Service Summary

To migrate the PETRA application to AWS, it is recommended to take fully advantage of services provided by the cloud. This is not only more cost effective but will lead to performance and stability gains.

The presented solution has been built using 2 different Availability Zones(AZs), this will improve system availability and ensure continuous service for users.

It has been included two Auto Scaling groups, each paired with an Application Load Balancer. The first for the Webserver virtual machines (EC2s) and the second to the PETRA application EC2s. Considering the pay-as-you-go pricing model this can yield to substantial savings over time. And in case the number of users grow, the system can automatically start more EC2 instances avoiding this way a decrease in performance.

Microsoft SQL server can no longer be updated, which brings a series of issues with security and lack of updates. So, in the presented project, the database platform is being updated to Aurora, which provides states of art performance.

The database will be also deployed in both AZ´s. In the first AZ it will operate as the primary database, while in the second AZ it will be a replica. This will bring better performance and redundancy in case the primary database becomes unavailable.

Finally, instead setting up a whole server for the Domain Controller we are making use of the AWS Managed Microsoft AD service. This will make running the system smoother, reducing the number of servers to be taken care of. This service will also be activated using Multi-AZ Deployment, which translates to more system stability and easier recover.

Summary of PETRA Specifications:

The dependencies of PETRA include DNS and Active Directory and the current firewall rules are listed below.

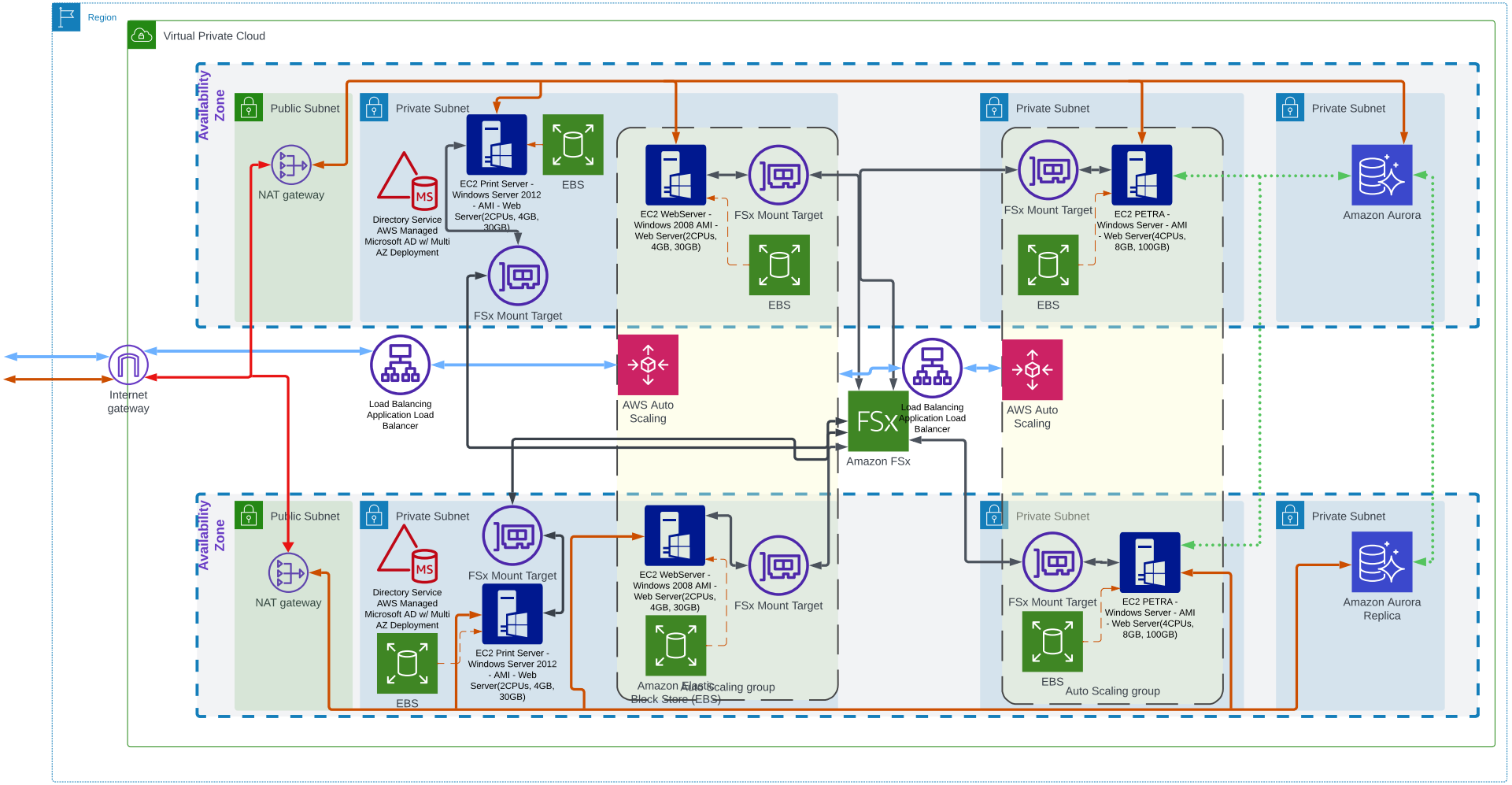
Port	Source	Destination	Comment
HTTPS	WebServers	Internet	Webservers use HTTPS to the internet
9000	WebServers	AppServers	PETRAweb talks to PETRAapp over port 9000
unknown	AppServers	Database	
3389	Webservers	Internet	RDP port, for administrators use
3389	AppServers	Internet	RDP port, for administrators use
3389	Database	Internet	RDP port, for administrators use
All	All servers	Active Directory	All servers need access to the companies Active Directory server on all ports.

