNAMO.PROFILE_STR = "default";
//CONFIG.S3.PROFILE_STR = "default";
//CONFIG.SQS.PROFILE_STR = "default";
```

19:56 JavaScript Spaces: 4

Immediate Javascript (br x)

Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in a browser based javascript environment (iframe). It operates similar to your browser console.

JavaScript (browser)

AWS profile default

8°C Mostly cloudy

File Edit Find View Go Run Tools Window Support Preview Run

Go to Anything (Ctrl-P)

aws

```
npm - "ip-10-16-0-61" x bash - "ip-10-16-0-61" x JS config.js
```

extracting: phase_1/app_server_1/lib/config.js
extracting: phase_1/app_server_1/lib/mw.js
vclab@environment: ~ cd phase_2/web_server_2/
vclab@environment:~/phase_2/web_server_2\$ npm install
npm warn deprecated querystring@0.2.0: The querystring API is considered legacy. new code should use the URLSearchParams API instead.
added 97 packages, and audited 98 packages in 3s
19 packages are looking for funding
 run 'npm fund' for details
8 vulnerabilities (3 low, 1 moderate, 4 high)
To address all issues, run:
 npm audit fix
Run 'npm audit' for details.
vclab@environment:~/phase_2/web_server_2\$ npm start
> start
> NODE_ENV=development node index.js
App is listening on port 8007
(node:5855) NOTE: We are formalizing our plans to enter AWS SDK for JavaScript (v2) into maintenance mode in 2023.
Please migrate your code to use AWS SDK for JavaScript (v2).
For more information, check the migration guide at https://a.co/7PzHCCy
(Use 'node --trace-warnings ...' to show where the warning was created)

19:56 JavaScript Spaces: 4

Immediate Javascript (br x)

Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in a browser based javascript environment (iframe). It operates similar to your browser console.

JavaScript (browser)

AWS profile default

8°C Mostly cloudy

The screenshot shows the AWS Cloud9 IDE interface with two tabs open:

- Terminal:** Shows the command `npm -i ip-10-16-0-61` being run, followed by npm install logs. It indicates 144 packages added and 145 audited in 6s. A note about deprecated querystring@0.2.0 is shown, along with audit results and npm start instructions.
- Immediate Javascript (br x):** A JavaScript REPL window with a welcome message: "Welcome to the Javascript REPL. This REPL allows you to test any single or multi line code in a browser based javascript environment (iframe). It operates similar to your browser console."

Below the IDE, a browser window displays the Image Tinter App at 3.80.162.206:8007. The page has a yellow background and contains the following text:

```

Start Lookup for images before you upload your first image.

[Images Lookup] [Stop Images Lookup]

Choose Images Lookup to get your images

Please upload an image (png only) and it will be resized to 300x300 and will become tinted.

[Choose File] No file chosen
[Submit]

