Milestone 2 : LowTech GMmBH Migration to Azure

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Abstract

1 Overview of the Problem

2 Objectives of the Migration

3 Migration Strategy

After reviewing the company landscape we have evaluated several options for the migration to a public/private cloud context depending on the application. For each one we detail the Cloud Context to deploy, which tools to use, and, if relevant, details on the service models of each product.

3.1 Finance: Legacy Application

As the finance department still needs to use this application for the next 3 years, we are only going to migrate to our own private cloud context. In this case, it is going to be deployed into a virtual machine with the ability to scale in terms of memory and CPU thanks to PoxMox. For backup purposes, we will create a file share specific to this application using Azure Files. We are also going to use Ansible playbooks to automate the configuration and installation of the application.

Cloud Context	Products And Technologies	Service Models
Private Cloud	ProxMox, Ansible	N/A
Public Cloud	Azure Files	PaaS

Table 1: Finance Legacy Application Deployment Strategy

3.2 Finance: SAP PPM, ERP, IAM and ERM

These applications will also be deployed in the new private cloud context. Since the finance department is the only one that needs access, this system will be somewhat isolated. We are going to configure networking access only for the finance department clients. Following the same patterns as for the Legacy application, we are also going to use Ansible to automate and make the installation and configuration repeatable.

Cloud Context	Products And Technologies	Service Models
Private Cloud	ProxMox, Ansible	N/A

Table 2: Finance SAP PPM, ERP, IAM and ERM Deployment Strategy

3.3 Production: Reporting Management

This application will be newly developed, for this, we are going to deploy the backend using Azure App Service, the front end using Azure Static Web Apps, Azure Blob Storage to save reports, and Azure CosmosDB if a database is needed. To secure all newly developed applications we are going to use Microsoft Entra ID, and make them accessible only with the company VPN.

Cloud Context	Products And Technologies	Service Models
Public Cloud	Azure App Service	PaaS or CaaS
Public Cloud	Azure Static Web App	PaaS or CaaS
Public Cloud	Azure Blob Storage	PaaS
Public Cloud	Microsoft Entra ID	PaaS
Public Cloud	Azure Cosmos DB	PaaS

Table 3: Production Reporting Management Deployment Strategy

3.4 Production + HR: Shift Management

This application will be newly developed. Following the standard for new applications, we will deploy the backend using Azure App Service, the front end using Azure Static Web Apps, and Azure Database For PostgreSQL if a database is needed. To secure all newly developed applications we are going to use Microsoft Entra ID, and make them accessible only with the company VPN.

Cloud Context	Products And Technologies	Service Models
Public Cloud	Azure App Service	PaaS or CaaS
Public Cloud	Azure Static Web App	PaaS or CaaS
Public Cloud	Microsoft Entra ID	PaaS
Public Cloud	Azure Database For PostgreSQL	PaaS

Table 4: Production, HR, Shift Management Deployment Strategy

3.5 Supply Management: SCM

This application is supplied by a third party. It will be installed in a linux virtual machine, using Azure Linux Virtual Machines + Azure Virtual Machine Scale Sets, to enable autoscaling. Same as all other internal applications, it will only be accessible through the company VPN.

Cloud Context	Products And Technologies	Service Models
Public Cloud	Azure Linux Virtual Machines + Azure Virtual Machine Scale Sets	IaaS

Table 5: Supply Management SCM Deployment Strategy

3.6 Quality Management: QM Software

This application is supplied by a third party. It will be installed in a windows virtual machine, using Azure Windows Virtual Machines + Azure Virtual Machine Scale Sets, to enable autoscaling. Same as all other internal applications, it will only be accessible through the company VPN.

Cloud Context	Products And Technologies	Service Models
Public Cloud	Azure Windows Virtual Machines + Azure Virtual Machine Scale Sets	IaaS

Table 6: Quality Management QM Software Deployment Strategy

3.7 Warehouse: Warehouse Management

This application will be newly developed. Following the standard for new applications, we will deploy the backend using Azure App Service, the front end using Azure Static Web Apps, and Azure Database For PostgreSQL if a database is needed. To secure all newly developed applications we are going to use Microsoft Entra ID, and make them accessible only with the company VPN.

Cloud Context	Products And Technologies	Service Models
Public Cloud	Azure App Service	PaaS or CaaS
Public Cloud	Azure Static Web App	PaaS or CaaS
Public Cloud	Microsoft Entra ID	PaaS
Public Cloud	Azure Database For PostgreSQL	PaaS

Table 7: Warehouse, Warehouse Management

3.8 Warehouse: Deliforce

This application will be installed on premise. As other on premise deployments we will automate it with Ansible. It will communicate with other internal applications using Azure Express Route, enabling us to transfer information between our private cloud and its public counterpart.

