OBJECTIVE : ELASTIC LOAD BALANCER

Attempt	1
Marks Obtained	0 / 10
Your score is	0.0%
Completed on	Monday , 28 January 2019 , 07:09 PM
Time Taken	00 H 00 M 10 S
Result	Fail

Domains / Topics wise Quiz Performance Report

S.No.	Topic	Total Questions	Correct	Incorrect	Unattempted
1	Other	10	0	1	9

10 Questions	**0** Correct	**1** Incorrect	**9** Unattempted

Show Answers

All

QUESTION 1 INCORRECT

Topic - Designing highly available, cost-efficient, fault-tolerant, scalable systems

You have a requirement to host a web application using EC2 Instances in AWS. You need to have high availability built for your application. You also want to ensure that requests to the relative URL /video/* is directed to a set of EC2 Instances for processing. Which of the following can be used to fulfil this requirement

- **A.** Create separate Target Groups , create a classic Load Balancer and attach the different Target Groups ✖
- **B.** Use the SQS Queue to store the videos which need to be directed to the relative EC2 Instances
- **C.** Create separate Target Groups , create an Application Load Balancer and attach the different Target Groups ✔
- **D.** Use Placement Groups to direct the requests for the videos to the set of EC2 Instances in that placement Groups.

Explanation :

Answer - C
Using an Application Load Balancer instead of a Classic Load Balancer has the following key benefit
The AWS Documentation mentions the following
Support for path-based routing. You can configure rules for your listener that forward requests based on the URL in the request. This enables you to structure your application as smaller services, and route requests to the correct service based on the content of the URL.
For more information on the Application Load Balancer , please refer to the following URL:

- http://docs.aws.amazon.com/elasticloadbalancing/latest/application/introduction.html (http://docs.aws.amazon.com/elasticloadbalancing/latest/application/introduction.html)

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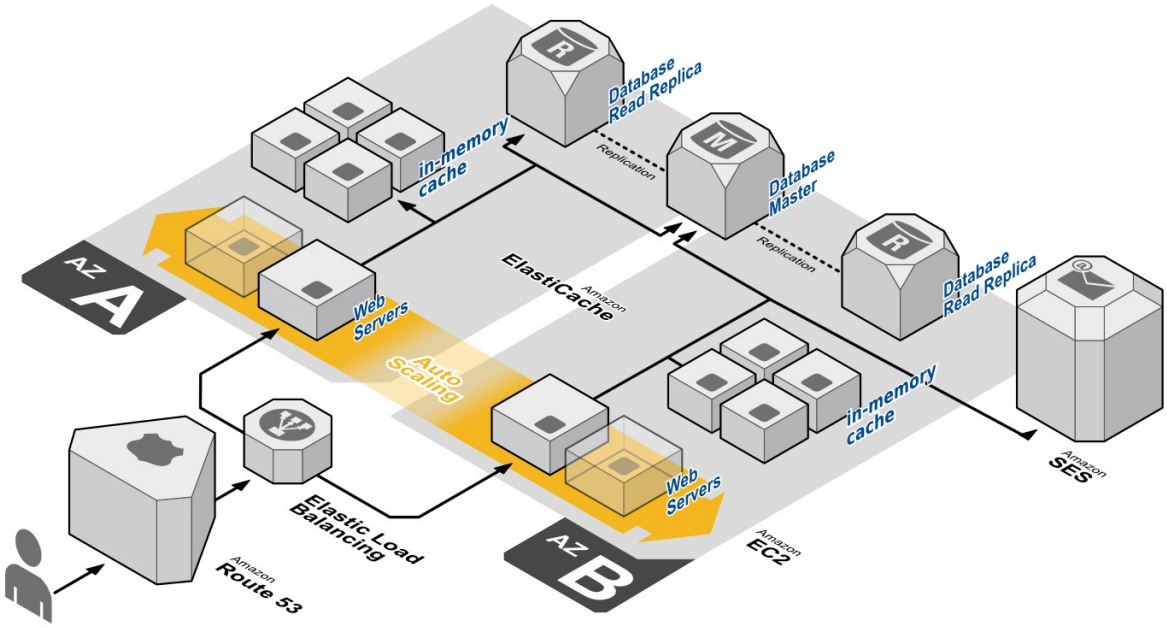
QUESTION 2 UNATTEMPTED

Topic - Implementation and Deployment

You are implementing the infrastructure in AWS which will be used to host a set of the web server, database server and caching layer. The Web Server will be talking to the Database server. Based on the screen shot below, how can we achieve a highly available, fault tolerant and scalable system?



