

Elastic Load Balancer in AWS

Last Updated : 26 Jul, 2023



In simplest terms, **cloud computing** means storing and accessing the data and programs on remote servers that are hosted on the internet instead of the computer's hard drive or local server. It is also referred to as Internet-based computing.

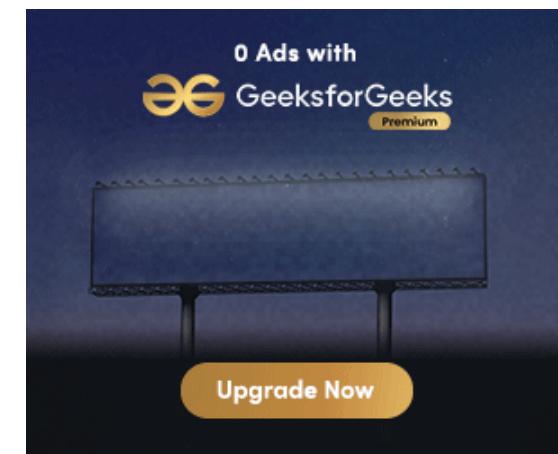
What are Amazon Web Services?

Amazon Web Services is a subsidiary of Amazon.com that provides on-demand cloud computing platforms for individuals, companies, and governments, on a paid subscription basis, pay-as-you-go principle.

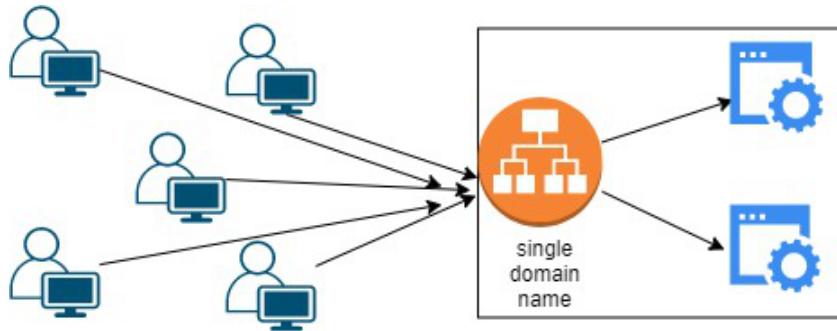
[Amazon Web Services](#) offers a highly reliable, scalable, low-cost infrastructure platform in the cloud. You can automate the infrastructure with the tool called Terraform to know more about Terraform refer to [What is Terraform?](#)

How Elastic Load Balancing?

The elastic load balancer is a service provided by Amazon in which the incoming traffic is efficiently and automatically distributed across a group of backend servers in a manner that increases speed and performance. It helps to improve the scalability of your application and secures your applications. Load Balancer allows you to configure health checks for the registered targets. In case any of the registered targets ([Auto scaling group](#))



unhealthy target. Thereby ensuring your application is highly available and fault tolerant. To know more about load balancing refer to [Load Balancing in Cloud Computing](#).



Types of Load Balancers

- 1. Classic Load Balancer:** It is the traditional form of load balancer which was used initially. It distributes the traffic among the instances and is not intelligent enough to support host-based routing or path-based routing. It ends up reducing efficiency and performance in certain situations. It is operated on the connection level as well as the request level. Classic Load Balancer is in between the transport layer (TCP/SSL) and the application layer ([HTTP/HTTPS](#)).
- 2. Application Load Balancer:** This type of Load Balancer is used when decisions are to be made related to HTTP and HTTPS traffic routing. It supports path-based routing and host-based routing. This load balancer works at the Application layer of the OSI Model. The load balancer also supports dynamic host port mapping.
- 3. Network Load Balancer:** This type of load balancer works at the transport layer(TCP/SSL) of the OSI model. It's capable of handling millions of requests per second. It is mainly used for load-balancing TCP traffic.
- 4. Gateway Load Balancer:** Gateway Load Balancers provide you the facility to deploy, scale, and manage virtual appliances like firewalls.