Considering the current firewall specifications, these would be implemented in the migration process using AWS Security Groups and NAT gateway. Remembering that Security Groups, by default denies every incoming port.

- Webserver instances:
    - They will be able to reach the internet using a NAT gateway, this way they can request HTTPS and RDP services from the outside.
    - Traffic that reaches the network from outside will be directed to the webserver using Routing tables combined with a Load Balancer.
- AppServer instances:
    - Port 9000 will accept connections originated from the WebServers subnet.
    - They will be able to reach the Database subnet with the aid of Routing tables inside the VPC
    - NAT gateway will enable for RDP port use from internet.
- Database instances:
    - Specified port for incoming connections from AppServers network will be open in the Security Group.
    - NAT gateway will enable for RDP port use from internet.
- Active Directory:
    - Every private subnet will have a route that can reach the active directory.
    - Security group will allow for incoming connections on all AD ports as necessary.

SYSTEM ASSET LIST AND MIGRATION SUMMARY

Asset TAG	Previous - Description	Implementation
S001	Windows Server / Domain Controller	Replaced by AWS Microsoft Active Directory
N001		AWS Security Groups and network ACLs
SAN01	NAS Storage	Replaced by FSx storage
S002	WebServer / Windows	Az1 EC2 instance -Scalable- possibly AMI clone from current
S003	WebServer / Windows	Az2 EC2 instance -Scalable- possibly AMI clone from current
S004	WebServer / Windows	Az1 Auto deployed as necessary
S005	WebServer / Windows	Az2 Auto deployed as necessary
S006	PETRA App Server / Windows	Az1 EC2 instance - possibly AMI clone from current
S007	PETRA App Server / Windows	Az2 EC2 instance - possibly AMI clone from current
S008	PETRA App Server / Windows	Az1 Auto deployed as necessary
S009	PETRA App Server / Windows	Az2 Auto deployed as necessary
N002	Switch	AWS subnets connected by default
N003	Switch	AWS subnets connected by default
S010	Print Server	Az1 - EC2 instance from clone AMI
S011	Print Server	Az2 - EC2 instance from clone AMI
S012	Database / MS SQL	Aurora: AWS Schema Conversion Tool (AWS SCT) + Data Migration(DMS)
S013	Database / MS SQL	Aurora: AWS Schema Conversion Tool (AWS SCT) + Data Migration(DMS)


