FishTank Ltd PETRA migration

Migration Process
We will categorise our migration plan into a three-phase process: Assess, Mobilize, Migrate and Modernize. We will also be utilizing the "7 R's": Retire, Retain, Relocate, Rehost, Repurchase, Replatform, and Refactor to determine the level of effort/readiness needed to migrate certain applications to the cloud.

Assess
Firstly, PETRA is a three-layer application comprising of Web, Application and Database. AWS hosts several cloud options for these applications which include EC2 instances/AWS lambda for web hosting, EC2 instances for applications and RDS for hosting databases. As PETRA is based on Microsoft's COTS Dynamics CRM platform, we need to be aware that it has been heavily customized to suit FishTank's needs. It is also important to identify any gaps when moving to the cloud through the 6 pillars of the AWS Cloud Adoption Framework.

Mobilise
At this stage, we create a migration plan adhering to the findings of the first phase. Addressing problems such as PETRA's platform (Microsoft Windows Server 2008) and database (Microsoft SQL Server 2012) running on old servers that may cause issues in the future is one of the key things to look for during this stage. We will also be focusing on building the "landing zone" of our cloud environment which is the driving operational readiness and cloud skills that we have to develop. As with the Assess stage, there are several tools AWS provides that can help with our decisions such as the AWS Migration Hub which automates the planning and tracking of application migrations across multiple partner tools. We can also consider how moving to the cloud can affect any downtime on our on-premise work, which is an important characteristic of PETRA as it is used extensively by the Sales, Build and Fulfilment departments. AWS DMS replicates data from a source to a target database in the cloud and as this process is considered a homogenous migration, native tools are used to perform these conversions.

Migrate and Modernise

As the final phase, Migrate and Modernise is the pivotal process of making sure that each application is designed, migrated, and validated. Modernising can help with the problem of PETRA using out-of-extended support products such as the Microsoft Windows Server and the Microsoft SQL server. We can determine if the platform can shift to the 2022 version of Microsft Windows Servers or to any database PETRA is currently using. Moving to the cloud means that there is an opportunity to streamline and optimise costs and also usage, which is due to the elastic nature of the cloud. FSx Windows file server can be used from on-premises enabling ease of use when transitioning to the cloud. We can continue to analyse costs using the AWS Cost Explorer, and AWS Compute Optimiser which also contribute to saved costs. Following the three-phase plan, we can address the "7 R's".
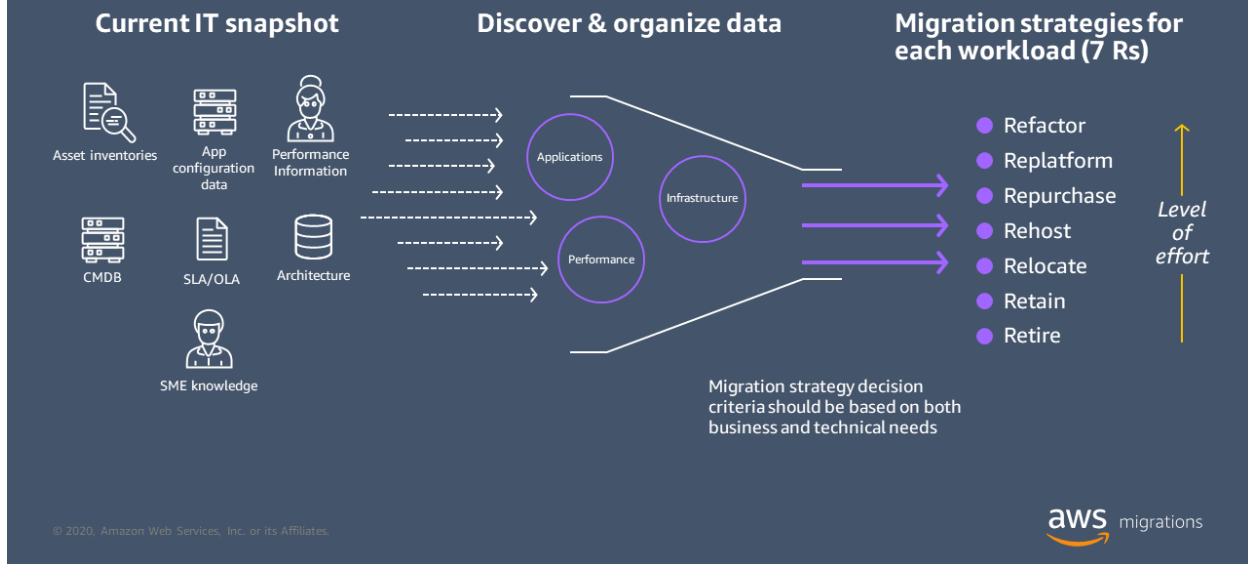
Retire:
We can decommission applications from on-premise such as DNS entry and services that aren't of use when migrating to the cloud. As PETRA has listed its specific DNS and AD, we can remove firewall rules that aren't in use.

