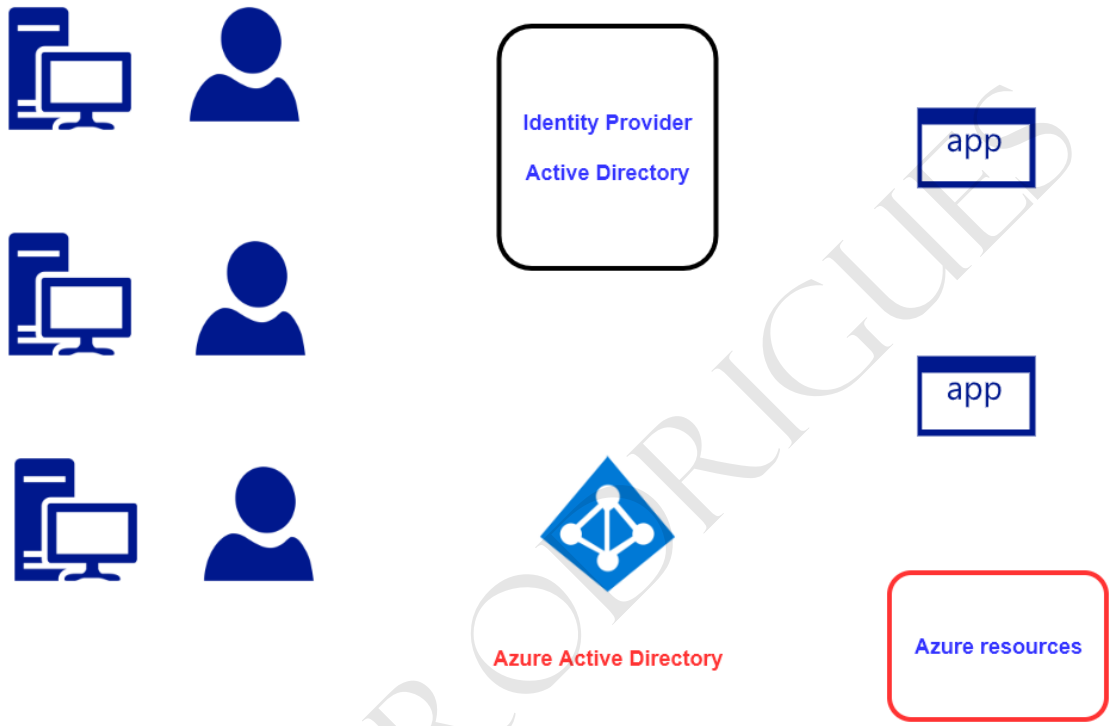
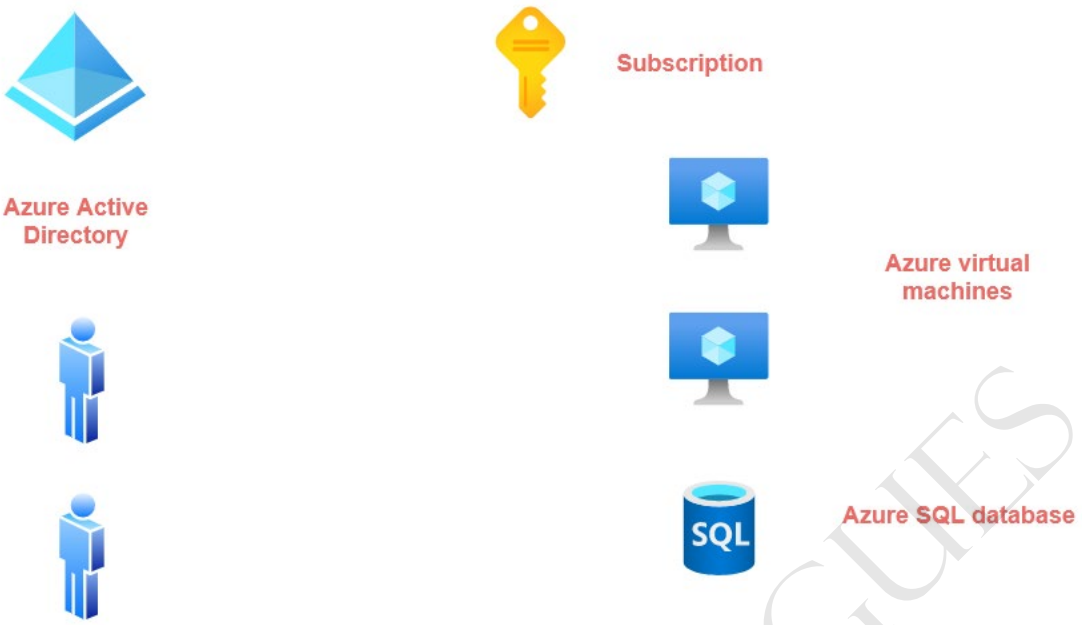
Manage identity and access

