

# AWS Solution Architect

## Course-end Project

### --Set Up and Monitor a WordPress Instance for Your Organization

**Problem Statement:** In this project, you should be able to launch a WordPress instance using AWS CloudFormation and monitor the instance using Amazon Route 53.

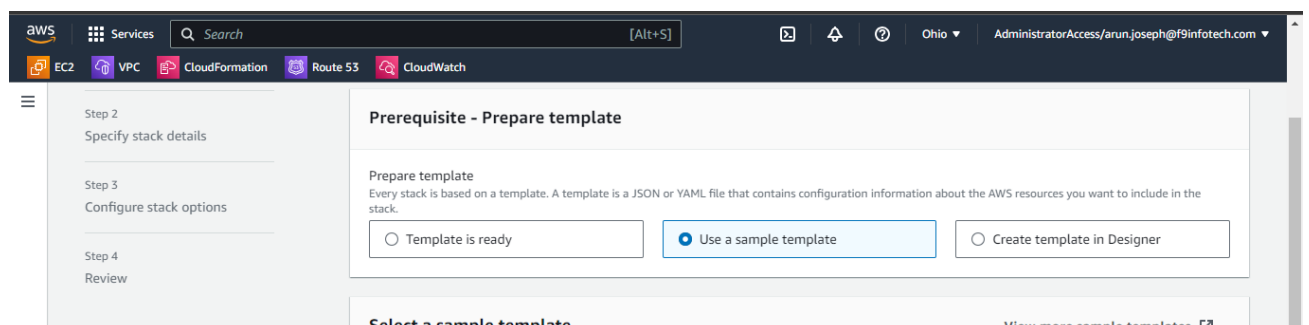
#### Real-World Scenario:

Your organization publishes blogs and provides documentation services for other businesses and technologies. You have been asked to:

- Set up a live WordPress instance to publish blogs
- Set up a WordPress instance that can be used for development and testing purposes so that any work done on this instance will not impact the live blog
- Configure the WordPress instance for development and testing purposes, which will be available only for business hours (9 AM–6 PM)
- Monitor the health of the WordPress instance

## Task (Activities)

### 1. Create a CloudFormation stack



Services

Search

[Alt+S]

EC2

VPC

CloudFormation

Route 53

CloudWatch

Stack name

WordPress blog

S3 URL: [https://cloudformation-templates-us-east-2.s3.us-east-2.amazonaws.com/WordPress\\_Single\\_Instance.template](https://cloudformation-templates-us-east-2.s3.us-east-2.amazonaws.com/WordPress_Single_Instance.template)

View in Designer

Cancel

Next

Services

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Step 3

Configure stack options

Step 4

Review Demowp

Stack name

Demowp

Stack name can include letters (a-z and A-Z), numbers (0-9), and dashes (-).

Parameters

Parameters are defined in your template and allow you to input custom values when you create or update a stack.

DBName

The WordPress database name

wordpressdb

DBPassword

The WordPress database admin account password

\*\*\*\*\*

DBRootPassword

MySQL root password

\*\*\*\*\*

DBUser

The WordPress database admin account username

\*\*\*\*\*

InstanceType

WebServer EC2 instance type

t2.micro

KeyName

Name of an existing EC2 KeyPair to enable SSH access to the instances

Select AWS:EC2:KeyPair:KeyName

SSHLocation

The IP address range that can be used to SSH to the EC2 instances

0.0.0.0/0

Next

Services

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CloudFormation

Stacks

Create stack

Step 1

Create stack

Step 2

Specify stack details

Step 3

Configure stack options

Step 4

Review Demowp

Review Demowp

Step 1: Specify template

Template

Template URL: [https://cloudformation-templates-us-east-2.s3.us-east-2.amazonaws.com/WordPress\\_Single\\_Instance.template](https://cloudformation-templates-us-east-2.s3.us-east-2.amazonaws.com/WordPress_Single_Instance.template)

Stack description: AWS CloudFormation Sample Template WordPress\_Single\_Instance: WordPress is web software you can use to create a beautiful website or blog. This template installs WordPress with a local MySQL database for storage. It demonstrates using the AWS CloudFormation bootstrap scripts to deploy WordPress. "WARNING" This template creates an Amazon EC2 instance. You will be billed for the AWS resources used if you create a stack from this template.

