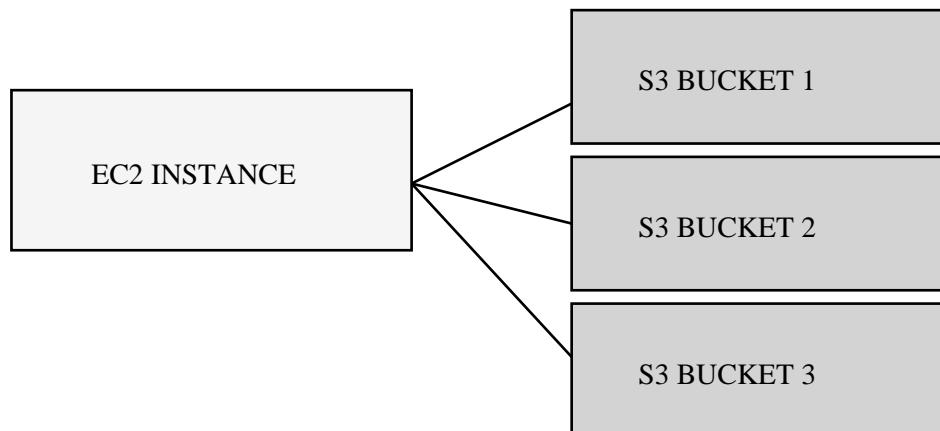


AWS CLOUD PROJECT - EC2 & S3 WEB HOSTING

Internship Studio
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This cloud project demonstrates end-to-end deployment of a web application using Amazon EC2 for compute and Amazon S3 for object storage. The EC2 instance runs a Node.js server, while images are distributed across multiple S3 buckets. AWS Systems Manager (SSM) was used for secure instance access, eliminating the need for key-pair SSH login. Initially, the web application was not reachable through the public IP address. This issue occurred because the Node.js application was listening only on localhost (127.0.0.1). Updating the server to listen on 0.0.0.0 allowed external network access. Additionally, HTTP traffic was enabled through Security Group inbound rules. Another key challenge included configuring S3 buckets for public read access. To resolve this, Block Public Access was disabled and bucket policies were applied to allow GetObject access. This project strengthened understanding of AWS networking, server hosting, IAM permission structures, secure cloud access, and troubleshooting real deployment issues.

ARCHITECTURE DIAGRAM



PROJECT EXECUTION SCREENSHOTS

The screenshot shows the AWS EC2 Instances page. A single instance, "i-006599810e235e143 (IStudio-project-server)", is listed as "Running". The instance type is t2.micro, and it has 2/2 checks passed. It is located in the "ap-south-1a" availability zone and has a public IP of "ec2-13-1".

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IP
i-006599810e235e143 (IStudio-project-server)	i-006599810e235e143	Running	t2.micro	2/2 checks passed	View alarms +	ap-south-1a	ec2-13-1

The screenshot shows the AWS S3 Buckets page. Three buckets are listed under "General purpose buckets": "adhityan-bucket-1", "adhityan-bucket-2", and "adhityan-bucket-3". All three buckets were created on November 5, 2025, at 11:32:17 UTC+05:30.

Name	AWS Region	Creation date
adhityan-bucket-1	Asia Pacific (Mumbai) ap-south-1	November 5, 2025, 11:32:17 (UTC+05:30)
adhityan-bucket-2	Asia Pacific (Mumbai) ap-south-1	November 5, 2025, 11:34:56 (UTC+05:30)
adhityan-bucket-3	Asia Pacific (Mumbai) ap-south-1	November 5, 2025, 11:35:23 (UTC+05:30)

The image shows two separate screenshots of the Amazon S3 console, each displaying the contents of a bucket named "adhithyan-bucket-1" and "adhithyan-bucket-2" respectively. Both screenshots are from the same browser session, indicated by the identical URL and header information.

Screenshot 1: adhithyan-bucket-1

The left sidebar shows the "Amazon S3" navigation menu with the "General purpose buckets" section expanded. Under "General purpose buckets", the following items are listed: Directory buckets, Table buckets, Vector buckets, Access Grants, Access Points (General Purpose Buckets, FSx file systems), Access Points (Directory Buckets), Object Lambda Access Points, Multi-Region Access Points, Batch Operations, and IAM Access Analyzer for S3. Below this is a "Block Public Access settings for this account" section, followed by a "Storage Lens" section with "Dashboards" and "CloudShell" options.

