AWS Cloud Migration Proposition for FishTank ltd

Dear FishTank ltd,

In the next section we will present a detailed proposition for your transfer to AWS Cloud.

Account Security

FishTank Ltd have three (3) full-time employees who ensure that all systems are available and maintained. We recommend the creation of additional users to whom we would assign permissions by following the principle of least privilege.

This will ensure that your employees have access to those levels they require. This would be applied to other roles you require and that have been mentioned in the *Appendix B* of your document*:* Business Analyst, Cloud Consultant, Solution Architect, Server Migration Engineer, Database Migration Engineer, First/Second line Cloud support, Third line Cloud support.

To secure who is accessing your data, we would use **AWS Identity and Access Management (IAM)**, a web service that helps you securely control access to AWS resources by creating IAM User Groups and IAM Roles for temporary AWS credentials. Your User Groups will include *Sales, Build and Fulfilment departments*.

An IAM user group is a collection of IAM users. With user groups, you can specify permissions for multiple users, which makes it easier to manage the permissions. A user can be a member of more than one user group.

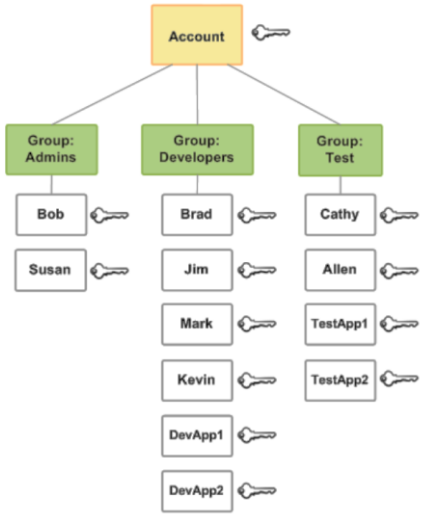


Diagram 1: Example of IAM User Groups for a small company

The diagram above shows a simple example of a small company. The company owner creates an *Admins* user group for users to create and manage other users as the company grows. The *Admins* user group creates a *Developers* user group and a *Test* user group. Each of these user groups consists of users (humans and applications) that interact with AWS (Jim, Brad, DevApp1, and so on). Each user has an individual set of security credentials. In this example, each user belongs to a single user group. However, users can belong to multiple user groups.

You will also benefit from IAM policies:

1. Identity-based policies – AWS managed and custom policies to IAM identities.
2. Resource-based policies – policies attached to resources
3. AWS Organizations service control policies (SCPs) – permission for account members of your organization or organization unit
4. IAM permissions boundaries – set maximum permissions that an IAM entity can receive.

FishTank Ltd will have multiple accounts that can be managed with **AWS Organizations** for centralized management of all your AWS accounts and apply **service control policies (SCPs)** to control maximum permissions in every account under an OU for no cost of service.

