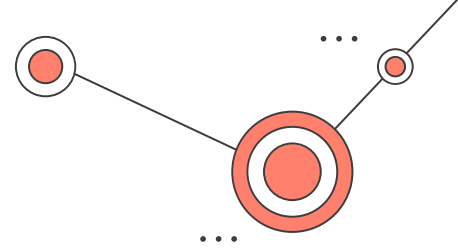


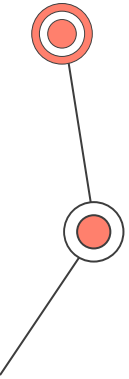
# Gawai Studio

Small Project 2  
Oleh: Fiardika Rizki

# Goal Small Project 2

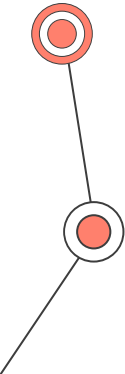
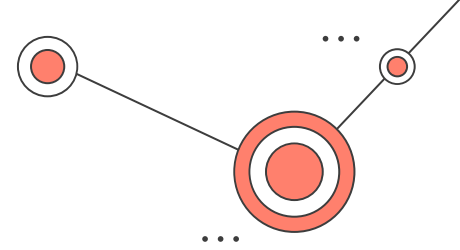
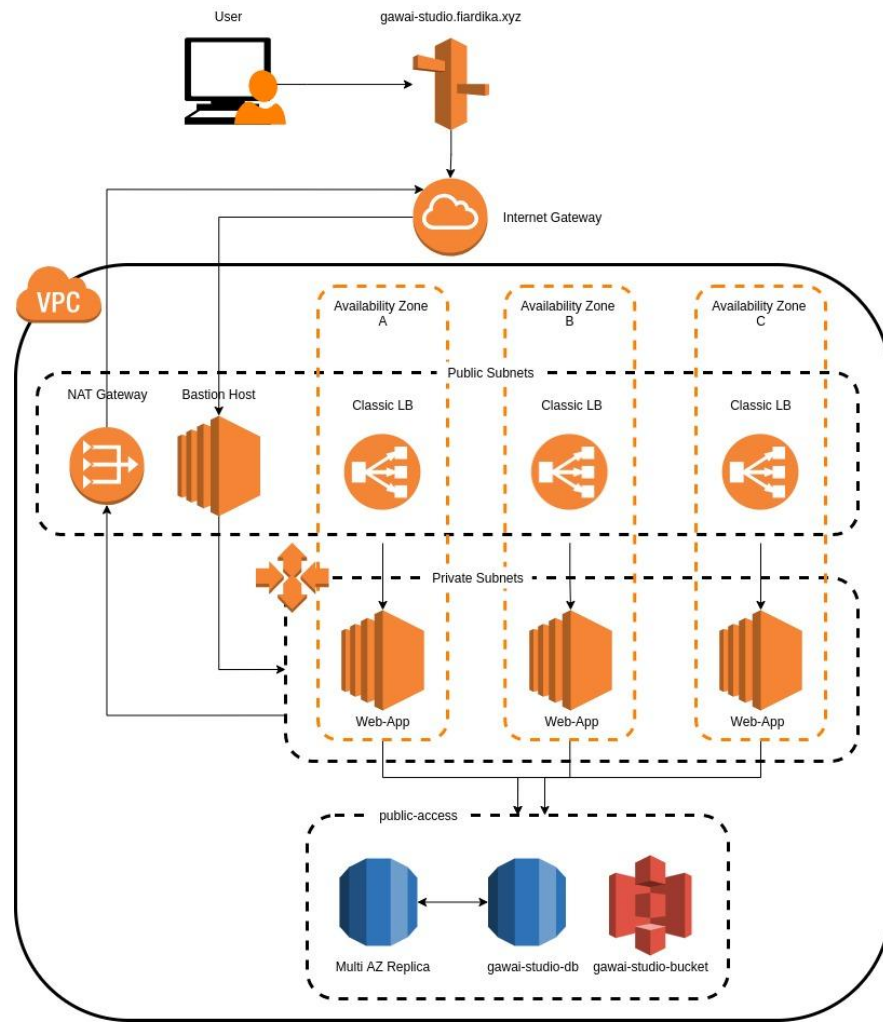


1. Membuat topologi infrastruktur cloud AWS
2. Membangun keperluan jaringan pada infrastruktur cloud
3. Deploy Aplikasi (Web, DNS, Database, Storage)
4. Menerapkan High Availability dengan Load Balancer dan Auto Scaling
5. Membuat akses user billing pada console cloud platform
6. Membuat budgeting plan untuk infrastruktur yang dibuat



