

FishTank Ltd: PETRA
Migration to AWS Cloud

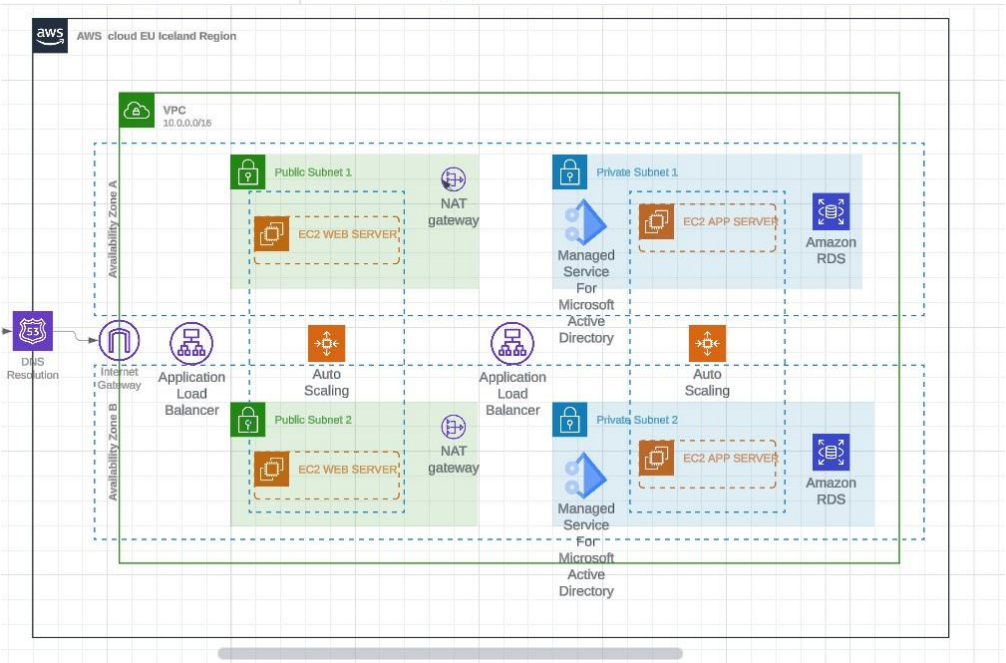
Prepared by: Vandana Sharma

Date: 16/05/2024

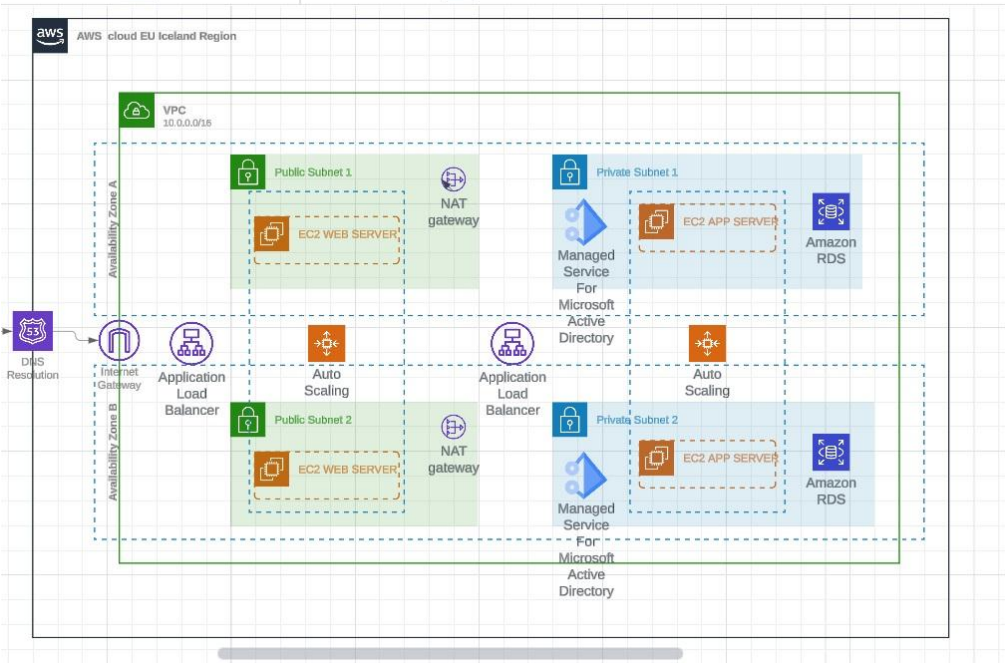
Contact Information: vandsharma17@gmail.com

