

N Virginia; Logged in on personal AWS account: joshphillis@hotmail.com

The screenshot shows the AWS Console Home page for the N. Virginia region. The top navigation bar includes the AWS logo, a Services menu, a search bar, and account information for "N. Virginia" and "joshphillis@hotmail.com". A red box highlights the account information area. The main content area features sections for "Recently visited" services (EC2, IAM, S3, Resource Groups & Tag Editor) and "Applications" (0). The "Applications" section shows the current region as "us-east-1 (Current Region)" and includes a "Create application" button. Below this, there is a table header for "Name", "Description", "Region", and "Originating account". A message indicates "No applications" and provides a link to "Create application". At the bottom, there are links to "View all services", "Go to myApplications", and other AWS service links like "Welcome to AWS", "AWS Health", and "Cost and usage". The footer contains copyright information for 2024 and links for Privacy, Terms, and Cookie preferences.

Navigate to Instances

Select Launch instances

The screenshot shows the AWS EC2 Instances page. On the left, there is a navigation sidebar with the following categories:

- EC2 Dashboard
- EC2 Global View
- Events
- Console-to-Code [Preview](#)
- Instances
 - Instances** (highlighted with a red box)
 - Instance Types
 - Launch Templates
 - Spot Requests
 - Savings Plans
 - Reserved Instances
 - Dedicated Hosts
 - Capacity Reservations
- Images
 - AMIs
 - AMI Catalog
- Elastic Block Store

The main content area is titled "Instances Info". It features a search bar with placeholder text "Find Instance by attribute or tag (case-sensitive)" and a dropdown menu set to "All states". Below the search bar is a table header with columns: Name, Instance ID, Instance state, Instance type, Status check, Alarm status, and Avail. A message "No instances" is displayed, followed by the text "You do not have any instances in this region" and a large "Launch instances" button.

At the bottom of the page, the URL is https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#Instances:, and the footer includes links for © 2024, Amazon Web Services, Inc. or its affiliates., Privacy, Terms, and Cookie preferences.

Name: **httpserver1**

AMI: **ami-06d5e0de6baf595ca**

The screenshot shows the AWS EC2 'Launch an instance' wizard. The 'Name and tags' section has 'Name' set to 'httpserver1'. The 'Application and OS Images (Amazon Machine Image)' section has a search bar containing 'ami-06d5e0de6baf595ca'. The 'Summary' section shows 1 instance being launched, using the 'Amazon Linux 2023 AMI 2023.5.2...' AMI, t2.micro instance type, and a new security group. A 'Launch instance' button is visible.

Launch an instance | EC2 | us-east-1

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

aws Services Search [Alt+S]

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 Info

Name Add additional tags

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.

Q ami-06d5e0de6baf595ca

Recents Quick Start

Amazon Linux macOS Ubuntu Windows Red Hat SUSE Li

Number of instances Info

1

Software Image (AMI)

Amazon Linux 2023 AMI 2023.5.2... read more
ami-0ae8f15ae6fe8cda

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

Cancel **Launch instance**

Review commands

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Instance type: t2.micro

The screenshot shows the AWS EC2 console interface for launching a new instance. The browser address bar indicates the URL is <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances>.

The left sidebar shows the selected AMI details:

- Name: TIO AMI
- Description: AMI created for PGPCC TIO exercises
- Image ID: ami-06d5e0de6baf595ca
- Catalog: Community
- Published: 2023-11-27T11:20:45.000Z
- Architecture: x86_64
- Virtualization: hvm
- Root device type: ebs
- ENAv Enabled: Yes

The main configuration area has a red box highlighting the "Instance type" section. It shows the selected instance type as "t2.micro". Other options like "All generations" and "Compare instance types" are also visible.

The right panel displays the "Summary" configuration with the following settings:

- Number of instances: 1
- Software Image (AMI): TIO AMI (ami-06d5e0de6baf595ca)
- Virtual server type (instance type): t2.micro
- Firewall (security group): New security group
- Storage (volumes): 1 volume(s) - 8 GiB

A callout box provides information about the "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. 750 hours of usage are included in the price of the AMI." A close button "X" is shown next to the callout.

At the bottom, standard AWS footer links are present: CloudShell, Feedback, © 2024, Amazon Web Services, Inc. or its affiliates., Privacy, Terms, and Cookie preferences.

Key Pair login section, Create key pair **pgpcc-key1**. Key pair already exists. **This is to show that I created it but forgot to take a snapshot.**

The screenshot shows the AWS Cloud Computing console with the URL <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances>. A modal dialog box titled "Create key pair" is open. The "Key pair name" field contains "pgpcc-key1". Below the field, a message says "Key pair already exists." At the bottom right of the dialog, there are "Cancel" and "Create key pair" buttons, with "Create key pair" highlighted by a red box.

Key pair name
Key pairs allow you to connect to your instance securely.
pgpcc-key1
Key pair already exists.

Key pair type
 RSA RSA encrypted private and public key pair
 ED25519 ED25519 encrypted private and public key pair

Private key file format
 .pem For use with OpenSSH
 .ppk For use with PuTTY

⚠️ When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. [Learn more](#)

Cancel Create key pair

Select pgpcc-key1

The screenshot shows the AWS EC2 Launch Instances wizard at the 'Key pair (login)' step. A red box highlights the dropdown menu for selecting a key pair. The dropdown contains the following options:

- Select (highlighted)
- Search (with a magnifying glass icon)
- Proceed without a key pair (Not recommended) (Default value)
- pgpcc-key1 (highlighted)

Below the dropdown, it says "Type: rsa".

On the right side of the screen, the "Summary" section shows the following configuration:

- Number of instances: 1
- Software Image (AMI): TIO AMI ami-06d5e0de6baf595ca
- Virtual server type (instance type): t2.micro
- Firewall (security group): New security group
- Storage (volumes): 1 volume(s) - 8 GiB

At the bottom, there is a note about the Free tier.

Page footer: CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Selected Default VPC

Subnet: us-east-1a (1st Instance)

The screenshot shows the AWS EC2 console interface for launching a new instance. The 'Network settings' section is highlighted with a red box. It includes fields for selecting a VPC (vpc-054d753022a29fc2b) and a Subnet (subnet-06896a8b4d00a8ca1). Below these, there's an 'Auto-assign public IP' dropdown set to 'Enable'. The 'Additional charges apply' note is visible. The 'Firewall (security groups)' section shows a radio button for 'Create security group' (selected) and 'Select existing security group'. A security group name 'launch-wizard-2' is entered. The 'Summary' section on the right shows 1 instance, TIO AMI, t2.micro instance type, and a note about the free tier.

VPC - required | Info
vpc-054d753022a29fc2b (default)
172.31.0.0/16

Subnet | Info
subnet-06896a8b4d00a8ca1
VPC: vpc-054d753022a29fc2b Owner: 851725205521 Availability Zone: us-east-1a
IP addresses available: 4091 CIDR: 172.31.32.0/20

Create new subnet

Auto-assign public IP | Info
Enable

Additional charges apply when outside of [free tier allowance](#)

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.
 Create security group
 Select existing security group

Security group name - required
launch-wizard-2

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 _-:/()#@+=;&!\$*

Number of instances | Info
1

Software Image (AMI)
TIO AMI
ami-06d5e0de6baf595ca

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. 750 hours of

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Create security group. Name: **tio2-sg**

Description: **Opens security groups for ssh and http**

1st Rule: **ssh, Protocol: TCP, Port Range: 22**

Source type: **Anywhere**

The screenshot shows the AWS EC2 console interface for launching instances. The left sidebar has 'Services' selected. The main area is titled 'Launch an instance | EC2 | us-east-1'. The URL in the browser is <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:>. The page displays fields for IP addresses, auto-assigning public IPs, and creating a new security group. A red box highlights the 'Create security group' button and the 'Security group name - required' field, which contains 'tio2-sg'. Another red box highlights the 'Description - required' field, which contains 'Opens security groups for ssh and http'. To the right, a summary panel shows the configuration: 1 instance, TIO AMI (ami-06d5e0de6baf595ca), t2.micro instance type, and a note about the free tier. At the bottom, there are links for CloudShell, Feedback, and various AWS terms like Privacy, Terms, and Cookie preferences.

Launch an instance | EC2 | us-east-1

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

AWS Services Search [Alt+S]

IP addresses available: 4091 CIDR: 172.31.32.0/20

Auto-assign public IP | Info

Enable

Additional charges apply when outside of free tier allowance

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.

Create security group

Select existing security group

Security group name - required

tio2-sg

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

Opens security groups for ssh and http

Inbound Security Group Rules

▼ Security group rule 1 (TCP, 22, 0.0.0.0/0)

Type | Info

Protocol | Info

Port range | Info

ssh

TCP

22

Remove

Summary

Number of instances | Info

1

Software Image (AMI)

TIO AMI

ami-06d5e0de6baf595ca

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. 750 hours of

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Selected **Add security group rule** to add **HTTP** type

Add type **HTTP**, port range **80**

Source dropdown, select **Anywhere**

The screenshot shows the AWS EC2 console interface for launching a new instance. The main area displays two security group rules:

- Security group rule 1 (TCP, 22, 0.0.0.0/0)**:
 - Type: ssh
 - Protocol: TCP
 - Port range: 22
 - Source type: Anywhere
 - Description: 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: Anywhere
 - Description: e.g. SSH for admin desktop

A yellow warning box at the bottom left states: "⚠ Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only." A red box highlights the "Add security group rule" button.

The right side of the screen shows the instance summary, including:

- Number of instances: 1
- Software image (AMI): TIO AMI ami-06d5e0de6baf595ca
- Virtual server type (instance type): t2.micro
- Firewall (security group): New security group
- Storage (volumes): 1 volume(s) - 8 GiB

At the bottom, a blue box provides information about the free tier: "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. 750 hours of".