# Cloud Infrastructure







# Kebutuhan Jaringan

# Kebutuhan Jaringan

VPC Services	Details
VPC (gawai-studio-vpc)	CIDR 10.10.10.0/24
Subnets	CIDR 10.10.10.0/27 (public subnet zone A) CIDR 10.10.10.32/27 (public subnet zone B) CIDR 10.10.10.64/27 (public subnet zone C) CIDR 10.10.10.96/27 (private subnet zone A) CIDR 10.10.10.128/27 (private subnet zone B) CIDR 10.10.10.160/27 (private subnet zone C)
Internet Gateway	Attached to gawai-studio-vpc
NAT Gateway	Subnet to public zone A
Route Tables	Private-route - Destination NAT (0.0.0.0/0) - Subnet Associations (Private Zone A-C) Public-route - Destination IGW (0.0.0.0/0) - Subnet Associations (Public Zone A-C)

Name ▾	VPC ID ▾	State ▾	IPv4 CIDR
gawai-studio-vpc-sp2	vpc-08f1f48cf8afe4a38	✔ Available	10.10.10.0/24

private-subnet-1a	subnet-0cdc426746f1790c0	✔ Available	vpc-08f1f48cf8afe4a38   gawai-studio-vpc-sp2	10.10.10.96/27
private-subnet-1b	subnet-08f81a02e2e046822	✔ Available	vpc-08f1f48cf8afe4a38   gawai-studio-vpc-sp2	10.10.10.128/27
private-subnet-1c	subnet-0f72e8cb87874ca4c	✔ Available	vpc-08f1f48cf8afe4a38   gawai-studio-vpc-sp2	10.10.10.160/27
public-subnet-1a	subnet-01033ff770bb355aa	✔ Available	vpc-08f1f48cf8afe4a38   gawai-studio-vpc-sp2	10.10.10.0/27
public-subnet-1b	subnet-06600465cff9a21fa	✔ Available	vpc-08f1f48cf8afe4a38   gawai-studio-vpc-sp2	10.10.10.32/27
public-subnet-1c	subnet-0595174c231f78040	✔ Available	vpc-08f1f48cf8afe4a38   gawai-studio-vpc-sp2	10.10.10.64/27

Name ▾	Internet gateway ID ▾	State ▾	VPC ID ▾
gawai-studio-igw-sp2	igw-0c96c36e3f238c75c	✔ Attached	vpc-08f1f48cf8afe4a38   gawai-studio-vpc-sp2

	Name ▾	NAT gateway ID ▾	State ▾	State message ▾	Elastic IP address ▾	Private IP address ▾
🔵	gawai-studio-nat	nat-0c83a9fb96c09e762	✔ Available	–	52.74.198.71	10.10.10.14

Name ▾	Route Table ID ▾	Explicit subnet associator	Edge associations	Main	VPC ID
public-route	rtb-0277169c6ccf08bab	3 subnets	-	Yes	vpc-08f1f48cf8afe4a38   gawai-studio-vpc-sp2
private-route	rtb-08f28cb20d755b61e	3 subnets	-	No	vpc-08f1f48cf8afe4a38   gawai-studio-vpc-sp2

# Deploy Aplikasi Web





# Deploy Aplikasi Web

- Menggunakan konsep Bastion Host untuk akses SSH
- Default minimum Instance yang dijalankan 2 buah (private)
- Konektivitas Database menggunakan RDS yang disetting sebagai public
- Mounting S3 dengan tiap-tiap instance untuk kebutuhan asset website (image)
- Hosting dengan record name gawai-studio.fiardika.xyz dengan route LoadBalancing

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...
bastion-host	i-0d45ab14ca0d28f86	Running	t2.micro	2/2 checks passed	No alarms	ap-southeast-1a	ec2-52-77-249-128.ap-...	52.77.249.128
web-app	i-0e4d918f56a77a138	Running	t2.micro	2/2 checks passed	No alarms	ap-southeast-1b	-	-
web-app	i-0bc3d4191dbe96d3d	Running	t2.micro	2/2 checks passed	No alarms	ap-southeast-1c	-	-

```
<?php
```

```
$db_host = "gawai-studio-db.cfigdwymc6w9.ap-southeast-1.rds.amazonaws.com";
$db_user = "gawaistudio";
$db_pass = "1234567890";
$db_name = "dbsosmed";
```

gawai-studio-db

ModifyActions

Summary

DB identifier

gawai-studio-db

CPU

2.37%

Status

Available

Class

db.t2.micro

Role

Instance

Current activity

0 Connections

Engine

MySQL Community

Region & AZ

ap-southeast-1c

Connectivity & security

Monitoring

Logs & events

Configuration

Maintenance & backups

Tags

Connectivity & security

Endpoint & port

Endpoint

gawai-studio-db.cfigdwymc6w9.ap-southeast-1.rds.amazonaws.com

Port

3306

Networking

Availability zone

ap-southeast-1c

VPC

gawai-studio-vpc-sp2 (vpc-08f1f48cf8afe4a38)

