

PROJECT-1

Configure a Webserver and Database server with Proper Load Balancing, Autoscaling and SSL Configuration.

STEP 1.CREATING CUSTOM VPC WITH SUBNETS AND IGW.

The screenshot shows the AWS Management Console 'Your VPCs' page. A table lists two VPCs: 'default-VPC' and 'new-VPC'. The 'new-VPC' is selected, and its details are displayed below the table.

Name	VPC ID	State	IPv4 CIDR	IPv6 CIDR
default-VPC	vpc-00886adca73654e6a	Available	172.31.0.0/16	-
new-VPC	vpc-0a410991049ee7a06	Available	33.3.0.0/16	-

Details for VPC ID vpc-0a410991049ee7a06:

- State: Available
- DNS hostnames: Disabled
- DNS resolution: Enabled
- Tenancy: Default
- DHCP option set: dopt-02158bec54fab87e5
- Main route table: rtb-0b905f6ad27df739
- Main network ACL: acl-0077b1a7d3ee5636c
- Default VPC: No
- IPv4 CIDR: 33.3.0.0/16
- IPv6 pool: -
- Route 53 Resolver DNS Firewall rule groups: -
- Owner ID: O-45627564879

The screenshot shows the AWS Management Console 'Route tables' page for the 'new-VPC'. The 'rtb-03608ebab657afd49' route table is selected, and its details and routes are displayed.

Details for Route table ID rtb-03608ebab657afd49:

- Main: No
- Owner ID: O-45627564879
- Explicit subnet associations: -
- Edge associations: -

Routes (2):

Destination	Target	Status	Propagated
0.0.0.0/0	igw-01a741553f04a63a6	Active	No
33.3.0.0/16	local	Active	No

STEP 2. CREATING INSTANCES AND ITS IMAGES.

New EC2 Experience

EC2 Dashboard

EC2 Global View

Events

Tags

Limits

Instances

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Scheduled Instances

Capacity Reservations

Images

AMIs

AMI Catalog

Instances (1/1) Info

Search

< 1 >

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
new-INS	i-05c90ddf433493783	Running	t2.micro	2/2 checks passed	No alarms	us-east-1a

Instance: i-05c90ddf433493783 (new-EC2)

Details

Security

Networking

Storage

Status checks

Monitoring

Tags

Instance summary

Instance ID

i-05c90ddf433493783 (new-EC2)

Public IPv4 address

54.87.19.184 | open address

Private IPv4 addresses

33.3.3.205

IPv6 address

-

Instance state

Running

Public IPv4 DNS

-

Hostname type

IP name: ip-33-3-3-205.ec2.internal

Private IP DNS name (IPv4 only)

ip-33-3-3-205.ec2.internal

Feedback

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Privacy

Terms

Cookie preferences

Instances

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Scheduled Instances

Capacity Reservations

Images

AMIs

AMI Catalog

Elastic Block Store

Volumes

Snapshots

Lifecycle Manager

Network & Security

Security Groups

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

Recycle Bin

EC2 Image Builder

Actions

Launch instance from AMI

Owned by me

Search

Name	AMI ID	AMI name	Source	Owner
-	ami-015bfb11b4f0ebc4f	new-IMG	045627564879/new-IMG	045627564879

AMI ID: ami-015bfb11b4f0ebc4f

Details

Permissions

Storage

Tags

AMI ID

ami-015bfb11b4f0ebc4f

Image type

machine

Platform details

Linux/UNIX

Root device type

EBS

AMI name

new-IMG

Owner account ID

045627564879

Architecture

x86_64

Usage operation

RunInstances

Root device name

/dev/xvda

Status

Pending

Source

045627564879/new-IMG

Virtualization type

hvm

Boot mode

State reason

Creation date

6/11/2022 07:46:08

Kernel ID

Feedback

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STEP 3. CREATING LOAD BALANCER AND ATTACHING TARGET GROUP.

The screenshot shows the AWS Management Console interface for a newly created Load Balancer named 'new-LB'. The left sidebar contains navigation links for EC2 Dashboard, EC2 Global View, Events, Tags, Limits, Instances, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Scheduled Instances, Capacity Reservations, Images, AMIs, and AMI Catalog. The main content area displays the 'new-LB' details under the 'Basic Configuration' tab. The table below summarizes the configuration details:

Property	Value
Name	new-LB
ARN	arn:aws:elasticloadbalancing:us-east-1:045627564879:loadbalancer/app/new-LB/ce2e86ceecea64e8
DNS name	new-LB-498868008.us-east-1.elb.amazonaws.com (A Record)
State	Provisioning
Type	application
Scheme	internet-facing
IP address type	ipv4

The bottom of the console shows a footer with 'Feedback', 'Looking for language selection? Find it in the new Unified Settings', '© 2022, Amazon Internet Services Private Ltd. or its affiliates.', 'Privacy', 'Terms', and 'Cookie preferences'.