Company: Digital Futures

AWS Cloud Detail Design Diagram



Region Iceland(Europe)



US East (North Virginia)

Design Discussion

As application PETRA is accessed by users around the globe and fishtank ltd has existing datacentres in Mexico and Poland, designing a multi-region and multi-AZ cloud platform will be the best option as it will provide disaster recovery, fault tolerance, low latency, auto scalability and with the use of services like load balancer it will balance load across the multiple servers within each region. Here is the breakdown of the proposed design.

Breakdown of each region -

Subnets:

- Public Subnet: Contains the Application Load Balancer (ALB) and web servers (EC2 instances).
- Private Subnet: Contains application servers (EC2 instances), database servers (RDS instances), and managed Active Directory (AWS Managed Microsoft AD).

Elastic Load Balancer (ALB): -Distributes incoming application traffic across multiple web servers in the public subnet to ensure high availability.

Web Servers (EC2 instances):

- Hosts the web layer of the PETRA application.
- Configured to handle HTTPS traffic from the internet.
- Allow inbound HTTPS (Port 443) from the internet.
- Allow outbound traffic on Port 9000 to application servers.

Application Servers (EC2 instances):

- Hosts the application layer of the PETRA application.
- Communicates with web servers over port 9000.
- Allow inbound traffic on Port 9000 from web servers.
- Allow outbound traffic to database servers on the necessary port (default 1433).

Database Servers (RDS instances):

- Manages the database layer of the PETRA application using Amazon RDS for SQL Server.
- Configured to allow traffic from application servers.
- Allow inbound traffic from application servers on the necessary port (default 1433).

Managed Active Directory (AWS Managed Microsoft AD):

- Provides Active Directory services for authentication and authorization.
- Allow RDP (Port 3389) access for web servers, app servers, and database servers from specific IP addresses.

Data Flow:

- Web Servers: Communicate with the internet using HTTPS (port 443) through the ALB.
- Application Servers: Communicate with web servers over port 9000.
- Database Servers: Communicate with application servers over the necessary database port (default 1433 for SQL Server).
- Active Directory: All servers communicate with AWS Managed Microsoft AD on required ports for authentication.

Pricing Summary

As there are two regions with two availability zones in each region, the total annual cost will consist of the total cost combined for both availability zones in both regions plus the service cost.

Information gathered from PETRA Asset List:

- Web Servers: 4 servers, each with 2 CPUs and 4GB RAM
- Application Servers: 4 servers, each with 4 CPUs and 8GB RAM
- Database Servers: 2 servers, each with 8 CPUs and 16GB RAM

Proposed EC2 Instance for the web server - 4x t3. medium instances Reasoning: t3. medium instance specs: 2 vCPUs, 4GB RAM. Since each existing web server has 2 CPUs and 4GB RAM, a t3. medium instance is a suitable match. There are 4 web servers, so we need 4 t3. medium instances.

Proposed EC2 Instance for Application server - 4x m5. large instances, instances, each with 2 vCPUs and 8GB RAM.

Proposed EC2 Instance for Database server - 2x m5.2x large instances, each with 8 vCPUs and 32GB RAM. This provides additional memory for improved performance and future scalability.