Subnet group

default-vpc-08f1f48cf8afe4a38

Subnets

subnet-0595174c231f78040  
subnet-06500465c0f9a21fa  
subnet-01033f770bb3555aa  
subnet-08f81a02e2e046822  
subnet-0cdc426746f1790c0  
subnet-0f72e8cb87874ca4c

Security

VPC security groups

default (sg-03cf672a0e9f0a9a6)  
(active)

Public accessibility

Yes

Certificate authority

rds-ca-2019

Certificate authority date

August 23, 2024 00:08

# gawai-studio-sp2

Objects Properties Permissions Metrics Management Access Points

## Objects (2)

Objects are the fundamental entities stored in Amazon S3. You can use [Amazon S3 inventory](#) to get a list of all objects in your bucket. For others to access your objects, you'll need to explicitly grant them permissions. [Learn more](#)

[Refresh](#) [Copy URL](#) [Open](#) [Download](#) [Delete](#) [Actions](#) [Create folder](#) [Upload](#)

Find objects by prefix

< 1 > ⚙

<input type="checkbox"/>	Name	Type	Last modified	Size	Storage class
<input type="checkbox"/>	 <a href="#">connect.png</a>	png	May 2, 2021, 21:03:05 (UTC+07:00)	18.5 KB	Standard
<input type="checkbox"/>	 <a href="#">default.svg</a>	svg	May 2, 2021, 21:03:04 (UTC+07:00)	1.5 KB	Standard

```
ubuntu@ip-10-10-10-153:~$ df -Th
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/root       ext4      7.7G  2.8G  5.0G  36% /
devtmpfs        devtmpfs  484M    0  484M   0% /dev
tmpfs           tmpfs     490M    0  490M   0% /dev/shm
tmpfs           tmpfs     98M    0  98M   1% /run
tmpfs           tmpfs     5.0M    0  5.0M   0% /run/lock
tmpfs           tmpfs     490M    0  490M   0% /sys/fs/cgroup
/dev/loop0      squashfs  34M    34M    0 100% /snap/amazon-ssm-agent/3552
/dev/loop4      squashfs  32M    32M    0 100% /snap/snapd/11036
/dev/loop3      squashfs  70M    70M    0 100% /snap/lxd/19188
/dev/loop1      squashfs  56M    56M    0 100% /snap/core18/1988
/dev/loop5      squashfs  71M    71M    0 100% /snap/lxd/19647
/dev/loop6      squashfs  33M    33M    0 100% /snap/snapd/11588
/dev/loop2      squashfs  56M    56M    0 100% /snap/core18/1997
tmpfs           tmpfs     98M    0  98M   0% /run/user/1000
s3fs            fuse.s3fs 256T    0 256T   0% /var/www/html/img
```

```
ubuntu@ip-10-10-10-153:~$ ls -al /var/www/html/img/
total 25
drwxrwxrwx 1      1001      1001    0 Jan  1 1970 .
drwxr-xr-x 5 www-data www-data 4096 May  3 04:35 ..
-rwxr-xr-x 1      1001      1001 18912 May  3 06:49 connect.png
-rwxr-xr-x 1      1001      1001 1544 May  3 06:49 default.svg
```

## ► Hosted zone details

[Records \(3\)](#)[DNSSEC signing](#)[Hosted zone tags \(0\)](#)Records (3) [Info](#)[Delete record](#)

Automatic mode is the current search behavior optimized for best filter results. [To change modes go to settings.](#)