Page footer: CloudShell, Feedback, © 2024, Amazon Web Services, Inc. or its affiliates., Privacy, Terms, Cookie preferences

Select Launch Instance

The screenshot shows the AWS EC2 'Launch an instance' wizard. On the left, under 'Configure storage', a root volume of 8 GiB gp2 is selected. A tooltip indicates that free-tier eligible customers can get up to 30 GB of EBS storage. Below this, there's a note about backup information and file systems. On the right, instance details are shown: TIO AMI (ami-06d5e0de6baf595ca), Virtual server type (t2.micro), Firewall (New security group), and Storage (1 volume - 8 GiB). A large callout box highlights the 'Free tier' information and the 'Launch instance' button, which is highlighted with a red rectangle. The bottom right of the callout box also has a 'Review commands' link.

Launch an instance | EC2 | us-east-1 X +

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

aws Services Search [Alt+S]

Configure storage Info Advanced

1x 8 GiB gp2 Root volume (Not encrypted)

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage

Add new volume

Click refresh to view backup information

The tags that you assign determine whether the instance will be backed up by any Data Lifecycle Manager policies.

0 x File systems Edit

Advanced details Info

TIO AMI
ami-06d5e0de6baf595ca

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, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and

Cancel Launch instance Review commands

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Name: **httpserver2**

AMI: **ami-06d5e0de6baf595ca, TIO AMI**

The screenshot shows the AWS EC2 console interface for launching a new instance. A red box highlights the 'Name' field where 'httpserver2' has been typed. Another red box highlights the 'AMI from catalog' section, which displays the selected 'TIO AMI' (ami-06d5e0de6baf595ca) with a detailed description: 'AMI created for PGPPC TIO exercises'. To the right, the 'Summary' pane shows the configuration: 1 instance, TIO AMI, t2.micro instance type, and a new security group. A tooltip in the summary pane explains the 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. 750 hours of usage per month are included in the free tier for each AWS account.'

Launch an instance | EC2 | us-east-1

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

aws Services Search [Alt+S]

Name: httpserver2

Add additional tags

▼ 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

AMI from catalog Recents Quick Start

Name: TIO AMI

Description: AMI created for PGPPC TIO exercises

Image ID: ami-06d5e0de6baf595ca

Catalog Published Architecture Virtualization Root device type ENA Enabled

Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

▼ Summary

Number of instances [Info](#): 1

Software Image (AMI): TIO AMI
ami-06d5e0de6baf595ca

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. 750 hours of usage per month are included in the free tier for each AWS account.

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Instance type: t2.micro

The screenshot shows the AWS EC2 console interface for launching a new instance. The URL in the browser is <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances>.

Description: AMI created for PGPCC TIO exercises

Image ID: ami-06d5e0de6baf595ca

Catalog	Published	Architecture	Virtualization	Root device type	ENAv Enabled
Community	2023-11-	x86_64	hvm	ebs	Yes
AMIs	27T11:20:45.00		OZ		

Summary

Number of instances: 1

Software Image (AMI): TIO AMI
ami-06d5e0de6baf595ca

Virtual server type (instance type): t2.micro

Firewall (security group): New security group

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

Instance type: t2.micro

Additional costs apply for AMIs with pre-installed software.

Free tier eligible: Free tier eligible

Compare instance types

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. 750 hours of

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Select pgpcc-key1

Created when launching 1st Instance

The screenshot shows the AWS EC2 console interface for launching a new instance. The 'Key pair (login)' section is highlighted with a red box. It contains a dropdown menu where 'pgpcc-key1' is selected. Other options in the dropdown include 'Proceed without a key pair (Not recommended)' and another entry for 'pgpcc-key1'. To the right of the dropdown is a 'Create new key pair' button. The 'Summary' section on the right shows basic configuration details like the number of instances (1), AMI (TIO AMI), instance type (t2.micro), and storage (1 volume(s) - 8 GiB). A tooltip for the 'Free tier' is visible, stating: '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. 750 hours of'.

Launch an instance | EC2 | us-east-1 X +

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

AWS Services Search [Alt+S]

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 - required

pgpcc-key1

Create new key pair

Proceed without a key pair (Not recommended) Default value

pgpcc-key1 Type: rsa

Network Info

vpc-054d753022a29fcb2

Subnet Info

No preference (Default subnet in any availability zone)

Auto-assign public IP Info

Enable

Additional charges apply when outside of free tier allowance

Firewall (security groups) Info

Summary

Number of instances Info

1

Software Image (AMI)

TIO AMI
ami-06d5e0de6baf595ca

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. 750 hours of

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Selected Default VPC

Subnet: **us-east-1b** (2nd Instance)

The screenshot shows the AWS EC2 console interface for launching a new instance. The 'Network settings' section is highlighted with a red box, specifically the 'VPC - required' and 'Subnet' fields. The 'VPC' dropdown shows 'vpc-054d753022a29fc2b' with '(default)' and '172.31.0.0/16'. The 'Subnet' dropdown shows 'subnet-0970c412726fb179f' with details: 'VPC: vpc-054d753022a29fc2b', 'Owner: 851725205521', 'Availability Zone: us-east-1b', and 'Zone type: Availability Zone'. Below these, the 'Auto-assign public IP' field is set to 'Enable'. The 'Summary' section on the right shows 'Number of instances: 1', 'Software Image (AMI): TIO AMI ami-06d5e0de6baf595ca', 'Virtual server type (instance type): t2.micro', 'Firewall (security group): New security group', and 'Storage (volumes): 1 volume(s) - 8 GiB'. A tooltip for the 'Free tier' is visible, stating: '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. 750 hours of'. The bottom navigation bar includes CloudShell, Feedback, Privacy, Terms, and Cookie preferences.

VPC - required | Info
vpc-054d753022a29fc2b (default)
172.31.0.0/16

Subnet | Info
subnet-0970c412726fb179f
VPC: vpc-054d753022a29fc2b Owner: 851725205521 Availability Zone: us-east-1b
Zone type: Availability Zone IP addresses available: 4091 CIDR: 172.31.0.0/20

Auto-assign public IP | Info
Enable

Additional charges apply when outside of **free tier** allowance

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.
 Create security group
 Select existing security group

Security group name - **required**
launch-wizard-2

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 _-:/()#@+&;!\$*

Number of instances | Info
1

Software Image (AMI)
TIO AMI
ami-06d5e0de6baf595ca

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. 750 hours of

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Select, Select existing security group

Select drop down

Select already created tio2-sg

The screenshot shows the AWS EC2 Launch Instances wizard. The current step is "Select existing security group". A red box highlights the "Select existing security group" radio button. Another red box highlights the dropdown menu "Select security groups" which contains the entry "tio2-sg". To the right, the "Summary" section shows the selected instance configuration: 1 instance, TIO AMI, t2.micro instance type, and the security group "tio2-sg" selected.

VPC - required | [Info](#)

vpc-054d753022a29fcb2 (default) [C](#)

Subnet [Info](#)

subnet-0970c412726fb179f VPC: vpc-054d753022a29fcb2 Owner: 851725205521 Availability Zone: us-east-1b Zone type: Availability Zone IP addresses available: 4091 CIDR: 172.31.0.0/20 [C](#) Create new subnet [E](#)

Auto-assign public IP [Info](#)

Enable [▼](#)

Additional charges apply when outside of free tier allowance

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.

Create security group Select existing security group [E](#)

Common security groups [Info](#)

Select security groups [▼](#) [C](#) Compare security group rules

tio2-sg sg-0c16a2739e8797b43 X VPC: vpc-054d753022a29fcb2

Security groups that you add or remove will be added to or removed from all your network interfaces.

► Advanced network configuration

[CloudShell](#) [Feedback](#)

Number of instances [Info](#)

1

Software Image (AMI)

TIO AMI ami-06d5e0de6baf595ca

Virtual server type (instance type)

t2.micro

Firewall (security group)

tio2-sg

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. 750 hours of

© 2024, Amazon Web Services, Inc. or its affiliates. [Privacy](#) [Terms](#) [Cookie preferences](#)

Select Launch Instance

The screenshot shows the AWS EC2 'Launch an instance' wizard. On the left, under 'Configure storage', a root volume of 8 GiB gp2 is selected. A tooltip indicates that free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. Below this, there's a note to click refresh to view backup information and a section for file systems. On the right, instance details are shown: TIO AMI (ami-06d5e0de6ba5f595ca), Virtual server type (t2.micro), Firewall (tio2-sg), and Storage (1 volume - 8 GiB). A large red box highlights the 'Launch instance' button, which is orange with white text. Other buttons visible are 'Cancel' and 'Review commands'.

Launch an instance | EC2 | us-east-1 X +

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

aws Services Search [Alt+S]

Configure storage Info Advanced

1x 8 GiB gp2 Root volume (Not encrypted)

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage

Add new volume

Click refresh to view backup information

The tags that you assign determine whether the instance will be backed up by any Data Lifecycle Manager policies.

0 x File systems Edit

Advanced details Info

TIO AMI
ami-06d5e0de6ba5f595ca

Virtual server type (instance type)
t2.micro

Firewall (security group)
tio2-sg

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, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and

Cancel Launch instance Review commands

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Both instances are running

The screenshot shows the AWS EC2 Instances page with two instances listed:

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Available
httpserver1	i-0ca8f57773b17daa3	Running	t2.micro	2/2 checks passed	View alarms	us-east-1
httpserver2	i-0bf12a7f8055442e4	Running	t2.micro	2/2 checks passed	View alarms	us-east-1

A red box highlights the instance table.