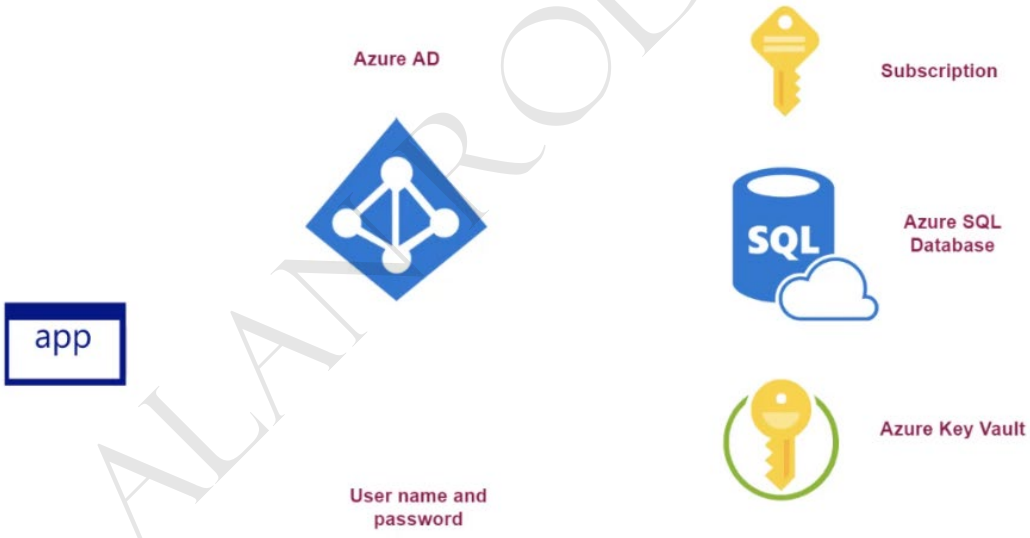
Azure Active Directory



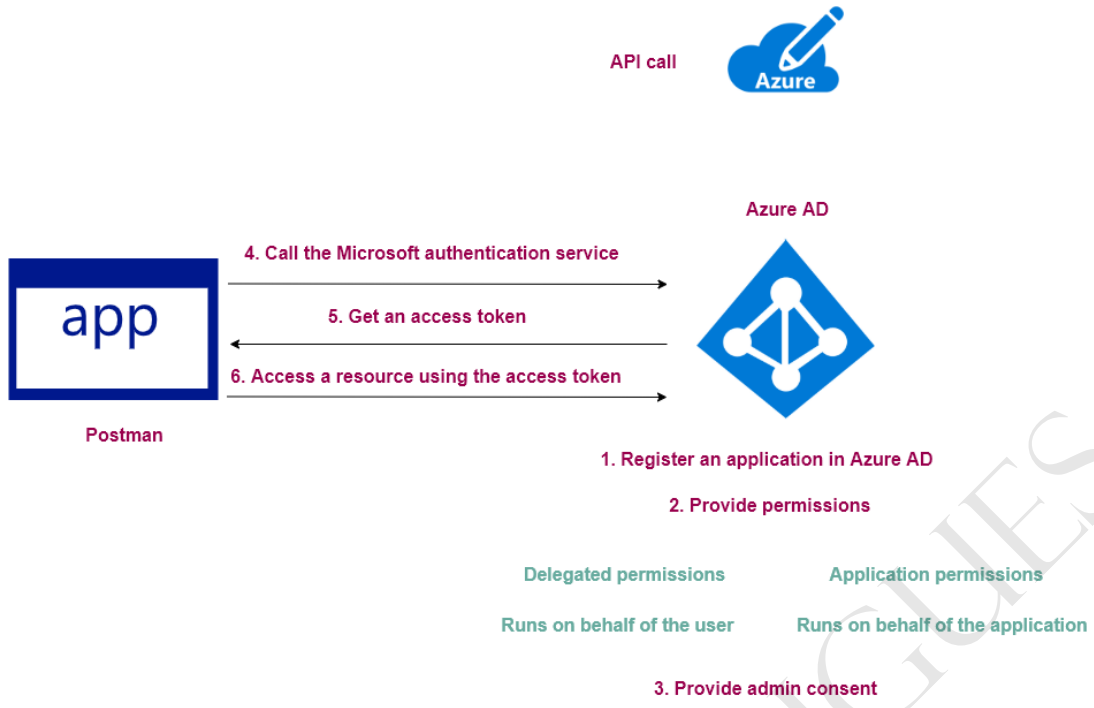
The Azure AD tenant and the subscription