Step 2: Specify stack details

Stack name

Stack name: Demowp

Parameters (7)

Key

Value

DBName

wordpressdb

DBPassword

\*\*\*\*\*

DBRootPassword

\*\*\*\*\*

DBUser

\*\*\*\*\*

InstanceType

t2.micro

KeyName

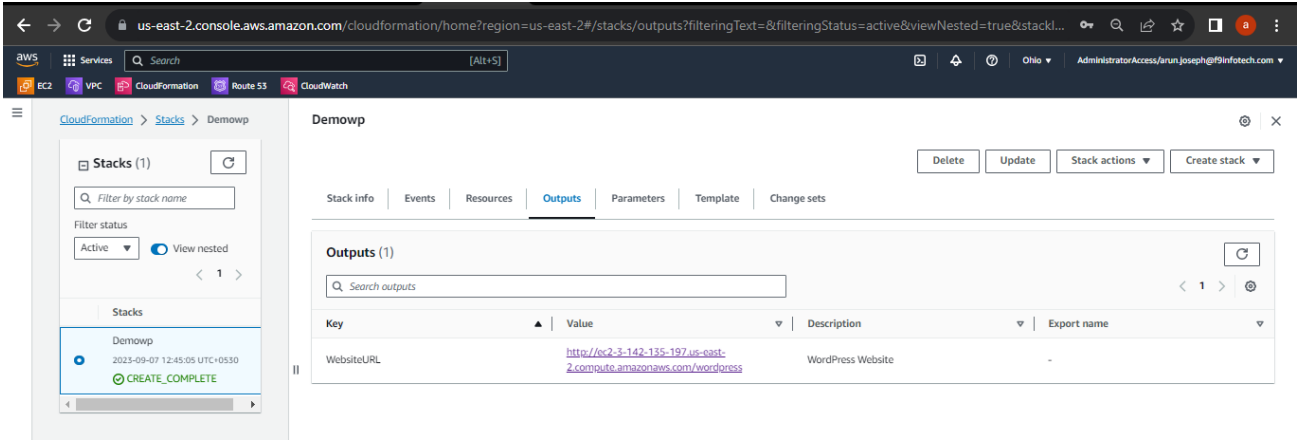
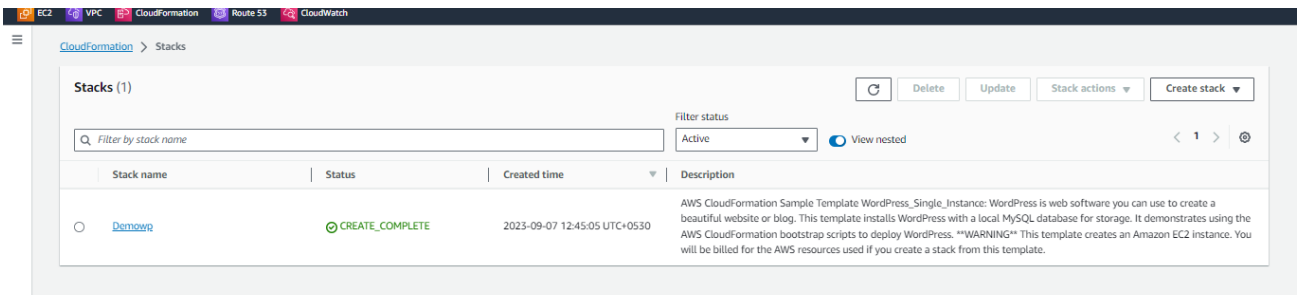
gsluplacement