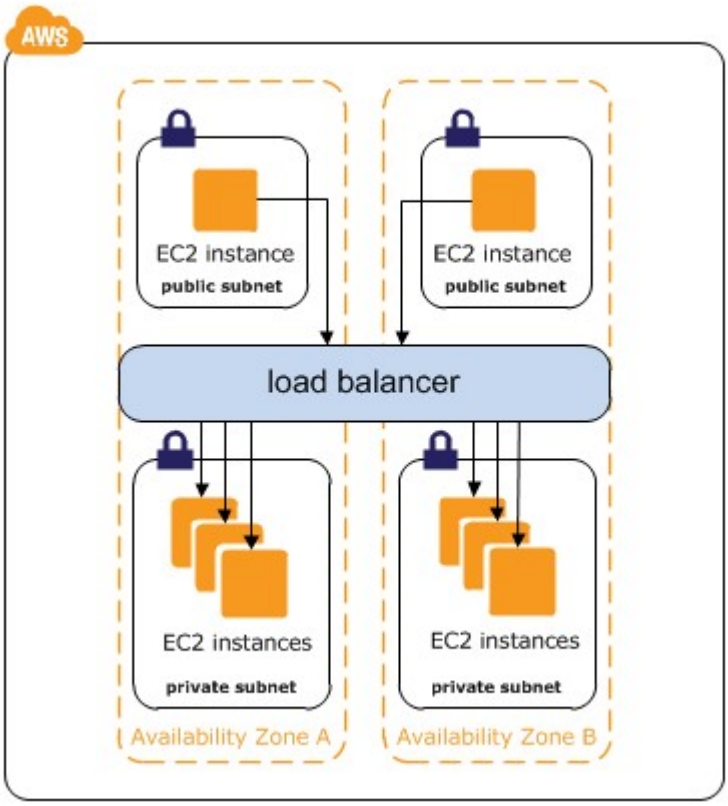
- A. Create an internal load balancer and place the web servers behind them
- B. Create an internal load balancer and place the database servers behind them ✔
- C. Enable advanced VPC configuration
- D. Create an internal load balancer and place the web and database servers behind them

Explanation :

Answer – B

The AWS Documentation mentions the following

If your application has multiple tiers, for example web servers that must be connected to the Internet and database servers that are only connected to the web servers, you can design an architecture that uses both internal and Internet-facing load balancers. Create an Internet-facing load balancer and register the web servers with it. Create an internal load balancer and register the database servers with it. The web servers receive requests from the Internet-facing load balancer and send requests for the database servers to the internal load balancer. The database servers receive requests from the internal load balancer.



For more information on the Application Load Balancer , please refer to the following URL:

- https://docs.aws.amazon.com/elasticloadbalancing/latest/classic/elb-internal-load-balancers.html?icmpid=docs_elb_console (https://docs.aws.amazon.com/elasticloadbalancing/latest/classic/elb-internal-load-balancers.html?icmpid=docs_elb_console)

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QUESTION 3 UNATTEMPTED

Topic - Designing highly available, cost-efficient, fault-tolerant, scalable systems

You have a custom built application that works on the HTTP TCP protocol on port 3000. You want to use the Elastic Load Balancer service for high availability of this application. Which of the below configurations would you use

- **A.** Use the Classic Load Balancer with health check of TCP protocol and ping path /index.html
- **B.** Use the Classic Load Balancer with health check of TCP protocol and port 3000 ✔
- **C.** Use the Application Load Balancer with health check of TCP protocol and ping path /index.html
- **D.** Use the Application Load Balancer with health check of TCP protocol and port 3000

Explanation :