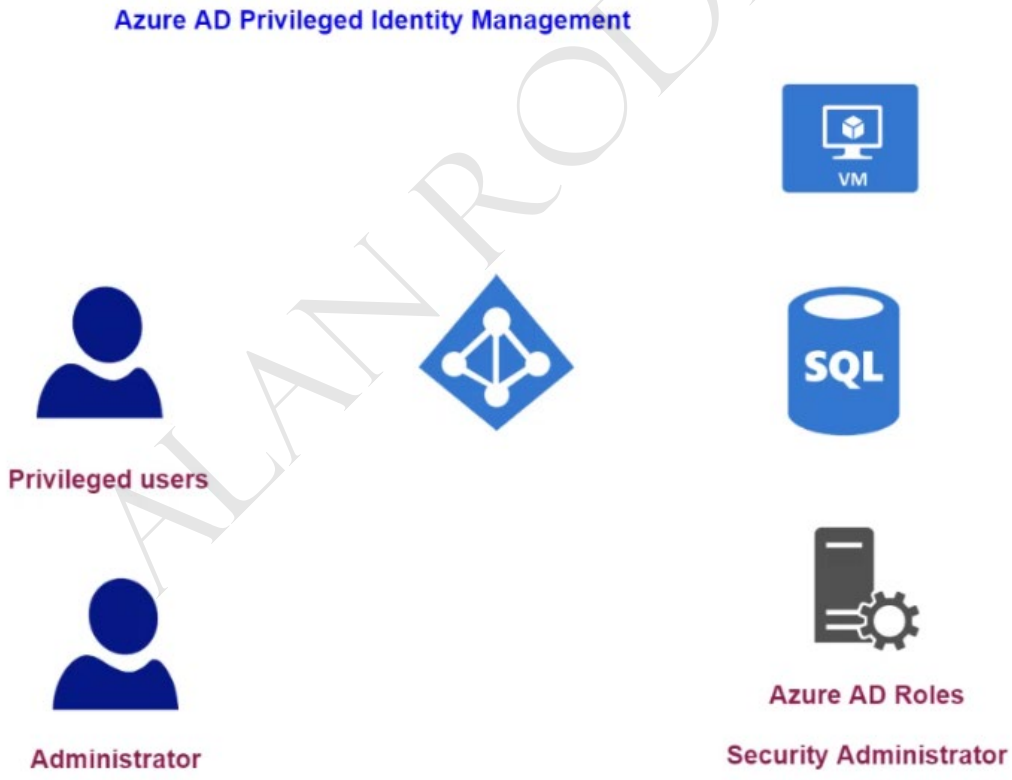
Application Registration



Lab - Application Registration

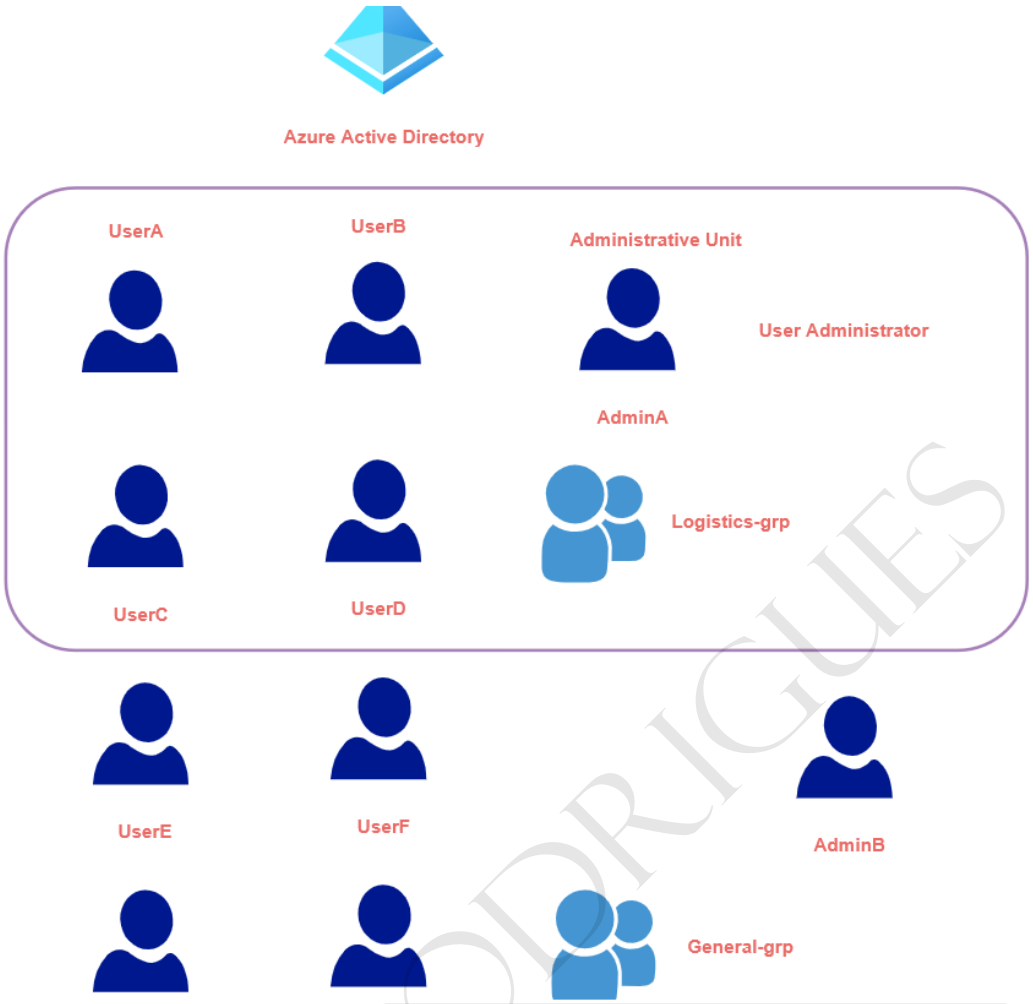


Azure AD Privileged Identity Management



Administrative Units

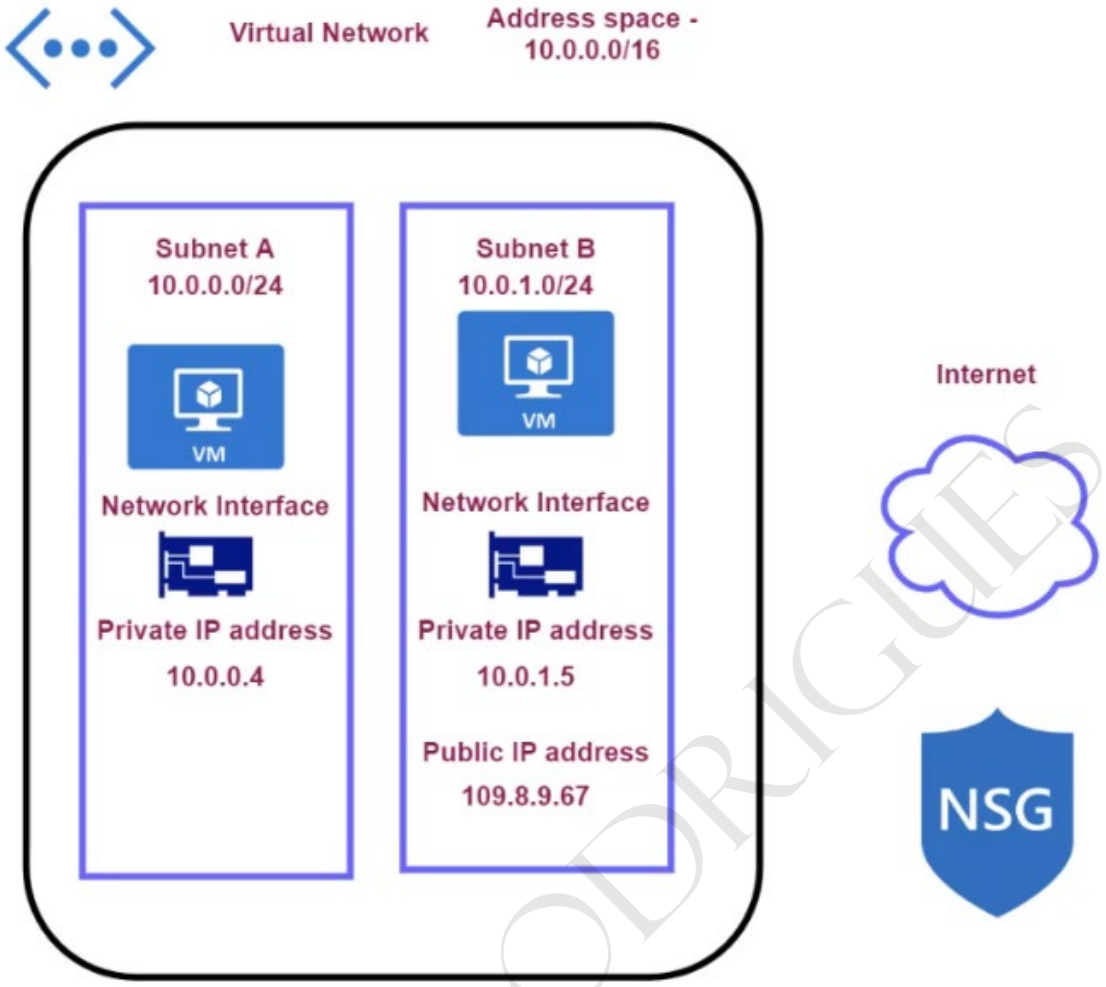
