Experiment : 9

Title : Configure Failover Routing with

Amazon Route 53

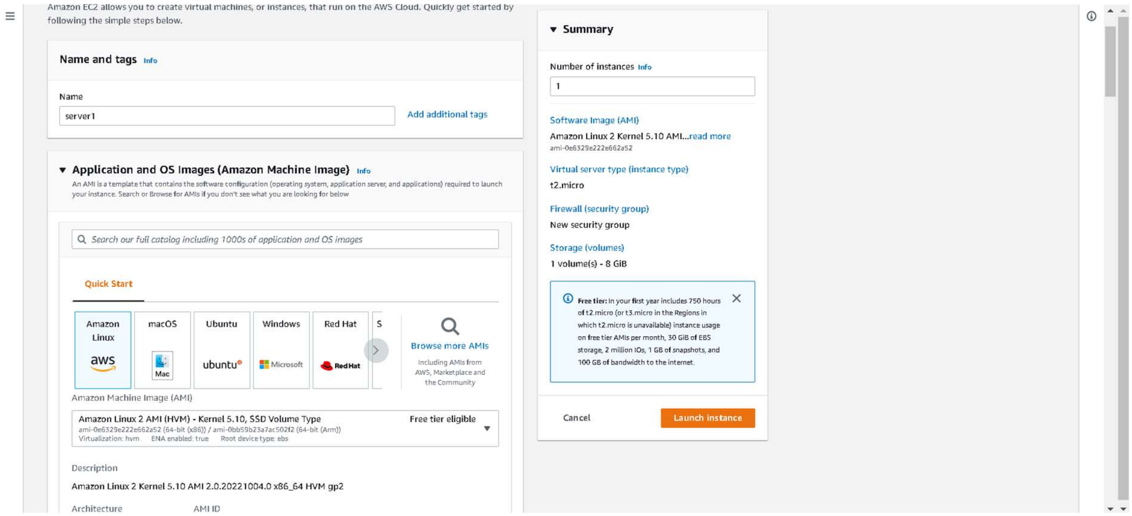
Aim : Configure DNS failover routing policy for Webservers across AWS Regions.

Pre-requisites : AWS Console, Amazon Route 53, Amazon EC2.

Procedure :

Steps:

1. Create a Public webserver in region 1.



Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

Name and tags

Name: server1

Application and OS Images (Amazon Machine Image)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Amazon Machine Image (AMI)

Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type — Free tier eligible
ami-0e6329e222e662a52 (64-bit (x86)) / ami-0bb59b23a7ac502f2 (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs

Description

Amazon Linux 2 Kernel 5.10 AMI 2.0.20221004.0 x86_64 HVM gp2

Architecture AMI ID

Summary

Number of instances: 1

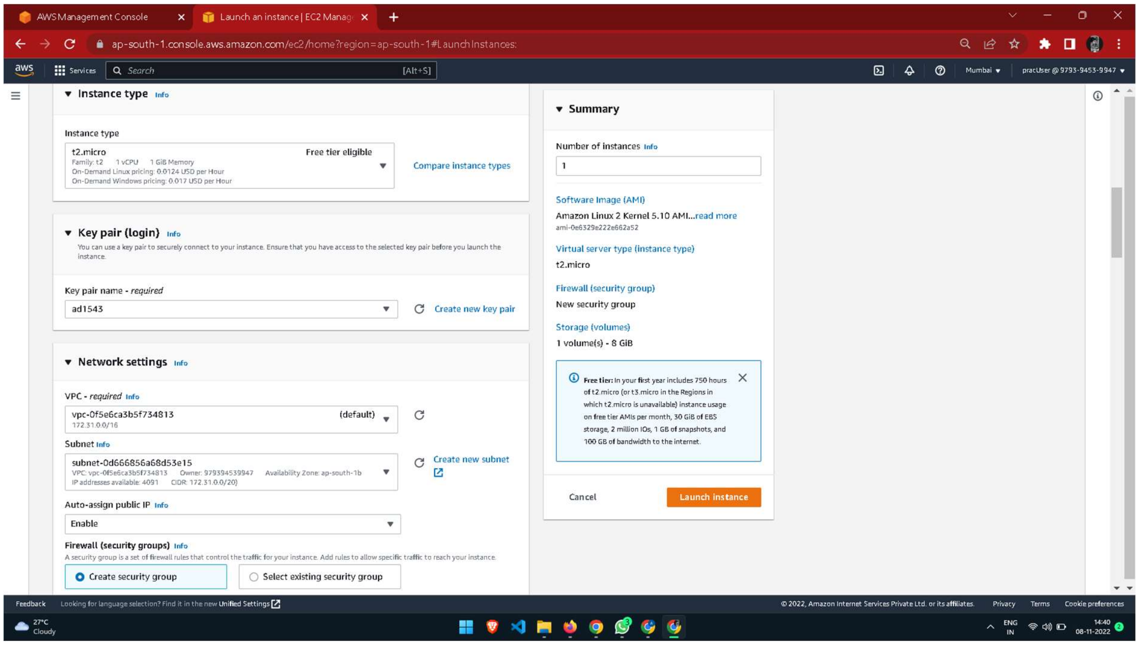
Software Image (AMI): Amazon Linux 2 Kernel 5.10 AMI...read more
ami-0e6329e222e662a52

Virtual server type (instance type): t2.micro

Firewall (security group): New security group

Storage (volumes): 1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.


AWS Management Console
Launch an instance | EC2 Manag
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LaunchInstances:
Services
Search
[Alt+S]
Mumbai
pracUser @ 9793-9453-9947

Instance type

Instance type: t2.micro — Free tier eligible
Family: t2 1 vCPU 1 GiB Memory
On-Demand Linux pricing: 0.0124 USD per Hour
On-Demand Windows pricing: 0.017 USD per Hour

Key pair (login)

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - *required*: ad1543

Network settings

VPC - *required*: vpc-0f5e6ca3b5f734813 (default)
172.31.0.0/16

Subnet: subnet-0d666856a68d53e15
VPC: vpc-0f5e6ca3b5f734813 Owner: 979394539947 Availability Zone: ap-south-1b
IP addresses available: 4091 CIDR: 172.31.0.0/20)

Auto-assign public IP: Enable

Firewall (security groups)
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

● Create security group ○ Select existing security group

Summary

Number of instances: 1

Software Image (AMI)
Amazon Linux 2 Kernel 5.10 AMI...read more
ami-0e6329e222e662a52

Virtual server type (instance type)
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New security group