SSHLocation

0.0.0.0/0

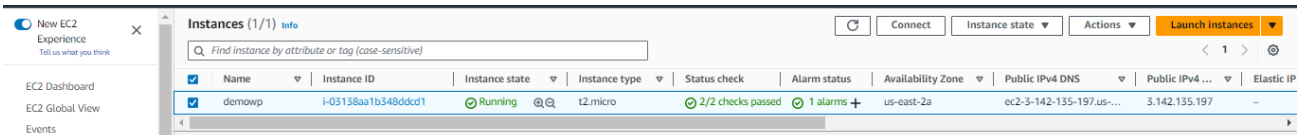
Step 3: Configure stack options

Submit

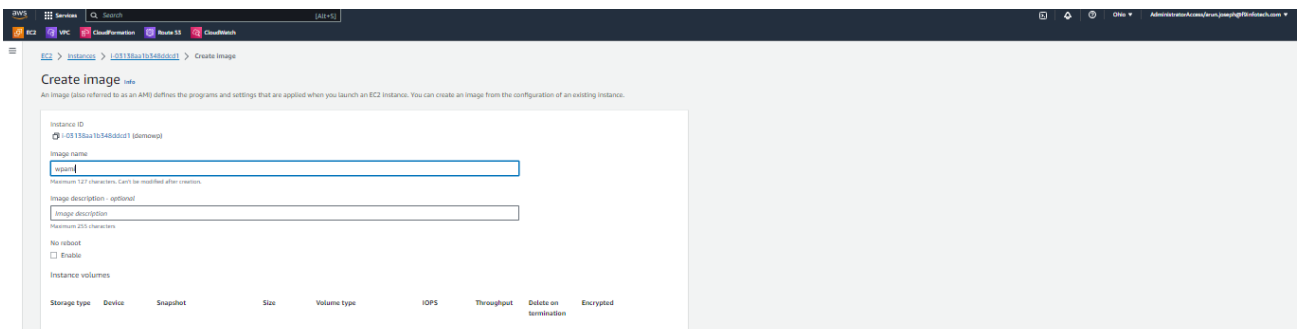
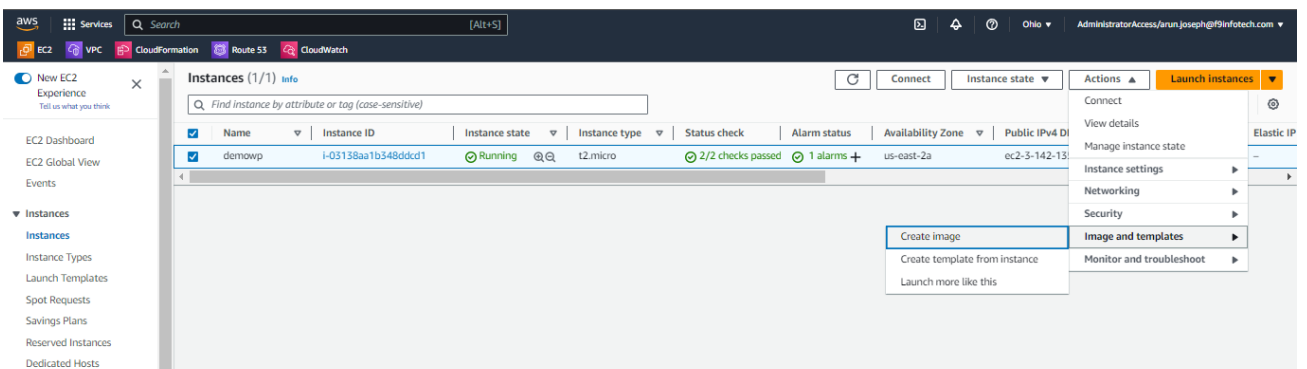


Stack Created

– Now just check your ec2 console



## 2. Create an AMI of the WordPress instance



EBS ☐ /Amazon... Create new snapshot S... 8 EBS General Purpose S... 100 ☐ Enable ☐ Enable

During the image creation process, Amazon EC2 creates a snapshot of each of the above volumes.

Tags - optional

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

☒ Tag image and snapshots together  
Tag the image and the snapshots with the same tag.

☐ Tag image and snapshots separately  
Tag the image and the snapshots with different tags.

No tags associated with the resource.

You can add up to 50 more tags.

aws Services Search [Alt+S]

EC2 VPC CloudFormation Route 53 CloudWatch

New EC2 Experience Tell us what you think

EC2 Dashboard EC2 Global View Events

Instances Instances Instance Types Launch Templates

### Amazon Machine Images (AMIs) (1) Info

Owned by me Find AMI by attribute or tag

<input type="checkbox"/>	Name	AMI ID	AMI name	Source	Owner	Visibility	Status	Creation
<input type="checkbox"/>		ami-07ea4856d97917801	wpami	750367672028/wpami	750367672028	Private	Available	2023/05

AMI is Created

### 3. Configure Auto Scaling to launch a new WordPress instance

#### Create Template

EC2 VPC CloudFormation Route 53 CloudWatch

## Create launch template

Creating a launch template allows you to create a saved instance configuration that can be reused, shared and launched at a later time. Templates can have multiple versions.

**Launch template name and description**

Launch template name - required

wptemplate

Must be unique to this account. Max 128 chars. No spaces or special characters like '&', '\*', '@'.

