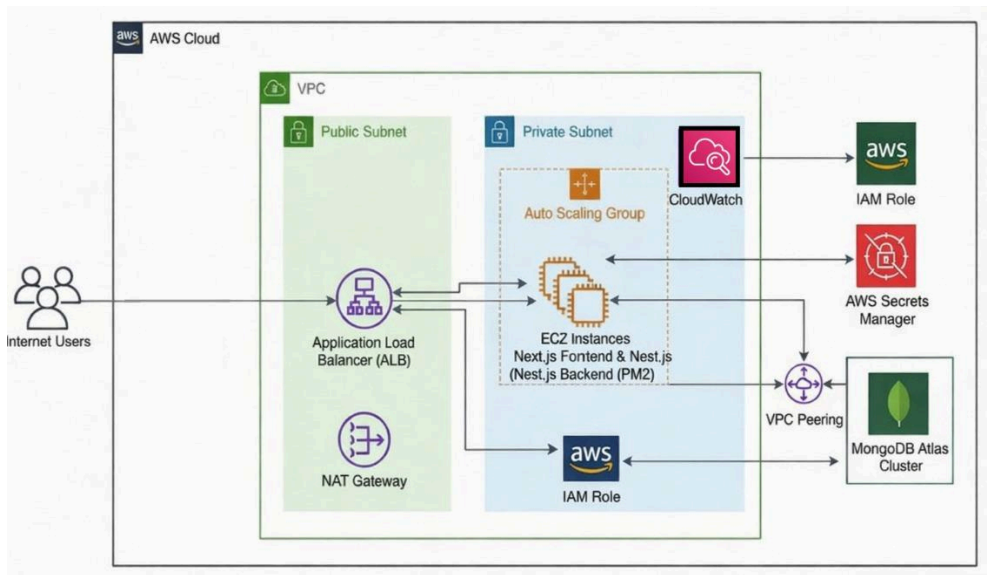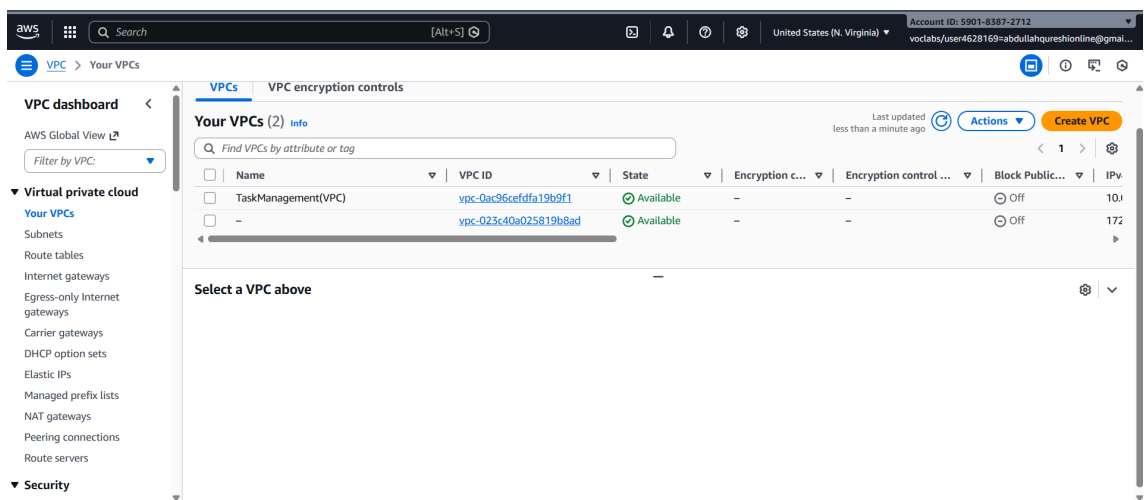# AWS ARCHITECTURE DESIGN, IMPLEMENTATION STEPS & SCREENSHOTS