Type ▼

Routing policy ▼

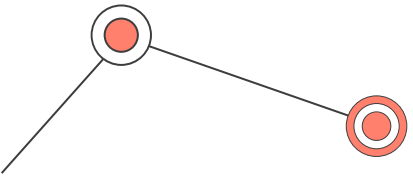
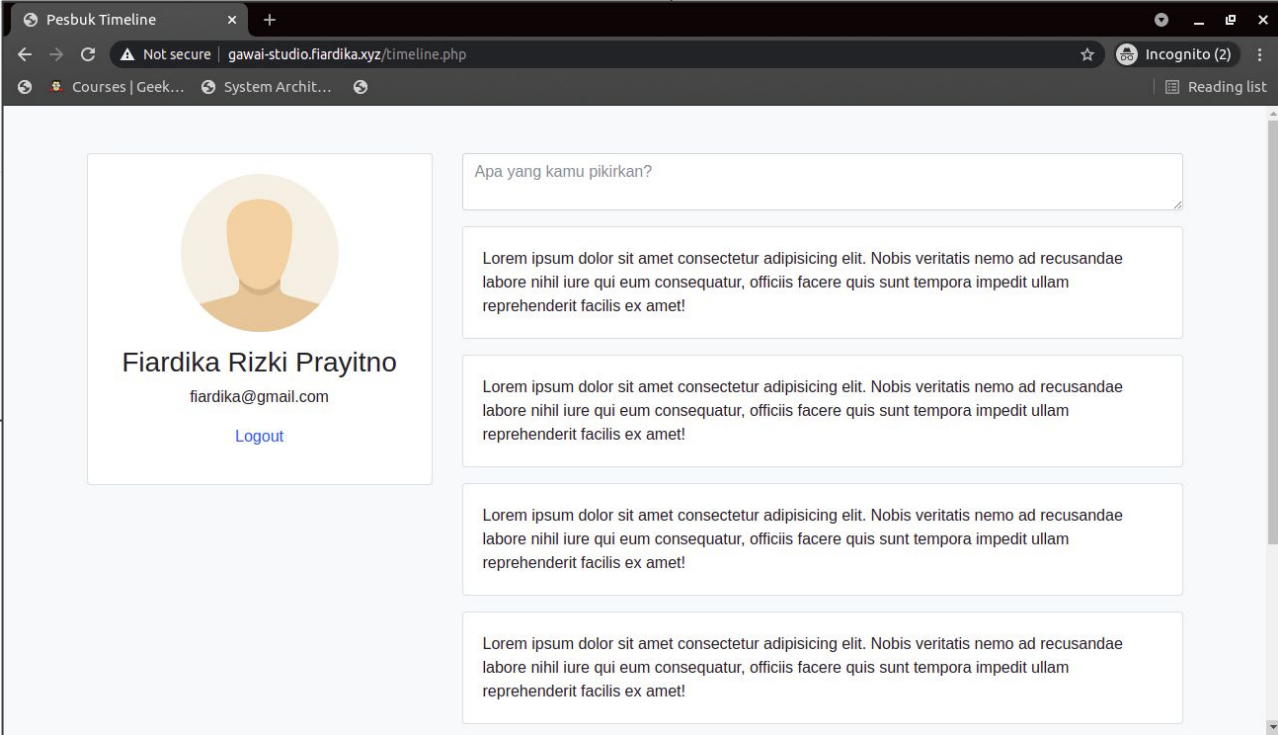
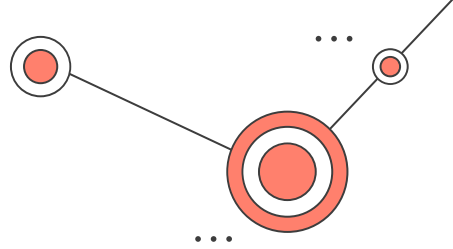
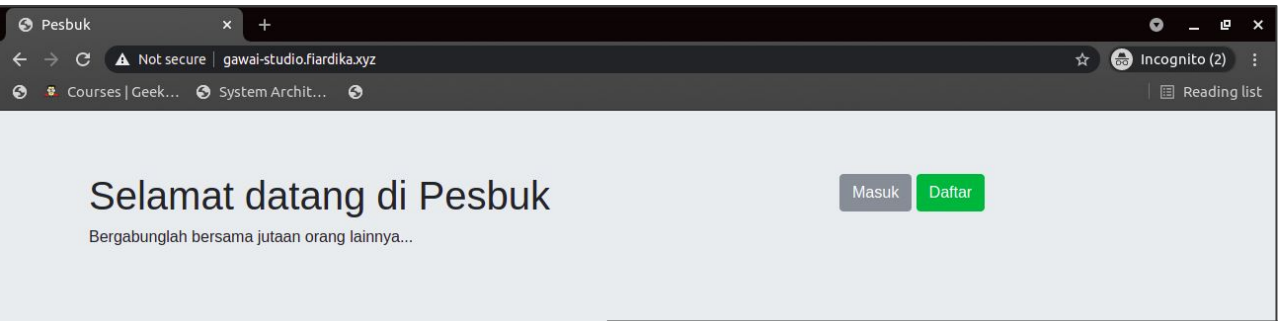
Alias ▼

☐ Record name ▼ Type ▼ Routin... ▼ Differ... ▼ Value/Route traffic to

<input type="checkbox"/>	fiardika.xyz	NS	Simple	-	ns-165.awsdns-20.com. ns-1865.awsdns-41.co.uk. ns-760.awsdns-31.net. ns-1493.awsdns-58.org.
--------------------------	--------------	----	--------	---	--

