Fishtank Ltd Cloud Migration Proposal

Introduction

This technical document will outline a procedure to migrate the PETRA application to AWS Cloud. It will comprise of strategy, an initial idea of network and security design as well as comprehensive pricing, breaking down an estimated total cost.

Migration Tools

The AWS Migration Accelerated Program (AWS MAP) is a comprehensive and proven cloud migration program that has experience migrating complex enterprises to the cloud. Using an outcome driven methodology, MAP provides the means to accelerate cloud migration through tools that reduce costs and automate and accelerate execution. AWS MAP uses a three-phased framework (Asses, Migrate and Modernize) to achieve migration. How does it work?

Step One:

Asses your readiness. The migration readiness assessment identifies gaps along the 6 dimensions of the AWS Cloud Adoption Framework. Through this assessment, it enables the identification of capabilities required in the migration and build a total cost of ownership model for the migration project.

Step Two:

Mobilize resources. This phase builds a foundation for the migration, aiming to fix the capability gaps identified in the assessment phase. Through clear guidance on migration plans, this phase will accelerate the migration process.

Step Three:

Migrate and modernize workloads. In this stage the large-scale migration process is executed based on the plans made within the previous two steps.

AWS Migration Evaluator:

This tool provides insights for your organization to get visibility into multiple cost-effective cloud migration scenarios, as well as reusing existing software licensing to further reduce costs. Using existing data from Fishtanks source's, it will be analysed by the evaluator to estimate costs and savings in AWS, producing a detailed report from the results.

Database Migration

The procedure to migrate from a source database to an AWS database involves two stages. The first is to use the AWS Schema Conversion Tool and AWS Database Migration Service to convert and migrate the schema and data form MS SQL Server 2012. While most of this operation is automated, certain aspects may require manual intervention/ adaptation on both Fishtanks and AWS' database schema and database code.

AWS Schema Conversion Tool

This tool connects to the source and target database, automatically assess and converts the source databases objects (tables, views, stored procedures, etc.) and will convert them into a format that is compatible with the target database. If and any object that is not automatically compatible, will be identified clearly with detailed instructions on how to manually convert to complete the migration process.

It should be noted that this tool also supports conversion of application source code for embedded SQL statements and will automatically convert them as part of the migration process. Legacy SQL Server functions will undergo cloud native code optimisation into equivalent AWS Service code to further aid with application modernization at the same time as database migration.

Supported AWS target databases from MS SQL Server includes Aurora MySql, Aurora PostgreSQL, MySQL and PostgreSQL.

AWS Database Migration Service

This tool will migrate databases to AWS quickly and securely. Throughout the migration process, the source database from Fishtank Ltd will remain fully operational, thus reducing downtime to applications and services that rely on these source databases.
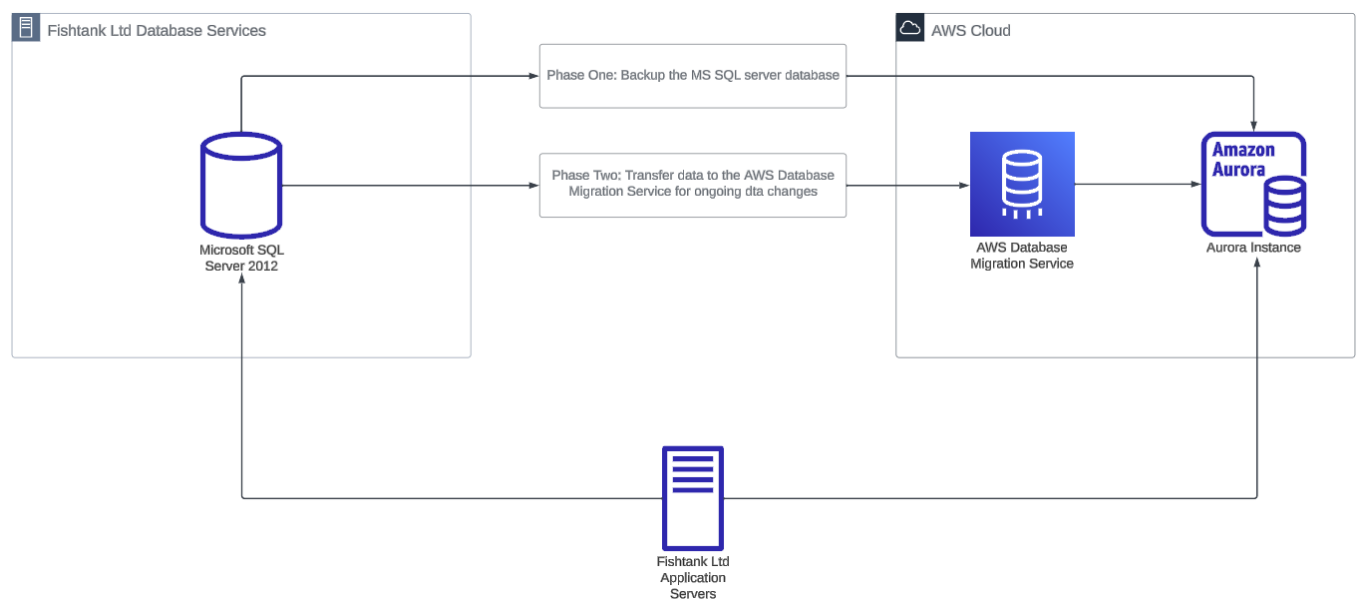