Lab - Administrative Units



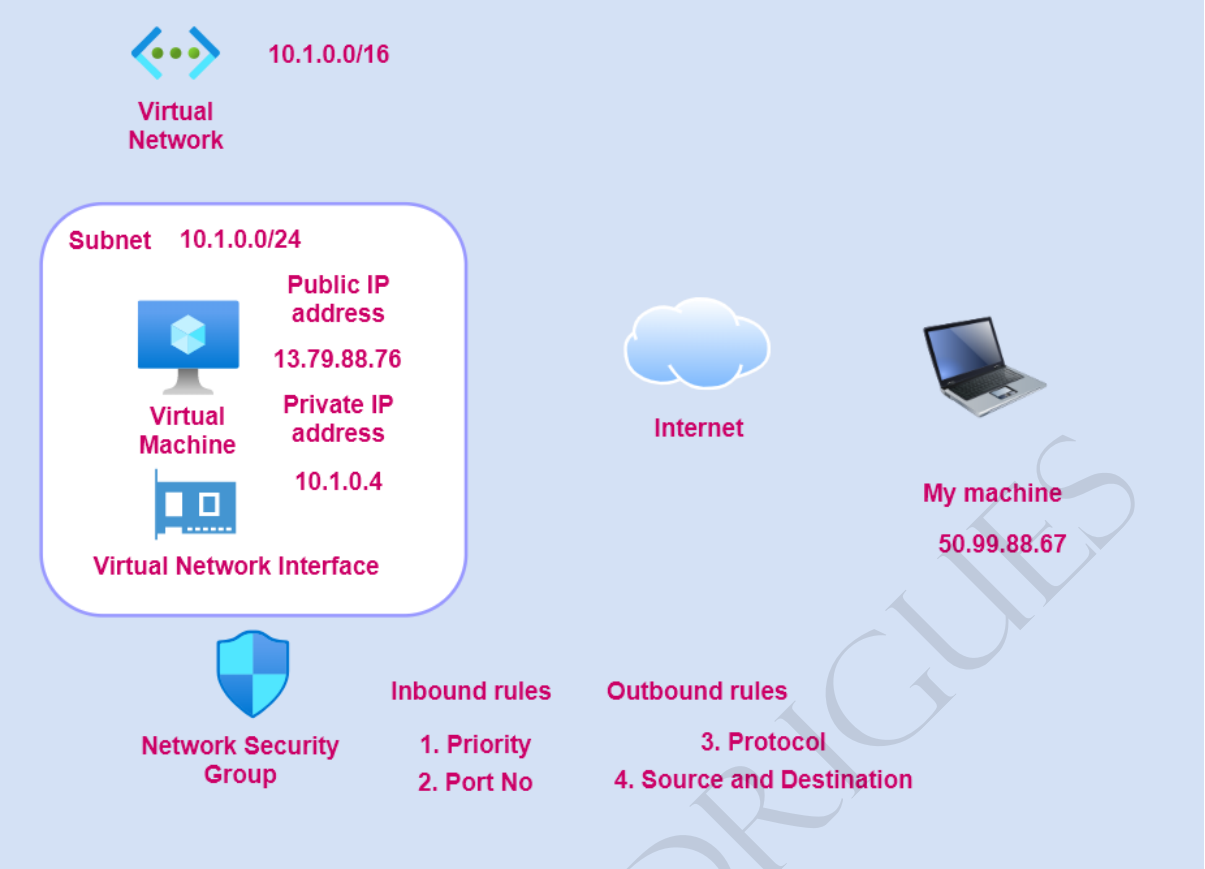
What is Azure AD Connect

Implement platform protection

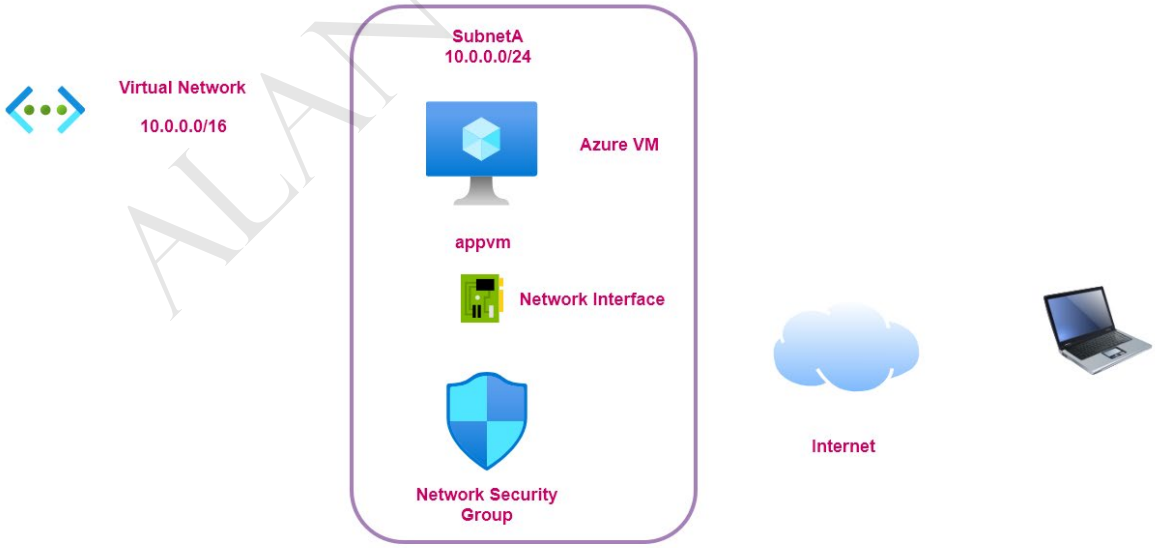
Review of virtual networks and machines