[Gateway Load Balancers](#) combine a transparent network gateway and then distribute the traffic.

Steps to configure an Application load balancer in AWS

Step 1: Launch the two instances on the AWS management console named Instance A and Instance B. Go to services and select the load balancer. To create AWS free tier account refer to [Amazon Web Services \(AWS\) – Free Tier Account Set up.](#)

The screenshot shows the AWS EC2 Instances page. The left sidebar has sections for EC2 Dashboard, Events, Tags, Reports, Limits, Instances (selected), Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts (New), Scheduled Instances, and Capacity Reservations. The main area displays a table with columns: Name, Instance ID, Instance Type, Availability Zone, Instance State, Status Checks, Alarm Status, Public DNS (IPv4), IPv4 Public IP, and IPv6. Two instances are listed: instanceA (i-015104070505078ef) and instanceB (i-0de23b07012599b...). Both are t2.micro instances in us-east-1e, running, with 2/2 checks passing and no alarm status. Their public DNS and IPv4 addresses are also listed.

Step 2: Click on Create the load balancer.

The screenshot shows the AWS Load Balancers page. The left sidebar includes AMIs, Bundle Tasks, ELASTIC BLOCK STORE (Volumes, Snapshots, Lifecycle Manager), NETWORK & SECURITY (Security Groups New, Elastic IPs New, Placement Groups New, Key Pairs New), and LOAD BALANCING (Load Balancers selected). The main area displays a table with columns: Name, DNS name, State, VPC ID, Availability Zones, Type, and Creator. A message at the top states: "You do not have any load balancers in this region." Below the table is a "Select a load balancer" section.

Step 3: Select Application Load Balancer and click on Create.

The screenshot shows the "Select load balancer type" section. It explains that Elastic Load Balancing supports three types: Application Load Balancers, Network Load Balancers (new), and Classic Load Balancers. It advises choosing the type that meets your needs. Below are three options:

- Application Load Balancer**: Represented by a circle with "HTTP HTTPS". A "Create" button is below it. A description states: "Choose an Application Load Balancer when you need a flexible feature set for your web 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." A "Learn more >" link is at the bottom.
- Network Load Balancer**: Represented by a circle with "TCP TLS UDP". A "Create" button is below it. A description states: "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 application. Operating at the connection level, Network Load Balancers are capable of handling millions of requests per second securely while maintaining ultra-low latencies." A "Learn more >" link is at the bottom.
- Classic Load Balancer**: Represented by a dark grey box with "PREVIOUS GENERATION for HTTP, HTTPS, and TCP". A "Create" button is below it. A description states: "Choose a Classic Load Balancer when you have an existing application running in the EC2-Classic network." A "Learn more >" link is at the bottom.

Step 4: Here you are required to configure the load balancer. Write the name of the load balancer. Choose the scheme as internet facing.

1. Configure Load Balancer 2. Configure Security Settings 3. Configure Security Groups 4. Configure Routing 5. Register Targets 6. Review

Step 1: Configure Load Balancer

Basic Configuration

To configure your load balancer, provide a name, select a scheme, specify one or more listeners, and select a network. The default configuration is an Internet-facing load balancer in the selected network with a listener that receives HTTP traffic on port 80.