Region – Iceland (Europe) for one availability zone

Service	Monthly cost	Annually for 2 availability zones
EC2 Instance for web server	122.64	1471.68 x2
EC2 Instance for Application server	222.50	2670 x2
RDS (SQL Server)	431.28	5175.36 x2
Elastic Load Balancer	20.71	248
AWS Migration service		
Amazon Cloufront	26.28	315.36 x2
AWS Directory service	292	3504 x2
Total (for both availability zones)		26,770

Region - US east

Service	Monthly cost	Annually for 2 availability zones
EC2 Instance for web server	108.33	1299.96 x2
EC2 Instance for Application server	433.62	5204.44 x2
RDS (SQL Server)	359.74	4076.88 x2
Elastic Load Balancer	220.85	220.85
AWS Migration service		
Amazon Cloufront	26.28	315x2
AWS Directory service	481.80	5781 x2
Total (for both availability zones)		37.381

Support cost.

Role	Days Required	Rate Per day	Cost (Annual)
Cloud consultant	10	2000	20000
Solution Architect	7	1000	7000
Service Migration Engineer	30	650	19500
Dtabase Migrarion Engineer	15	750	11500
First/Second line Cloud support	30	250	7500
Third line Cloud support	30	350	10500
Total			76,000

Total Annual expense – (76,000+37,381+26,770) = 140,651



Contact your AWS representative: [Contact Sales](#)

Export date: 16/05/2024

Language: English

Estimate URL: <https://calculator.aws/#/estimate?id=0cd1fddfd2162b2c210f118c5f526927e6ae5590>

Estimate summary	
Upfront cost	
0.00 USD	Total 12 months cost
Monthly cost	19,251.96 USD
1,604.33 USD	Includes upfront cost

Detailed Estimate

Name	Group	Region	Upfront cost	Monthly cost
Amazon EC2	No group	US East (N. Virginia)	0.00 USD	108.33 USD applied

Status: -

Description:

Config summary: Tenancy (Shared Instances), Operating system (Windows Server), Workload (Consistent, Number of instances: 4), Advance EC2 instance (t3a.medium), Pricing strategy (Compute Savings Plans 3yr No Upfront), Enable monitoring (disabled), DT Inbound: Not selected (0 TB per month), DT Outbound: Not selected (0 TB per month), DT Intra-Region: (0 TB per month)

Amazon EC2	No group	US East (N. Virginia)	0.00 USD	433.62 USD applied
------------	----------	-----------------------	----------	--------------------

Status: -

Description:

Config summary: Tenancy (Shared Instances), Operating system (Windows Server), Workload (Consistent, Number of instances: 4), Advance EC2 instance (t3a.xlarge), Pricing strategy (Compute Savings Plans 3yr No Upfront), Enable monitoring (disabled), DT Inbound: Not selected (0 TB per month), DT Outbound: Not selected (0 TB per month), DT Intra-Region: (0 TB per month)

Amazon EC2	No group	US East (N. Virginia)	0.00 USD	359.74 USD applied
------------	----------	-----------------------	----------	--------------------

Status: -

Description:

Config summary: Tenancy (Shared Instances), Operating system (Windows Server), Workload (Consistent, Number of instances: 2), Advance EC2 instance (t2.2xlarge), Pricing strategy (Compute Savings Plans 3yr No Upfront), Enable monitoring (disabled), DT Inbound: Not selected (0 TB per month), DT Outbound: Not selected (0 TB per month), DT Intra-Region: (0 TB per month)

Elastic Load Balancing	No group applied	US East (N. Virginia)	0.00 USD	220.83 USD
-------------------------------	------------------	-----------------------	----------	------------

Status: -

Description:

Config summary: Number of Application Load Balancers (1)

Amazon CloudFront	No group applied	US East (N. Virginia)	0.00 USD	0.01 USD
--------------------------	------------------	-----------------------	----------	----------

Status: -

Description:

Config summary: Number of requests (HTTPS) (10000 per month)