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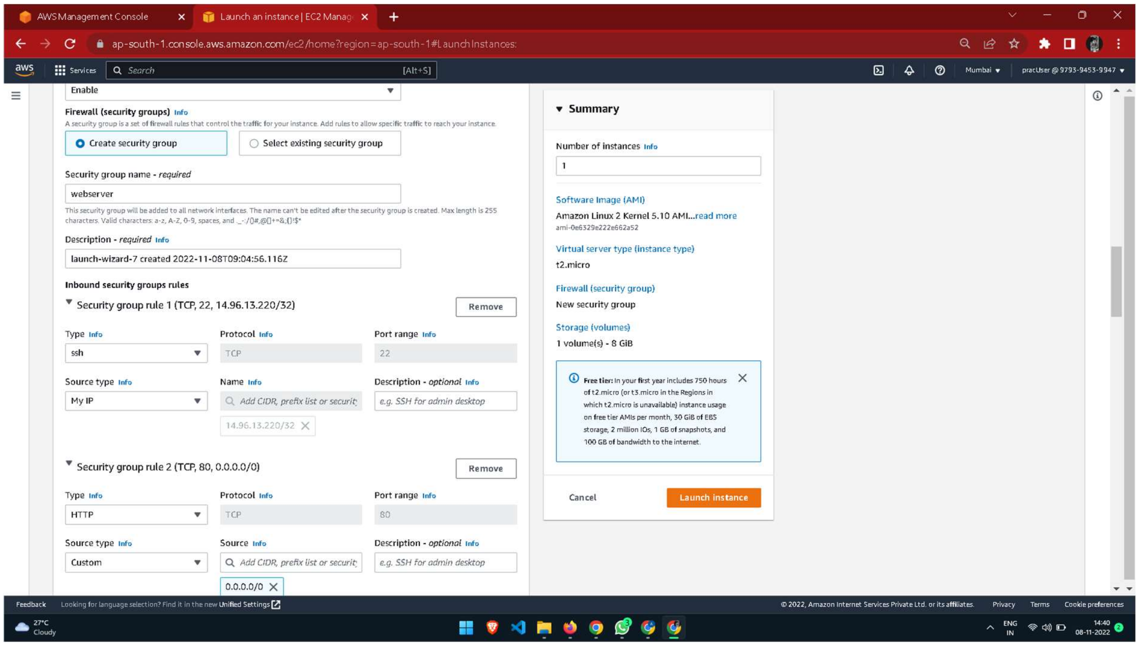
Cancel
Launch instance
Feedback
Looking for language selection? Find it in the new Unified Settings
© 2022, Amazon Internet Services Private Ltd. or its affiliates.
Privacy
Terms
Cookie preferences
27°C
Cloudy
ENG
IN
14:40
08-11-2022


AWS Management Console
Launch an instance | EC2 Manag
ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LaunchInstances:
Services
Search
[Alt+S]
Mumbai
pracUser @ 9793-9453-9947

Enable

Firewall (security groups)
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

● Create security group ○ Select existing security group

Security group name - *required*: webserver

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and _-:/()#,@[]+=&;{}!$*

Description - *required*: launch-wizard-7 created 2022-11-08T09:04:56.116Z

Inbound security groups rules

Security group rule 1 (TCP, 22, 14.96.13.220/32)

Type: ssh
Protocol: TCP
Port range: 22
Source type: My IP
Name: 14.96.13.220/32
Description - *optional*: e.g. SSH for admin desktop

Security group rule 2 (TCP, 80, 0.0.0.0/0)

Type: HTTP
Protocol: TCP
Port range: 80
Source type: Custom
Source: 0.0.0.0/0
Description - *optional*: e.g. SSH for admin desktop

Summary

Number of instances: 1

Software Image (AMI)
Amazon Linux 2 Kernel 5.10 AMI...read more
ami-0e6329e222e662a52

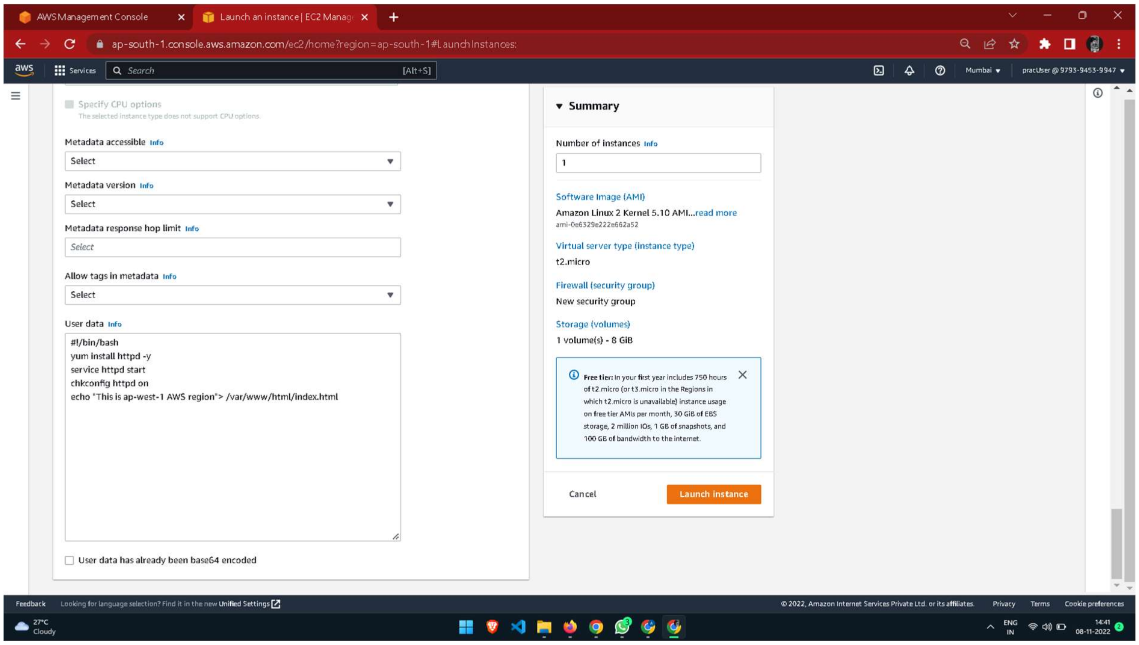
Virtual server type (instance type)
t2.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel
Launch instance
Feedback
Looking for language selection? Find it in the new Unified Settings
© 2022, Amazon Internet Services Private Ltd. or its affiliates.
Privacy
Terms
Cookie preferences
27°C
Cloudy
ENG
IN
14:40
08-11-2022