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1. Architectural Diagram

2. AWS Foundation Architecture(VPC etc)

Subnets (10) Info

Last updated 2 minutes ago · Actions ▼ · **Create subnet**

Find subnets by attribute or tag

‹ 1 › ⚙

	Name	Subnet ID	State	VPC	Block Public...	IPv4 CIDR
☐	–	subnet-087d29bcd66ea64bf	⊘ Available	vpc-023c40a025819b8ad	⊖ Off	172.31.0.0/20
☐	Private Subnet A	subnet-0c25721c4d90865fb	⊘ Available	vpc-0ac96cefdfa19b9f1 | TaskM...	⊖ Off	10.0.11.0/24
☐	–	subnet-07a0d8434b4825a67	⊘ Available	vpc-023c40a025819b8ad	⊖ Off	172.31.80.0/2
☐	–	subnet-0180561d28b1c90c6	⊘ Available	vpc-023c40a025819b8ad	⊖ Off	172.31.16.0/2
☐	Private Subnet B	subnet-01587112e5fc17aa6	⊘ Available	vpc-0ac96cefdfa19b9f1 | TaskM...	⊖ Off	10.0.12.0/24
☐	–	subnet-0204f39213b93ae89	⊘ Available	vpc-023c40a025819b8ad	⊖ Off	172.31.48.0/2
☐	Public Subnet A	subnet-0c0fd854e6ce194d7	⊘ Available	vpc-0ac96cefdfa19b9f1 | TaskM...	⊖ Off	10.0.1.0/24
☐	Public Subnet B	subnet-039d72a1c7aaa425a8	⊘ Available	vpc-0ac96cefdfa19b9f1 | TaskM...	⊖ Off	10.0.2.0/24

Security Groups (4) Info

Actions ▼ · Export security groups to CSV ▼ · **Create security group**

Find security groups by attribute or tag

‹ 1 › ⚙

	Name	Security group ID	Security group name	VPC ID	Description
☐	–	sg-0a65cd8f6ac25988f	TaskManagement-SG	vpc-0ac96cefdfa19b9f1	Defining rule for a
☐	–	sg-0b1ddb71229c35771	default	vpc-0ac96cefdfa19b9f1	default VPC secur
☐	–	sg-02519613a384ab241	default	vpc-023c40a025819b8ad	default VPC secur
☐	–	sg-0bba6a6a4bcb0c04f	loadBalancerSG	vpc-0ac96cefdfa19b9f1	using for load bal

Route tables (5) Info

Last updated 5 minutes ago · Actions ▼ · **Create route table**

Find route tables by attribute or tag

‹ 1 › ⚙

	Name	Route table ID	Explicit subnet associ...	Edge associations	Main	VPC
☐	–	rtb-00f6f9998768747f6	–	–	Yes	vpc-0ac96cefdfa19b9f1 | TaskM.
☐	PublicRT	rtb-0b4b510126f2a6162	2 subnets	–	No	vpc-0ac96cefdfa19b9f1 | TaskM.
☐	–	rtb-05957de39a3786be9	–	–	Yes	vpc-023c40a025819b8ad
☐	PrivateRT	rtb-07946f2902cb57413	2 subnets	–	No	vpc-0ac96cefdfa19b9f1 | TaskM.
☐	–	rtb-08ad41dc73aae1e9a	–	nat-11459a348f4d...	No	vpc-0ac96cefdfa19b9f1 | TaskM.

Internet gateways (2) Info

Actions ▼ · **Create internet gateway**

Find internet gateways by attribute or tag

‹ 1 › ⚙

	Name	Internet gateway ID	State	VPC ID	Owner
☐	TaskManagement(IGW)	igw-07860a5ebb033467f	⊘ Attached	vpc-0ac96cefdfa19b9f1 | TaskManage...	590183872712
☐	–	igw-0d356933bc5be8909	⊘ Attached	vpc-023c40a025819b8ad	590183872712

Elastic IP addresses (7) Info

Actions ▼   **Allocate Elastic IP address**

🔍 Find elastic IP addresses by attribute or tag

< 1 >

	Name	▽	Allocated IPv4 addr... ▽	Type ▽	Allocation ID ▽	Reverse DNS record ▽	A:
☐	–		35.153.242.3	Public IP	eipalloc-0e131249063968b40	–	–
☐	–		35.153.87.54	Public IP	eipalloc-0f06a013f9cb1dc67	–	–
☐	TaskManagement		52.45.96.186	Public IP	eipalloc-06956679b125486a6	–	i-(
☐	–		54.88.159.114	Public IP	eipalloc-0eccb65bb57e251e0	–	–

NAT gateways (1) Info

Actions ▼   **Create NAT gateway**

🔍 Find NAT gateways by attribute or tag

[✕]   Clear filters

< 1 >

	Name ▽	NAT gateway ID ▽	Connectivity... ▽	State ▽	State message ▽	Availability ... ▽	Route table ID ▽	P
○	NAT Gateway	nat-11459a348f4de148e	Public	⊘ Available	–	Regional	rtb-08ad41dc7...	3

3. MongoDB Atlas and EC2 Deployment

ORGANIZATION
Abdullah's Org - 202... ▼   >   PROJECT
Task Management ▼

Clusters

🔍 Find a database deployment....