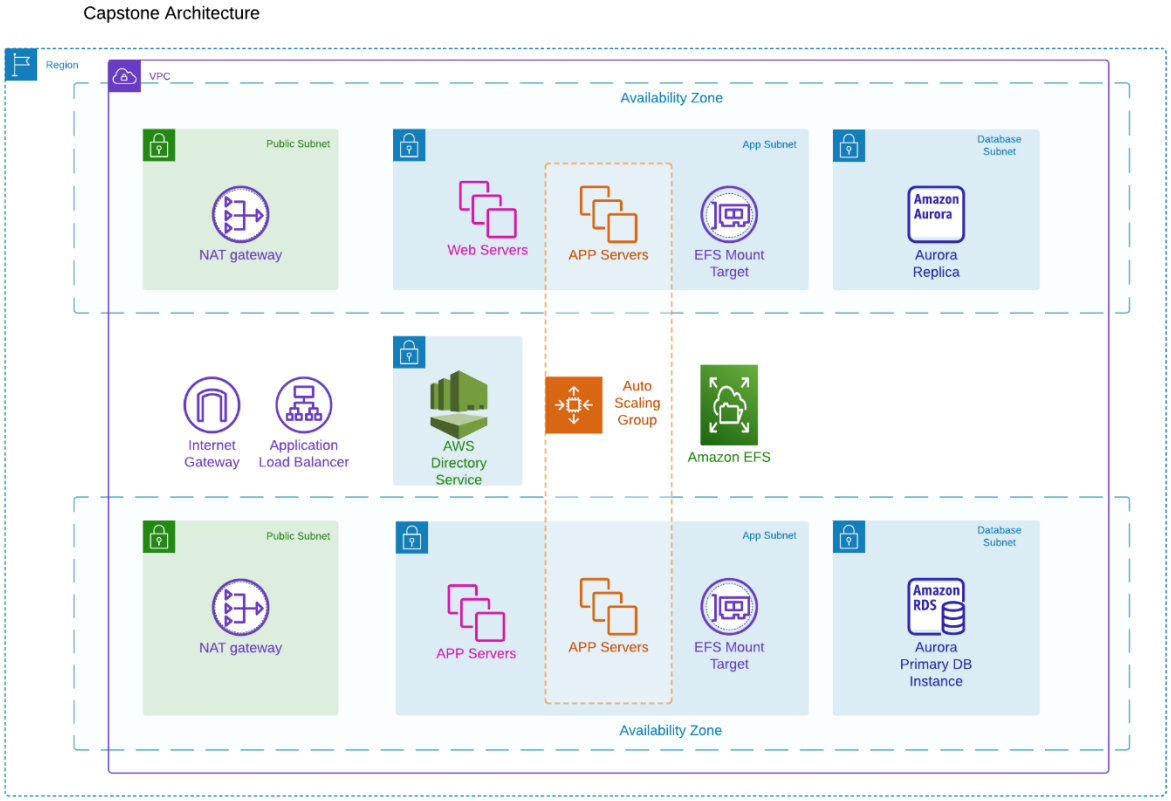
Additional Security

We would secure your infrastructure with multiple layers of defense, so you can control which instances are exposed to the internet by running your infrastructure in a VPC with a properly configured internet gateway and route tables.

We would define security groups and network ACLs to further protect your infrastructure at the interface and subnet levels. Additionally, instances would be secured with a firewall at the operating system level and follow other security best practices.

By implementing both network ACLs and security groups as a defense-in-depth means of controlling traffic, a mistake in the configuration of one of these controls will not expose the host to unwanted traffic.

FishTank's VPC



Amazon Virtual Private Cloud (Amazon VPC) is your network environment in the cloud. With Amazon VPC, you can launch AWS resources into a virtual network that you have defined.

We propose the creation of private and public subnets over two (2) Availability Zones. One Availability Zone would have:

- Two (2) Public Subnets with NAT Gateway
- One (1) Private Subnet with Web Servers whose destination is the Internet
- One (1) Private Subnet with Application Servers whose destination is Database and Internet
- One (1) Private Subnet with Active Directory
- One (1) Private Subnet with DB Replica

Each AWS account comes with a default Amazon VPC that is preconfigured for you to use immediately. The default Amazon VPC is suitable for getting started quickly and for launching public instances.

Deploying a VPC across multiple Availability Zones creates an architecture that achieves high availability by distributing traffic while providing data security. If you have an outage in one Availability Zone, you can fail over to the other Availability Zone.

Amazon EC2

We propose using **EC2 service** to create and run virtual machines and **G4 Accelerated Compute instance family**, **shared tenancy**, **Amazon Elastic Block Services (EBS) Provisioned IOPS SSD volumes (io1 and io2)** and **memory optimized R6i instance**.

Amazon **EC2 G4** instances are the industry's most cost-effective and versatile GPU instances for deploying machine learning models such as image classification, object detection, and speech recognition, and for graphics-intensive applications such as remote graphics workstations, game streaming, and graphics rendering. G4 instances are available with a choice of NVIDIA GPUs (G4dn) or AMD GPUs (G4ad). FishTank is a film company that could benefit from using G4 instance due to the high industry standards in the field of the film industry.