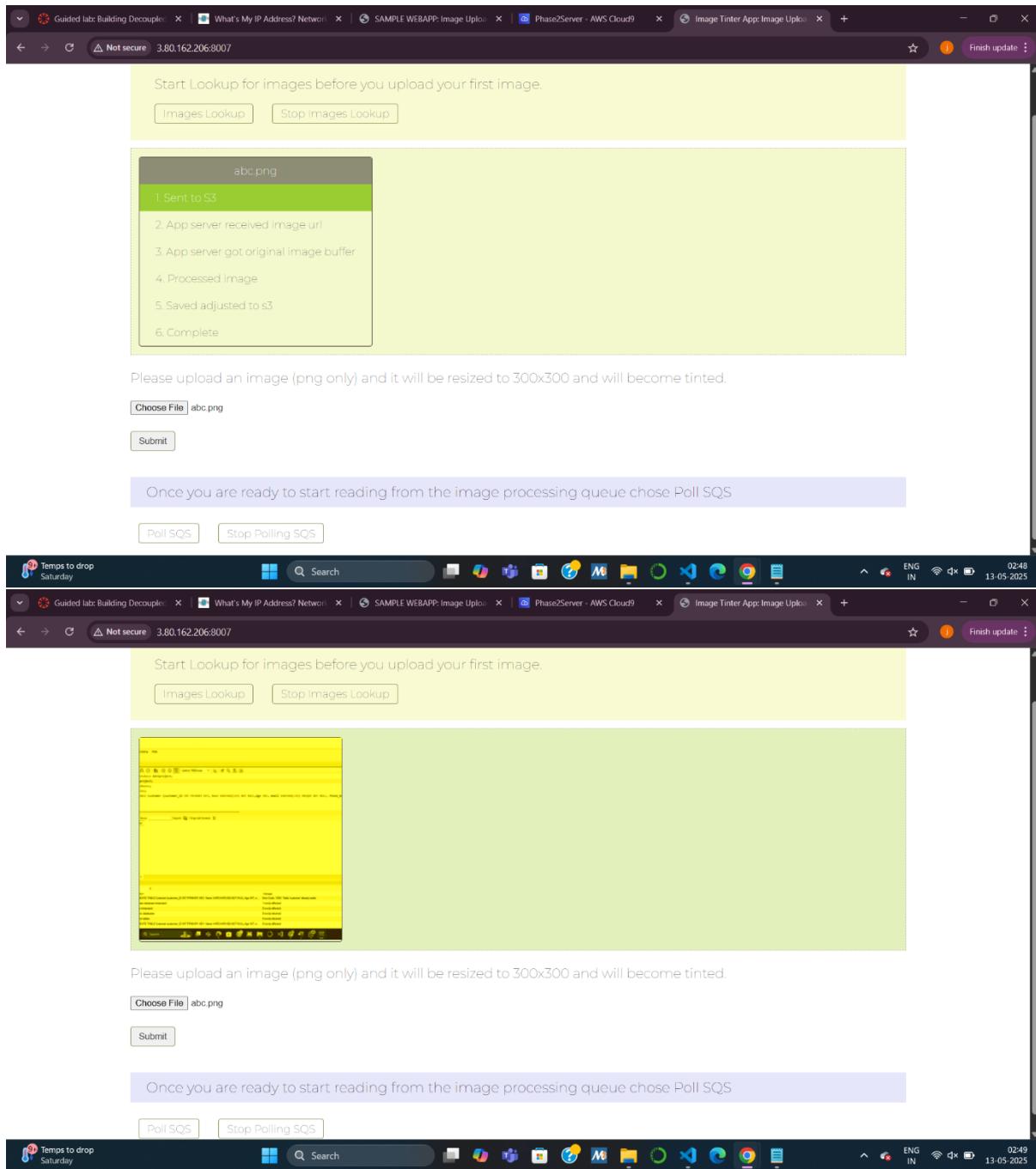
Once you are ready to start reading from the image processing queue chose Poll SQS

[Poll SQS] [Stop Polling SQS]

```

Task 9: Testing the Decoupled App

- Access the app via browser and upload images.
- Observe delayed processing (via SQS polling) and receive email alerts when uploads and processing happen.
- Shows loose coupling: servers act independently, making the system more fault-tolerant.



The screenshot displays two windows from the AWS Academy platform.

Top Window: Guided Lab Submission

This window shows a lab titled "Guided lab: Building Decoupled Applications by Using Amazon SQS". The status bar indicates "Due No Due Date Points 56 Submitting an external tool". A sidebar on the left includes links for Home, Modules, Discussions, Grades (with 17 notifications), and Lucid (Whiteboard). The main content area contains a conclusion section and a "Submitting your work" section. The submission results are displayed in a table:

Total score	30/30
[Task 1]	- S3 buckets with correct configuration f
[Task 2]	- Message queue found
[Task 3]	- SNS Topic created
[Task 4]	- SNS Topic with SQS subscription create
[Task 5]	- SNS Topic with Email subscription creat
ITsel A1	- SQS event notification created

Bottom Window: Knowledge Check Result

This window shows the "Module 13 Knowledge Check" results. The status bar indicates "Due No Due Date Points 100 Submitting an external tool". The sidebar and navigation are identical to the top window. The results table shows:

KEYBOARD NAVIGATION		
Knowledge check results		
Your score:	100%	(100 points)
Required score:	70%	(70 points)
Result: Congratulations! You have completed this knowledge check.		
To continue, choose Next in the lower-right corner.		

The system status bar at the bottom shows "ENG IN" and the date "13-05-2025".