Template version description

A prod webserver for MyApp

Max 255 chars

Auto Scaling guidance [Info](#)

Select this if you intend to use this template with EC2 Auto Scaling

☐ Provide guidance to help me set up a template that I can use with EC2 Auto Scaling

☒ Template tags

☐ Source template

**Launch template contents**

Specify the details of your launch template below. Leaving a field blank will result in the field not being included in the launch template.

**Summary**

**Software Image (AMI)**

wpami  
ami-07ea4856d97917801

**Virtual server type (instance type)**

t2.micro

**Firewall (security group)**

DemoWP-WebServerSecurityGroup-MSTUR9Q0BR1G

**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 I/Os, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

aws Services Search [Alt+S]

EC2 VPC CloudFormation Route 53 CloudWatch

### Application and OS Images (Amazon Machine Image) Info

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

Search our full catalog including 1000s of application and OS images

Recents My AMIs Quick Start

☐ Don't include in launch template ☒ Owned by me

☐ Shared with me

Including AMIs from AWS, Marketplace and the Community

**Summary**

**Software Image (AMI)**

wpami  
ami-07ea4856d97917801

**Virtual server type (instance type)**

t2.micro

**Firewall (security group)**

DemoWP-WebServerSecurityGroup-MSTUR9Q0BR1G

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wpami  
ami-07ea4856d97917801  
2023-09-07T07:26:45.000Z  
Virtualization: hvm    ENA enabled: true    Root device type: ebs

Description  
-

Architecture  
x86\_64

AMI ID  
ami-07ea4856d97917801

the regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 30 GiB of EBS storage, 2 million I/Os, 1 GiB of snapshots, and 100 GiB of bandwidth to the internet.

Cancel    Create launch template

EC2   VPC   CloudFormation   Route 53   CloudWatch

▼ Instance type **Info** Advanced

Instance type  
t2.micro  
Family: t2   1 vCPU   1 GiB Memory   Current generation: true   Free tier eligible  
On-Demand Linux base pricing: 0.0116 USD per Hour  
On-Demand SUSE base pricing: 0.0116 USD per Hour  
On-Demand Windows base pricing: 0.0162 USD per Hour  
On-Demand RHEL base pricing: 0.0716 USD per Hour  
Additional costs apply for AMIs with pre-installed software  
All generations  
Compare instance types

▼ Key pair (login) **Info**  
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  
demowp    Create new key pair

▼ Network settings **Info**  
Subnet **Info**  
Don't include in launch template  
Create new subnet

▼ Summary

Software Image (AMI)  
wpami  
ami-07ea4856d97917801  
Virtual server type (instance type)  
t2.micro  
Firewall (security group)  
Demowp-WebServerSecurityGroup-MSTUR9Q0BR1G  
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 I/Os, 1 GiB of snapshots, and 100 GiB of bandwidth to the internet.  
Cancel    Create launch template

aws   Services   Search   [Alt+S]   Ohio   AdministratorAccess/anun.joseph@psinfotech.com

EC2   VPC   CloudFormation   Route 53   CloudWatch

▼ Network settings **Info**

Subnet **Info**  
Don't include in launch template  
Create new subnet  
When you specify a subnet, a network interface is automatically added to your template.  
Firewall (security groups) **Info**  
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.  
Select existing security group    Create security group  
Security groups **Info**  
Select security groups  
Demowp-WebServerSecurityGroup-MSTUR9Q0BR1G    sg-0215da65f52b1ea43  
VPC: vpc-0c3ea223f23f0a843  
Compare security group rules  
► Advanced network configuration

▼ Storage (volumes) **Info**  
EBS Volumes  
Hide details  
Volume 1 (AMI Root) (8 GiB, EBS, General purpose SSD (gp2))

▼ Summary

Software Image (AMI)  
wpami  
ami-07ea4856d97917801  
Virtual server type (instance type)  
t2.micro  
Firewall (security group)  
Demowp-WebServerSecurityGroup-MSTUR9Q0BR1G  
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 I/Os, 1 GiB of snapshots, and 100 GiB of bandwidth to the internet.  
Cancel    Create launch template

## Template create and create ASG.

EC2   Auto Scaling groups   Create Auto Scaling group

Step 1 - Choose launch template or configuration  
Step 2 - Choose instance launch options  
Step 3 - optional - Configure advanced options  
Step 4 - optional - Configure group size and scaling policies  
Step 5 - optional - Add notifications  
Step 6 - optional - Add tags  
Step 7 - Review