Amazon **EBS** volumes provide durable, detachable, block-level storage for your Amazon EC2 instances. EBS volumes are mounted to the instances.

Provisioned IOPS SSD volumes (io1 and io2) are designed to meet the needs of I/O intensive workloads. For example, database workloads might be sensitive to storage performance and consistency. Provisioned IOPS SSD volumes use a consistent IOPS rate.

Amazon R6i instances are powered by 3rd generation Intel Xeon Scalable processors (code named Ice Lake) and are an ideal fit for memory-intensive workloads.

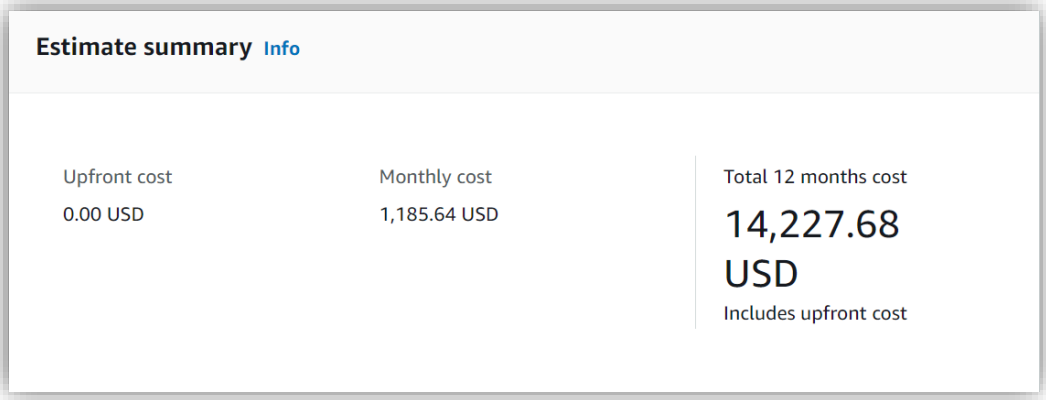
Features:

- Up to 3.5 GHz 3rd generation Intel Xeon Scalable processors (Ice Lake 8375C)
- Up to 15% better compute price performance over R5 instances
- Up to 20% higher memory bandwidth per vCPU compared to R5 instances
- Up to 50 Gbps of networking speed
- Up to 40 Gbps of bandwidth to the Amazon Elastic Block Store
- A new instance size (32xlarge) with 128 vCPUs and 1,024 GiB of memory
- Supports Elastic Fabric Adapter on the 32xlarge and metal sizes
- Built on the AWS Nitro System, a combination of dedicated hardware and lightweight hypervisor
- Support for always-on memory encryption using Intel Total Memory Encryption (TME)
- Support for new Intel Advanced Vector Extension (AVX 512) instructions for faster execution of cryptographic algorithms
- With R6id instances, up to 7.6 TB of local NVMe-based SSDs are physically connected to the host server and provide block-level storage that is coupled to the lifetime of the R6i instance

We also propose 24/7 hours support for 124.91$ per month.

Service...	Status	Upfron...	Monthl...	Descrip...	Region	Config Summary
Amazon EC2	-	0.00 USD	1,185.64 USD	Proposal_1	Europe (London)	Tenancy (Shared Instances), Operating s

Table 1: Estimate table



Picture 1: Estimate summary for EC2 and 24/7 Support

Monthly price: 1,1856.64$

One Year price: 14,227.68$

Storage

Our proposal is **Amazon S3** with **S3 Standard, Data Transfer, S3 Standard – Infrequent Access, S3 Glacier Instant Retrieval , S3 Glacier Deep Archive**.