Region
Virtual Private Cloud
Availability Zone
Public Subnet
Private Subnet
NAT gateway
Directory Service AWS Managed Microsoft AD w/ Multi AZ Deployment
EC2 Print Server - Windows Server 2012 - AMI - Web Server(2CPUs, 4GB, 30GB)
EBS
FSx Mount Target
EC2 WebServer - Windows 2008 AMI - Web Server(2CPUs, 4GB, 30GB)
EC2 PETRA - Windows Server - AMI - Web Server(4CPUs, 8GB, 100GB)
Amazon Aurora
Internet gateway
Load Balancing Application Load Balancer
AWS Auto Scaling
Amazon FSx
Amazon Elastic Block Store (EBS)
Auto Scaling group
Amazon Aurora Replica

aws pricing calculator

Contact your AWS representative: Contact Sales

Export date: **2/1/2024**

Language: **English**

Estimate URL: **https://calculator.aws/#/estimate?id=ae2508508ba7af5e2ef8b65c0e04220a1c27ee0a**

Estimate summary

Upfront cost	Monthly cost	Total 12 months cost
0.00 USD	**3,038.55 USD**	**36,462.60 USD** Includes upfront cost

Detailed Estimate

Name	Group	Region	Upfront cost	Monthly cost
Amazon EC2	No group applied	US East (Ohio)	0.00 USD	173.12 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 (On-Demand Utilization: 100 %Utilized/Month), Enable monitoring (disabled), EBS Storage amount (30 GB), DT Inbound: Not selected (0 TB per month), DT Outbound: Not selected (0 TB per month), DT Intra-Region: (0 TB per month)

Name	Group	Region	Upfront cost	Monthly cost
Amazon EC2	No group applied	US East (Ohio)	0.00 USD	686.08 USD

Status: -
Description:
Config summary: Tenancy (Shared Instances), Operating system (Windows Server), Workload (Consistent, Number of instances: 4), Advance EC2 instance (t3a.xlarge), Pricing strategy (On-Demand Utilization: 100 %Utilized/Month), Enable monitoring (disabled), EBS Storage amount (100 GB), DT Inbound: Not selected (0 TB per month), DT Outbound: Not selected (0 TB per month), DT Intra-Region: (0 TB per month)

Name	Group	Region	Upfront cost	Monthly cost
Amazon EC2	No group applied	US East (Ohio)	0.00 USD	53.86 USD

Status: -

Description:
Config summary: Tenancy (Shared Instances), Operating system (Linux), Workload (Consistent, Number of instances: 2), Advance EC2 instance (t4g.medium), Pricing strategy (On-Demand Utilization: 100 %Utilized/Month), Enable monitoring (disabled), EBS Storage amount (30 GB), DT Inbound: Not selected (0 TB per month), DT Outbound: Not selected (0 TB per month), DT Intra-Region: (0 TB per month)

Amazon Aurora PostgreSQL-Compatible DB	No group applied	US East (Ohio)	0.00 USD	1,971.73 USD

Status: -
Description:
Config summary: Aurora PostgreSQL Cluster Configuration Option (Aurora Standard), Quantity (2), Instance type (db.r5.2xlarge), Utilization (100 %Utilized/Month), Pricing strategy (OnDemand), Storage amount (1 TB)

Amazon FSx for Windows File Server	No group applied	US East (Ohio)	0.00 USD	153.76 USD

Status: -
Description:
Config summary: Desired aggregate throughput (0 MBps), Provisioned SSD IOPS (Automatic), Desired storage capacity (1 TB)