Cloud Context	Products And Technologies	Service Models
Public Cloud	Azure Express Route	PaaS
Private Cloud	ProxMox, Ansible	N/A

Table 8: Warehouse Deliforce Deployment Strategy

3.9 Sales + Operations + Customer Service: CRM

This application is supplied by a third party. It will be installed in a linux virtual machine, using Azure Linux Virtual Machines + Azure Virtual Machine Scale Sets, to enable autoscaling. As all other internal applications, it will only be accessible through the company VPN.

Cloud Context	Products And Technologies	Service Models
Public Cloud	Azure Linux Virtual Machines + Azure Virtual Machine Scale Sets	IaaS

Table 9: Quality Management QM Software Deployment Strategy

3.10 Sales: Lead Management

This application will be installed on premise. As other on premise deployments we will automate it with Ansible.

Cloud Context	Products And Technologies	Service Models
Private Cloud	ProxMox, Ansible	N/A

Table 10: Sales Lead Management Deployment Strategy

3.11 Sales: Business Analytics

This application is supplied by a third party. It will be installed in a linux virtual machine, using Azure Linux Virtual Machines + Azure Virtual Machine Scale Sets, to enable autoscaling. As all other internal

applications, it will only be accessible through the company VPN.

Cloud Context	Products And Technologies	Service Models
Public Cloud	Azure Linux Virtual Machines + Azure Virtual Machine Scale Sets	IaaS

Table 11: Sales Business Analytics Deployment Strategy

3.12 Sales: Tableu (Market Development)

This application is supplied by a third party. It will be installed in a custom virtual machine, using Azure Tableu Server. In this case we are not going to actively enable auto scaling, since we anticipate that te use case does not benefit from adding more instances. As other internal applications it will only be accessible through the company VPN.

Cloud Context	Products And Technologies	Service Models
Public Cloud	Azure Tableu Server	IaaS
N/A	Tableu Desktop	N/A

Table 12: Sales Tableu (Market Development) Deployment Strategy

3.13 HR: HR Software

This application will be newly developed following the standard for new applications. To secure all newly developed applications we are going to use Microsoft Entra ID, and make them accessible only with the company VPN.

Cloud Context	Products And Technologies	Service Models
Public Cloud	Azure App Service	PaaS or CaaS
Public Cloud	Azure Static Web App	PaaS or CaaS
Public Cloud	Microsoft Entra ID	PaaS
Public Cloud	Azure Database For PostgreSQL	PaaS

Table 13: HR Software Deployment Strategy

3.14 Facility Management: Facility Management Software

This is a proprietary application that will be deployed on premises following practices stated for all previous on premise deployments

Cloud Context	Products And Technologies	Service Models
Private Cloud	ProxMox, Ansible	N/A

Table 14: Facility Management Software Deployment Strategy

3.15 Finance + HR + Sales + Legislation: Office Suite

In this case, several departments need access to the office suite. We are going to provide them with access to the Microsoft 365 selection of products. Each client will have the option to use the office suite in the cloud, or locally on their devices. We will also provide OneDrive access for easy document sharing and collaboration.

Cloud Context	Products And Technologies	Service Models
Public Cloud	Microsoft Office 365	SaaS
Public Cloud	OneDrive	SaaS

Table 15: Office Suite Deployment Strategy

3.16 Webshop: Website CMS

This application will be newly developed following the standard for new applications. As a special consideration, this application is the only public facing application which needs to handle customer requests. Our standard for newly developed applications enable this critical piece of the business to easily scale and be secured with valid certificates with no extra configurations.

Cloud Context	Products And Technologies	Service Models
Public Cloud	Azure App Service	PaaS or CaaS
Public Cloud	Azure Static Web App	PaaS or CaaS
Public Cloud	Azure Database For PostgreSQL	PaaS

Table 16: Webshop Website Deployment Strategy

3.17 General Considerations

Importantly, for all newly developed applications we will:

- Set up a private GitHub repository
- Set up GitHub actions to enable continues integration and continuous deployments in Azure
- Set up an infrastructure folder to hold terraform files. These files will define the infrastructure and will allow for easy repeatability
- Use Microsoft Entra ID in case authentication with the organization is needed
- Use Docker to package the applicaation with containers that will be deployed in Azure App Service in case of the backend, and Azure Static Web Apps in case of the frontend

For all aplications that will be deployed on premises:

- Set up a private GitHub repository
- Create Ansible playbooks to make configuration and instalation in a VM repeatable
- In case the application needs to communicate with another aplication deployed in the public cloud we will use Azure Express Route to create a getaway.

For all applications that will be installed on the cloud and run in virtual machines:

- Set up a private GitHub repository
- Create terraform files to define the infrastructure i.e the VM size and OS
- Create Ansible playbooks to make configuration and instalation in a VM repeatable

4 Cost of operations in Microsoft Azure

5 Migration Roadmap

6 Cloud Architecture

7 Standard For a Cloud Native Application

References