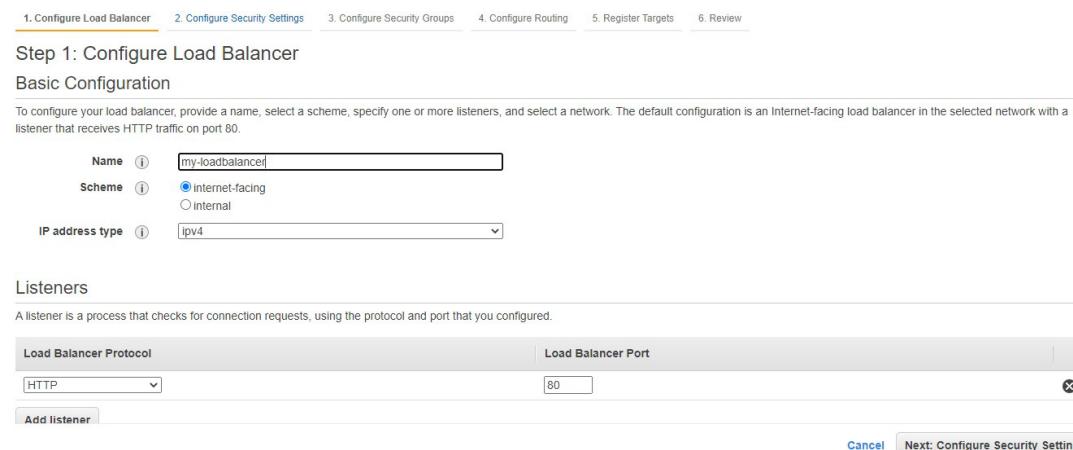
Name: my-loadbalance|
Scheme: Internet-facing
 Internal
IP address type: ipv4

Listeners

A listener is a process that checks for connection requests, using the protocol and port that you configured.

Load Balancer Protocol	Load Balancer Port
HTTP	80

Add listener Cancel Next: Configure Security Settings



Step 5: Add at least 2 availability zones. Select us-east-1a and us-east-1b

1. Configure Load Balancer 2. Configure Security Settings 3. Configure Security Groups 4. Configure Routing 5. Register Targets 6. Review

Step 1: Configure Load Balancer

Availability Zones

Specify the Availability Zones to enable for your load balancer. The load balancer routes traffic to the targets in these Availability Zones only. You can specify only one subnet per Availability Zone. You must specify subnets from at least two Availability Zones to increase the availability of your load balancer.

VPC: vpc-c63330bc (172.31.0.0/16) (default)

Availability Zones:

Region	Subnet
us-east-1a	subnet-07a25158
us-east-1b	subnet-f6629590
us-east-1c	subnet-e8d22fc9
us-east-1d	subnet-919214dc
us-east-1e	subnet-28f6cc16
us-east-1f	subnet-54e1495a

IPv4 address: Assigned by AWS

Cancel Next: Configure Security Settings

Step 6: We don't need to do anything here. Click on Next: Configure Security Groups

1. Configure Load Balancer 2. Configure Security Settings 3. Configure Security Groups 4. Configure Routing 5. Register Targets 6. Review

Step 2: Configure Security Settings

⚠ Improve your load balancer's security. Your load balancer is not using any secure listener.
If your traffic to the load balancer needs to be secure, use the HTTPS protocol for your front-end connection. You can go back to the first step to add/configure secure listeners under [Basic Configuration](#) section. You can also continue with current settings.

Cancel Previous Next: Configure Security Groups

Step 7: Select the default security group. Click on Next: Configure Routing

Step 3: Configure Security Groups

A security group is a set of firewall rules that control the traffic to your load balancer. On this page, you can add rules to allow specific traffic to reach your load balancer. First, decide whether to create a new security group or select an existing one.

Assign a security group: Create a new security group
 Select an existing security group

Security Group ID	Name	Description	Actions
sg-0bb0a9bc3e885adfb	AutoScaling-Security-Group-1	AutoScaling-Security-Group-1 (2020-06-15 12:00:39.275+05:30)	Copy to new
sg-0b3772fb57fb44ce	AutoScaling-Security-Group-2	AutoScaling-Security-Group-2 (2020-06-15 15:18:53.000+05:30)	Copy to new
sg-103a4f3e	default	default VPC security group	Copy to new
sg-0b13f451747da2fc2	launch-wizard-1	launch-wizard-1 created 2020-05-12T23:27:45.924+05:30	Copy to new
sg-045b8504a3b7badf44	launch-wizard-10	launch-wizard-10 created 2020-06-13T14:16:46.319+05:30	Copy to new
sg-0fd12e18e2b9c22d6	launch-wizard-11	launch-wizard-11 created 2020-06-15T11:38:34.722+05:30	Copy to new
sg-04b735293b0ccb9a7	launch-wizard-12	launch-wizard-12 created 2020-06-15T15:10:02.695+05:30	Copy to new
sg-030470cd95160c71	launch-wizard-13	launch-wizard-13 created 2020-06-15T20:33:05.606+05:30	Copy to new
sg-0d9a46000ea95453f	launch-wizard-2	launch-wizard-2 created 2020-05-13T05:34:24.807+05:30	Copy to new