🗄 Edit Config ▼   **+ Create**

● **Cluster0**   Connect   View Monitoring   Browse Collections   ···   FREE

Enhance Your Experience

For production throughput and richer metrics, upgrade to a dedicated cluster now!

[Upgrade]

● R 0
● W
Last 5 hours
0.2/s

Connections 5.0
Last 5 hours
6.0

● In 15.40 B/s
● Out 225.20 B/s
Last 5 hours
332.68 B/s

Data Size
112.75 KB / 512.00 MB (0%)
Last 14 days
512.00 MB

VERSION	REGION	TYPE	BACKUPS	LINKED APP SERVICES	ATLAS SQL	ATLAS SEARCH
8.0.17	AWS / N. Virginia (us-east-1)	Replica Set - 3 nodes	Inactive	None Linked	Connect	Create Index

[+ Add Tag]

Data Explorer

{} My Queries
Data Modeling

CLUSTERS (1)

Search clusters

- Cluster0
  - admin
  - local
  - test
    - comments
    - tasks ...
    - users

tasks

Cluster0 > test > tasks

View monitoring | Visualize Your Data

Documents 3 | Aggregations | Schema | Indexes 1 | Validation

Type a query: { field: 'value' } or **Generate query**

Explain | Reset | Find | Options

ADD DATA | UPDATE | DELETE

25 1 – 3 of 3

```
_id: ObjectId('6947cec0035939bd0f5e4088')
title : "test 1"
description : "db test"
startDate : 2025-12-21T00:00:00.000+00:00
endDate : 2025-12-25T00:00:00.000+00:00
status : "to-do"
createdBy : "te    2025-12-25T00:00:00.000+00:00
assignedTo : Array (empty)
comment : Array (empty)
uploads : Array (empty)
createdAt : 2025-12-21T10:41:04.423+00:00
updatedAt : 2025-12-25T09:59:55.930+00:00
__v : 0
```

EC2

[Alt+S]

United States (N. Virginia)

Account ID: 5901-8387-2712
voclabs/user4628169=abdullahqureshionline@gmai...

Instances (4) Info

Last updated less than a minute ago

Connect | Instance state ▼ | Actions ▼ | **Launch instances** ▼

Find Instance by attribute or tag (case-sensitive)

All states ▼

1

	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4
		i-02987446dae9a9c68	⊖ Terminated	t3.small	–	View alarms +	us-east-1b	–
		i-05982213fc443a891	⊘ Running	t3.small	⊘ 3/3 checks passed	View alarms +	us-east-1b	–
		i-0e300d39578430512	⊖ Terminated	t3.small	–	View alarms +	us-east-1b	–
	Task Manage…	i-0ba85fe0cf47f9899	⊘ Running	t3.small	⊘ 3/3 checks passed	View alarms +	us-east-1a	–

Instance summary for i-0ba85fe0cf47f9899 (Task Management) Info

Updated less than a minute ago

Connect | Instance state ▼ | Actions ▼

Instance ID
i-0ba85fe0cf47f9899

Public IPv4 address
52.45.96.186 | open address

Private IPv4 addresses
10.0.1.52

IPv6 address
–

Instance state
⊘ Running

Public DNS
–

Hostname type
IP name: ip-10-0-1-52.ec2.internal

Private IP DNS name (IPv4 only)
ip-10-0-1-52.ec2.internal

Answer private resource DNS name
–

Instance type
t3.small

Elastic IP addresses
52.45.96.186 (TaskManagement) [Public IP]

Auto-assigned IP address
–

VPC ID
vpc-0ac96cefdfa19b9f1 (TaskManagement(VPC))

AWS Compute Optimizer finding
ⓘ Opt-in to AWS Compute Optimizer for recommendations.

| Learn more

IAM Role
–

Subnet ID
subnet-0c0fd854e6ce194d7 (Public Subnet A)

Auto Scaling Group name
–

IMDSv2
Required

Instance ARN
arn:aws:ec2:us-east-1:590183872712:instance/i-0ba85fe0cf47f9899

Managed
false

task-management-template (lt-097e29809c71fc16a)

Actions ▼   Delete template

Launch template details

Launch template ID	Launch template name	Default version	Owner
lt-097e29809c71fc16a	task-management-template	1	arn:aws:sts::590183872712:assumed-role/voclabs/user4628169=abdullahqureshionline@gmail.com