The screenshot shows the AWS Management Console interface for a newly created Target Group named 'new-TG'. The left sidebar is identical to the previous screenshot. The main content area displays the 'new-TG' details under the 'Details' tab. The table below summarizes the configuration details:

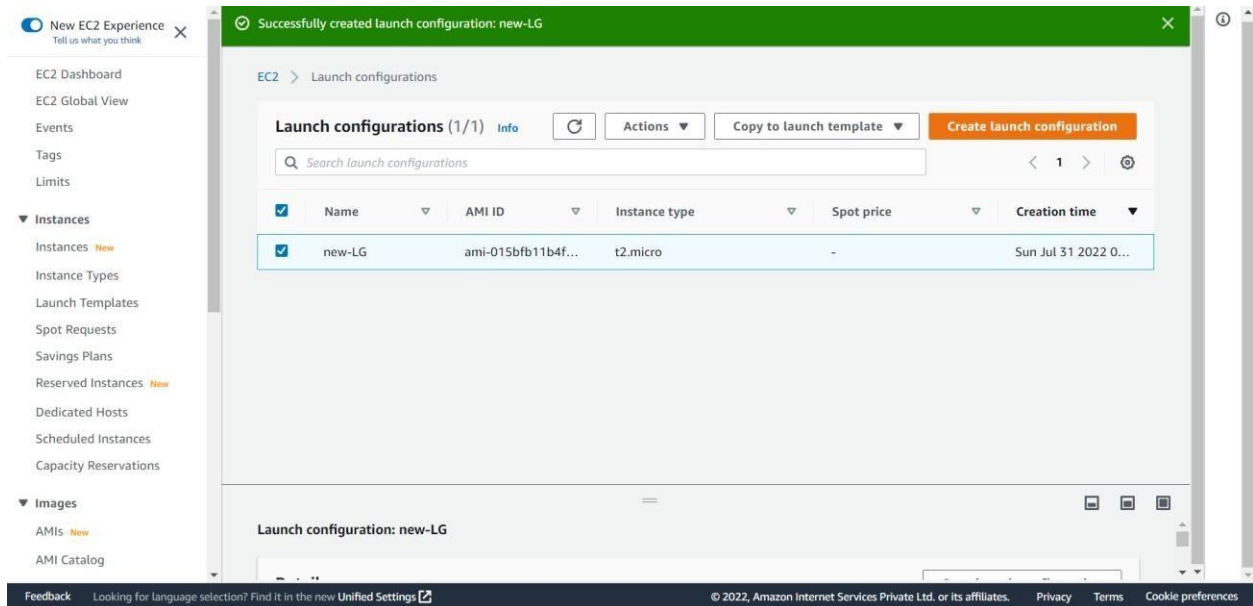
Property	Value
Target type	Instance
Protocol : Port	HTTP: 80
Protocol version	HTTP1
VPC	vpc-0a410991049ee7a06
IP address type	IPv4
Load balancer	None associated

Below the details, there is a summary of target counts:

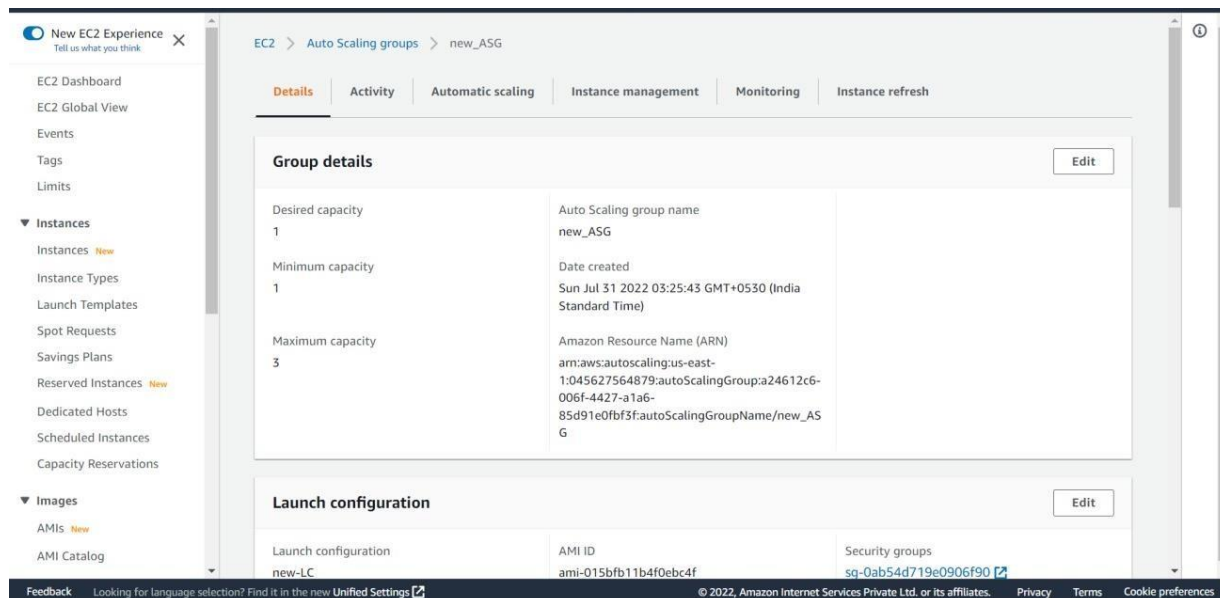
Total targets	Healthy	Unhealthy	Unused	Initial	Draining
0	0	0	0	0	0