[Cancel](#) [Previous](#) [Next: Configure Routing](#)

Step 8: Choose the name of the target group to be my target group. Click on Next: Register Targets.

Step 4: Configure Routing

Your load balancer routes requests to the targets in this target group using the protocol and port that you specify, and performs health checks on the targets using these health check settings. Note that each target group can be associated with only one load balancer.

Target group

Target group [i](#)

Name [i](#)

Target type Instance
 IP
 Lambda function

Protocol [i](#)

Port [i](#)

Health checks

Protocol [i](#)

Path [i](#)

[Cancel](#) [Previous](#) [Next: Register Targets](#)

Step 9: Choose instance A and instance B and click on Add to register.

Click on Next: Review.

Step 5: Register Targets

Registered targets

To deregister instances, select one or more registered instances and then click Remove.

Remove	Instance	Name	Port	State	Security groups	Zone
<input type="checkbox"/>	i-015104070505079ef	instanceA	80	running	default	us-east-1e
<input type="checkbox"/>	i-0de23b37012599b85	instanceB	80	running	default	us-east-1e

Instances

To register additional instances, select one or more running instances, specify a port, and then click Add. The default port is the port specified for the target group. If the instance is already registered on the specified port, you must specify a different port.

Add to registered on port 80

Search Instances	X						
Instance	Name	State	Security groups	Zone	Subnet ID	Subnet CIDR	
<input checked="" type="checkbox"/>	i-015104070505079ef	instanceA	running	default	us-east-1e	subnet-28f6cc16	172.31.48.0/20
<input checked="" type="checkbox"/>	i-0de23b37012599b85	instanceB	running	default	us-east-1e	subnet-28f6cc16	172.31.48.0/20

Cancel Previous Next: Review

Step 10: Review all the configurations and click on create

Step 6: Review

Please review the load balancer details before continuing

Load balancer

- Name: my-loadbalancer
- Scheme: Internet-facing
- Listeners: Port 80 - Protocol: HTTP
- IP address type: IPv4
 - VPC: vpc-d53390bc
 - Subnets: subnet-07a25158, subnet-f6629590
 - Tags

Security groups

- Security groups: sg-103a4f3e

Routing

- Target group: New target group
- Target group name: my-target-group
- Port: 80
- Target type: instance
- Protocol: HTTP
- Health check protocol: HTTP
- Path: /
- Health check port: traffic port
- Healthy threshold: 5

Cancel Previous Create

Step 11: Congratulations!! You have successfully created a load balancer.

Click on close.

Load Balancer Creation Status

Successfully created load balancer
Load balancer my-loadbalancer was successfully created.
Note: It might take a few minutes for your load balancer to be fully set up and ready to route traffic, and for the targets to complete the registration process and pass the initial health checks.

Suggested next steps

- Discover other services that you can integrate with your load balancer. Visit the Integrated services tab within my-loadbalancer
- Consider using AWS Global Accelerator to further improve the availability and performance of your applications. [AWS Global Accelerator console](#)

[Close](#)

Step 12: This highlighted part is the DNS name which when copied in the URL will host the application and will distribute the incoming traffic efficiently between the two instances.

The screenshot shows the AWS Load Balancer creation status. A callout box highlights the 'DNS name' field, which contains the value 'my-loadbalancer-203630516.us-east-1.elb.amazonaws.com'. The rest of the page displays basic configuration details for the load balancer.