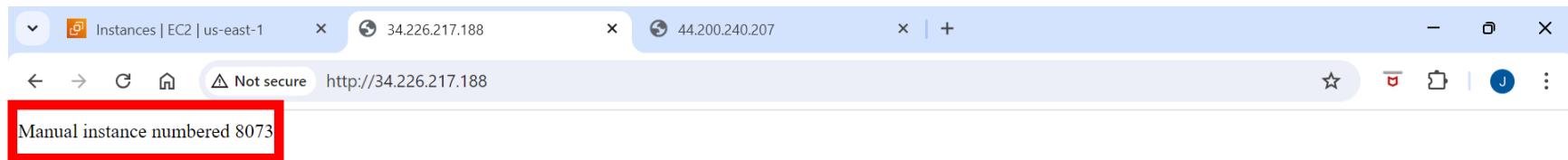
Both instances are in different availability zones

The screenshot shows the AWS EC2 Instances page. On the left, a sidebar menu is open under the 'Instances' section, showing options like Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images, AMIs, and AMI Catalog. The main content area displays a table titled 'Instances (2) Info'. The table has columns for Instance ID, Instance state, Instance type, Status check, Alarm status, Availability Zone, and Public IPv4 DNS. Two instances are listed:

Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
i-0ca8f57773b17daa3	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1a	ec2-34-226-217-188.co.
i-0bf12a7f8055442e4	Running	t2.micro	2/2 checks passed	View alarms +	us-east-1b	ec2-44-200-240-207.co.

A red box highlights the 'Availability Zone' column header and the two entries for the instances. A modal window titled 'Select an instance' is partially visible at the bottom of the screen.

1st Public IP address with the http page working (1st Instance)



2nd Public IP address with the http page working (2nd Instance)



Under **Load Balancing**, select **Target Groups**

Select **Create target group**

The screenshot shows the AWS EC2 Target Groups page. The left sidebar is collapsed, and the main content area displays the 'Target groups' list. The 'Actions' dropdown menu has a 'Create target group' option highlighted with a red box. The URL in the browser bar is <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#TargetGroups>.

Target groups Info

Actions Actions Create target group

Filter target groups

Name	ARN	Port	Protocol	Target type	Load balancer
No target groups You don't have any target groups in us-east-1					

0 target groups selected

Select a target group above.

Load Balancers

Target Groups

Trust Stores New

Auto Scaling Groups

Settings

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#TargetGroups:

© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Under **Choose Target type:** select **Instance**

Target group name: **web-tg**

The screenshot shows the 'Step 1 Create target group | EC2' wizard on the AWS console. The browser address bar shows the URL: <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTargetGroup>. The page displays four target type options: 'Instances' (selected), 'IP addresses', 'Lambda function', and 'Application Load Balancer'. Each option has a bulleted list of features. Below the options is a 'Target group name' input field containing 'web-tg', which is also highlighted with a red box. The top navigation bar includes tabs for 'CloudShell', 'Feedback', and links for 'Privacy', 'Terms', and 'Cookie preferences'.

Step 1 Create target group | EC2

34.226.217.188 44.200.240.207

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTargetGroup:

aws Services Search [Alt+S]

Instances

- Supports load balancing to instances within a specific VPC.
- Facilitates the use of [Amazon EC2 Auto Scaling](#) to manage and scale your EC2 capacity.

IP addresses

- Supports load balancing to VPC and on-premises resources.
- Facilitates routing to multiple IP addresses and network interfaces on the same instance.
- Offers flexibility with microservice based architectures, simplifying inter-application communication.
- Supports IPv6 targets, enabling end-to-end IPv6 communication, and IPv4-to-IPv6 NAT.

Lambda function

- Facilitates routing to a single Lambda function.
- Accessible to Application Load Balancers only.

Application Load Balancer

- Offers the flexibility for a Network Load Balancer to accept and route TCP requests within a specific VPC.
- Facilitates using static IP addresses and PrivateLink with an Application Load Balancer.

Target group name

web-tg

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Scroll down to **Health checks**

Enter: **/health.html**

The screenshot shows the AWS Management Console for creating a target group. The URL in the browser is <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTargetGroup>. The main content area is titled "Health checks" and contains the following information:

- Health check protocol:** Set to "HTTP".
- Health check path:** A text input field containing the value `//health.html`, which is highlighted with a red box.
- Advanced health check settings:** A link to expand or collapse additional configuration options.

Below the "Health checks" section is another section titled "Attributes" with the following note:

Info Certain default attributes will be applied to your target group. You can view and edit them after creating the target group.

At the bottom of the page, there are links for CloudShell, Feedback, Copyright notice (© 2024, Amazon Web Services, Inc. or its affiliates.), Privacy, Terms, and Cookie preferences.

Expand Advanced health check settings

Healthy threshold: **Adjust from 5 to 2**

The screenshot shows the AWS EC2 Target Group creation interface. The 'Advanced health check settings' section is expanded, indicated by a red box around the title. A second red box highlights the 'Healthy threshold' input field, which is set to '2'. Other settings shown include 'Traffic port' selected, 'Unhealthy threshold' at '2', and 'Timeout' at '5 seconds'.

▼ Advanced health check settings

Health check port
The port the load balancer uses when performing health checks on targets. By default, the health check port is the same as the target group's traffic port. However, you can specify a different port as an override.

Traffic port
 Override

Healthy threshold
The number of consecutive health checks successes required before considering an unhealthy target healthy.

2

2-10

Unhealthy threshold
The number of consecutive health check failures required before considering a target unhealthy.

2

2-10

Timeout
The amount of time, in seconds, during which no response means a failed health check.

5 seconds

2-120

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Scroll down, select **Next**

The screenshot shows the AWS EC2 Target Group creation wizard, Step 1: Create target group. The page is titled "Step 1 Create target group | EC2". The URL in the browser is <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTargetGroup>. The AWS logo is at the top left, followed by "Services". The search bar contains "Search [Alt+S]". The top right shows "N. Virginia" and the user email "joshphillis@hotmail.com".

The main content area has a heading "The approximate amount of time between health checks of an individual target". A text input field contains "30" with "seconds" next to it, and "5-300" below it. Below this is a section for "Success codes" with a text input field containing "200".

A section titled "Attributes" contains a note: "Certain default attributes will be applied to your target group. You can view and edit them after creating the target group." Below this is a section titled "Tags - optional" with the note: "Consider adding tags to your target group. Tags enable you to categorize your AWS resources so you can more easily manage them." At the bottom right are "Cancel" and "Next" buttons, with "Next" being highlighted by a red box.

At the bottom of the page are links for "CloudShell", "Feedback", "© 2024, Amazon Web Services, Inc. or its affiliates.", "Privacy", "Terms", and "Cookie preferences".

Under **Register targets**, select both instances via the **checkbox to the left**

The screenshot shows the AWS EC2 console with the URL <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTargetGroup>. The page is titled "Step 2 Create target group | EC2". It displays the "Register targets" step, which is optional for creating a target group but required for load balancer traffic routing. A red box highlights the "Register targets" section. Below it, a table lists "Available instances (2/2)". Two instances are shown, both with checkboxes checked and highlighted by a red box. The first instance is "httpserver2" (Instance ID: i-0bf12a7f8055442e4) and the second is "httpserver1" (Instance ID: i-0ca8f57773b17daa3). Both are in a "Running" state and belong to the security group "tio2-sg". The status bar at the bottom indicates "2 selected".

Instance ID	Name	State	Security groups
i-0bf12a7f8055442e4	httpserver2	Running	tio2-sg
i-0ca8f57773b17daa3	httpserver1	Running	tio2-sg

Ports for the selected instances
Ports for routing traffic to the selected instances.
80
1-65535 (separate multiple ports with commas)

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Select **Include as pending below**

The screenshot shows the AWS EC2 Target Groups creation interface. At the top, there are two browser tabs: "Step 2 Create target group | EC2" and "34.226.217.188". The main content area is titled "Step 2 Create target group" and shows a list of selected instances:

Instance ID	Name	State	Security groups
i-0bf12a7f8055442e4	httpserver2	Running	tio2-sg
i-0ca8f57773b17daa3	httpserver1	Running	tio2-sg

Below the table, it says "2 selected". Under "Ports for the selected instances", there is a field containing "80" with the placeholder "1-65535 (separate multiple ports with commas)". At the bottom of this section is a button labeled "Include as pending below", which is highlighted with a red box.

At the bottom of the page, there is a "Review targets" section with a "Targets (0)" list, a "Filter targets" input field, and a "Remove all pending" button. The footer includes links for CloudShell, Feedback, Privacy, Terms, and Cookie preferences, along with a copyright notice: "© 2024, Amazon Web Services, Inc. or its affiliates."

Select Create target group

The screenshot shows the AWS EC2 console interface for creating a target group. The top navigation bar includes tabs for 'Step 2 Create target group | EC2' and '34.226.217.188'. The URL in the address bar is <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateTargetGroup>. The main content area is titled 'Select Targets'.

In the 'Targets' section, two instances are listed:

Instance ID	Name	Port	State	Security groups	Zone	Private IPv4 address
i-0bf12a7f8055442e4	httpserver2	80	Running	tio2-sg	us-east-1b	172.31.13.248
i-0ca8f57773b17daa3	httpserver1	80	Running	tio2-sg	us-east-1a	172.31.35.158

Below the table, there are buttons for 'Cancel', 'Previous', and 'Create target group'. The 'Create target group' button is highlighted with a red box.

Target group successfully created

Select Load Balancers

The screenshot shows the AWS EC2 Target Groups page for a target group named "web-tg". A green success message at the top states: "Successfully created the target group: web-tg. Anomaly detection is automatically applied to all registered targets. Results can be viewed in the Targets tab." The left sidebar is collapsed, and the main content area displays the target group details. The "Details" section shows the ARN: arn:aws:elasticloadbalancing:us-east-1:1851725205521:targetgroup/web-tg/02e8e047babfc11c. The "Targets" section shows 2 total targets, with 0 healthy, 0 unhealthy, 2 unused, 0 initial, and 0 draining. Below this is a chart titled "Distribution of targets by Availability Zone (AZ)". The bottom navigation bar includes links for "LoadBalancers", "Privacy", "Terms", and "Cookie preferences".

Successfully created the target group: web-tg. Anomaly detection is automatically applied to all registered targets. Results can be viewed in the Targets tab.