AWS Application Migration Service	No group applied	US East (N. Virginia)	0.00 USD applied	0.00 USD
--	------------------	-----------------------	------------------	----------

Status: -

Description:

AWS Directory Service	No group applied	US East (N. Virginia)	0.00 USD	481.80 USD
------------------------------	------------------	-----------------------	----------	------------

Status: -

Description:

Config summary: Total number of directories (1), Number of total additional domain controllers (1), Edition (Enterprise), Number of directories to be shared (1), Number of additional accounts to which each directory is shared (1), Shared Directory edition (Enterprise)

For Iceland Region



Contact your AWS representative: [Contact Sales](#)

Export date: 16/05/2024 Language: English

Estimate URL: <https://calculator.aws/#/estimate?id=6eb83c2f9f8a90a66f710061012680ad530352dc>

Estimate summary	
Upfront cost	
0.00 USD	Total 12 months cost
Monthly cost	13,385.28 USD
1,115.44 USD	Includes upfront cost

Detailed Estimate

Name	Group	Region	Upfront cost	Monthly cost
Amazon EC2	No group applied	EU (Ireland)	0.00 USD	122.64 USD

Status: -

Description:

Config summary: Tenancy (Shared Instances), Operating system (Windows Server), Workload (Consistent, Number of instances: 4), Advance EC2 instance (t3a.medium), Pricing strategy (Compute Savings Plans 3yr No Upfront), Enable monitoring (disabled), DT Inbound: Not selected (0 TB per month), DT Outbound: Not selected (0 TB per month), DT Intra-Region: (0 TB per month)

Amazon EC2	No group applied	EU (Ireland)	0.00 USD	222.50 USD
------------	------------------	--------------	----------	------------

Status: -

Description:

Config summary: Tenancy (Shared Instances), Operating system (Linux), Workload (Consistent, Number of instances: 4), Advance EC2 instance (c6g.xlarge), Pricing strategy (Compute Savings Plans 3yr No Upfront), Enable monitoring (disabled), DT Inbound: Not selected (0 TB per month), DT Outbound: Not selected (0 TB per month), DT Intra-Region: (0 TB per month)

Amazon EC2	No group applied	EU (Ireland)	0.00 USD	431.28 USD
------------	------------------	--------------	----------	------------

Status: -

Description:

Config summary: Tenancy (Shared Instances), Operating system (Windows Server), Workload (Consistent, Number of instances: 2), Advance EC2 instance (t2.2xlarge), Pricing strategy (Compute Savings Plans 3yr No Upfront), Enable monitoring (disabled), DT Inbound: Not selected (0 TB per month), DT Outbound: Not selected (0 TB per month), DT Intra-Region: (0 TB per month)

Elastic Load Balancing	No group applied	EU (Ireland)	0.00 USD	20.74 USD
------------------------	------------------	--------------	----------	-----------

Status: -

Description:

Config summary: Number of Application Load Balancers (1)

AWS Application Migration Service	No group applied	EU (Ireland)	0.00 USD	0.00 USD
-----------------------------------	------------------	--------------	----------	----------

Status: -

Description:

Config summary: Number of server/s (6), Number of hour/s per serve

Amazon CloudFront	No group applied	EU (Ireland)	0.00 USD	26.28 USD
-------------------	------------------	--------------	----------	-----------

Status: -

Description:

Config summary: Number of requests (HTTPS) (10 per second)

AWS Directory Service	No group applied	EU (Ireland)	0.00 USD	292.00 USD
-----------------------	------------------	--------------	----------	------------

Status: -

Description:

Config summary: Total number of directories (1), Number of total additional domain controllers (0), Edition (Enterprise), Number of directories to be shared (0), Number of additional accounts to which each directory is shared (0), Shared Directory edition (Enterprise)

Acknowledgement

AWS Pricing Calculator provides only an estimate of your AWS fees and doesn't include any taxes that might apply. Your actual fees depend on a variety of factors, including your actual usage of AWS services. [Learn more](#) 