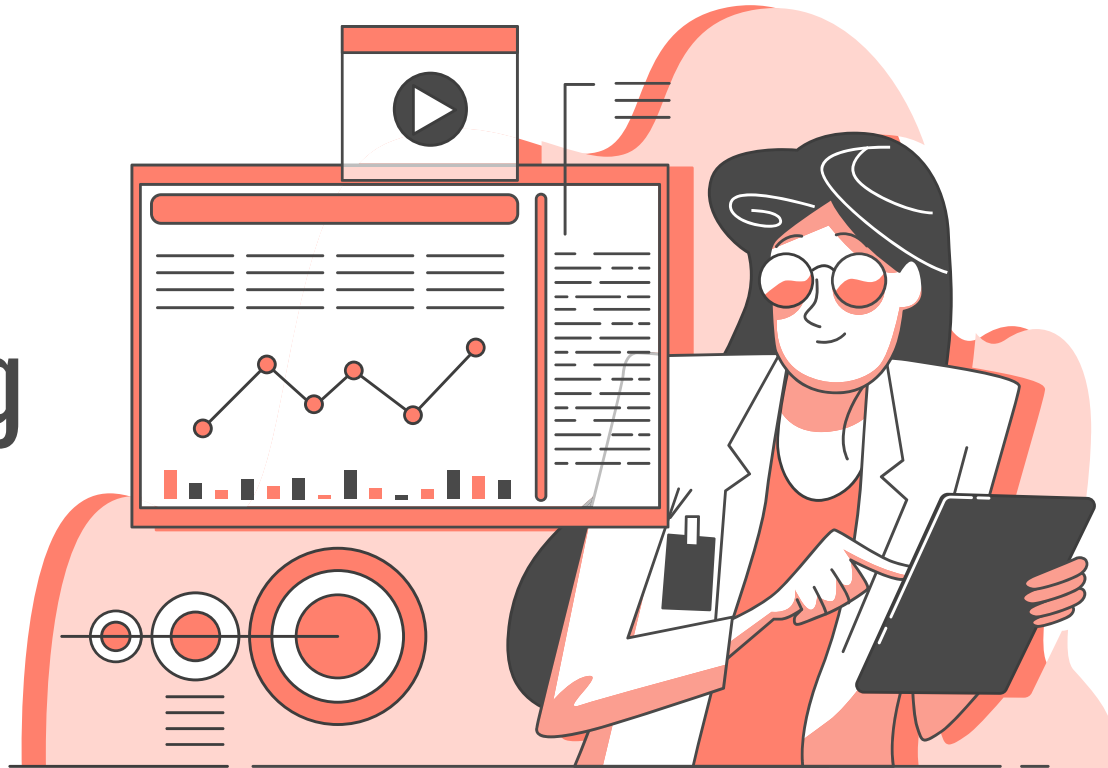
<input type="checkbox"/>	fiardika.xyz	SOA	Simple	-	ns-165.awsdns-20.com. awsdns-hostmaster.amazon.com. 1 7200 900 1209600 86400
--------------------------	--------------	-----	--------	---	--

<input type="checkbox"/>	gawai-studio.fiardika.xyz	A	Simple	-	dualstack.gawai-studio-lb-sp2-417808183.ap-southeast-1.elb.amazonaws.com.
--------------------------	---------------------------	---	--------	---	---





# Load Balancing & Auto Scaling



# Load Balancing & Auto Scaling

Services	Details
ELB	Menggunakan Classic Load Balancer
ELB	Assign Availability Zone pada : <ul style="list-style-type: none"><li>- CIDR 10.10.10.0/27 (public subnet zone A)</li><li>- CIDR 10.10.10.32/27 (public subnet zone B)</li><li>- CIDR 10.10.10.64/27 (public subnet zone C)</li></ul> Assign Instance pada : <ul style="list-style-type: none"><li>- 2 Instance Private (Minimum)</li></ul>
Auto Scaling	Desired Capacity: 2 Minimum Capacity: 2 Maximum Capacity: 4
Auto Scaling	Execute policy when: As required to maintain Average CPU utilization at 80
Auto Scaling	Instances need: 180 seconds to warm up before including in metric

Name	DNS name	State	VPC ID	Availability Zones	Type	Created At	Monitoring
gawai-studio-lb-sp2	gawai-studio-lb-sp2-4178081...		vpc-08f1f48cf8afe4a38	ap-southeast-1b, ap-so...	classic	May 2, 2021 at 8:09:23 PM ...	