Retain:
As FishTank is looking to migrate its business to the cloud there may be some applications to continue running on-premise. However, in this case, all of the applications are able to migrate to the cloud.

Relocate:
Deciding which applications can move to the cloud without purchasing new hardware. This applies to web hosting, databases and applications.

Rehost:
Rehosting, for example, is the migration of the on-premise Microsoft Windows Server to an EC2 instance hosting a Microsoft Windows Server. We may also use AWS Lambda to provide a serverless way of web hosting, however, that is something that needs to be discussed as it is a different use case.

Repurchase:
This is the decision to move to a newer version of the Windows Server, we would ideally be using the 2022 version in our example and for our costs as well.

Replatform:
This is essentially retiring legacy systems and moving from a CapEx model to an OpEx one. As this migration approach essentially leverages the whole of the cloud's abilities, it's used for workloads that need enhanced performance while minimising operational costs.

Refactor:
Best for complex applications with high usability and enables personalised levels of scaling and high availability.

Out of these options, Repurchase seems to be the best use case in this scenario, as we are looking to leverage the cloud without necessarily having to design systems from scratch. It is a flexible pay-as-you-go model and also provides the option to scale up/down when needed. However, there is also an associated con about this approach which is that it is highly expensive for low-usability applications. In our case, 5000 users seem to be on the smaller side, so we would have to adjust the baseline costs first.
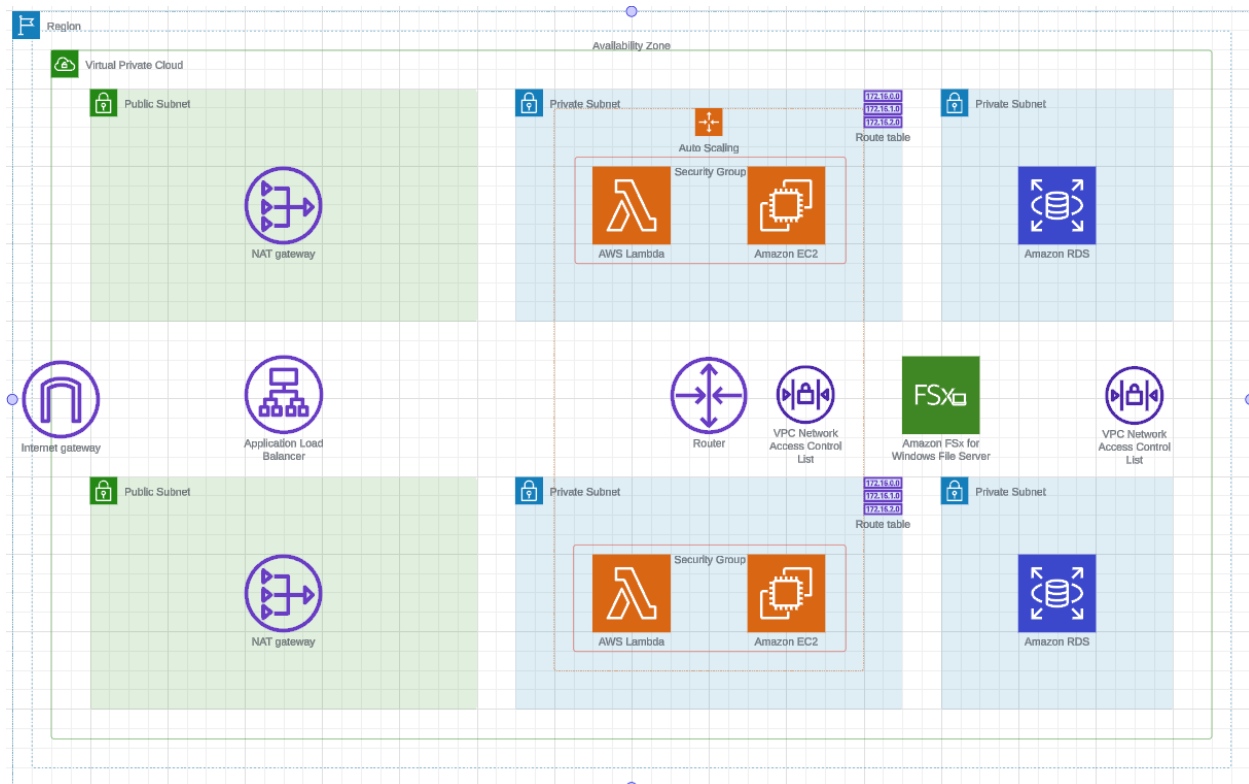
AWS Migration Hub:
The AWS Migration Hub would be our main tool in assisting us with the migration to the cloud. It is used to simplify and accelerate both migration and modernisation through preset templates and also enables collaboration between a wide range of users in your organisation. The orchestration hub can help with the migration of the Windows Server to an EC2 or Lambda instance, and also for the SQL server to RDS. It provides a simple dashboard that shows helpful metrics such as the progress of the migration and any errors that may arise. Before creating a migration hub, AWS requires some answers regarding the environment of PETRA and any migration goals. As we are looking to fully migrate our network system, web, application, and database to the cloud, Migration Hub can recommend other services that may be more beneficial according to FishTank's needs. Migration Hub is integrated with other AWS services meaning that it has migration services for Applications, Servers, and Databases. This allows for a centralised way of migrating different on-premise services to the cloud.
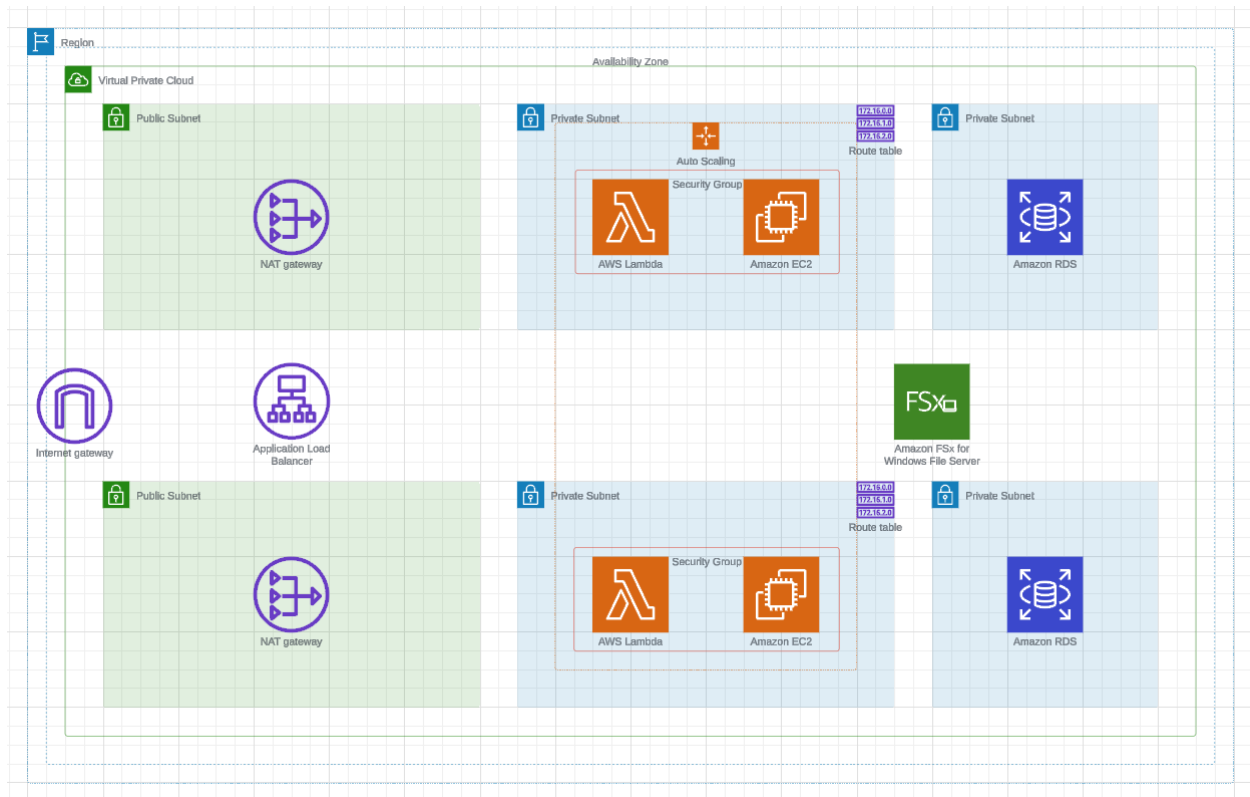
Networking:

As provided in the case study, there are several dependencies on the on-premise PETRA application. To be able to talk to the internet we would need the inbound port of the NAT gateway with our EC 2 instances. The NAT gateway would then be connected through the load balancers and to the internet. We would also need to open the 9000 port through our private subnet as we want our web and application to talk to each other (PETRAweb talks to PETRAapp over port 9000). 3389 would also need to be open for remote desktop control over an encrypted channel, which would be for the webserver, app server and database. It would be ideal to create an ACL for the webserver, app and database to allow for port 3389 to be open on both outbound and inbound connections.

Costs:

The cost of running for a month would be $9,308.18 (£7,325.91).

Estimate summary Info

Upfront cost

0.00 USD

Monthly cost

9,308.18 USD

Total 12 months cost

111,698.16 USD

Includes upfront cost

As for migration costs, there is no charge to use the AWS Migration Hub, however, the cost is calculated through the tools you use and any resources that are running on AWS.

My Estimate

Service Name	Status	Upfront cost	Monthly cost	Description	Region	Config Sum...
Windows Server and SQL Server on Amazon EC2	-	0.00 USD	108.98 USD	Windows Server 2012	US East (Ohio)	EC2 Windows...
AWS Network Firewall	-	0.00 USD	0.00 USD	-	US East (Ohio)	Number of A...
Amazon FSx for Windows File Server	-	0.00 USD	283.84 USD	-	US East (Ohio)	Desired aggr...
Windows Server and SQL Server on Amazon EC2	-	0.00 USD	108.98 USD	Windows Server 2008	US East (Ohio)	EC2 Windows...
Windows Server and SQL Server on Amazon EC2	-	0.00 USD	108.98 USD	Windows Server 2008	US East (Ohio)	EC2 Windows...
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Windows Server and SQL Server on Amazon EC2	-	0.00 USD	108.98 USD	Windows Server 2008	US East (Ohio)	EC2 Windows...
Windows Server and SQL Server on Amazon EC2	-	0.00 USD	220.43 USD	Windows Server	US East (Ohio)	EC2 Windows...
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Amazon RDS for SQL server	-	0.00 USD	3,689.88 USD	-	US East (Ohio)	Storage for e...
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Running and setting up the cloud migration will take a while. We can go by a one-month timeframe to ensure that everything has migrated to the cloud and also for any headroom in case there is any problem that comes from the cloud. In this case, the cloud consultant and solutions architect are the basis of migrating the application to the cloud and are only hired on the days when the lift and shift process is required. The server and database migration engineers are also needed when the server and database are needed to migrate to the cloud. The first/second line cloud support should be available for the whole month to ensure everything runs smoothly, while the third provides backup in times of intense days.

(Cloud Consultant + Solutions architect) * 10 = £30 000
(Server Migration Engineer + Database Migration Engineer) * 15 = £21 000
(First/Second line Cloud support) * 30 = £7500
(Third line Cloud support) * 10 = £3500
(Business Analyst) * 10 = £4000
Total people cost = £66000

This is for the initial cost of migrating and maintaining.
The total cost of the first month is: 73348.34