EC2 > Target groups > web-tg

Details

arn:aws:elasticloadbalancing:us-east-1:1851725205521:targetgroup/web-tg/02e8e047babfc11c

Target type	Protocol : Port	Protocol version	VPC
Instance	HTTP: 80	HTTP1	vpc-054d753022a29fcb2

IP address type
IPv4
Load balancer
None associated

Total targets	Healthy	Unhealthy	Unused	Initial	Draining
2	0	0	2	0	0

0 Anomalous

Distribution of targets by Availability Zone (AZ)

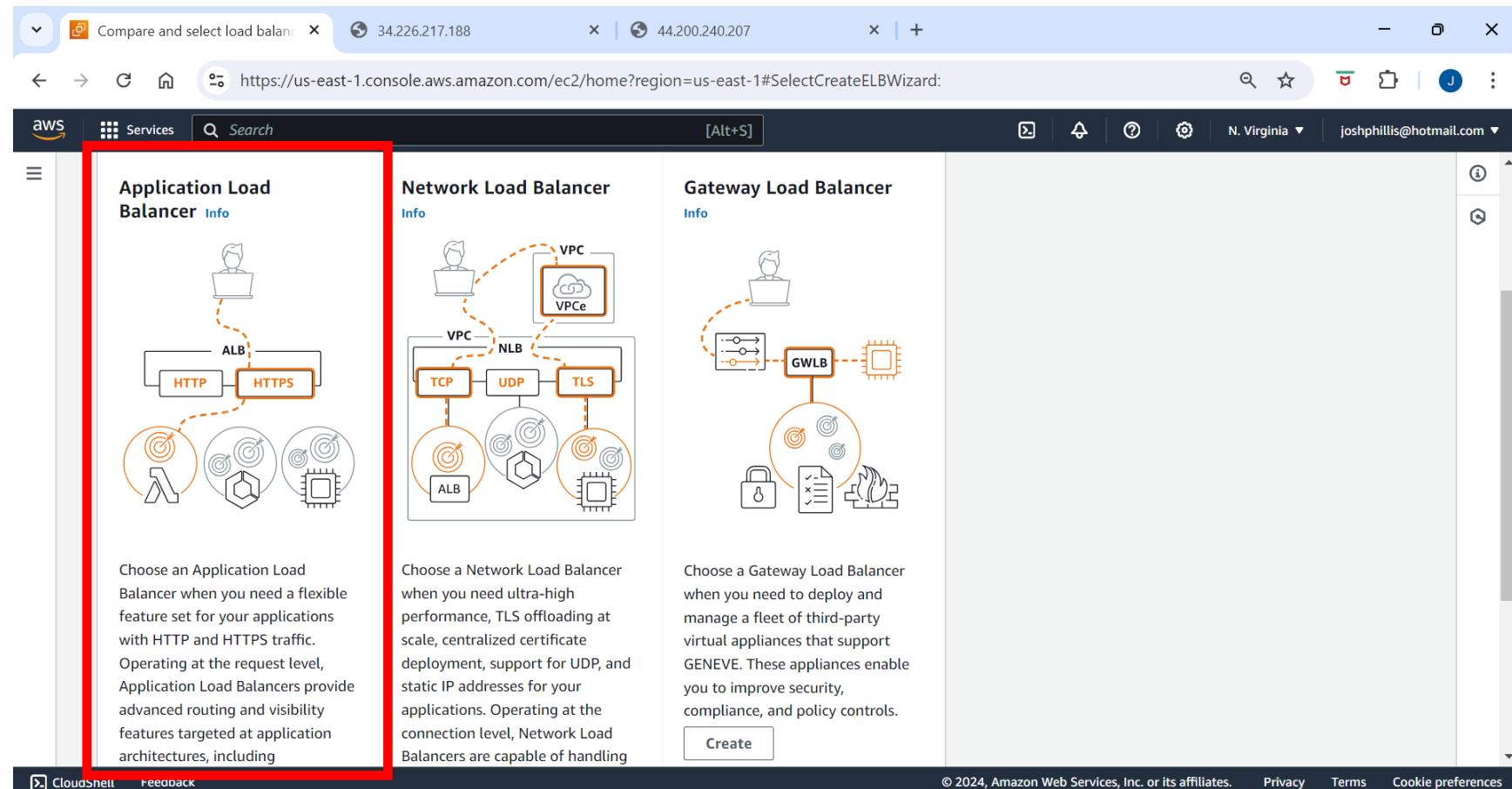
https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LoadBalancers:

© 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Select **Create load balancer**

The screenshot shows the AWS EC2 Load Balancers console. The URL in the browser is <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LoadBalancers>. The left sidebar shows the navigation menu with 'Load Balancers' selected under 'Load Balancing'. The main content area displays the 'Load balancers' page, which includes a table header with columns: Name, DNS name, State, VPC ID, and Availability Zones. A modal dialog box is overlaid on the page, containing the message '0 load balancers selected' and 'Select a load balancer above.' The 'Create load balancer' button in the top right corner of the main content area is highlighted with a red box.

Scroll down and select **Create** under Application Load Balancer



The screenshot shows the AWS CloudFront Select Create ELB Wizard interface. It displays three options for creating a new load balancer:

- Application Load Balancer**: This option is highlighted with a red box. It features a diagram showing traffic from a user's browser through an Application Load Balancer (ALB) to multiple back-end targets (Lambda function, database, and microservices). It supports HTTP and HTTPS traffic. A detailed description below the diagram states: "Choose an Application Load Balancer when you need a flexible feature set for your applications with HTTP and HTTPS traffic. Operating at the request level, Application Load Balancers provide advanced routing and visibility features targeted at application architectures, including".
- Network Load Balancer**: This option shows traffic from a user's browser through a Network Load Balancer (NLB) to back-end targets using TCP, UDP, or TLS protocols. It supports VPC and VPCE.
- Gateway Load Balancer**: This option shows traffic from a user's browser through a Gateway Load Balancer (GWLB) to back-end targets supporting GENEVE, including virtual appliances like firewalls and load balancers.

At the bottom of the ALB section, there is a "Create" button.

Page footer: © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Compare and select load balancer x 34.226.217.188 x 44.200.240.207 x + https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#SelectCreateELBWizard:

AWS Services Search [Alt+S] N. Virginia joshphillis@hotmail.com

Choose an Application Load Balancer when you need a flexible feature set for your applications with HTTP and HTTPS traffic. Operating at the request level, Application Load Balancers provide advanced routing and visibility features targeted at application architectures, including microservices and containers.

Create

Choose a Network Load Balancer when you need ultra-high performance, TLS offloading at scale, centralized certificate deployment, support for UDP, and static IP addresses for your applications. Operating at the connection level, Network Load Balancers are capable of handling millions of requests per second securely while maintaining ultra-low latencies.

Create

Choose a Gateway Load Balancer when you need to deploy and manage a fleet of third-party virtual appliances that support GENEVE. These appliances enable you to improve security, compliance, and policy controls.

Create

▶ Classic Load Balancer - previous generation

Close

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Load balancer name: **web-lb**

The screenshot shows the AWS Management Console interface for creating an Application Load Balancer. The top navigation bar includes tabs for 'Create application load balance' and two open browser tabs showing IP addresses. The main content area has a dark header with 'Services' and a search bar. Below the header, a descriptive text explains how the Application Load Balancer distributes traffic. A section titled 'How Application Load Balancers work' is shown. The 'Basic configuration' step is active, with a red box highlighting the 'Load balancer name' field. The name 'web-lb' is entered. Below the name field, a note states: 'A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.' The 'Scheme' section shows 'Internet-facing' is selected. The 'Load balancer IP address type' section notes that public IPv4 addresses have an additional cost. The bottom of the page includes standard AWS footer links: CloudShell, Feedback, © 2024, Amazon Web Services, Inc. or its affiliates., Privacy, Terms, and Cookie preferences.

Create application load balance 34.226.217.188 44.200.240.207

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateALBWizard:

The Application Load Balancer distributes incoming HTTP and HTTPS traffic across multiple targets such as Amazon EC2 instances, microservices, and containers, based on request attributes. When the load balancer receives a connection request, it evaluates the listener rules in priority order to determine which rule to apply, and if applicable, it selects a target from the target group for the rule action.

▶ How Application Load Balancers work

Basic configuration

Load balancer name

Name must be unique within your AWS account and can't be changed after the load balancer is created.

A maximum of 32 alphanumeric characters including hyphens are allowed, but the name must not begin or end with a hyphen.

Scheme | [Info](#)

Scheme can't be changed after the load balancer is created.

Internet-facing

An internet-facing load balancer routes requests from clients over the internet to targets. Requires a public subnet. [Learn more](#)

Internal

An internal load balancer routes requests from clients to targets using private IP addresses. Compatible with the IPv4 and Dualstack IP address types.

Load balancer IP address type | [Info](#)

Select the front-end IP address type to assign to the load balancer. The VPC and subnets mapped to this load balancer must include the selected IP address types. Public IPv4 addresses have an additional cost.

[CloudShell](#) [Feedback](#) © 2024, Amazon Web Services, Inc. or its affiliates. [Privacy](#) [Terms](#) [Cookie preferences](#)

Network mapping, select all Availability Zones

The screenshot shows the 'Create application load balance' wizard on the AWS Management Console. The current step is 'Network mapping'. A red box highlights the 'Availability Zones' section where two zones are selected: 'us-east-1a (use1-az6)' and 'us-east-1b (use1-az1)'. Another red box highlights the 'Mappings' section above, which instructs to 'Select at least two Availability Zones and one subnet per zone'. The VPC dropdown shows 'vpc-054d753022a29fcb2' with CIDR '172.31.0.0/16'. The Subnet dropdown for 'us-east-1a' shows 'subnet-06896a8b4d00a8ca1' with CIDR '172.31.32.0/20'. The Subnet dropdown for 'us-east-1b' shows 'subnet-0970c412726fb179f'.

Create application load balance X

34.226.217.188 X

44.200.240.207 X

https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateALBWizard:

AWS Services Search [Alt+S] N. Virginia joshphillis@hotmail.com

Network mapping Info

The load balancer routes traffic to targets in the selected subnets, and in accordance with your IP address settings.