Load balancer: gawai-studio-lb-sp2

Description

Instances

Health check

Listeners

Monitoring

Tags

Migration

Basic Configuration

Name

gawai-studio-lb-sp2

\* DNS name

gawai-studio-lb-sp2-417808183.ap-southeast-1.elb.amazonaws.com  
(A Record)

Type

Classic (Migrate Now)

Scheme

internet-facing

Availability Zones

subnet-01033ff770bb355aa - ap-southeast-1a,  
subnet-0595174c231f78040 - ap-southeast-1c,  
subnet-06600465cff9a21fa - ap-southeast-1b

Creation time

May 2, 2021 at 8:09:23 PM UTC+7

Hosted zone

Z1LMS91P8CMLE5

Status

2 of 2 instances in service

VPC

vpc-08f1f48cf8afe4a38

Port Configuration

Port Configuration

80 (HTTP) forwarding to 80 (HTTP)  
Stickiness: LBCookieStickinessPolicy, expirationPeriod='180'

Edit stickiness



## Group details

[Edit](#)

Desired capacity

2

Minimum capacity

2

Maximum capacity

4

Auto Scaling group name

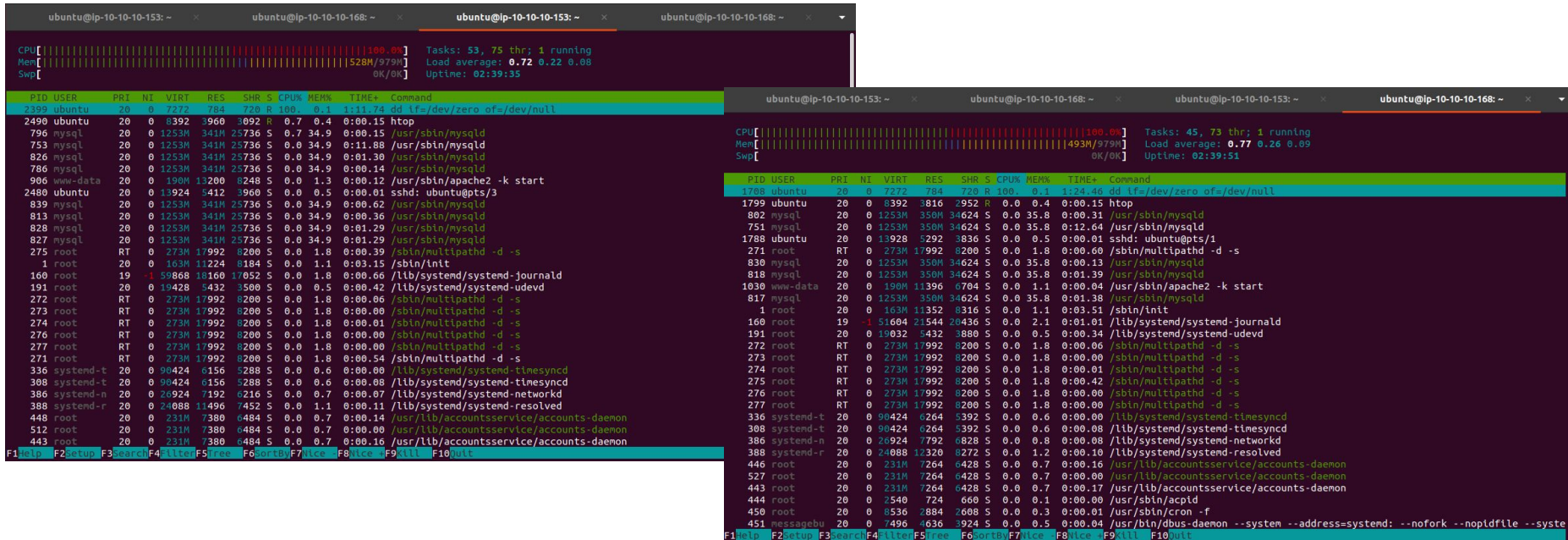
gawai-studio-autoscaling

Date created

Mon May 03 2021 11:51:41 GMT+0700 (Western Indonesia Time)

Amazon Resource Name (ARN)

arn:aws:autoscaling:ap-southeast-1:351029054045:autoScalingGroup:61ba896b-2b8a-44a9-92c6-5b0e19bf822a:autoScalingGroupName/gawai-studio-autoscaling



**Instances (5)** [Info](#)

[Refresh](#) [Connect](#) [Instance state](#) [Actions](#) [Launch instances](#)

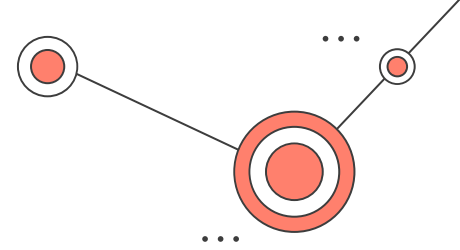
	Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS	Public IPv4 ...	Elastic IP
<input type="checkbox"/>	bastion-host	i-0d45ab14ca0d28f86	Running	t2.micro	2/2 checks passed	No alarms	ap-southeast-1a	ec2-52-77-249-128.ap-...	52.77.249.128	-
<input type="checkbox"/>	web-app	i-048dca774ff3fa4f7	Running	t2.micro	2/2 checks passed	No alarms	ap-southeast-1a	-	-	-
<input type="checkbox"/>	web-app	i-0ecad478ac3fb7ca6	Running	t2.micro	2/2 checks passed	No alarms	ap-southeast-1a	-	-	-
<input type="checkbox"/>	web-app	i-0e4d918f56a77a138	Running	t2.micro	2/2 checks passed	No alarms	ap-southeast-1b	-	-	-
<input type="checkbox"/>	web-app	i-0bc3d4191dbe96d3d	Running	t2.micro	2/2 checks passed	No alarms	ap-southeast-1c	-	-	-