The bottom of the console shows a footer with 'Feedback', 'Looking for language selection? Find it in the new Unified Settings', '© 2022, Amazon Internet Services Private Ltd. or its affiliates.', 'Privacy', 'Terms', and 'Cookie preferences'.

STEP 4. CREATING LAUNCH CONFIGURATION



STEP 5. CREATING AUTOSCALING GROUP



STEP 6. CREATING SCALE OUT AND SCALE IN POLICIES

The screenshot displays the AWS Management Console interface for configuring dynamic scaling policies. The left sidebar shows the navigation menu with categories like Instances, Images, Elastic Block Store, and Network & Security. The main content area is titled "Dynamic scaling policies (2)" and contains two policy configuration cards: "scale-in" and "scale-out".

scale-in Policy Configuration:

- Policy type: Simple scaling
- Enabled or disabled?: Enabled
- Execute policy when: scale-in-alarm
- breaches the alarm threshold: CPUUtilization \leq 40 for 1 consecutive periods of 60 seconds for the metric dimensions: AutoScalingGroupName = new_ASG
- Take the action: Remove 1 capacity units
- And then wait: 20 seconds before allowing another scaling activity

scale-out Policy Configuration:

- Policy type: Simple scaling
- Enabled or disabled?: Enabled
- Execute policy when: scale-out-alarm
- breaches the alarm threshold: CPUUtilization $>$ 70 for 1 consecutive periods of 60 seconds for the metric dimensions: AutoScalingGroupName = new_ASG
- Take the action: Add 1 capacity units
- And then wait: 20 seconds before allowing another scaling activity

Below the dynamic scaling policies, there is a section for "Predictive scaling policies (0)". The bottom of the console shows the footer with copyright information: "© 2022, Amazon Internet Services Private Ltd. or its affiliates." and links for Privacy, Terms, and Cookie preferences.

STEP 7. INCREASING CPU USAGE

The screenshot shows a terminal window with the output of the `top` command. The output indicates that the system is under high CPU load, with the CPU usage at 98.3%. The top of the output shows the system is up for 22 minutes, with 1 user and a load average of 0.08, 0.02, 0.01. The tasks are 105 total, with 2 running, 61 sleeping, 0 stopped, and 0 zombie. The CPU usage is 98.3% (us), 1.7% (sy), 0.0% (ni), 0.0% (id), 0.0% (wa), 0.0% (hi), 0.0% (si), and 0.0% (st). The memory usage is 988672 total, 673464 free, 103076 used, 212132 buff/cache, and 0 KiB swap.