VPC Info

The load balancer will exist and scale within the selected VPC. The selected VPC is also where the load balancer targets must be hosted unless routing to Lambda or on-premises targets, or if using VPC peering. To confirm the VPC for your targets, view [target groups](#). For a new VPC, [create a VPC](#).

vpc-054d753022a29fcb2
IPv4 VPC CIDR: 172.31.0.0/16

Mappings Info

Select at least two Availability Zones and one subnet per zone. The load balancer routes traffic to targets in these Availability Zones only. Availability Zones that are not supported by the load balancer or the VPC are not available for selection.

Availability Zones

us-east-1a (use1-az6)

Subnet

subnet-06896a8b4d00a8ca1
IPv4 subnet CIDR: 172.31.32.0/20

IPv4 address
Assigned by AWS

us-east-1b (use1-az1)

Subnet

subnet-0970c412726fb179f

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Create application load balance x 34.226.217.188 x 44.200.240.207 x + https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateALBWizard:

aws Services Search [Alt+S] N. Virginia joshphillis@hotmail.com

Assigned by AWS

us-east-1c (use1-az2)
Subnet
subnet-052d08b4af9111f04
IPv4 subnet CIDR: 172.31.80.0/20

IPv4 address
Assigned by AWS

us-east-1d (use1-az4)
Subnet
subnet-0ca885cc3145225b6
IPv4 subnet CIDR: 172.31.16.0/20

IPv4 address
Assigned by AWS

us-east-1e (use1-az3)
Subnet
subnet-0305e88f5964c411d
IPv4 subnet CIDR: 172.31.48.0/20

IPv4 address
Assigned by AWS

us-east-1f (use1-az5)

CloudShell feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Create application load balance x 34.226.217.188 x 44.200.240.207 x + https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateALBWizard:

aws Services Search [Alt+S] N. Virginia joshphillis@hotmail.com

us-east-1f (use1-az5)

Subnet

subnet-048cbc03cc04c61b
IPv4 subnet CIDR: 172.31.64.0/20

IPv4 address
Assigned by AWS

Security groups Info

A security group is a set of firewall rules that control the traffic to your load balancer. Select an existing security group, or you can [create a new security group](#).

Security groups

Select up to 5 security groups

default

sg-0a0bbe9a13382356f VPC: vpc-054d753022a29fc2

Listeners and routing Info

A listener is a process that checks for connection requests using the port and protocol you configure. The rules that you define for a listener determine how the load balancer routes requests to its registered targets.

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Select **tio2-sg** under **Security groups** dropdown

The screenshot shows the AWS Management Console interface for creating an Application Load Balancer. The top navigation bar includes tabs for 'Create application load balance' (selected), '34.226.217.188', and '44.200.240.207'. The URL in the address bar is <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateALBWizard>. The main content area is titled 'Create Application Load Balancer'.

In the 'Security groups' section, a dropdown menu is open, showing the option 'Select up to 5 security groups'. A red box highlights the dropdown and the selected item 'tio2-sg' (sg-0c16a2739e8797b43 VPC: vpc-054d753022a29fcb2). To the right of the dropdown is a 'C' icon for cloning.

Below the security group selection, the 'Listeners and routing' section is visible. It contains a 'Listener HTTP:80' configuration. The 'Protocol' is set to 'HTTP' and the 'Port' is '80'. The 'Default action' dropdown is set to 'Forward to' with the option 'Select a target group'. A 'Create target group' link is also present. To the right of this configuration is a 'Remove' button and another 'C' icon.

At the bottom of the page, there are links for 'CloudShell', 'Feedback', '© 2024, Amazon Web Services, Inc. or its affiliates.', 'Privacy', 'Terms', and 'Cookie preferences'.

Under **Listeners and routing**, under **Default action**, select **web-tg**

The screenshot shows the AWS CloudFormation Create Application Load Balancer wizard at the 'Listener configuration' step. The 'Listeners and routing' section is highlighted with a red box. Within this section, the 'Default action' dropdown is also highlighted with a red box. The dropdown shows 'Forward to web-tg' selected, with a note below stating 'Target type: Instance, IPv4'. Other options in the dropdown include 'HTTP' and 'Create target group'. The 'Protocol' dropdown is set to 'HTTP' and the 'Port' dropdown is set to '80'. A 'Remove' button is visible to the right of the listener settings.

Listeners and routing [Info](#)

A listener is a process that checks for connection requests using the port and protocol you configure. The rules that you define for a listener determine how the load balancer routes requests to its registered targets.

▼ Listener HTTP:80

Protocol Port

HTTP : 80
1-65535

Default action [Info](#)

Forward to **web-tg**
Target type: Instance, IPv4

HTTP

Create target group [\[x\]](#)

Listener tags - optional

Consider adding tags to your listener. Tags enable you to categorize your AWS resources so you can more easily manage them.

Add listener tag

You can add up to 50 more tags.

Add listener

CloudShell Feedback © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

Scroll down, select **Create load balancer**

The screenshot shows the AWS Management Console interface for creating an Application Load Balancer. The top navigation bar includes tabs for 'Create application load balance' and '34.226.217.188' and '44.200.240.207'. The URL in the address bar is <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#CreateALBWizard>. The main content area is titled 'Create application load balancer'.

Subnets:

- us-east-1e
[subnet-0305e88f5964c411d](#)
- us-east-1f
[subnet-048cbca03cc04c61b](#)

Service integrations: AWS WAF: None, AWS Global Accelerator: None

Tags: None

Attributes: A note states: "Certain default attributes will be applied to your load balancer. You can view and edit them after creating the load balancer."

Creation workflow and status:

► **Server-side tasks and status**
After completing and submitting the above steps, all server-side tasks and their statuses become available for monitoring.

At the bottom right, there are 'Cancel' and 'Create load balancer' buttons. The 'Create load balancer' button is highlighted with a red box.

Page footer: CloudShell, Feedback, © 2024, Amazon Web Services, Inc. or its affiliates., Privacy, Terms, Cookie preferences

Load balancer successfully created

The screenshot shows the AWS EC2 Load Balancers console. A red box highlights a green success message banner at the top:

Successfully created load balancer: web-lb
It might take a few minutes for your load balancer to fully set up and route traffic. Targets will also take a few minutes to complete the registration process and pass initial health checks.

The main content area shows the details for the load balancer "web-lb".

Details			
Load balancer type Application	Status Provisioning	VPC vpc-054d753022a29fc2	Load balancer IP address type IPv4
Scheme Internet-facing	Hosted zone Z35SXDOTRQ7X7K	Availability Zones subnet-0970c412726fb179f us-east-1b (use1-az1) subnet-06896a8b4d00a8ca1 us-east-1a (use1-az6) subnet-0ca885cc3145225b6 us-east-1d (use1-az4) subnet-052d08b4af9111f04 us-east-1c (use1-az2)	Date created August 7, 2024, 19:09 (UTC-05:00)

Navigation and other UI elements are visible on the left and bottom of the page.

web-lb load balancer is Active

The screenshot shows the AWS EC2 Load Balancers page. The left sidebar is collapsed. The main content area displays a table titled "Load balancers (1)". The table has columns: Name, DNS name, State, VPC ID, and Availability Zones. A single row is present, representing a load balancer named "web-lb". The "State" column shows "Active" with a green checkmark. The "DNS name" column shows "web-lb-326402155.us-eas...". The "VPC ID" column shows "vpc-054d753022a29fc...". The "Availability Zones" column shows "6 Availability Zones". A red box highlights the "Name" column for "web-lb" and the "State" column showing "Active". Below the table, a message says "0 load balancers selected" and "Select a load balancer above."

Name	DNS name	State	VPC ID	Availability Zones
web-lb	web-lb-326402155.us-eas...	Active	vpc-054d753022a29fc...	6 Availability Zones

0 load balancers selected

Select a load balancer above.

Select the **checkbox to the left of the web-lb load balancer**

Select **copy** to the left of DNS name

The screenshot shows the AWS EC2 Load Balancers console. On the left, there is a navigation sidebar with sections like EC2 Dashboard, Instances, Images, and Elastic Block Store. The main area is titled "Load balancers (1/1)" and shows a single entry for "web-lb". A red box highlights the checkbox next to "Name" for "web-lb". Below the table, a modal window titled "Load balancer: web-lb" displays the "DNS name Info" section, which includes a copy icon and the value "web-lb-326402155.us-east-1.elb.amazonaws.com (A Record)".

Name	DNS name	State	VPC ID	Availability Zones
<input checked="" type="checkbox"/> web-lb	web-lb-326402155.us-eas...	Active	vpc-054d753022a29fc...	6 Availability Zones

Load balancer: web-lb

Load balancer ARN: arn:aws:elasticloadbalancing:us-east-1:851725205521:loadbalancer/app/web-lb/77c24811b9df7d2e

DNS name Info: web-lb-326402155.us-east-1.elb.amazonaws.com (A Record)

Open a new browser tab

Type http://

Paste DNS of load balancer (**web-lb-326402155.us-east-1.elb.amazonaws.com**)



Manual instance number 8073

Load balancer alternates between instances



Bonus step:

Under **Load Balancing**, navigate to **Target groups**

Select **checkbox** next to Target group **web-tg**

Select **Attributes**, select **Edit**

The screenshot shows the AWS EC2 Target Groups interface. On the left sidebar, under the 'Load Balancing' section, the 'Target Groups' option is selected and highlighted with a red box. In the main content area, a table lists one target group named 'web-tg'. The 'Name' column for 'web-tg' has a checkbox checked, which is also highlighted with a red box. Below the table, a modal window titled 'Target group: web-tg' is open, showing tabs for 'Details', 'Targets', 'Monitoring', 'Health checks', 'Attributes' (which is currently selected and highlighted with a red box), and 'Tags'. At the bottom right of this modal, there is a large red box highlighting the 'Edit' button.