Figure 1 - Basic DMS Process Visualisation

As seen in figure 1, Fishtanks application servers will always remain in communication with the source and target databases, to remain fully functional during the migration process. A backup of the source database is created in event of system failure.

The DMS is a server that is located within the AWS cloud that performs replication software. Fishtank will create a source and target connection for the DMS to extract and load data. A scheduled task will run on this server to move the data, creating tables and associated primary keys if they do not exist on the target. Please note that tables can be manually created if preferred.

Application Migration

This section will focus on the process of migrating Fishtanks Windows Server (2008) to AWS. TO begin with, the applications and workloads to be migrated must be identified. The AWS Application Discovery Service is available to create a map of Fishtank's on-premises infrastructure and dependencies between applications, identifying the servers, applications and services to be migrated.

AWS Application Migration Service

This service will quickly lift and shift physical, virtual, or cloud servers without compatibility issues, performance impact and minimal downtime to the PETRA system. This service replicates source servers into an AWS account. When Fishtank are ready, the service automatically converts and launches source servers on AWS, hence saving cost on running AWS when in transition.

It is possible to import existing VM images to an Amazon EC2 using the AWS VM Import/Export service.

Migrating Fishtank's Windows workload to AWS comprises of several stages, including migration planning, readiness assessment, and migration implementation stage. The final stage is the migration stage which involves the following considerations:

- Preparing the AWS environment – Using an Amazon Machine Image and setting up a VPC to where the workload will migrate to.
- Select migration tool – There exists several migration methods that are designed for each situation, these include the Migration Hub, Application Migration Service and VM Import/Export.
- Configure the migration – Select the source server, specifying the target instance type, storage and network settings.
- Perform the migration – This process involves replicating the data, testing the migrated workload and performing final cutovers to switch over to the AWS located workload.
- Validate the migration – Validate that the workload is performing as expected through testing and ensuring security and other compliances are met.
- Optimize the workload – Through resizing instances being used and utilising auto scaling, Fishtank will gain cost benefit.
- Monitor and manage the migrated workload – Using Amazon Cloud watch, Fishtank can continuously monitor its AWS workload to ensure optimal performance and security.

Pricing

Name	Description	Monthly Cost
EC2 SQL Server x2	Windows server and SQL	3,679.2 USD
EC2 Windows Server x4(Petra)	Windows server and SQL	7,358.4 USD
EC2 Web Server x4	Windows server and SQL	7,358.4 USD
Print Server on Windows	Allows to share printers across an AWS network	66.43 USD
AWS Database Migration Service and storage	Combined cost based on Fishtanks current assets	2,538.44 USD

AWS Application Migration Service		0.00 USD
AWS Application Discovery Service		0.00 USD
AWS Schema Conversion Tool		0.00 USD
AWS Migration Evaluator		0.00 USD
AWS VM Import/Export		0.00 USD

Estimated total cost during migration period = 21,000.87 USD/month

Estimated total cost after migration period = 18,462.43 USD/month