Amazon S3 is object-level storage. An object includes file data, metadata, and a unique identifier. Object storage does not use a traditional file and folder structure. Amazon S3 storage tiers are all designed to provide 99.999999999 percent (11 9's) of data durability of objects over a given year. By default, data in Amazon S3 is stored redundantly across multiple facilities and multiple devices in each facility. Amazon S3 can be accessed through the web-based AWS Management Console, programmatically through the API and SDKs, or with third-party solutions (which use the API and SDKs).

Summary:

- S3 Standard storage (1 TB per month),
- Data returned by S3 Select (1 TB per month),
- Data scanned by S3 Select (1 TB per month)
- S3 Standard-IA storage (1 TB per month),
- Data retrievals (1 TB per month),
- Data returned by S3 Select (1 TB per month)
- S3 Glacier Deep Archive Average Object Size (16 MB),
- S3 Glacier Deep Archive storage (1 TB per month)

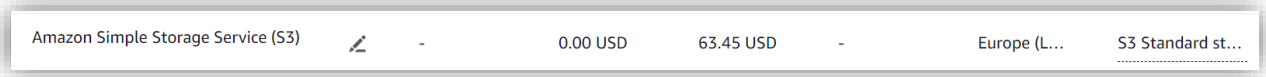


Table 2: Estimate for S3

Monthly price: 63.45$

One Year price: 761.4$

Database Services

Since PETRA application has Microsoft SQL Server our proposal is **Amazon RDS and Amazon Aurora MySQL service**.

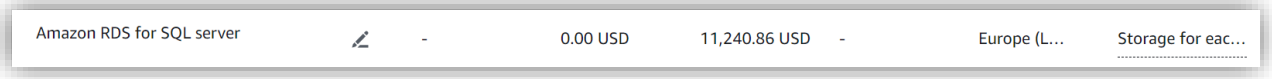


Table 3: Estimate for Amazon RDS service

Monthly price: 11,240.86$

One Year price: 134,890.32$

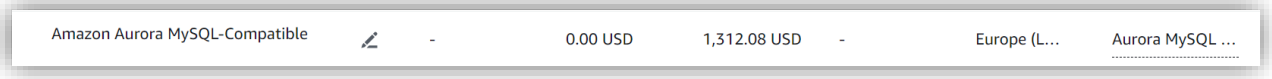
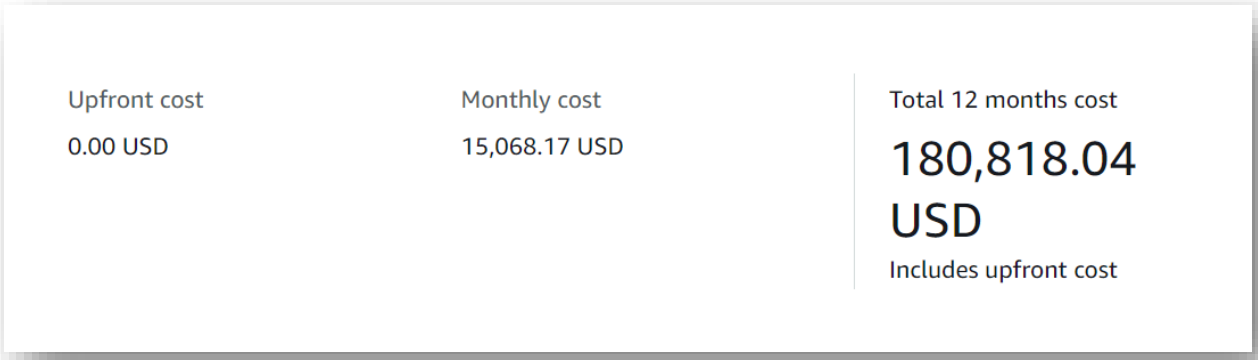


Table 4: Estimate for Amazon Aurora MySQL service

Monthly price: 1,312.08$

One Year price: 15,744.96$

Total cost



Picture 2: Total Cost of AWS Services without Role Rates

Total Cost of AWS Services + Role Rates: 245, 618.04$