Name	DNS name	State	VPC ID	Availability Zones	Type	Created
my-loadbalancer	my-loadbalancer-203630516...	active	vpc-c63330bc	us-east-1a, us-east-1b	application	June 16

Basic Configuration

Name	my-loadbalancer
ARN	arn:aws:elasticloadbalancing:us-east-1:013179561180:loadbalancer/app/my-loadbalancer/ce4b8ceb87eb7694
DNS name	my-loadbalancer-203630516.us-east-1.elb.amazonaws.com
State	active
Type	application
Scheme	internet-facing
IP address type	ipv4
VPC	vpc-c63330bc
Availability Zones	subnet-07a25158 - us-east-1a

Step 13: This is the listener port 80 which listens to all the incoming requests

Load balancer: my-loadbalancer

Description **Listeners** Monitoring Integrated services Tags

A listener checks for connection requests using its configured protocol and port, and the load balancer uses the listener rules to route requests to targets. You can add, remove, or update listeners and listener rules.

Add listener Edit Delete

	Listener ID	Security policy	SSL Certificate	Rules
<input type="checkbox"/>	HTTP : 80 arn:aws:elasticloadbalancing:us-east-1:0d27f1ad720d241e...	N/A	N/A	Default: forwarding to my-target-group View/edit rules

Step 14: This is the target group that we have created

EC2 > Target groups

Target groups (1)

Filter resources by property or value

Name	ARN	Port	Protocol	Target type	Load balancer	VPC ID
my-target-group	arn:aws:elasticloadbalancing:us-east-1:0d27f1ad720d241e...	80	HTTP	Instance	my-loadbalancer	vpc-c63330bc

Step 15: Now we need to delete the instance. Go to Actions -> Click on Delete.

New EC2 Experience
Tell us what you think

Create Load Balancer

Actions ▾

AMIs
Bundle Tasks
ELASTIC BLOCK STORE
Volumes
Snapshots
Lifecycle Manager
NETWORK & SECURITY
Security Groups New
Elastic IPs New
Placement Groups New
Key Pairs New
Network Interfaces
LOAD BALANCING
Load Balancers
Target Groups New
AUTO SCALING
Launch Configurations
Auto Scaling Groups

Name my-loadbalancer

Edit health check
Edit subnets
Edit IP address type
Edit instances
Edit listeners
Edit security groups
Edit attributes
Delete

Load balancer: my-loadbalancer

Description Listeners Monitoring Integrated services Tags

Basic Configuration

Name	my-loadbalancer
ARN	arn:aws:elasticloadbalancing:us-east-1:013179561180:loadbalancer/app/my-loadbalancer/ce4b8ceb87eb7694
DNS name	my-loadbalancer-2036300516.us-east-1.elb.amazonaws.com (A Record)
State	active
Type	application
Scheme	internet-facing
IP address type	ipv4
VPC	vpc-c63330bc

Step 16: Also don't forget to terminate the instances.

New EC2 Experience
Tell us what you think

EC2 Dashboard New
Events New
Tags
Reports
Limits
INSTANCES
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts New
Scheduled Instances
Capacity Reservations
IMAGES
AMIs

Launch Instance Connect Actions ▾

Security Group Name default

Name Instance ID

InstanceA i-015104070505078ef
InstanceB i-0de23b37012599b85

Connect
Get Windows Password
Create Template From Instance
Launch More Like This

Instance State ▾
Start
Stop
Stop - Hibernate
Reboot
Terminate

InstanceState
Instance Settings
Image
Networking
CloudWatch Monitoring

Availability Zone ▾
Instance State ▾
Status Checks ▾
Alarm Status
Public DNS (IPv4) ▾
IPv4 Public IP ▾
IPv6 Public IP ▾

Instances: i-015104070505078ef (instanceA), i-0de23b37012599b85 (instanceB)

Description Status Checks Monitoring Tags

Features of cloud

- No up-front investment
- Lowering operating cost
- Highly scalable and efficient
- Easy access
- Reducing business risks and maintenance expenses

Advantages of Elastic Load Balancer

- ELB automatically distributes incoming application traffic across multiple targets, such as [EC2 instances](#), [containers](#), and [IP addresses](#), to achieve high availability.
- It can automatically scale to handle changes in traffic demand, allowing you to maintain consistent application performance.
- It can monitor the health of its registered targets and route traffic only to the healthy targets.
- It evenly distributes traffic across all availability zones in a region, improving fault tolerance.