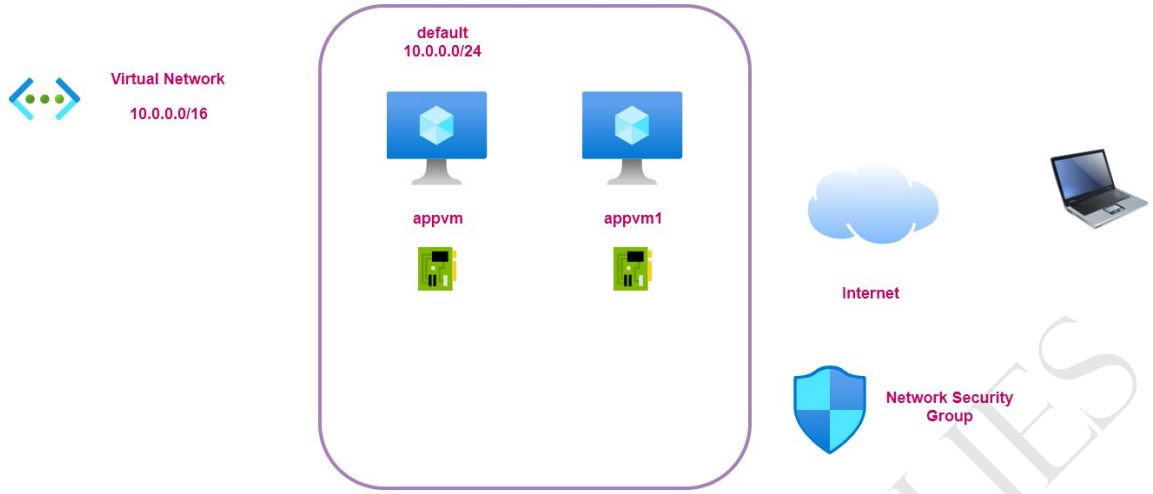
Network Security Groups



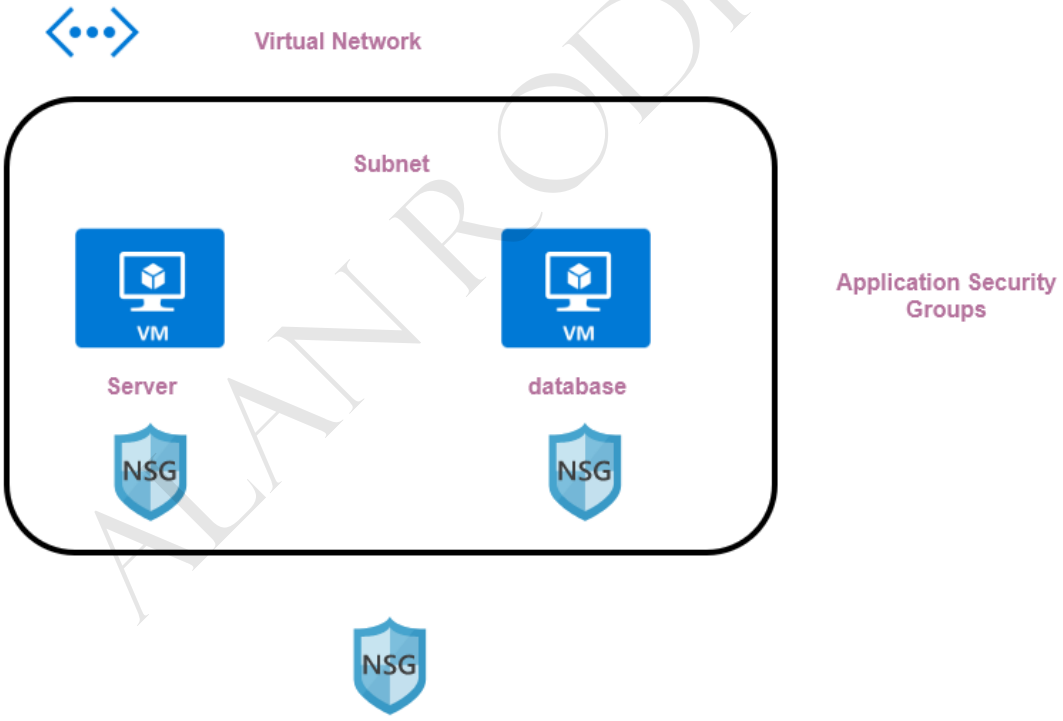
Lab - Network Security Groups



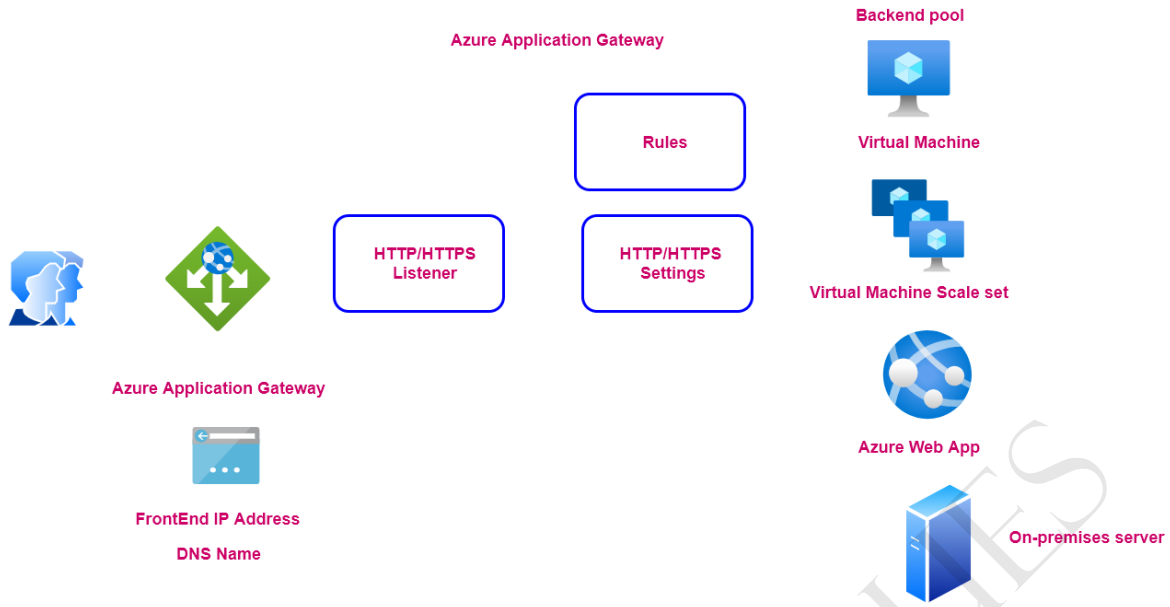
Lab - Network Security Groups - Subnet Considerations