Choose launch template or configuration **Info**  
Specify a launch template that contains settings common to all EC2 instances that are launched by this Auto Scaling group. If you currently use launch configurations, you might consider migrating to launch templates.  
Name  
Auto Scaling group name  
Enter a name to identify the group.  
asgwp  
Must be unique to this account in the current Region and no more than 255 characters.  
Launch template **Info** Switch to launch configuration  
Launch template  
Choose a launch template that contains the instance-level settings, such as the Amazon Machine Image (AMI), instance type, key pair, and security groups.  
wpamplate  
Create a launch template  
Version  
Default (1)  
Create a launch template version  
Description  
-  
AMI ID  
ami-07ea4856d97917801  
Key pair name  
demowp  
Additional details  
Storage (volumes)  
Data created  
Launch template  
wpamplate  
is-037a7faa875426c3  
Security groups  
-  
Security group ID  
sg-0215da65f52b1ea43  
Instance type  
t2.micro  
Request Spot Instances  
No

EC2

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CloudFormation

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Services

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AMIs

EC2

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EC2 > Auto Scaling groups > Create Auto Scaling group

Step 1  
Choose launch template or configuration

Step 2  
Choose instance launch options

Step 3 - optional  
Configure advanced options

Step 4 - optional  
Configure group size and scaling policies

Step 5 - optional  
Add notifications

Step 6 - optional  
Add tags

Step 7  
Review

## Choose instance launch options [info](#)

Choose the VPC network environment that your instances are launched into, and customize the instance types and purchase options.

### Network [info](#)

For most applications, you can use multiple Availability Zones and let EC2 Auto Scaling balance your instances across the zones. The default VPC and default subnets are suitable for getting started quickly.

**VPC**  
Choose the VPC that defines the virtual network for your Auto Scaling group.

vpc-0c7ea22829330a413  
172.31.0.0/16 Default

[Create a VPC](#)

**Availability Zones and subnets**  
Define which Availability Zones and subnets your Auto Scaling group can use in the chosen VPC.

Select Availability Zones and subnets

us-east-2a | subnet-01181201c05a8b037  
172.31.0.0/24 Default

us-east-2b | subnet-046135d90cf242701  
172.31.16.0/24 Default

[Create a subnet](#)

### Instance type requirements [info](#)

You can select the desired instance attributes or instance type from your launch template, or you can choose to override the launch template by specifying different instance attributes or manually adding instance types.

[Override launch template](#)

Launch template	Version	Description
systemd <a href="#">info</a>	Default	
it-0576rfa0877542613		
Instance type		
t2.micro		

[Cancel](#) [Skip to review](#) [Previous](#) [Next](#)

EC2

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S3

Step 3 - optional  
Configure advanced options

Configure launch template or configuration

Step 2  
Choose instance launch options

Step 1 - optional  
Configure advanced options

Step 4 - optional  
Configure group size and scaling policies

Step 5 - optional  
Add notifications

Step 6 - optional  
Add tags

Step 7  
Review

## Configure advanced options - optional [info](#)

Integrate your Auto Scaling group with other services to distribute network traffic across multiple servers using a load balancer or to establish service-to-service communications using VPC Lattice. You can also set options that give you more control over health check replacements and monitoring.

### Load balancing [info](#)

Use the options below to attach your Auto Scaling group to an existing load balancer, or to a new load balancer that you define.

☒ No load balancer  
Your Auto Scaling group will not be forwarded by a load balancer.

☐ Attach to an existing load balancer  
Choose from your existing load balancers.

☐ Attach to a new load balancer  
Quickly create a basic load balancer or attach to your Auto Scaling group.

### VPC Lattice integration options [info](#)

To meet networking capabilities and scalability, integrate your Auto Scaling group with VPC Lattice. VPC Lattice facilitates communications between AWS services and helps you connect and manage your applications across compute services in AWS.

☒ No VPC Lattice service  
VPC Lattice will not manage your Auto Scaling group's network access and connectivity with other services.

☐ Attach to VPC Lattice service  
Incoming requests associated with specified VPC Lattice target groups will be routed to your Auto Scaling group.

Create new VPC Lattice service [link](#)

### Health checks

Health checks are now available by replacing unhealthy instances. When you use multiple health checks, all are evaluated, and if at least one fails, instance replacement occurs.