Answer – B
The Classic Load Balancer should be used because the Application Load Balancer does not support the TCP protocol.
When you configure the health check for TCP , you need to configure the protocol and port number

For more information on configuring health checks , please refer to the following URL:

- https://docs.aws.amazon.com/elasticloadbalancing/latest/classic/elb-healthchecks.html (https://docs.aws.amazon.com/elasticloadbalancing/latest/classic/elb-healthchecks.html)

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QUESTION 4 UNATTEMPTED

Topic - Implementation and Deployment

You have a classic load balancer running with EC2 Instances running behind it. You need to log into one of the EC2 Instance to debug some errors which are occurring on that instance. Which of the below steps would you take ?

- **A.** Remove the ELB , debug the instance , and then recreate the ELB to take in the requests after the issue has been sorted out.
- **B.** Remove the Target Group, debug the instance , and then recreate the ELB to take in the requests after the issue has been sorted out.
- **C.** Deregister the instance, debug the instance and then register the instance with the ELB again after the issue has been sorted out. ✔
- **D.** Create a second ELB , transfer all instances to the new ELB. Debug the Instance and then delete the old ELB

Explanation :

Answer – C
The AWS Documentation mentions the following
Registering an EC2 instance adds it to your load balancer. The load balancer continuously monitors the health of registered instances in its enabled Availability Zones, and routes requests to the instances that are healthy. If demand on your instances increases, you can register additional instances with the load balancer to handle the demand.
Deregistering an EC2 instance removes it from your load balancer. The load balancer stops routing requests to an instance as soon as it is deregistered. If demand decreases, or you need to service your instances, you can deregister instances from the load balancer. An instance that is deregistered remains running, but no longer receives traffic from the load balancer, and you can register it with the load balancer again when you are ready.
For more information on registering and deregistering instances , please refer to the following URL:

- https://docs.aws.amazon.com/elasticloadbalancing/latest/classic/elb-deregister-register-instances.html (https://docs.aws.amazon.com/elasticloadbalancing/latest/classic/elb-deregister-register-instances.html)

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QUESTION 5 UNATTEMPTED

Topic - Implementation and Deployment

You currently have a set of EC2 Instances running behind a classic load balancer. These instances are distributed across 2 Availability Zones. But you notice that a lot of requests are being directed mostly towards one availability zone. What can you do to ensure equal distribution of traffic.

- A. Create one more listener to listen for requests in the other ELB.
- B. Enable Cross Zone Load balancing ✔
- C. Use Route53 to distribute the requests to the other availability zone
- D. Configure the Connection draining to a higher value

Explanation :

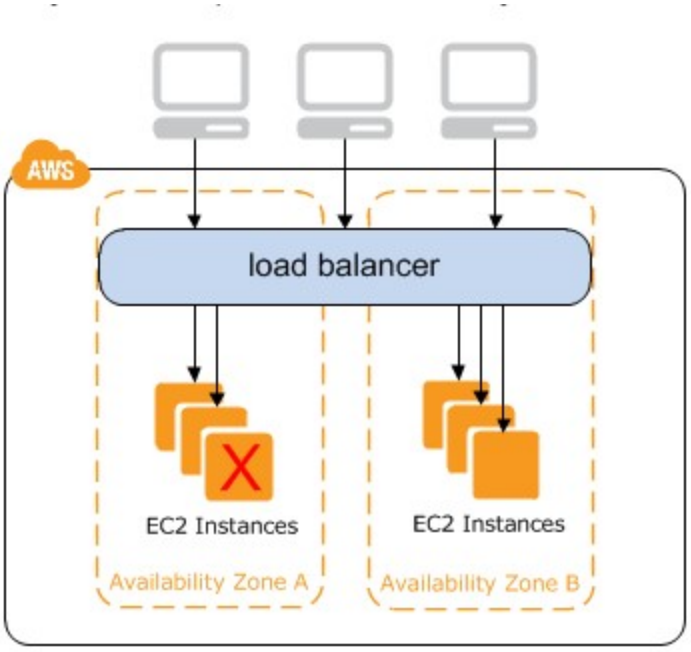
Answer – B
The AWS Documentation mentions the following
By default, your Classic Load Balancer distributes incoming requests evenly across its enabled Availability Zones. For example, if you have ten instances in Availability Zone us-west-2a and two instances in us-west-2b, the requests are distributed evenly between the two Availability Zones. As a result, the two instances in us-west-2b serve the same amount of traffic as the ten instances in us-west-2a. To ensure that your load balancer distributes incoming requests evenly across all instances in its enabled Availability Zones, enable cross-zone load balancing.
Cross-zone load balancing reduces the need to maintain equivalent numbers of instances in each enabled Availability Zone, and improves your application's ability to handle the loss of one or more instances. However, we still recommend that you maintain approximately equivalent numbers of instances in each enabled Availability Zone for higher fault tolerance.
For more information on Cross Zone Load Balancing , please refer to the following URL:

- http://docs.aws.amazon.com/elasticloadbalancing/latest/classic/enable-disable-crosszone-lb.html (http://docs.aws.amazon.com/elasticloadbalancing/latest/classic/enable-disable-crosszone-lb.html)

Note:

In our case the question says we have a set of EC2 instances distributed across 2 AZ's are running behind a classic ELB. We are not sure whether these instances are distributed evenly among these 2 AZ's since it is not mentioned in the question.

By default, the load balancer **distributes traffic evenly across the Availability Zones** that you enable for your load balancer. Elastic Load Balancing detects unhealthy instances and routes traffic only to healthy instances.



By default, when classic ELB is implemented, both Zone A and Zone B instances receive same amount of traffic, which means in Zone A there are only 2 instances to respond back to the 50% of requests where as in Zone B there are 3 instances to respond back to the remaining 50% of requests.

To distribute traffic evenly across all registered instances in all enabled Availability Zones, **enable *cross-zone load balancing*** on your load balancer.
If the nodes for your load balancer can distribute requests regardless of Availability Zone, this is known as *cross-zone load balancing*.

With cross-zone load balancing, the load balancer distributes traffic evenly across all registered targets in all enabled Availability Zones.

So if we look at the above diagram with cross-zone load balancing enabled, Zone A will receive only 40% of requests and Zone B will receive 60% of requests from the application.

Further information can be found at:

https://docs.aws.amazon.com/elasticloadbalancing/latest/classic/introduction.html (https://docs.aws.amazon.com/elasticloadbalancing/latest/classic/introduction.html)

For example, suppose that you have 10 instances in us-west-2a and 2 instances in us-west-2b. With cross-zone load balancing, the load balancer distributes incoming requests evenly across all 12 instances. Otherwise, the 2 instances in us-west-2b serve the same amount of traffic as the 10 instances in us-west-2a.

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QUESTION 6 UNATTEMPTED

Topic - Troubleshooting

You are setting up instances behind a classic load balancer in AWS. After creation of the Load balancer ,the Instances are not getting into the InService state even after a long time. Which of the following could be a reason for this

- A. You have set a low Connection Draining setting
- B. You have not enable cross load balancing
- C. You should have chosen the Application Load Balancer
- D. The health checks are failing ✔

Explanation :

Answer – D
This is clearly given in the AWS Documentation for troubleshooting the ELB
Problem: Registered EC2 instances are taking longer than expected to be in the InServicestate.

Cause: Your instance might be failing the health check. After the initial instance registration steps are completed (it can take up to approximately 30 seconds), the load balancer starts sending health check requests. Your instance is not InService until one health check succeeds.
For more information on troubleshooting your ELB , please refer to the following URL:

- http://docs.aws.amazon.com/elasticloadbalancing/latest/classic/elb-troubleshooting.html (http://docs.aws.amazon.com/elasticloadbalancing/latest/classic/elb-troubleshooting.html)

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QUESTION 7 UNATTEMPTED

Topic - Designing highly available, cost-efficient, fault-tolerant, scalable systems

Which of the following are true with regards to the logging mechanism in the Classic Load Balancer. Choose 2 answers from the options given below

- [ ] **A.** Access Logging is enabled by default.
- [ ] **B.** It can be used to capture detailed information about requests sent to your load balancer ✔
- [ ] **C.** There is no additional charge for access logs ✔
- [ ] **D.** The logs are stored in DynamoDB