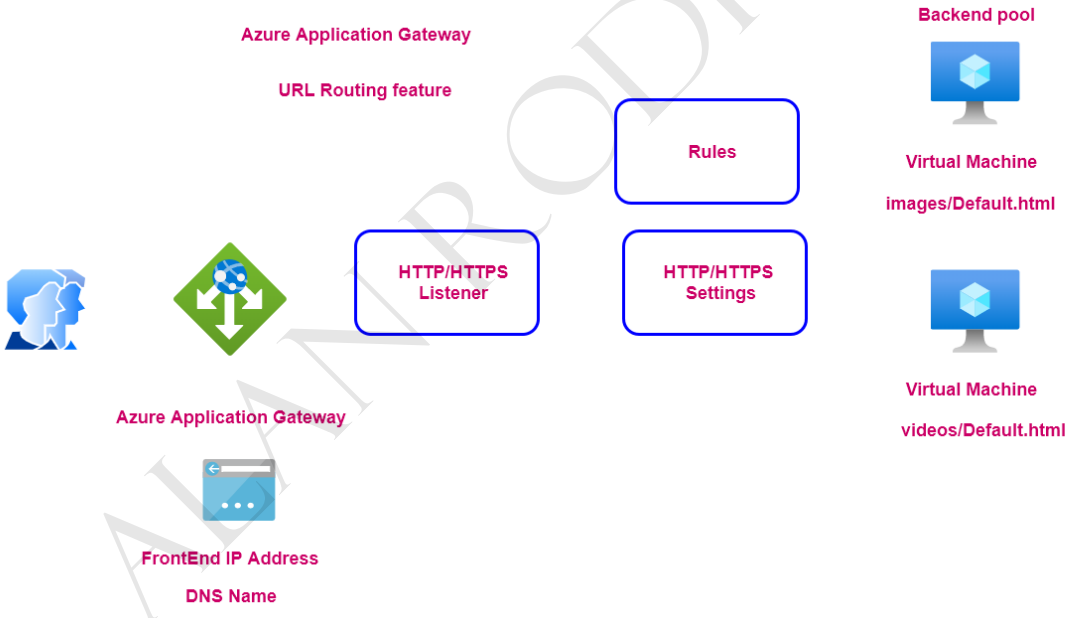
Application Security Groups



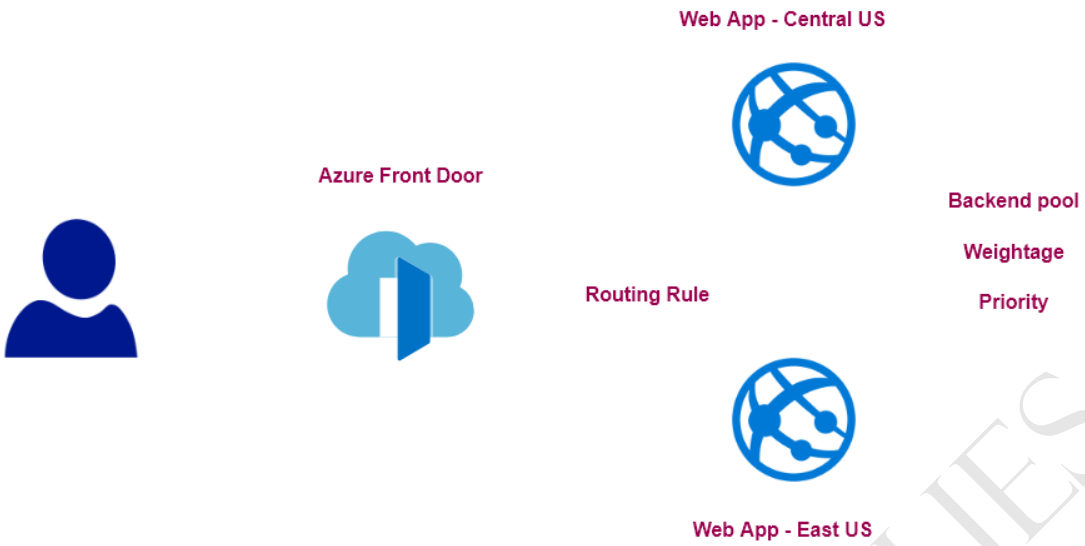
The Azure Application Gateway Service



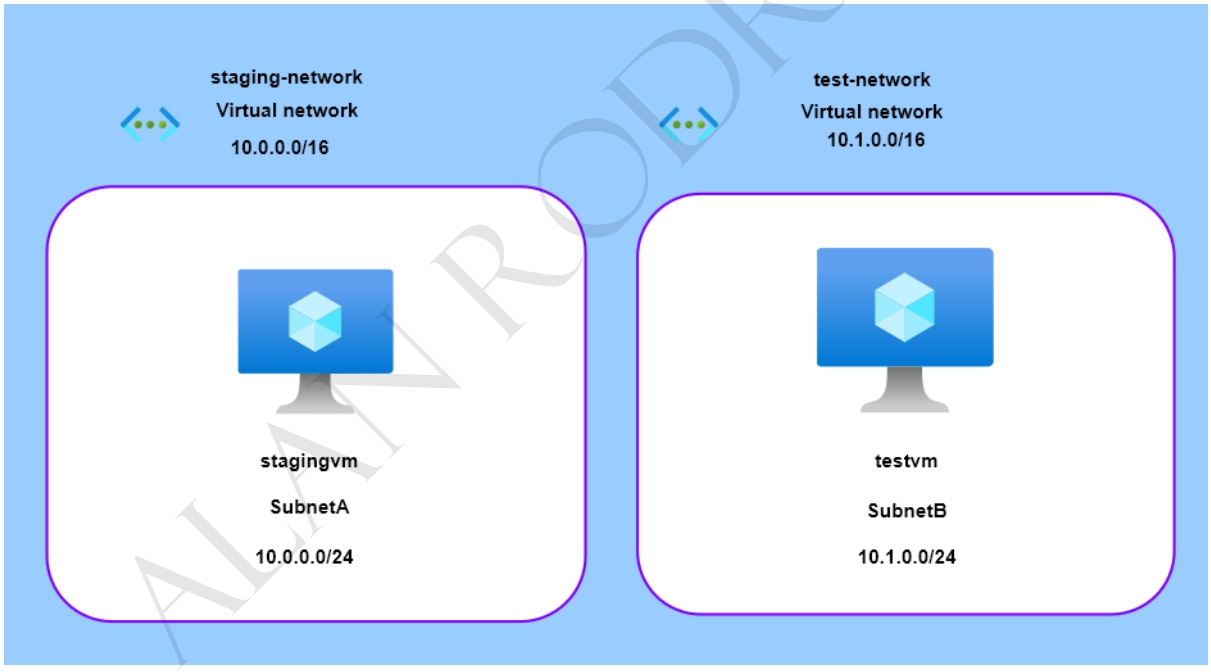
Lab - Azure Application Gateway - URL Routing – Setup



Azure Front Door



Virtual Network Peering



Point to Site VPN Connection

10.0.0.0/16

GatewaySubnet

10.0.1.0/24

default

10.0.0.0/24

10.0.0.4

The gateway subnet is used to host gateway VM's and services

The VM's in the gateway subnet are configured with the required VPN gateway settings