Select **Turn on stickiness**

Enter a value between **1 second and 7 days**

Select **Save changes**

The screenshot shows the AWS CloudWatch Metrics Insights console. At the top, there are three tabs: 'Edit target group attributes | EC' (selected), '34.226.217.188', and '44.200.240.207'. Below the tabs is a browser-style address bar with the URL <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#TargetGroupEditAttributes:targetGroupArn=arn:aws:elasticl...>. The main content area is titled 'Stickiness' with an 'Info' link. A red box highlights the 'Turn on stickiness' checkbox, which is checked. Below it, under 'Stickiness type', 'Load balancer generated cookie' is selected. Another red box highlights the 'Stickiness duration' and 'Unit of time' fields, where '10' is entered in the duration field and 'seconds' is selected in the unit dropdown. A third red box highlights the 'Save changes' button at the bottom right.

After multiple **refreshes** on the **Load balancer**, it remains on the 1st Instance

As described by AWS: By default, an Application Load Balancer routes each request independently to a registered target based on the chosen load-balancing algorithm. However, you can use the sticky session feature (also known as session affinity) to enable the load balancer to bind a user's session to a specific target. This ensures that all requests from the user during the session are sent to the same target. This feature is useful for servers that maintain state information in order to provide a continuous experience to clients. To use sticky sessions, the client must support cookies.



After multiple refreshes, the Load Balancer switched to the 2nd Instance



Session clean-up

Navigate to **Management Console, Load Balancer Page**

Select the **checkbox** to the left of **web-lb** Load balancer

Select **Actions** dropdown, Select **Delete Load Balancer**

The screenshot shows the AWS Management Console interface for the EC2 service, specifically the Load Balancers section. The URL in the browser is <https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LoadBalancers>. On the left, there's a navigation sidebar with various EC2-related options like Instances, Images, and Elastic Block Store. The main content area is titled "Load balancers (1/1)". It displays a single load balancer named "web-lb" with its status as "Active". A red box highlights the "Actions" dropdown menu, which contains options such as "Edit IP address type", "Edit subnets", "Manage instances", etc. Another red box highlights the "Delete load balancer" option within this dropdown menu. At the bottom of the page, there's a "Details" section providing more information about the load balancer.

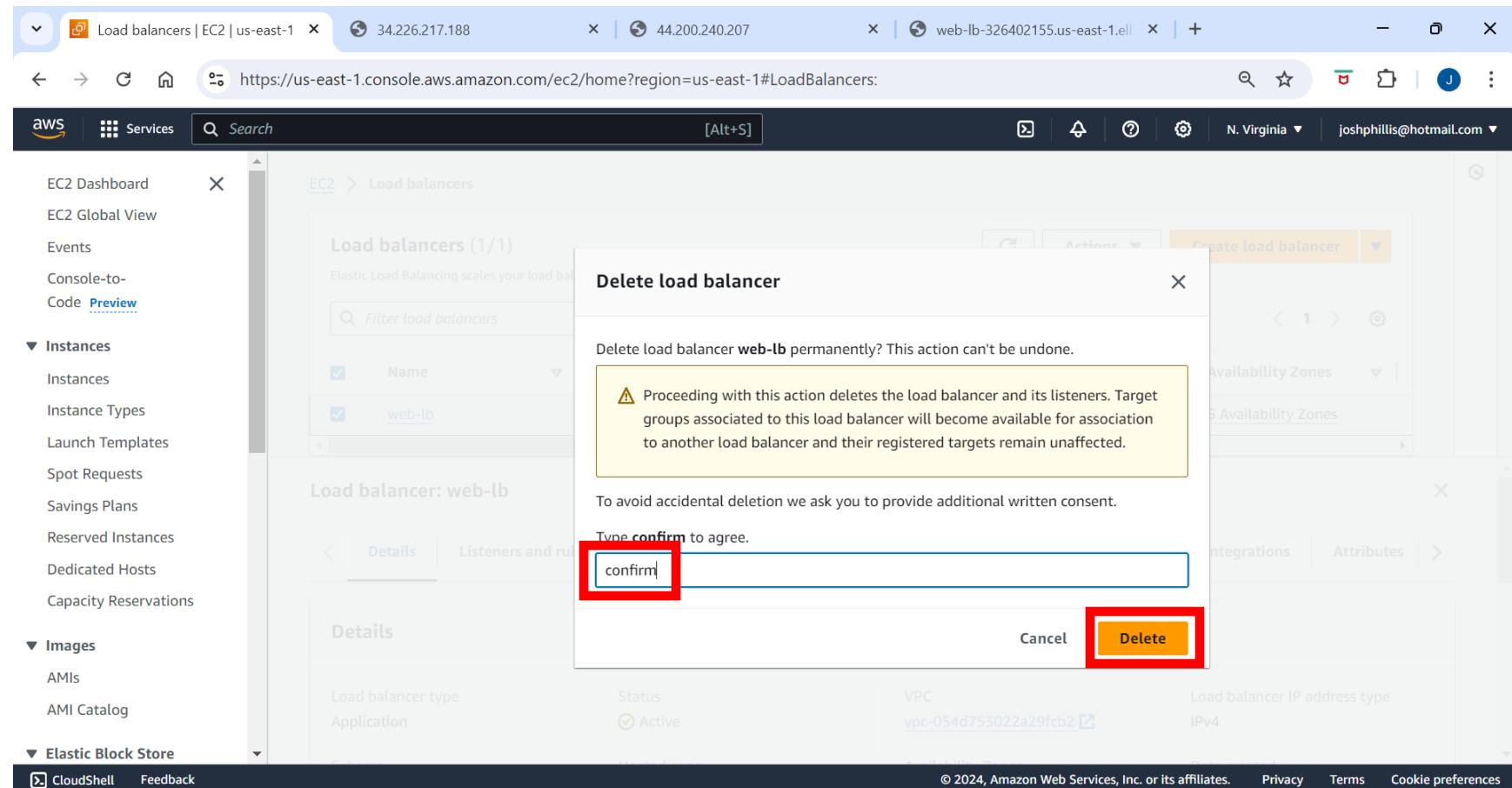
Name	DNS name	Status	VPC ID
web-lb	web-lb-326402155.us-eas...	Active	vpc-054d753022a29fcf2

Details

Load balancer type	Status	VPC	Load balancer IP address type
Application	Active	vpc-054d753022a29fcf2	IPv4

Enter Confirm

Select Delete



Navigate to **Target groups**

Select the **checkbox** to the left of **web-tg** Target group

Actions dropdown, select **Delete**

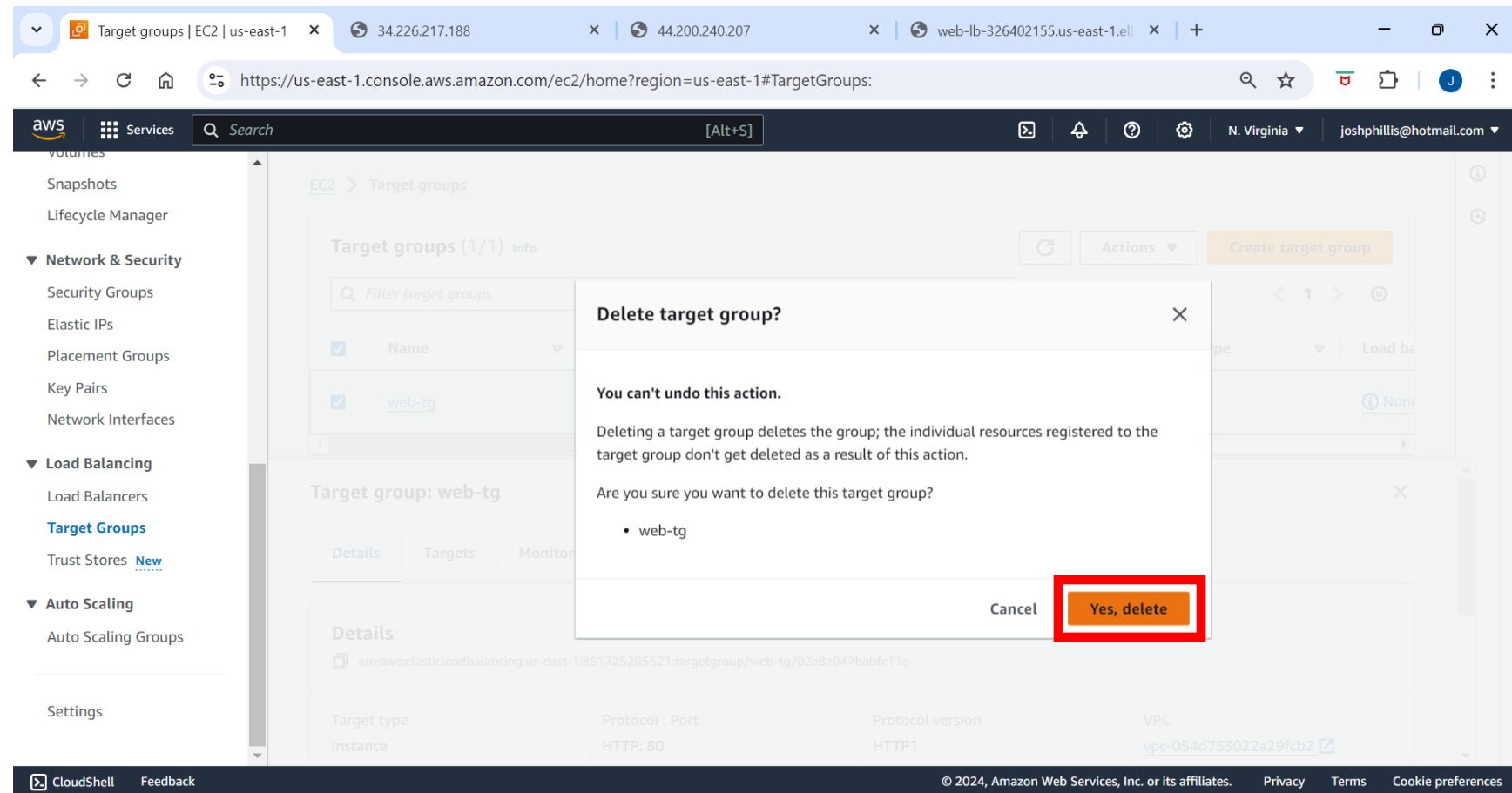
The screenshot shows the AWS EC2 Target Groups page. On the left, there is a navigation sidebar with sections like Snapshots, Lifecycle Manager, Network & Security, Load Balancing, Auto Scaling, and Settings. Under Load Balancing, the 'Target Groups' link is highlighted with a red box. The main content area shows a table titled 'Target groups (1/1)'. A single row is listed with the name 'web-tg', ARN, Port (80), and Protocol (HTTP). To the right of the table, an 'Actions' dropdown menu is open, also highlighted with a red box. The 'Delete' option in this menu is selected. Below the table, there is a section titled 'Target group: web-tg' with tabs for Details, Targets, Monitoring, Health checks, Attributes, and Tags. The 'Details' tab is selected, showing the ARN and configuration details for the target group.