Explanation :

Answer - B and C
The following is true about logging in the Classic Load Balancer
1) It can be used to capture detailed information about requests sent to your load balancer
2) There is no additional charge for access logs

3) The logs are stored in S3
4) Access logging is disabled by default
For more information on ELB logging , please refer to the following URL:

- http://docs.aws.amazon.com/elasticloadbalancing/latest/classic/access-log-collection.html (http://docs.aws.amazon.com/elasticloadbalancing/latest/classic/access-log-collection.html)

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QUESTION 8 UNATTEMPTED

Topic - Designing highly available, cost-efficient, fault-tolerant, scalable systems

Which of the following types of applications are best suited to the Application Load balancer

- A. Application which communicate on the TCP Protocol
- B. Applications based on REST API
- C. Applications based on the microservices architecture ✔
- D. Applications which communicate via JSON

Explanation :

Answer - C
The AWS Documentation mentions the following
You can use a microservices architecture to structure your application as services that you can develop and deploy independently. You can install one or more of these services on each EC2 instance, with each service accepting connections on a different port. You can use a single Application Load Balancer to route requests to all the services for your application. When you register an EC2 instance with a target group, you can register it multiple times; for each service, register the instance using the port for the service.

For more information on using containers as targets , please refer to the following URL:

- http://docs.aws.amazon.com/elasticloadbalancing/latest/application/tutorial-target-ecs-containers.html (http://docs.aws.amazon.com/elasticloadbalancing/latest/application/tutorial-target-ecs-containers.html)

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QUESTION 9 UNATTEMPTED

Topic - Designing highly available, cost-efficient, fault-tolerant, scalable systems

Which of the following is the most effective way to use the Application Load Balancer. Choose 2 answers from the options given below

- ☐ **A.** Ensure multiple Availability Zones are part of the Elastic Load Balancer ✔
- ☐ **B.** Ensure multiple Regions are part of the Elastic Load Balancer
- ☐ **C.** Ensure each Availability Zone has atleast one registered target. ✔
- ☐ **D.** Ensure each region has atleast one registered target.

Explanation :

Answer - A and C
The best practise is to ensure that the ELB has multiple Availability Zones registered.
The AWS Documentation mentions
You can enable or disable the Availability Zones for your load balancer at any time. After you enable an Availability Zone, the load balancer starts routing requests to the registered targets in that Availability Zone. Your load balancer is most effective if you ensure that each enabled Availability Zone has at least one registered target.
For more information on Application Load Balancers and subnets , please refer to the following URL:

- http://docs.aws.amazon.com/elasticloadbalancing/latest/application/load-balancer-subnets.html (http://docs.aws.amazon.com/elasticloadbalancing/latest/application/load-balancer-subnets.html)

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QUESTION 10 UNATTEMPTED

Topic - Implementation and Deployment

Which of the following can be used in an Application Load Balancer to track HTTP requests from clients

- A. Use Cloudwatch metrics
- B. Use ELB Request Tracing ✔
- C. Use Cloudtrail
- D. Use ELB Connection Draining

Explanation :

Answer - B
The AWS Documentation recommends this feature for tracking HTTP requests
You can use request tracing to track HTTP requests from clients to targets or other services. When the load balancer receives a request from a client, it adds or updates the X-Amzn-Trace-Id header before sending the request to the target. Any services or applications between the load balancer and the target can also add or update this header.
For more information on Application Load Balancer request tracing , please refer to the following URL
http://docs.aws.amazon.com/ (http://docs.aws.amazon.com/elasticloadbalancing/latest/application/load-balancer-request-tracing.html)elasticloadbalancing/latest/ (http://docs.aws.amazon.com/elasticloadbalancing/latest/application/load-balancer-

request-tracing.html)application/load-balancer-
(http://docs.aws.amazon.com/elasticloadbalancing/latest/application/load-balancer-request-tracing.html)request-tracing.html
(http://docs.aws.amazon.com/elasticloadbalancing/latest/application/load-balancer-request-tracing.html)

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