☒ EC2 health checks

☐ Amazon ElastiCache health checks

Additional health check types - optional [info](#)

☐ Turn on Elastic Load Balancing health checks  
Elastic Load Balancing monitors whether instances are available to handle requests. When it reports an unhealthy instance, EC2 Auto Scaling can replace it as soon as possible.

☐ Turn on VPC Lattice health checks  
VPC Lattice can monitor whether instances are available to handle requests. If it considers a target an failed a health check, EC2 Auto Scaling replaces it after its next periodic check.

#### Health check grace period [info](#)

This time period delays the first health check until your instances finish initializing. It doesn't prevent an instance from terminating when placed into a non-terminating state.

seconds

## Next

EC2

Auto Scaling groups

Create Auto Scaling group

Step 1

Choose launch template or configuration

Step 2

Choose instance launch options

Step 3 - optional

Configure advanced options

Step 4 - optional

Configure group size and scaling policies

Step 5 - optional

Add notifications

Step 6 - optional

Add tags

Step 7

Review

## Configure group size and scaling policies - optional

Set the desired, minimum, and maximum capacity of your Auto Scaling group. You can optionally add a scaling policy to dynamically scale the number of instances in the group.

Group size - optional

Specify the size of the Auto Scaling group by changing the desired capacity. You can also specify minimum and maximum capacity limits. Your desired capacity must be within the limit range.

Desired capacity

Minimum capacity

Maximum capacity

Scaling policies - optional

Choose whether to use a scaling policy to dynamically resize your Auto Scaling group to meet changes in demand.

☐ Target tracking scaling policy

Choose a desired outcome and leave it to the scaling policy to add and remove capacity as needed to achieve that outcome.

☒ None

Instance scale-in protection - optional

Instance scale-in protection

If protect from scale in is enabled, newly launched instances will be protected from scale in by default.