Details   Versions   Template tags

Launch template version details

Actions ▼   Delete template version

Version	Description	Date created	Created by
1 (Default)	initial version	2025-12-25T11:13:58.000Z	arn:aws:sts::590183872712:assumed-role/voclabs/user4628169=abdullahqureshionline@gmail.com

Instance details   Storage   Resource tags   Network interfaces   Advanced details

AMI ID	Instance type	Availability Zone	Availability Zone Id
ami-0b0af13bfd54d1bc8	t3.small	-	-

Key pair name	Security groups	Security group IDs
taskManagement	-	sq-0a65cd8f6ac25988f

Image summary for ami-0b0af13bfd54d1bc8

EC2 Image Builder   Actions ▼   **Launch instance from AMI**

AMI ID	Image type	Platform details	Root device type
ami-0b0af13bfd54d1bc8	machine	Linux/UNIX	EBS

AMI name	Owner account ID	Architecture	Usage operation
task-management-ami	590183872712	x86_64	RunInstances

Root device name	Status	Source	Virtualization type
/dev/sda1	⊘ Available	590183872712/task-management-ami	hvm

Boot mode	State reason	Creation date	Kernel ID
uefi-preferred	–	2025-12-25T10:39:12.000Z	–

Description	Product codes	RAM disk ID	Deprecation time
–	–	–	–

Last launched time	Block devices	Deregistration protection	Allowed image
Sat Jan 03 2026 11:36:16 GMT+0500 (Pakistan Standard Time)	/dev/sda1=snap-047c82f94d9cd4d9a:8:true:gp3 /dev/sdb=ephemeral0 /dev/sdc=ephemeral1	⊖ Disabled	-

Source AMI ID	Source AMI Region
ami-0ecb62995f68bb549	us-east-1

4. Domain & SSL Configuration

5. Testing

```
ubuntu@ip-10-0-1-52:~$ ls
task-management
ubuntu@ip-10-0-1-52:~$ cd task-management
ubuntu@ip-10-0-1-52:~/task-management$ ls
backend  frontend
ubuntu@ip-10-0-1-52:~/task-management$ cd backend
ubuntu@ip-10-0-1-52:~/task-management/backend$ cd ..
ubuntu@ip-10-0-1-52:~/task-management$ pm2 ls
```

id	name	mode	↻	status	cpu	memory
0	backend	fork	0	online	0%	99.7mb
1	frontend	fork	0	online	0%	56.9mb

```
ubuntu@ip-10-0-1-52:~/task-management$
```
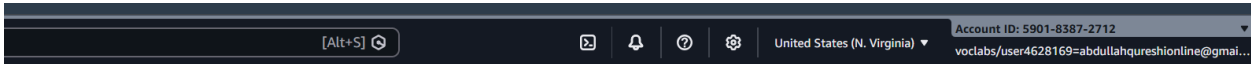
```
ubuntu@ip-10-0-1-52:~/task-management$ cd backend
ubuntu@ip-10-0-1-52:~/task-management/backend$ ls
README.md  eslint.config.mjs  migrate-mongo-config.js  node_modules      package.json  tsconfig.build.json  uploads
dist       exports            nest-cli.json            package-lock.json  src           tsconfig.json
ubuntu@ip-10-0-1-52:~/task-management/backend$ cd ..
ubuntu@ip-10-0-1-52:~/task-management$ cd frontendd
-bash: cd: frontendd: No such file or directory
ubuntu@ip-10-0-1-52:~/task-management$ cd frontend
ubuntu@ip-10-0-1-52:~/task-management/frontend$ ls
README.md  eslint.config.mjs  next-env.d.ts  next.config.ts  node_modules  package-lock.json  package.json  postcss.config.mjs  public  src  tsconfig.json
ubuntu@ip-10-0-1-52:~/task-management/frontend$
```

```
ubuntu@ip-10-0-1-52:~/task-management/frontend$ pm2 logs 1
[TAILING] Tailing last 15 lines for [1] process (change the value with --lin
es option)
/home/ubuntu/.pm2/logs/frontend-error.log last 15 lines:
/home/ubuntu/.pm2/logs/frontend-out.log last 15 lines:
1|frontend |    - Local:        http://localhost:3000
1|frontend |    - Network:      http://10.0.1.52:3000
1|frontend |
1|frontend |   √ Starting...
1|frontend |   √ Ready in 806ms
1|frontend |
1|frontend | > taskmanagement@0.1.0 start
1|frontend | > next start
1|frontend |
1|frontend |    ▲ Next.js 15.5.2
1|frontend |    - Local:        http://localhost:3000
1|frontend |    - Network:      http://10.0.1.52:3000
1|frontend |
1|frontend |   √ Starting...
1|frontend |   √ Ready in 1680ms
```

```
ubuntu@ip-10-0-1-52:~/task-management/frontend$ pm2 logs 0
[TAILING] Tailing last 15 lines for [0] process (change the value with --lin
es option)
/home/ubuntu/.pm2/logs/backend-error.log last 15 lines:
/home/ubuntu/.pm2/logs/backend-out.log last 15 lines:
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [RouterExplorer] M
apped {/task/user, GET} route +1ms
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [RouterExplorer] M
apped {/task/:id, PATCH} route +1ms
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [RouterExplorer] M
apped {/task/removeUser/:taskId, PATCH} route +0ms
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [RouterExplorer] M
apped {/task/addUser/:taskId, PATCH} route +1ms
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [RouterExplorer] M
apped {/task/update/:id, PATCH} route +0ms
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [RouterExplorer] M
apped {/task/:id, DELETE} route +1ms
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [RouterExplorer] M
apped {/task/export-csv/:id, GET} route +0ms
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [RouterExplorer] M
apped {/task/images, POST} route +1ms
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [RoutesResolver] C
ommentsController {/comments}: +0ms
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [RouterExplorer] M
apped {/comments, POST} route +1ms
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [RouterExplorer] M
apped {/comments, GET} route +0ms
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [RouterExplorer] M
apped {/comments/:id, GET} route +0ms
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [RouterExplorer] M
apped {/comments/:id, PATCH} route +1ms
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [RouterExplorer] M
apped {/comments/:id, DELETE} route +0ms
0|backend  | [Nest] 854  - 01/03/2026, 3:18:23 PM     LOG [NestApplication]
Nest application successfully started +4ms
```