Name	ARN	Port	Protocol
web-tg	arn:aws:elasticloadbalancing:us-east-1:851725205521:targetgroup/web-tg/02e8e047babfc11c	80	HTTP

Details

Target type Instance	Protocol : Port HTTP: 80	Protocol version HTTP1	VPC vpc-054d753022a29fcb2
-------------------------	-----------------------------	---------------------------	--

Select Yes, Delete



Navigate to Instances

Select **both Instances** via **checkbox to left**

Select dropdown for **Instance state**

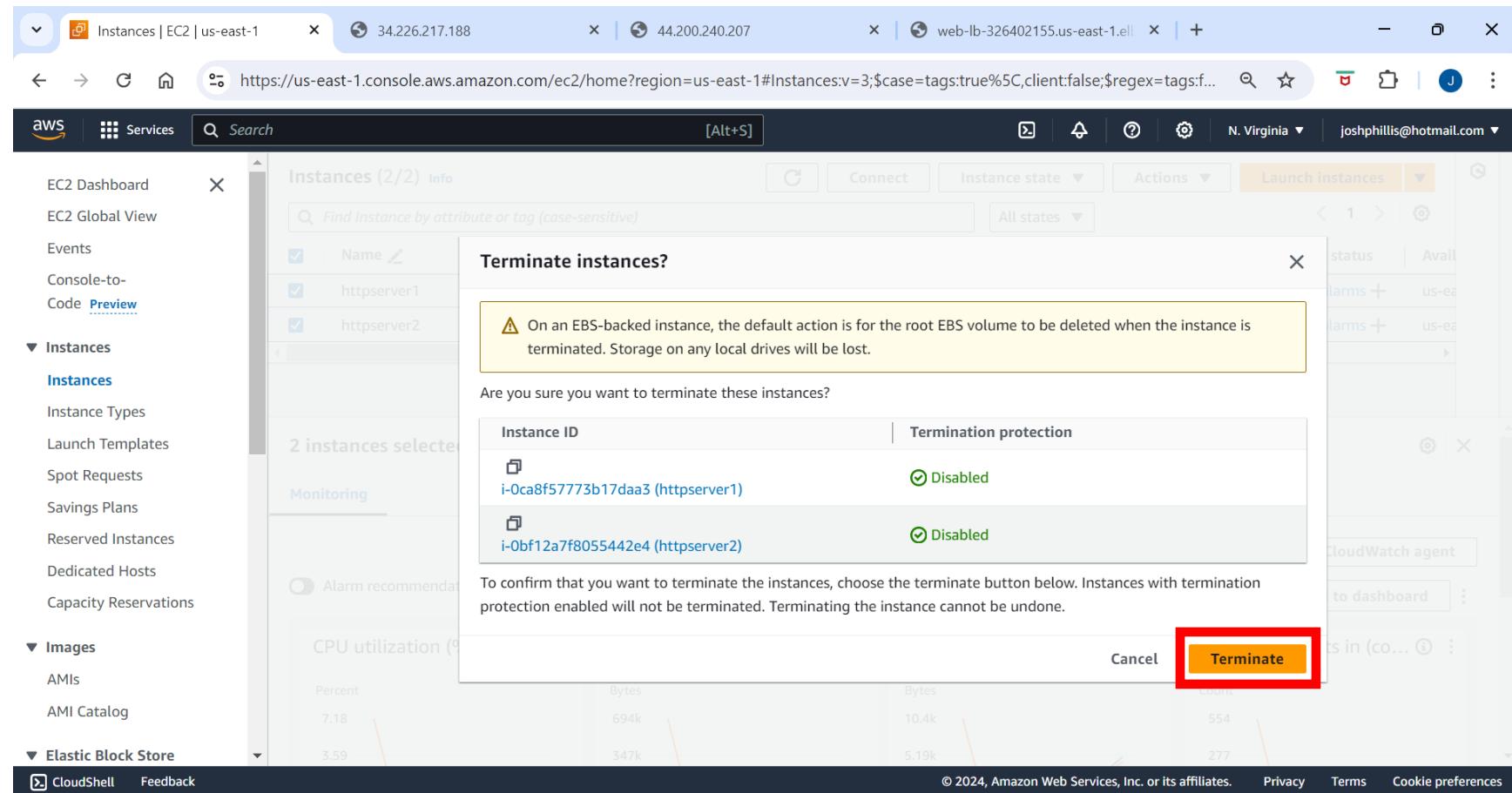
Select **Terminate instance**

The screenshot shows the AWS EC2 Instances page. On the left, the navigation pane is open, with the 'Instances' section expanded and the 'Instances' item selected. In the main content area, two instances are listed:

Name	Instance ID	Instance state
httpserver1	i-0ca8f57773b17daa3	Running
httpserver2	i-0bf12a7f8055442e4	Running

Two checkboxes are checked next to the instance names. The 'Instance state' dropdown menu is open, and the 'Terminate instance' option is highlighted with a red box. The status bar at the bottom indicates '2 instances selected'.

Select Terminate



Navigate to EC2 Dashboard

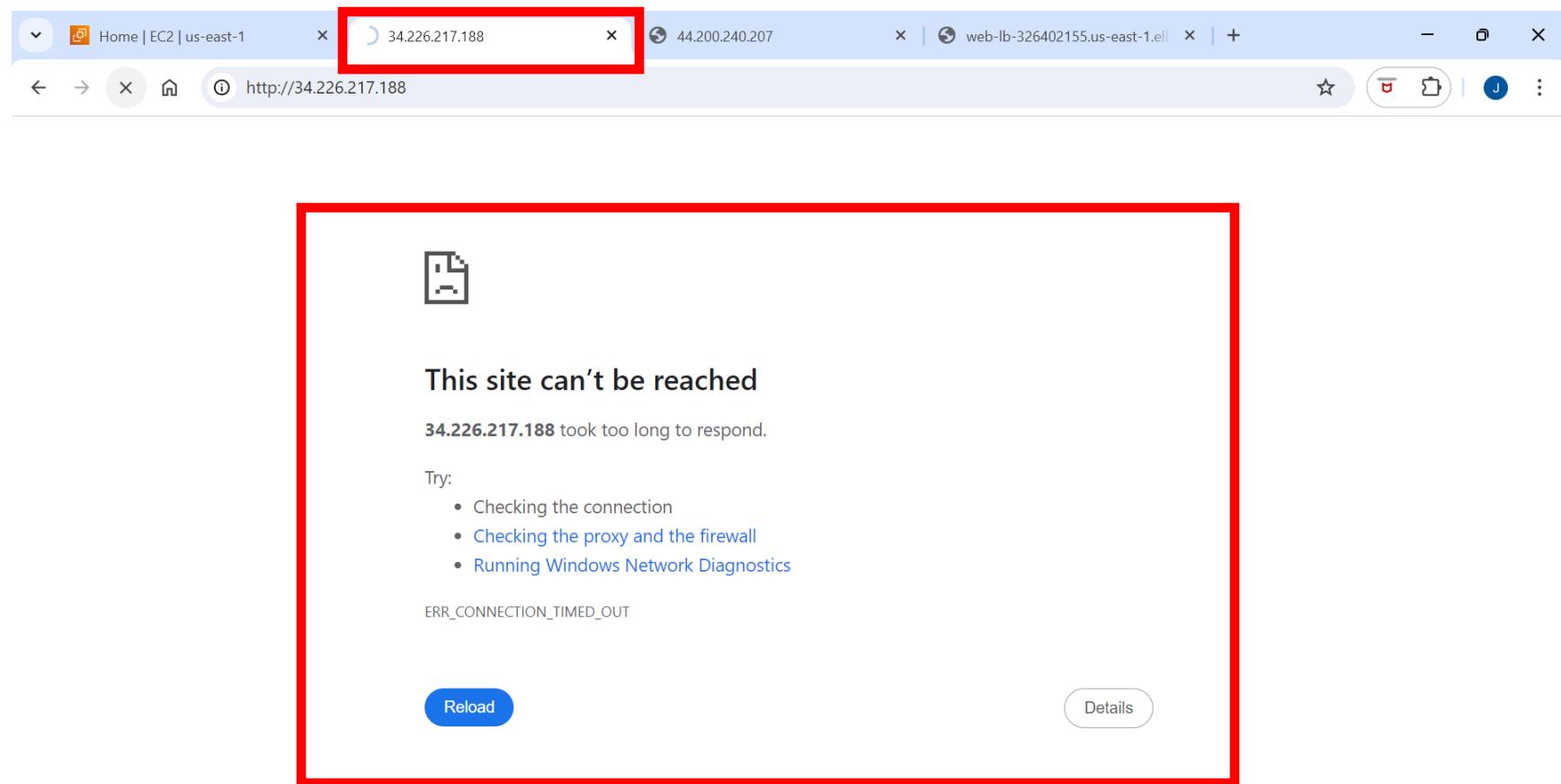
Both Instances are **not Running**

The screenshot shows the AWS EC2 Dashboard. The left sidebar has a red box around the 'EC2 Dashboard' link. The main 'Resources' section displays the following data:

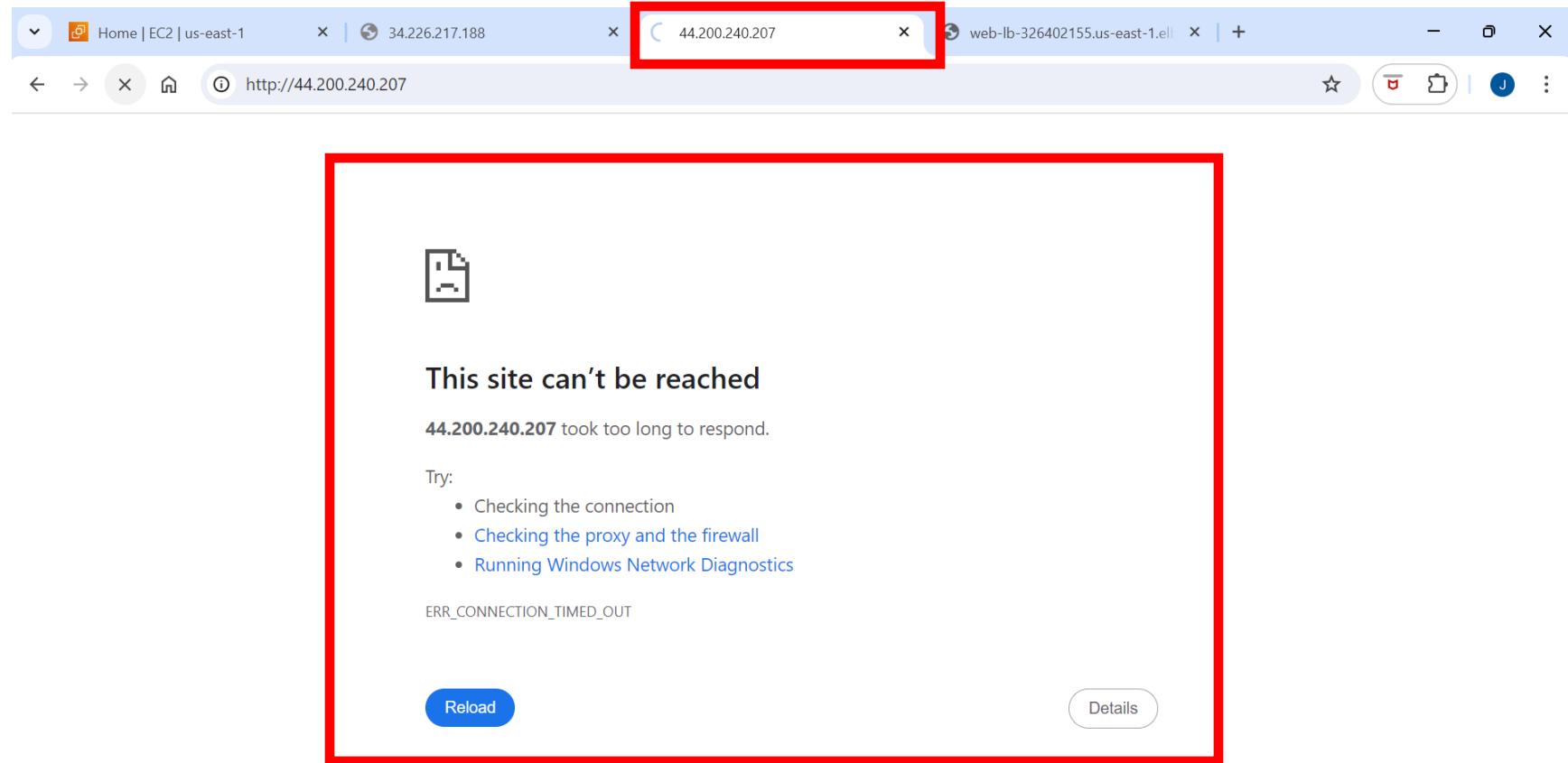
Category	Value
Instances (running)	0
Dedicated Hosts	0
Instances	2
Load balancers	0
Security groups	8
Volumes	2
Auto Scaling Groups	0
Elastic IPs	0
Key pairs	1
Placement groups	0
Snapshots	0

The 'Instances' row is highlighted with a red box. The 'Instances (running)' row is also highlighted with a red box. The 'EC2 Free Tier' section on the right shows 2 offers in use, with a warning about 0 offers exceeding the limit.

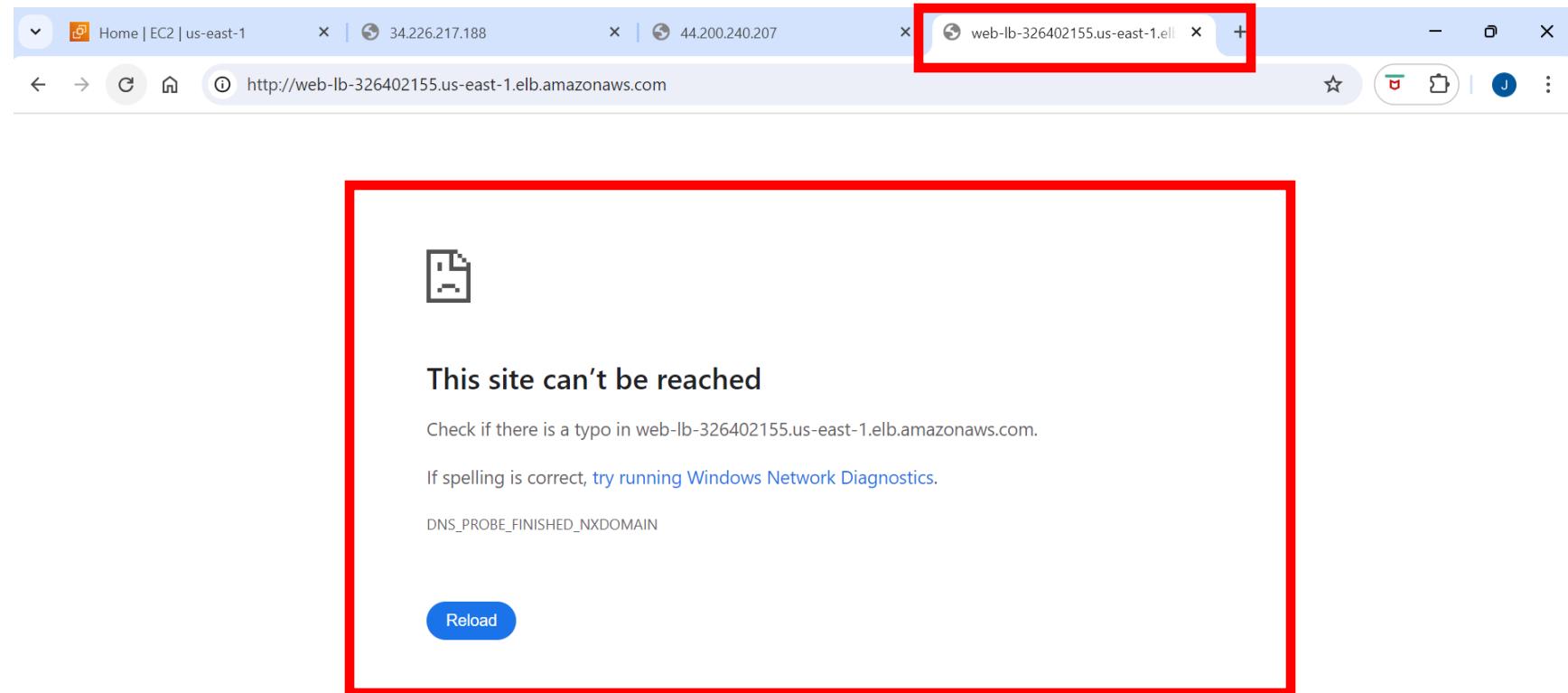
1st Instance is **not Running**



2nd Instance is not Running



Load Balancer is not operational



No Load balancer

The screenshot shows the AWS Management Console interface for the EC2 service, specifically the Load Balancers section. The browser tabs at the top include "Load balancers | EC2 | us-east-1", "34.226.217.188", "44.200.240.207", and "web-lb-326402155.us-east-1.elb.amazonaws.com". The main content area displays the "Load balancers" table with one row labeled "No load balancers". A red box highlights this row. Below the table, a modal dialog box is open with the heading "0 load balancers selected" and the message "Select a load balancer above." The left sidebar contains navigation links for Network & Security, Load Balancing, Auto Scaling, and Settings.

Load balancers

Elastic Load Balancing scales your load balancer capacity automatically in response to changes in incoming traffic.

Filter load balancers

Name DNS name State VPC ID Availability Zones Type

No load balancers

0 load balancers selected

Select a load balancer above.

Load balancers | EC2 | us-east-1 https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LoadBalancers: © 2024, Amazon Web Services, Inc. or its affiliates. Privacy Terms Cookie preferences

No Target groups

The screenshot shows the AWS EC2 Target Groups page. At the top, there are three tabs: "Target groups | EC2 | us-east-1", "34.226.217.188", and "44.200.240.207". Below the tabs is a search bar and a URL: "https://us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#TargetGroups:". The main navigation bar includes "Services" (with "EC2" selected), "Search", and "Actions". The left sidebar lists various services under "Network & Security" (Snapshots, Lifecycle Manager, Security Groups, Elastic IPs, Placement Groups, Key Pairs, Network Interfaces), "Load Balancing" (Load Balancers), "Target Groups" (selected), and "Auto Scaling" (Auto Scaling Groups). The "Target Groups" section has a heading "Target groups Info" and a "Create target group" button. A search bar says "Filter target groups". Below it is a table header with columns: Name, ARN, Port, Protocol, Target type, and Load balancer. A message in a red-bordered box says "No target groups" and "You don't have any target groups in us-east-1". A modal window titled "0 target groups selected" says "Select a target group above." at the bottom.