Successful	Launching a new EC2 instance: i-0ecad478ac3fb7ca6	At 2021-05-03T07:39:58Z a monitor alarm TargetTracking-gawai-studio-autoscaling-AlarmHigh-ca96949b-bcc5-407d-86a2-1c87532185f7 in state ALARM triggered policy Target Tracking Policy changing the desired capacity from 3 to 4. At 2021-05-03T07:40:12Z an instance was started in response to a difference between desired and actual capacity, increasing the capacity from 3 to 4.	2021 May 03, 02:40:14 PM +07:00	2021 May 03, 02:43:45 PM +07:00
Successful	Launching a new EC2 instance: i-048dca774ff3fa4f7	At 2021-05-03T07:34:58Z a monitor alarm TargetTracking-gawai-studio-autoscaling-AlarmHigh-ca96949b-bcc5-407d-86a2-1c87532185f7 in state ALARM triggered policy Target Tracking Policy changing the desired capacity from 2 to 3. At 2021-05-03T07:35:00Z an instance was started in response to a difference between desired and actual capacity, increasing the capacity from 2 to 3.	2021 May 03, 02:35:03 PM +07:00	2021 May 03, 02:39:04 PM +07:00

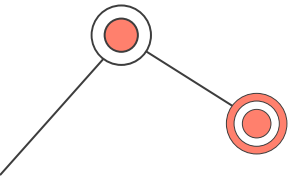
# User Akses Billing



# User Akses Billing



- Pembuatan User Group baru dengan policy existing AWS (ReadOnlyBilling)
- Create user Finance GS
- Attach User Group ke User Finance GS



## GS-Finance

Delete

## Summary

Edit


User group name

GS-Finance

Creation time

May 02, 2021, 21:30 (UTC+07:00)

ARN

 arn:aws:iam::351029054045:group/GS-Finance

Users

Permissions

Access advisor

Permissions policies (1) [Info](#)

You can attach up to 10 managed policies.



Simulate

Remove

Add permissions ▼

< 1 > 

<input type="checkbox"/>	Policy Name 	Type	Attached entities
<input type="checkbox"/>	 AWSBillingReadOnlyAccess	AWS managed	1

## Summary

Delete user



User ARN    `arn:aws:iam::351029054045:user/finance-GS`

Path    `/`

Creation time    2021-05-02 21:23 UTC+0700

Permissions

Groups (1)

Tags

Security credentials

Access Advisor

### ▼ Permissions policies (1 policy applied)

Add permissions

Add inline policy

Policy name ▼

Policy type ▼

Attached from group

AWSBillingReadOnlyAccess

AWS managed policy from group [GS-Finance](#)



## Billing & Cost Management Dashboard



### Getting Started with AWS Billing & Cost Management

- Manage your costs and usage using [AWS Budgets](#)
- Visualize your cost drivers and usage trends via [Cost Explorer](#)
- Dive deeper into your costs using the [Cost and Usage Reports with Athena integration](#)
- **Learn more:** Check out the [AWS What's New webpage](#)

### Do you have Reserved Instances (RIs)?

- Access the RI Utilization & Coverage reports—and RI purchase recommendations—via [Cost Explorer](#).

### Spend Summary

[Cost Explorer](#)

Welcome to the AWS Billing & Cost Management console. Your last month, month-to-date, and month-end forecasted costs appear below.