No other VM's must be deployed to the gateway subnet

The gateway subnet can be configured as /29, but Microsoft recommends /27, /26

Next Step Authentication via certificates

10.0.0.0/16

GatewaySubnet

10.0.1.0/24

default

10.0.0.0/24

10.0.0.4

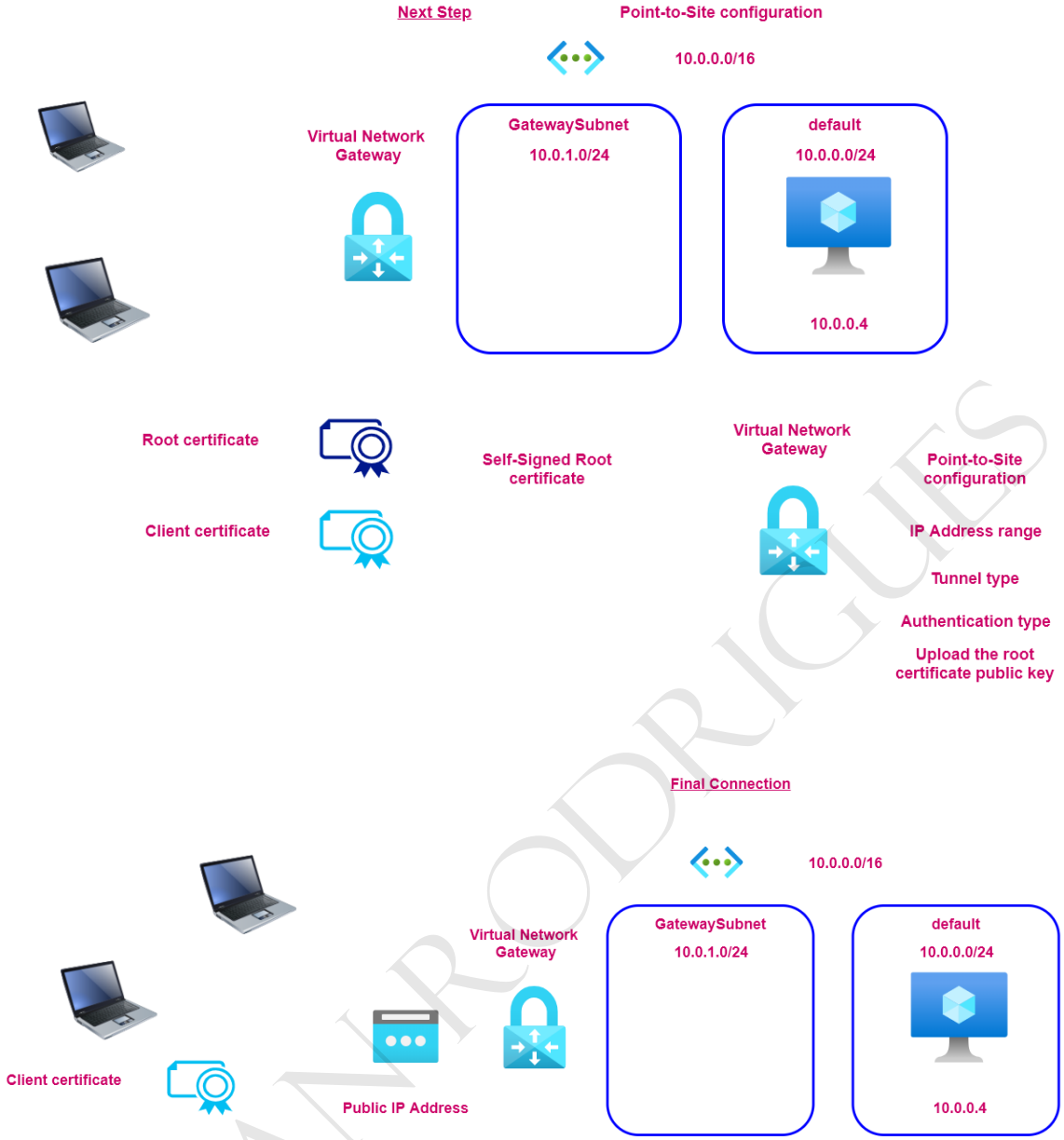
Root certificate

Self-Signed Root certificate

Self-Signed Root certificate

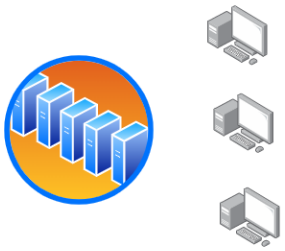
Client certificate

Enterprise CA authority



Site to Site VPN Connection

Site-to-Site VPN



Router

Public IP Address

10.0.0.0/16

GatewaySubnet

10.0.1.0/24

default

10.0.0.0/24

10.0.0.4

The gateway subnet is used to host gateway VM's and services

The VM's in the gateway subnet are configured with the required VPN gateway settings