6. Load Balancer & Auto Scaling

task-management-alb

task-management-alb

▼ Details

Load balancer type	**Status**	**VPC**	**Load balancer IP address type**
Application	⊘ Active	vpc-0ac96cefdfa19b9f1 ↗	IPv4
Scheme	**Hosted zone**	**Availability Zones**	**Date created**
Internet-facing	Z35SXDOTRQ7X7K	subnet-0c0fd854e6ce194d7 ↗ us-east-1a (use1-az4)	December 25, 2025, 15:51 (UTC+05:00)
		subnet-039d72a1c7aa425a8 ↗ us-east-1b (use1-az6)	

Load balancer ARN	**DNS name** Info
arn:aws:elasticloadbalancing:us-east-1:590183872712:loadbalancer/app/task-management-alb/d792fd93998b8632	task-management-alb-551903363.us-east-1.elb.amazonaws.com (A Record)

EC2 > Target groups > task-management

task-management

Details
arn:aws:elasticloadbalancing:us-east-1:590183872712:targetgroup/task-management/a57bcf96b9a5fab2

Target type	**Protocol : Port**	**Protocol version**	**VPC**
Instance	HTTP: 80	HTTP1	vpc-0ac96cefdfa19b9f1 ↗
IP address type	**Load balancer**		
IPv4	task-management-alb ↗		

2	⊘ 2	⊗ 0	⊖ 0	⊘ 0	⊖ 0
Total targets	Healthy	Unhealthy	Unused	Initial	Draining
	0 Anomalous				

▶ **Distribution of targets by Availability Zone (AZ)**
Select values in this table to see corresponding filters applied to the Registered targets table below.

EC2 > Auto Scaling groups > Task Management AS

Task Management AS

Task Management AS Capacity overview
arn:aws:autoscaling:us-east-1:590183872712:autoScalingGroup:680f3686-7789-4993-b8c7-04b525340b49:autoScalingGroupName/Task Management AS

Desired capacity	**Scaling limits**	**Desired capacity type**	**Status**
1	1 - 3	Units (number of instances)	-

Date created
Thu Dec 25 2025 16:21:27 GMT+0500 (Pakistan Standard Time)

Details | Integrations | Automatic scaling | Instance management | Instance refresh | Activity | Monitoring | Tags - *moved*

Launch template

Launch template	**AMI ID**	**Instance type**	**Owner**
lt-097e29809c71fc16a	ami-0b0af13bfd54d1bc8	t3.small	arn:aws:sts::590183872712:assumed-role/voclabs/user4628169=abdullahqureshionline@gmail.com
task-management-template			
Version	**Security groups**	**Security group IDs**	**Create time**
Default	-	sg-0a65cd8f6ac25988f	Thu Dec 25 2025 16:13:58 GMT+0500