☐ Enable instance scale-in protection

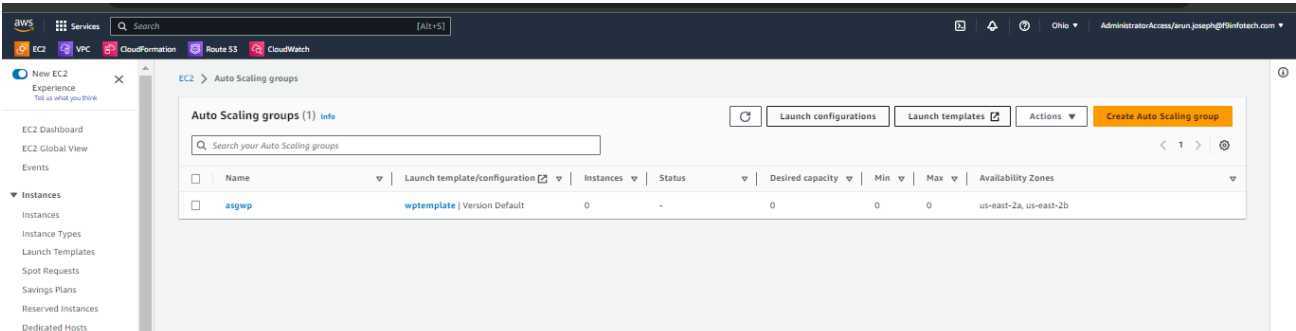
Create

Go to console

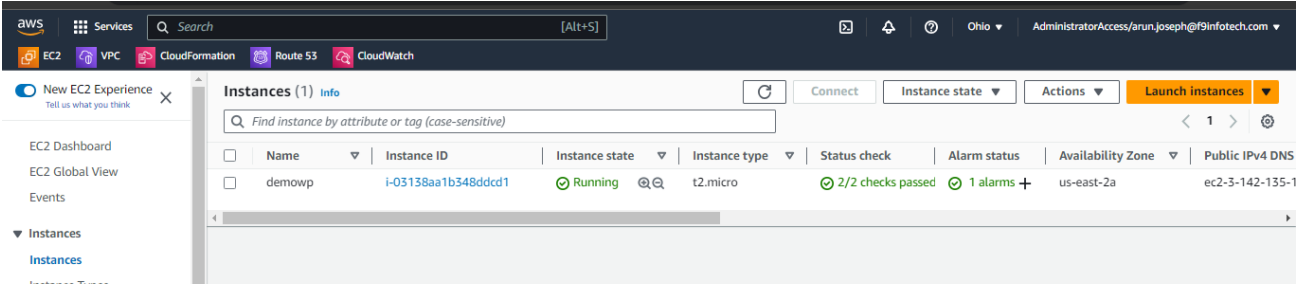
Previous

Next

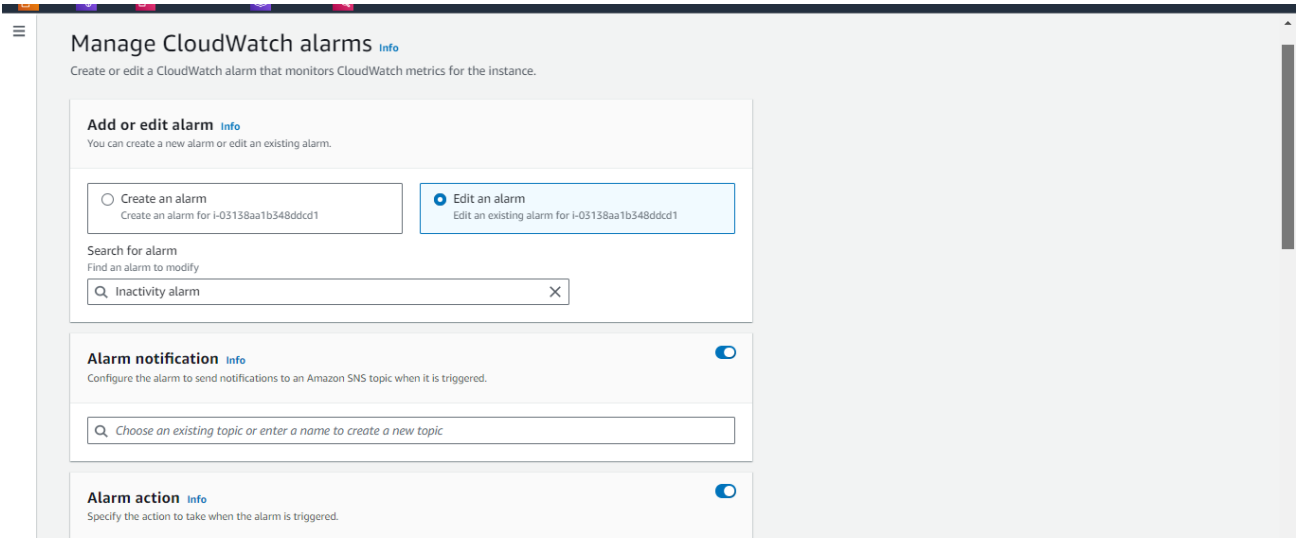
Then review it and create ASG.



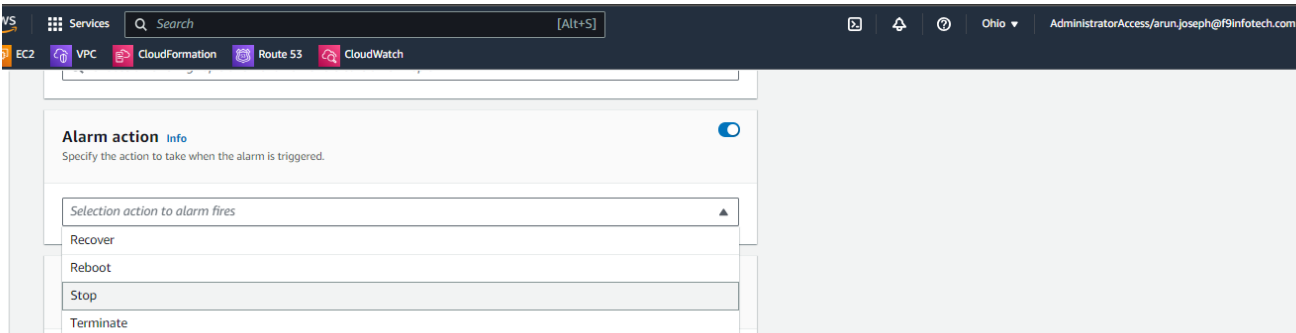
4. Configure the new WordPress instance to shut down automatically



Click The + Icon under the Alarm status



Click the **edit an alarm** and on **Toggle of Alarm action**



Select the **Stop**

aws

Services

Search

[Alt+S]

Ohio

AdministratorAccess/arun.joseph@9infotech.com

EC2

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Alarm action

Info

Specify the action to take when the alarm is triggered.