ap-south-1.console.aws.amazon.com/ec2/home?region=ap-south-1#LaunchInstances:

Specify CPU options
The selected instance type does not support CPU options.

Metadata accessible: Select

Metadata version: Select

Metadata response hop limit: Select

Allow tags in metadata: Select

User data

```
#!/bin/bash
yum install httpd -y
service httpd start
chkconfig httpd on
echo "This is ap-west-1 AWS region"> /var/www/html/index.html
```

□ User data has already been base64 encoded

Summary

Number of instances: 1

Software Image (AMI): Amazon Linux 2 Kernel 5.10 AMI...read more
ami-0e6329e222e662a52

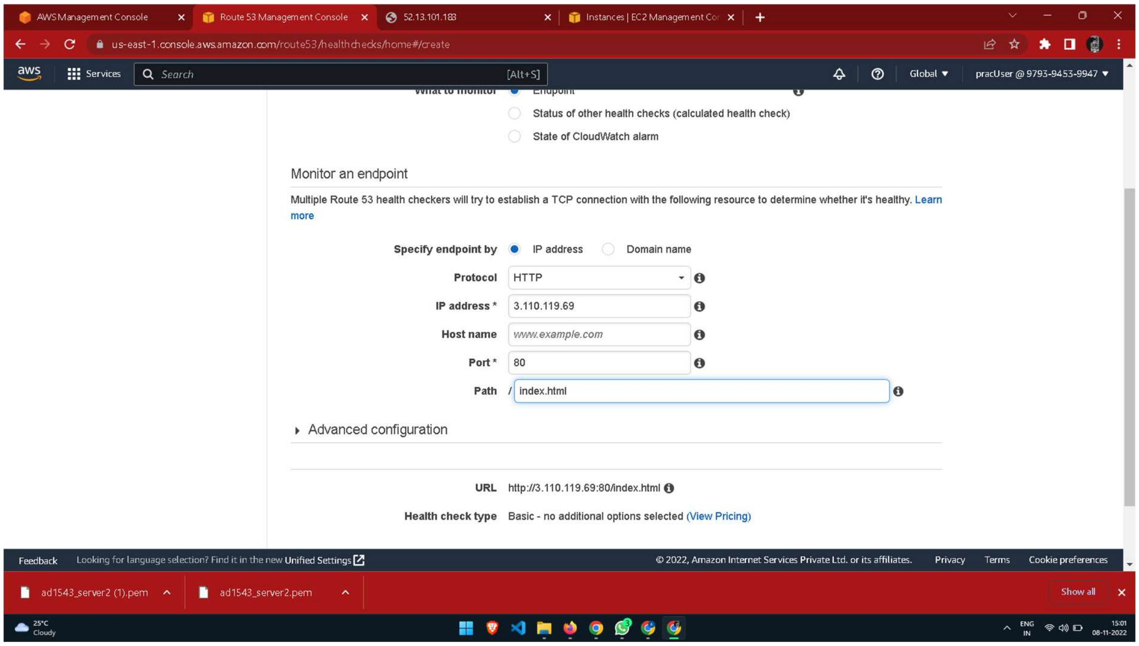
Virtual server type (instance type): t2.micro