Disadvantages of Elastic Load Balancer

- ELB can add latency to your application, as traffic must pass through the load balancer before being routed to your targets.
- It has limited customization options, so you may need to use additional tools and services to fully meet your application's requirements.
- It can introduce additional complexity to your application architecture, requiring you to manage and maintain additional resources.
- It can increase your overall AWS costs, especially if you have high traffic volumes or require multiple load balancers.

FAQs On AWS Load Balancer

Q.1: What is the difference between EC2 and ELB?

Elastic load balancing will distribute the traffic to the application which is present in EC2-Instance.

Q.2: Which is faster NLB or ALB?

Network load balancer is faster than the Application load balancer when there is an sudden load.

[Comment](#)[More info ▾](#)[Next Article >](#)[AWS Elastic Load Balancer Health](#)[Check](#)

Similar Reads

Elastic Load Balancer in AWS

In simplest terms, cloud computing means storing and accessing the data and programs on remote servers that are hosted on the internet instead of the computer's hard drive or local server. It is also referred to as...

⌚ 5 min read

AWS Elastic Load Balancer Health Check

In the domain of cloud computing and web application hosting, ensuring the persistent accessibility and execution of services is vital. Elastic Load Balancing (ELB) is a major help given by Amazon Web Service...

⌚ 8 min read

How To Configure GateWay Load Balancer In AWS ?

In the advanced landscape of cloud computing, managing incoming internet traffic efficiently is fundamental for ensuring the accessibility, scalability, and reliability of applications. AWS offers a set of services to...

⌚ 7 min read

How To Delete Elastic IP In AWS?

Amazon Web Services (AWS) gives an exhaustive arrangement of distributed computing administrations, and Amazon Versatile Figure Cloud (EC2) is an essential part that permits clients to run virtual servers in t...

⌚ 6 min read

Auto Scaling vs Load Balancer

Auto-scaling and Load Balancer are two important concepts in cloud computing and network infrastructure. Auto-scaling is a feature that helps to adjust the capacity of a system automatically based on its current...

⌚ 3 min read

Introduction to AWS Elastic Beanstalk

AWS Elastic Beanstalk is an AWS-managed service for web applications. Elastic Beanstalk is a pre-configured EC2 server that can directly take up your application code and environment configurations and...

⌚ 6 min read

AWS EBS (Elastic Block Store) Snapshot

Data is the most important thing anywhere over the internet. Everyone wants to be more secure and save when it comes to their Data security. Data on your Amazon EBS volume can also be back up to Amazon S...

⌚ 6 min read

What Are AWS Load Balancer Types ?

Managing and allocating incoming network traffic is a critical component in the dynamic realm of cloud computing that helps to guarantee high availability and dependability for online applications. Load balanc...

⌚ 11 min read

AWS Application Load Balancer

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 balance...

⌚ 14 min read

How To Integrate AWS Auto Scaling With Classical Load Balancer ?

Auto Scaling is a service in Amazon Web Services (AWS) with the help of an EC2 instance that automatically changes the number of instances as per the user's application demand. this nature of auto-...

⌚ 5 min read

What are the 3 Types of Load Balancers in AWS?

Load balancing is a crucial aspect of ensuring high availability, scalability, and fault tolerance in cloud computing environments. Amazon Web Services (AWS) provides several types of load balancers to...

⌚ 2 min read

Integrating AWS Lambda with Application Load Balancer

With the growing acceptance of the serverless architecture within businesses, AWS Lambda is a computing service that is being applied broadly for running functions without provisioning or managing servers....