The main content area is titled "adhithyan-bucket-1" and shows the "Objects" tab selected. It displays one object: "cloud_project_image_1.png". The object details are as follows:

Name	Type	Last modified	Size	Storage class
cloud_project_image_1.png	png	November 5, 2025, 11:48:32 (UTC+05:30)	521.2 KB	Standard

Screenshot 2: adhithyan-bucket-2

The right sidebar shows the "Amazon S3" navigation menu with the "General purpose buckets" section expanded. The list of items is identical to the first screenshot. Below this is a "Block Public Access settings for this account" section, followed by a "Storage Lens" section with "Dashboards" and "CloudShell" options.

The main content area is titled "adhithyan-bucket-2" and shows the "Objects" tab selected. It displays one object: "cloud_project_image_2.png". The object details are as follows:

Name	Type	Last modified	Size	Storage class
cloud_project_image_2.png	png	November 5, 2025, 11:54:17 (UTC+05:30)	513.4 KB	Standard

Both screenshots show the same browser interface, including the address bar, tabs, and system status bar at the bottom.

The screenshot displays two side-by-side views of the AWS S3 console, both showing the details for the file 'cloud_project_image_2.png' located in the 'adithyan-bucket-2' bucket.

Top Screenshot (Left):

- Object Details:** The file 'cloud_project_image_2.png' has the following properties:
 - Owner:** e3b52f340adb6d359fc15864af815a792a41c89b334a73bc05bd18e5f8f631f
 - AWS Region:** Asia Pacific (Mumbai) ap-south-1
 - Last modified:** November 5, 2025, 11:54:17 (UTC+0:30)
 - Size:** 513.4 KB
 - Type:** png
 - Key:** cloud_project_image_2.png
- Actions:** Copy S3 URI, Download, Open in new tab, Object actions dropdown.

Bottom Screenshot (Right):

- Bucket Overview:** The 'adithyan-bucket-3' bucket contains one object: 'cloud_project_image_3.png'.
 - Object Details:** The file 'cloud_project_image_3.png' has the following properties:
 - Name:** cloud_project_image_3.png
 - Type:** png
 - Last modified:** November 5, 2025, 11:58:46 (UTC+0:30)
 - Size:** 527.6 KB
 - Storage class:** Standard
 - Actions:** Copy S3 URI, Copy URL, Download, Open in new tab, Delete, Actions dropdown, Create folder, Upload.
- Actions:** Find objects by prefix, Sort by Name, Type, Last modified, Size, Storage class.

Screenshot of a browser window showing the AWS S3 console. The user is viewing the properties of an object named "cloud_project_image_3.png" in the bucket "adhithyan-bucket-3".

Properties Tab:

- Object overview:**
 - Owner: e3b52f340adb6d359fc15864af815a792a41c89b334a73bc05bd18e5f8f6311f
 - AWS Region: Asia Pacific (Mumbai) ap-south-1
 - Last modified: November 5, 2025, 11:58:46 (UTC+05:30)
 - Size: 527.6 KB
 - Type: png
 - Key: cloud_project_image_3.png
- S3 URI:** s3://adhithyan-bucket-3/cloud_project_image_3.png
- Amazon Resource Name (ARN):** arnaws3::adhithyan-bucket-3/cloud_project_image_3.png
- Entity tag (Etag):** t3562407ed84f7b8aff4c92b22450
- Object URL:** https://adhithyan-bucket-3.s3.ap-south-1.amazonaws.com/cloud_project_image_3.png

Permissions Tab:

Storage Lens:

CloudShell:

```
// Start the server
app.listen(PORT, () => {
  console.log(`Server is running on port ${PORT}`);
});
root@ip-10-0-0-13:/myprojectfiles# ls -l
total 12
-rw-r--r-- 1 root root 5525 Nov 5 07:33 completion.html
-rw-r--r-- 1 root root 379 Nov 5 07:35 app.js
root@ip-10-0-0-13:/myprojectfiles# npm install express
added 68 packages in 4s

16 packages are looking for funding
  run 'npm fund' for details
root@ip-10-0-0-13:/myprojectfiles# sudo node app.js
Server is running on port 80

^C
root@ip-10-0-0-13:/myprojectfiles# vi app.js
root@ip-10-0-0-13:/myprojectfiles# sudo node app.js
Server is running on port 80
^C
root@ip-10-0-0-13:/myprojectfiles# vi completion.html
root@ip-10-0-0-13:/myprojectfiles# sudo node app.js
Server is running on port 80
^C
root@ip-10-0-0-13:/myprojectfiles# vi completion.html

[1]+  Stopped                  vi completion.html
root@ip-10-0-0-13:/myprojectfiles# vi completion.html
root@ip-10-0-0-13:/myprojectfiles# sudo node app.js
Server is running on port 80
```

```

Session ID: Adhithyan-3-oZn7d6rx5yde4lxssulecoxa
Instances ID: i-006599810e235e143?region=ap-south-1#:
Shortcuts Instance ID: i-006599810e235e143

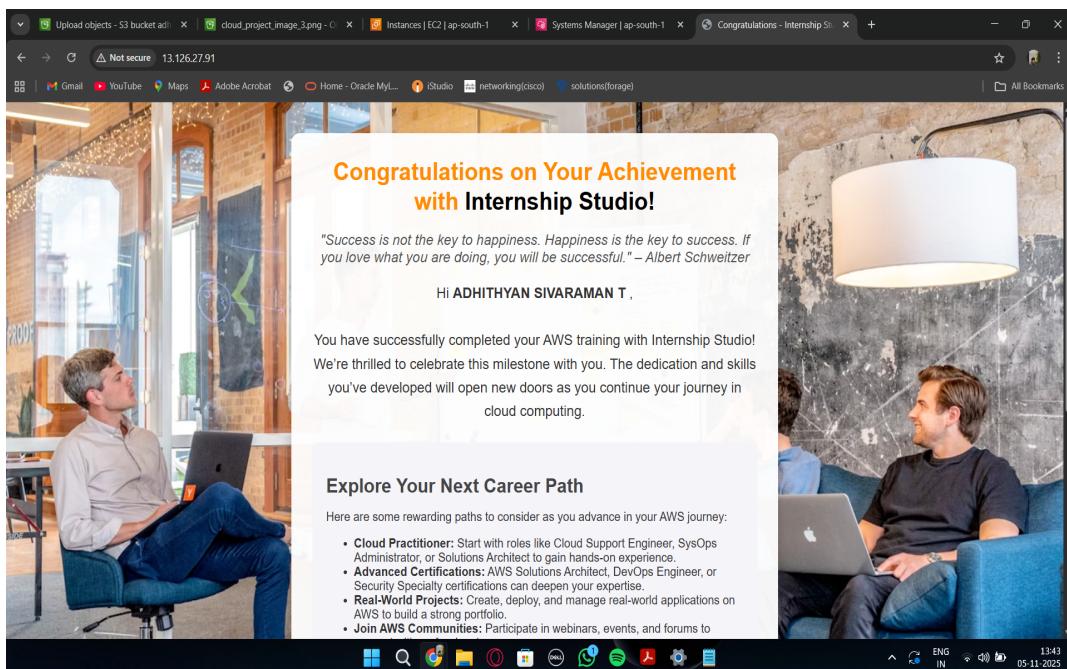
root@ip-10-0-0-13:/myprojectfiles# ls -ltr
total 12
-rw-r--r-- 1 root root 5525 Nov  5 07:33 completion.html
-rw-r--r-- 1 root root 379 Nov  5 07:33 app.js
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^C
root@ip-10-0-0-13:/myprojectfiles# vi completion.html

[1]+  Stopped                  vi completion.html
root@ip-10-0-0-13:/myprojectfiles# vi completion.html
root@ip-10-0-0-13:/myprojectfiles# sudo node app.js
Server is running on port 80
^C
root@ip-10-0-0-13:/myprojectfiles# node -v
v18.19.1
root@ip-10-0-0-13:/myprojectfiles# npm -v
9.2.0
root@ip-10-0-0-13:/myprojectfiles#

```



CONCLUSION

This project provided hands-on experience in deploying real-world applications using cloud infrastructure. It helped develop a deep understanding of EC2 instance management, secure SSH-less access with SSM Session Manager, Static asset hosting through S3, IAM role assignment, bucket policy configuration, and inbound firewall rule handling. Troubleshooting connectivity issues allowed practical learning of how cloud networking and public accessibility differ from local development environments. Overall, this project builds a strong foundation for advanced cloud architecture, DevOps pipelines, container deployment (ECS/EKS/Docker), automated CI/CD workflows, and scalable production-grade distributed systems.