Firewall (security group): New security group

Storage (volumes): 1 volume(s) - 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

2. Create a public webserver in region 2.
3. Create a Route53 public hosted zone (e.g: Yourdomain.com).
4. Create 2 health checks for both the webservers.



us-east-1.console.aws.amazon.com/route53/healthchecks/home#/create

What to monitor: ● Endpoint
○ Status of other health checks (calculated health check)
○ State of CloudWatch alarm

Monitor an endpoint

Multiple Route 53 health checkers will try to establish a TCP connection with the following resource to determine whether it's healthy. Learn more

Specify endpoint by: ● IP address ○ Domain name

Protocol: HTTP

IP address *: 3.110.119.69

Host name: www.example.com

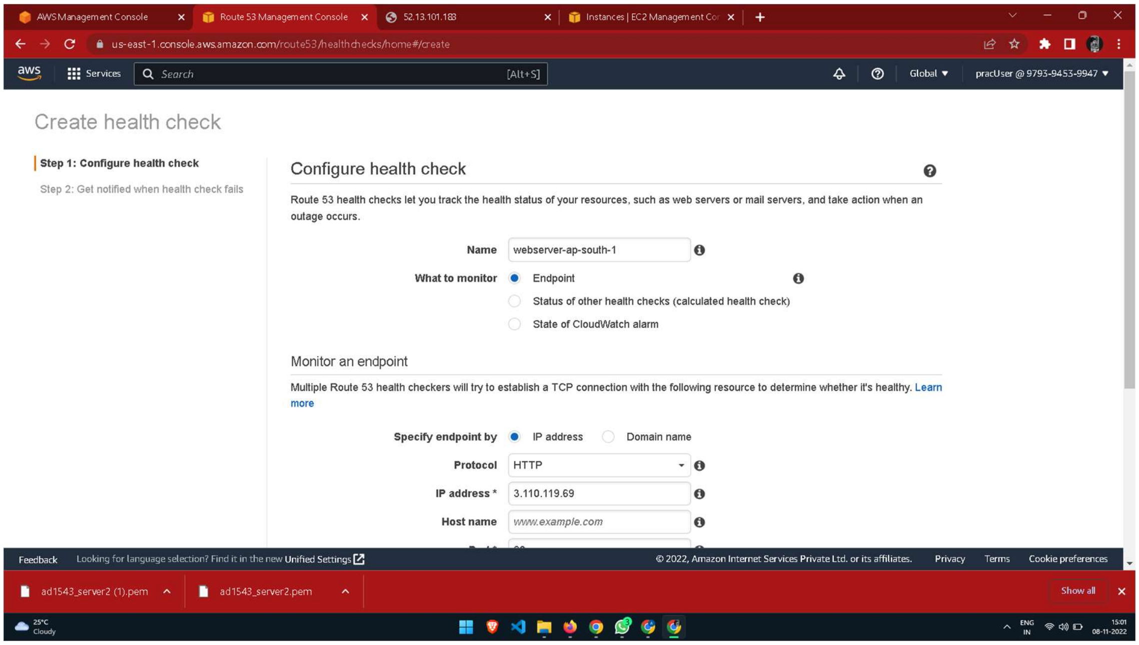
Port *: 80

Path: / index.html

Advanced configuration

URL: http://3.110.119.69:80/index.html

Health check type: Basic - no additional options selected (View Pricing)



Create health check

Step 1: Configure health check

Step 2: Get notified when health check fails

Configure health check

Route 53 health checks let you track the health status of your resources, such as web servers or mail servers, and take action when an outage occurs.