⌚ 6 min read

AWS RDS - Maintaining a DB instance

This article intends to explain every parameter related to the "Maintenance of a DB Instance". Maintenance refers to the up-gradation of database instance i.e. updating the hardware attached to the service, operating...

⌚ 3 min read

AWS Load Balancing Using Terraform

AWS load balancing is a service that splits incoming network traffic across multiple resources. These resources can be EC2 instances, Containers, and IP addresses. AWS provides various types of load balance...

⌚ 4 min read

Amazon Web Services - Deleting Network Load Balancer

The AWS Network Load Balancer is used for routing the connections to other active microservices, containers, or instances of Amazon EC2 from the Amazon Virtual Private Cloud(VPC). These mappings...

⌚ 3 min read

AWS Elastic IP Addresses

Pre-requisite: AWS A Static IPv4 address more suited for dynamic cloud computing is called an Elastic IP (EIP) address. These IPs are mostly used to hide instances or software from your AWS account that fail. T...

⌚ 9 min read

What is AWS Bastion Host?

Security plays an important role in all sectors. When a user is using any service its concern is that his/her data should be secured while sharing their data in that service. There is always a chance that some malicio...

⌚ 4 min read

How To Create Cron Job In AWS Lambda?

A Cron job works like scheduling a task in any system. It is mainly used for backups, system maintenance, etc. Cron's job works on both local systems as well as cloud services. To run the crown job in AWS, we ha...

⌚ 7 min read

How to Create a Load Balancer and Connect it across 2 VMs?

Load Balancer is basically defined as a distributing device that is used to distribute the work Processes into different systems/servers. It is generally used to control the traffic on one system by dividing the flow of...

⌚ 4 min read

Article Tags :

Amazon Web Services

Machine Learning

AWS

Practice Tags :

Machine Learning



⌚ Corporate & Communications
Address:- A-143, 7th Floor, Sovereign Corporate Tower, Sector- 136, Noida, Uttar Pradesh (201305) | Registered Address:- K 061, Tower K, Gulshan Vivante Apartment, Sector 137, Noida, Gautam Buddh Nagar, Uttar Pradesh, 201305

Company	Languages	DSA	Data Science & ML	Web Technologies	Python Tutorial
About Us	Python	Data Structures	Data Science With Python	HTML	Python Programming
Legal	Java	Algorithms	Data Science For Python	CSS	Examples
In Media	C++	DSA for Beginners	Beginner	TypeScript	Python Projects
Contact Us	PHP	Basic DSA	Data Science For Beginner	JavaScript	Python Tkinter
Advertise with us	GoLang	Problems	Machine Learning	ReactJS	Web Scraping
GFG Corporate	SQL	DSA Roadmap	ML Maths	NextJS	OpenCV Tutorial
Solution	R Language	Top 100 DSA	Data Visualisation	Bootstrap	Python Interview
Placement	Android Tutorial	Interview Problems	Pandas	Web Design	Question
Training Program	Tutorials Archive	DSA Roadmap by Sandeep Jain	NumPy		



GeeksforGeeks

Community

All Cheat Sheets

NLP

Deep Learning

Django

Computer Science	DevOps	System Design	Interview Preparation	School Subjects	GeeksforGeeks Videos
Operating Systems	Git	High Level Design	Competitive Programming	Mathematics	DSA
Computer Network	Linux	Low Level Design	Programming	Physics	Python
Database Management	AWS	UML Diagrams	Top DS or Algo for CP	Chemistry	Java
System Software	Docker	Interview Guide	Company-Wise Recruitment	Biology	C++
Engineering	Kubernetes	Design Patterns	Process	Social Science	Web Development
Digital Logic Design	Azure	OOAD	Bootcamp	English Grammar	Data Science
Engineering Maths	GCP	System Design	Interview Preparation	Commerce	CS Subjects
Software Development	DevOps Roadmap	Questions	Company-Wise Aptitude	World GK	
Software Testing			Preparation	Puzzles	

@GeeksforGeeks, Sanchhaya Education Private Limited, All rights reserved