Current month-to-date balance for May 2021

**\$1.70**



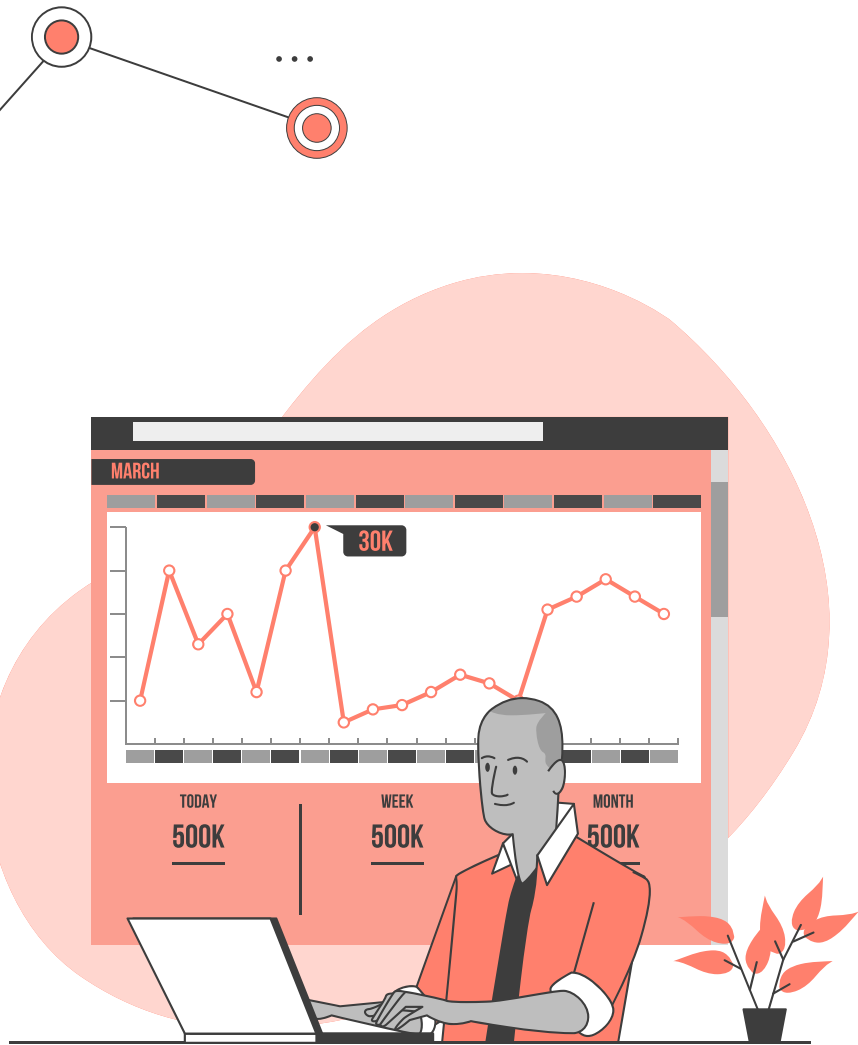
### Month-to-Date Spend by Service

[Bill Details](#)

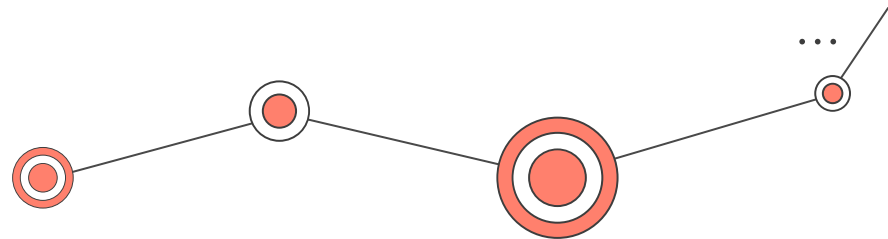
The chart below shows the proportion of costs spent for each service you use.



EC2	\$1.04
Route53	\$0.50
S3	\$0.01
CloudWatch	\$0.00
Other Services	\$0.00
Tax	\$0.15
<b>Total</b>	<b>\$1.70</b>



# Budgeting Plan





Service Name	Billing/Hours	Billing/Day	Billing/Month	Billing/Semester	Billing/Year
Instance (t2.micro) + Auto Scaling 4 instances	0,0464	1,1136	33,408	200,448	400,896
EBS (8GB for AMI, 8x4 Instance)	0,00666666666667	0,16	4,8	28,8	57,6
Load Balancer	0,028	0,672	20,16	120,96	241,92
Route 53 (1 Hosted Zone)	0,5	0,5	0,5	0,5	0,5
Standard S3 Bucket	0,1	0,1	0,1	0,1	0,1
RDS MySQL Single AZ	0,026	0,624	18,72	112,32	224,64
RDS MySQL Multi AZ (Duplicate)	0,052	1,248	37,44	224,64	449,28
<b>Total</b>	<b>0,7590666667</b>	<b>4,4176</b>	<b>115,128</b>	<b>687,768</b>	<b>1374,936</b>

Zone: Asia Pacific (Singapore)ap-southeast-1

EIP berbayar saat dipesan tapi tidak digunakan

Instances t2.micro **0,116/hours**

EBS **0,12 tiap GiB/Month**

Load Balancer **0,028/Hours**

Route 53 **0,50/Hosted Zone**

S3 Bucket 50TB Pertama **0,025 tiap GB/Month**

RDS MySQL Single AZ **0,026/Hours**

RDS MySQL Multi AZ (Duplicate) Single AZ\*2 = **0,052/Hours**



# Terima Kasih!

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