Stop

Alarm thresholds

Specify the metric thresholds for the alarm.

Group samples by

Maximum

Type of data to sample

CPU utilization

Alarm when

<=

Percent

0.02

Consecutive period

1

Period

1 Hour

Alarm name

awssec2-i-03138aa1b348ddcd1-LessThanOrEqualToThreshold-CPUUtilization

Sample metric data

Info

Sample metric data for i-03138aa1b348ddcd1

1h

3h

12h

1d

3d

1w

Refresh

Add to dashboard

CPU utilization (Maximum)

21.7

10.8

0.02

0

08:00

08:30

09:00

09:30

10:00

10:30

Cancel

Update

Update

It's Created

5. Monitor the instance using Availability Monitoring feature of the R53

Go to the Route53

Route 53

Dashboard

Hosted zones

Health checks

IP-based routing

CIDR collections

Traffic flow

Traffic policies

Policy records

Domains

Route 53 > Dashboard

Route 53 Dashboard

Info

DNS management

1 Hosted zone

Traffic management

A visual tool that lets you easily create policies for multiple endpoints in complex configurations.

Create policy

Availability monitoring

1 Health check

Domain registration

A domain is the name, such as example.com, that your users use to access your application.

Register domain

Register domain

Go to the **Health Checks** on the left side bar

EC2

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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

wpname



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 \*

3.142.135.197

Host name

http://ec2-3-142-135-197-us-east-2-

Port \*

80

Path

/images

Advanced configuration

URLhttp://3.142.135.197:80/

Health check typeBasic - no additional options selected (View Pricing)

\* Required

Cancel

Next

Next

aws

Services

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[Alt+S]

EC2

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Global

AdministratorAccess/anun.joseph@psinfotech.com

Create health check

Step 1: Configure health check

Step 2: Get notified when health check fails

Get notified when health check fails

If you want CloudWatch to send you an Amazon SNS notification, such as an email, when the status of the health check changes to unhealthy, create an alarm and specify where to send notifications.

Create alarm

Yes

No

CloudWatch sends you an Amazon SNS notification whenever the status of this health check is unhealthy for at least one minute. The alarm will be located in the us-east-1 region.

Send notification to

Existing SNS topic

New SNS topic

Topic name \*

wpsns

Recipient email addresses \*

jdoe@example.com,mmajor@example.com

Generate multiple addresses with a comma, a semicolon, or a space

Invalid recipient name

\* Required

Cancel

Previous

Create health check

Create alarm Yes

Select New SNS Topic and give email address

Create

how to s3

devops do

Configure

(4) Whats

wordpress

Amazon V

Route 53

Instances

monitorin

us-east-1.console.aws.amazon.com/route53/healthchecks/home?region=us-east-2#

aws

Services

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Dashboard

Hosted zones

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Traffic policies

Policy records

Domains

Registered domains

Pending requests

Resolver

VPCs

Inbound endpoints

Outbound endpoints

Rules

Query logging

Health check with id 4f2de47d-b2c7-4105-b067-4a5daa563445 has been created successfully

Health checks console feedback collection

To help us improve the Health Check user experience, please take 5 minutes to complete this survey.

Create health check

Delete health check

Edit health check

Filter by keyword

<< 1 to 1 of 1 health check >>

	Name	Status	Description	Alarms	ID
<input type="checkbox"/>	viphealth	10 minutes ago Healthy	http://3.144.220.58:80/	1 of 1 in INSUFFICIE...	4f2de47d-b2c7-4105-b067-4a5daa563445

Info

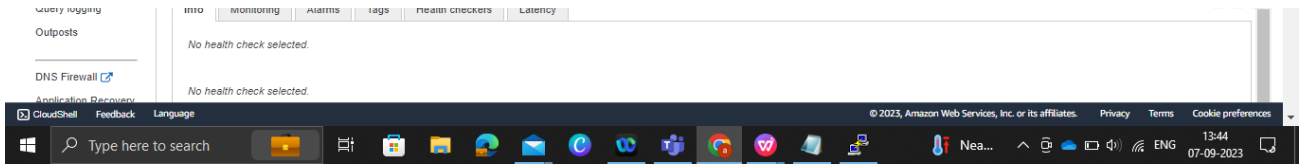
Monitoring

Alarms

Traffic

Health checks

Instances



**Task is Completed**