PID	USER	PR	NI	VIRT	RES	SHR	S	%CPU	%MEM	TIME+	COMMAND
3536	root	20	0	114640	756	692	R	99.9	0.1	0:06.84	yes
1	root	20	0	123508	5424	3876	S	0.0	0.5	0:02.34	systemd
2	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kthreadd
3	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	rcu_gp
4	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	rcu_par_gp
6	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kworker/0:0H-ev
9	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	mm_percpu_wq
10	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_tasks_rude_
11	root	20	0	0	0	0	S	0.0	0.0	0:00.00	rcu_tasks_trace
12	root	20	0	0	0	0	S	0.0	0.0	0:00.02	ksoftirqd/0
13	root	20	0	0	0	0	I	0.0	0.0	0:00.10	rcu_sched
14	root	rt	0	0	0	0	S	0.0	0.0	0:00.00	migration/0
15	root	20	0	0	0	0	S	0.0	0.0	0:00.00	cpuhp/0
17	root	20	0	0	0	0	S	0.0	0.0	0:00.00	kdevtmpfs
18	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	netns
19	root	20	0	0	0	0	I	0.0	0.0	0:00.01	kworker/u30:1-e
21	root	20	0	0	0	0	S	0.0	0.0	0:00.02	kauditd
261	root	20	0	0	0	0	S	0.0	0.0	0:00.00	khungtaskd
262	root	20	0	0	0	0	S	0.0	0.0	0:00.00	oom_reaper
263	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	writeback
265	root	20	0	0	0	0	S	0.0	0.0	0:00.03	kcompactd0
266	root	25	5	0	0	0	S	0.0	0.0	0:00.00	ksmd
267	root	39	19	0	0	0	S	0.0	0.0	0:00.00	khugepaged
322	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kintegrityd
324	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	kblockd
325	root	0	-20	0	0	0	I	0.0	0.0	0:00.00	blkcg_punt_bio
677	root	20	0	0	0	0	S	0.0	0.0	0:00.00	xen-balloon

STEP 8. SCALE OUT ALARM

The screenshot shows the AWS CloudWatch Alarms console. A green notification bar at the top states "Successfully created alarm scale-in-alarm." with a "View alarm" button. The left sidebar contains navigation links: Favorites and recents, Dashboards, Alarms (1 in alarm, 1 OK, 0 disabled), All alarms, Billing, Logs, Metrics, X-Ray traces, Events, Application monitoring, Insights, Settings, and Getting Started. The main content area displays a list of alarms:

Name	State	Last state update	Conditions	Actions
scale-out-alarm	In alarm	2022-07-31 03:51:02	CPUUtilization > 70 for 1 datapoints within 1 minute	Actions enabled
scale-in-alarm	OK	2022-07-31 03:50:40	CPUUtilization <= 40 for 1 datapoints within 1 minute	Actions enabled

STEP 9. DNS MAPPING

The screenshot shows the AWS Route 53 console. A green notification bar at the top states "amazon.info was successfully created." with instructions on how to create records. The left sidebar contains navigation links: Delete zone, Test record, Configure query logging, Hosted zone details (Edit hosted zone), Records (2), DNSSEC signing, and Hosted zone tags (0). The main content area displays the "Record details" for the "amazon.info" record:

Record name	Value
amazon.info	ns-677.awsdns-20.net, ns-1996.awsdns-57.co.uk, ns-1477.awsdns-56.org, ns-395.awsdns-49.com

The "Nameservers" section shows the list of nameservers for the hosted zone:

- ns-677.awsdns-20.net
- ns-1996.awsdns-57.co.uk
- ns-1477.awsdns-56.org
- ns-395.awsdns-49.com

The "Forwarding" section shows the domain "amazon.info" and a button to "Add Forwarding".

STEP 10. HOSTING WEBSITES

```
To add the current session, click on the left arrow button.
1 ec2-52-1-56-80.compute-1a...
creating: coffee-shop-html-template/scss/bootstrap/scss/utilities/
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_align.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_background.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_borders.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_clearfix.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_display.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_embed.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_flex.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_float.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_interactions.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_overflow.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_position.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_screenreaders.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_shadows.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_sizing.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_spacing.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_stretched-link.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_text.scss
inflating: coffee-shop-html-template/scss/bootstrap/scss/utilities/_visibility.scss
creating: coffee-shop-html-template/scss/bootstrap/scss/vendor/
inflating: coffee-shop-html-template/scss/bootstrap/scss/vendor/_rfs.scss
inflating: coffee-shop-html-template/scss/style.scss
inflating: coffee-shop-html-template/service.html
inflating: coffee-shop-html-template/testimonial.html
root@ip-172-31-86-146:/var/www/html# ls
coffee-shop-html-template  index.html  koppee.zip
root@ip-172-31-86-146:/var/www/html# rm -f index.html
root@ip-172-31-86-146:/var/www/html# ls
coffee-shop-html-template  koppee.zip
root@ip-172-31-86-146:/var/www/html# cp -r /var/www/html/coffee-shop-html-template/* /var/www/html
root@ip-172-31-86-146:/var/www/html# ls
LICENSE.txt  about.html  coffee-shop-html-template.jpg  css  index.html  koppee.zip  mail  reservation.html  service.html
README.txt  coffee-shop-html-template  contact.html  img  js  lib  menu.html  scss  testimonial.html
root@ip-172-31-86-146:/var/www/html#
```

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