Name: webserver-ap-south-1

What to monitor:
● Endpoint
○ Status of other health checks (calculated health check)
○ State of CloudWatch alarm

Monitor an endpoint

Multiple Route 53 health checkers will try to establish a TCP connection with the following resource to determine whether it's healthy. Learn more

Specify endpoint by: ● IP address ○ Domain name

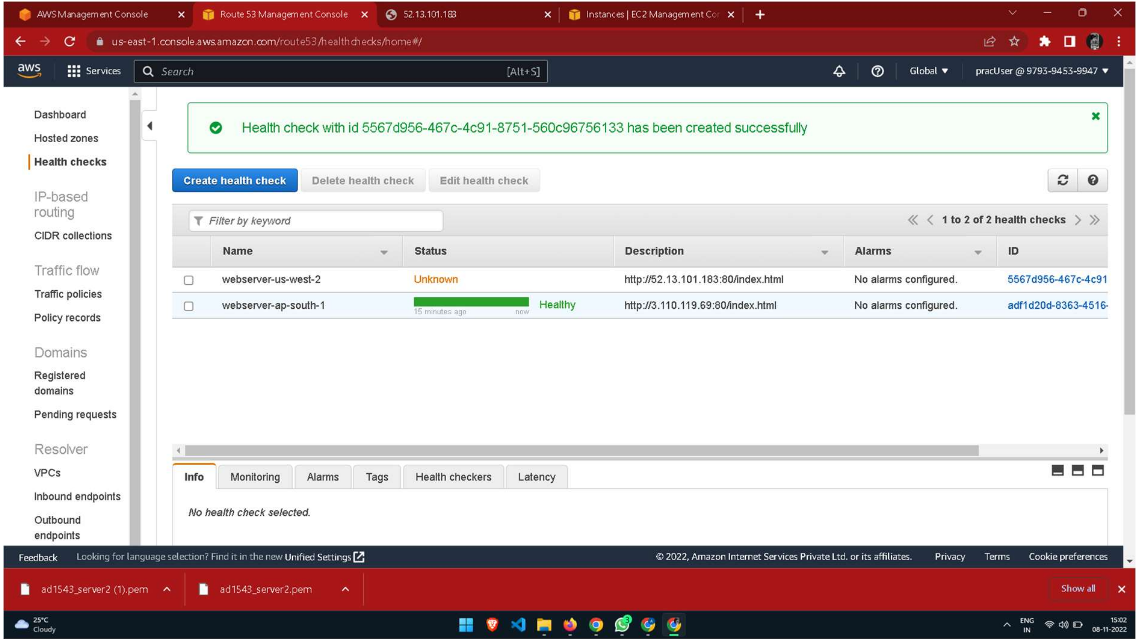
Protocol: HTTP

IP address *: 3.110.119.69

Host name: www.example.com

us-east-1.console.aws.amazon.com/route53/healthchecks/home#/create

5. Create a subdomain A record test.yourdomain.com and configure it as failover routing (Primary).

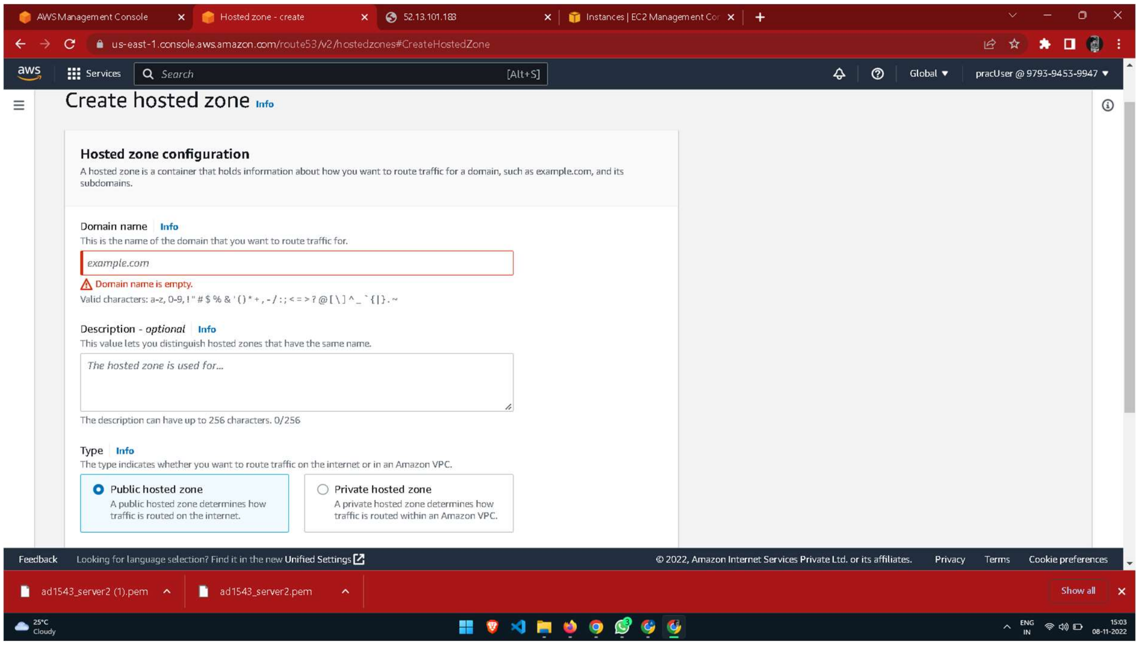


Health check with id 5567d956-467c-4c91-8751-560c96756133 has been created successfully

Name	Status	Description	Alarms	ID
webserver-us-west-2	Unknown	http://52.13.101.183:80/index.html	No alarms configured.	5567d956-467c-4c91
webserver-ap-south-1	Healthy	http://3.110.119.69:80/index.html	No alarms configured.	adf1d20d-8363-4516-

No health check selected.

6. Create another same subdomain A record test.yourdomain.com and configure it as failover routing (secondary).


AWS Management Console
Hosted zone - create
52.13.101.183
Instances | EC2 Management Con
us-east-1.console.aws.amazon.com/route53/v2/hostedzones#CreateHostedZone
aws
Services
Search
[Alt+S]
Global ▾
pracUser @ 9793-9453-9947 ▾
Feedback
Looking for language selection? Find it in the new Unified Settings
© 2022, Amazon Internet Services Private Ltd. or its affiliates.
Privacy
Terms
Cookie preferences
ad1543_server2 (1).pem
ad1543_server2.pem
Show all
25°C
Cloudy
ENG
IN
15:03
08-11-2022

Create hosted zone Info

Hosted zone configuration

A hosted zone is a container that holds information about how you want to route traffic for a domain, such as example.com, and its subdomains.

Domain name Info

This is the name of the domain that you want to route traffic for.

example.com

⚠ Domain name is empty.

Valid characters: a-z, 0-9, ! " # $ % & ' ( ) * + , - / : ; < = > ? @ [\ ] ^ _ ` { | } . ~

Description - *optional* Info

This value lets you distinguish hosted zones that have the same name.

The hosted zone is used for...

The description can have up to 256 characters. 0/256

Type Info

The type indicates whether you want to route traffic on the internet or in an Amazon VPC.

● Public hosted zone
A public hosted zone determines how traffic is routed on the internet.

○ Private hosted zone
A private hosted zone determines how traffic is routed within an Amazon VPC.

7. Test the connection by hitting http://test.yourdomain.com.
8. Login to primary webserver in region 1 and stop httpd service.
9. Wait for TTL to expire and see If you get redirected to another web server in region 2.

Result:

Hence, we have successfully configure DNS failover routing policy for Webservers across AWS Regions.