No other VM's must be deployed to the gateway subnet

The gateway subnet can be configured as /29, but Microsoft recommends /27, /26

Next Step

On-premises setup

10.1.0.0/16

default

10.1.0.0/24

10.1.0.4

Windows Server 2019

VPN/Routing server

10.0.0.0/16

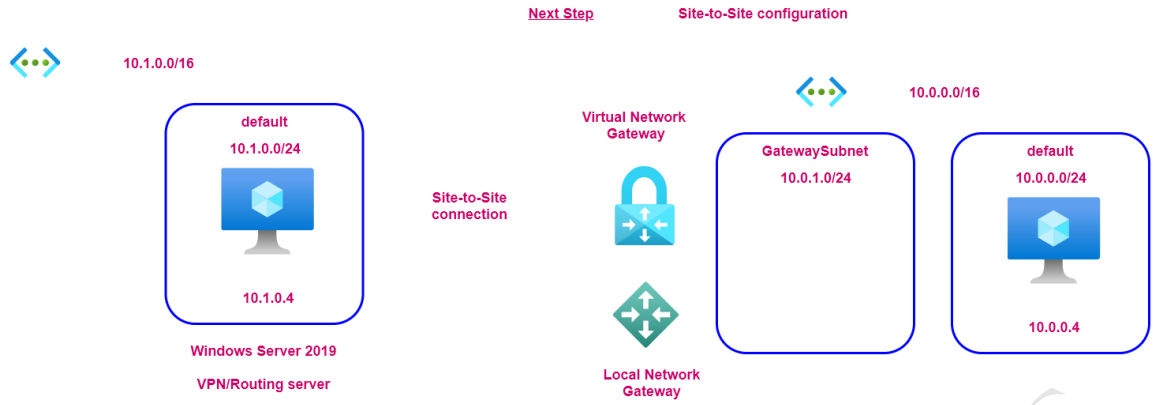
GatewaySubnet

10.0.1.0/24

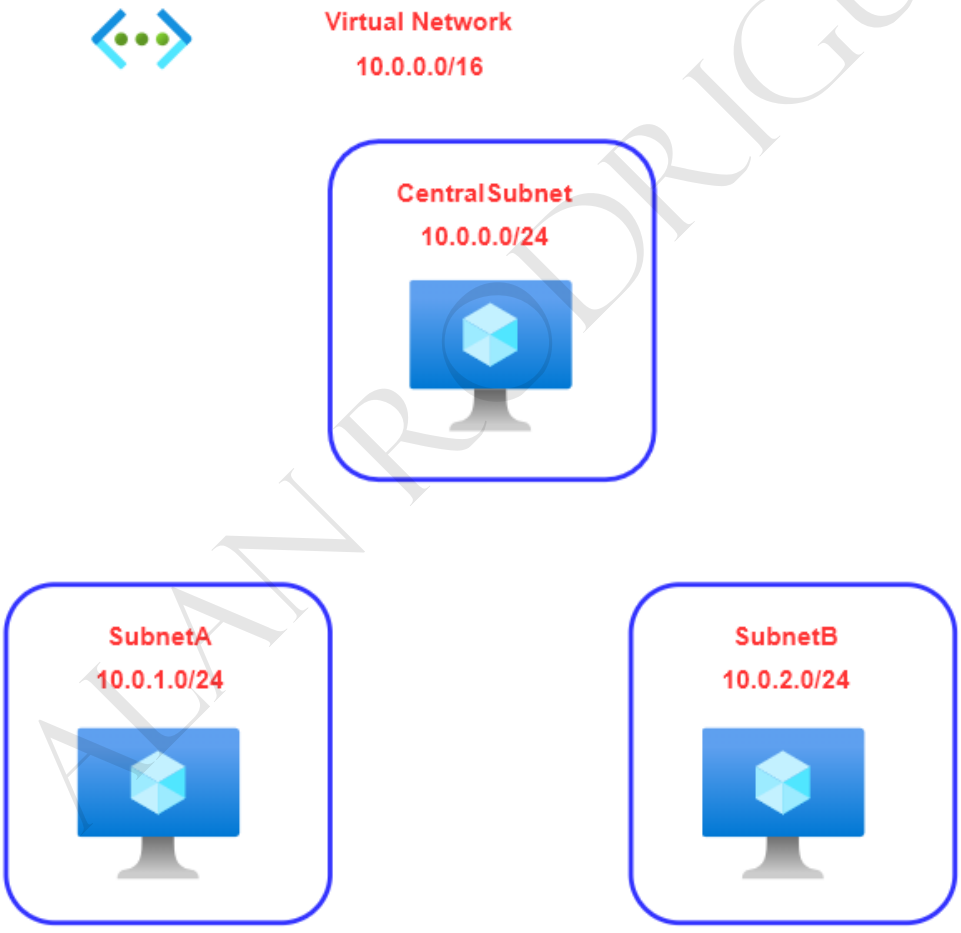
default

10.0.0.0/24

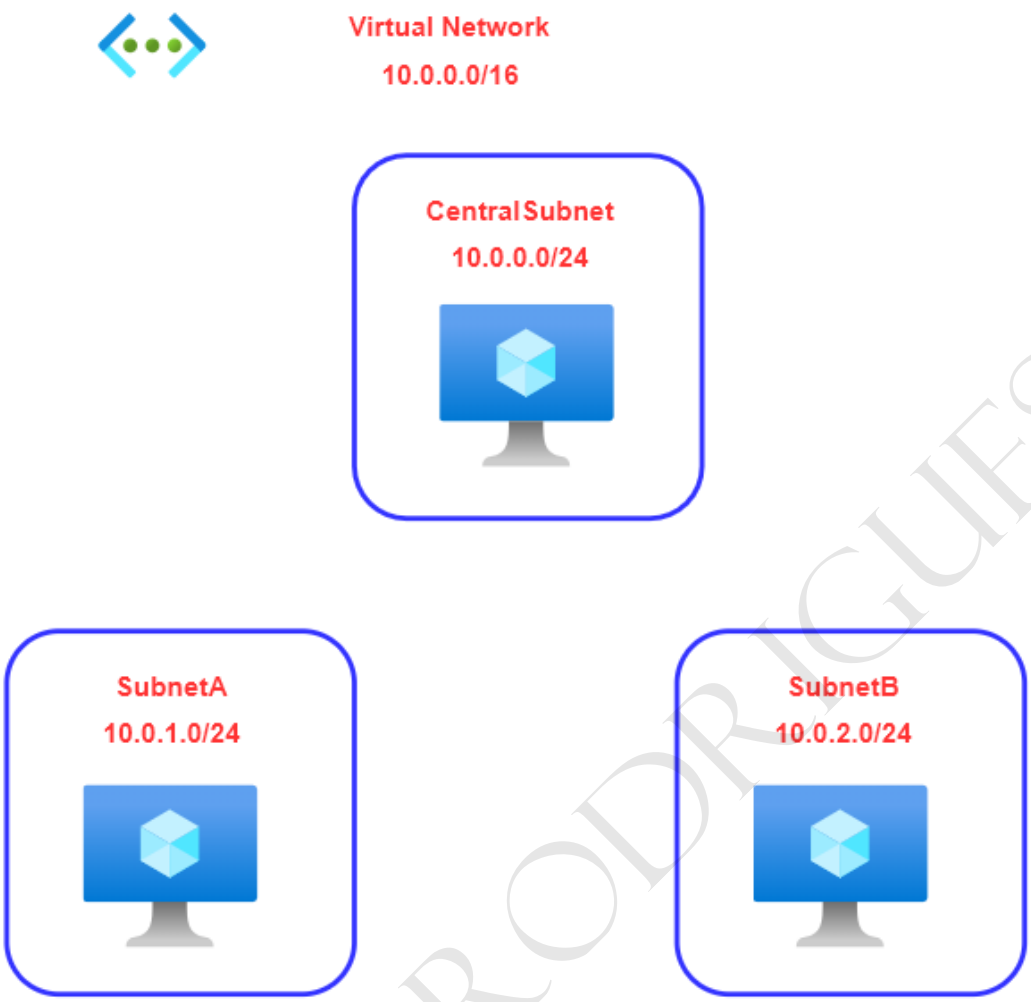
10.0.0.4



User Defined Routes



User Defined Routes - What are we going to do

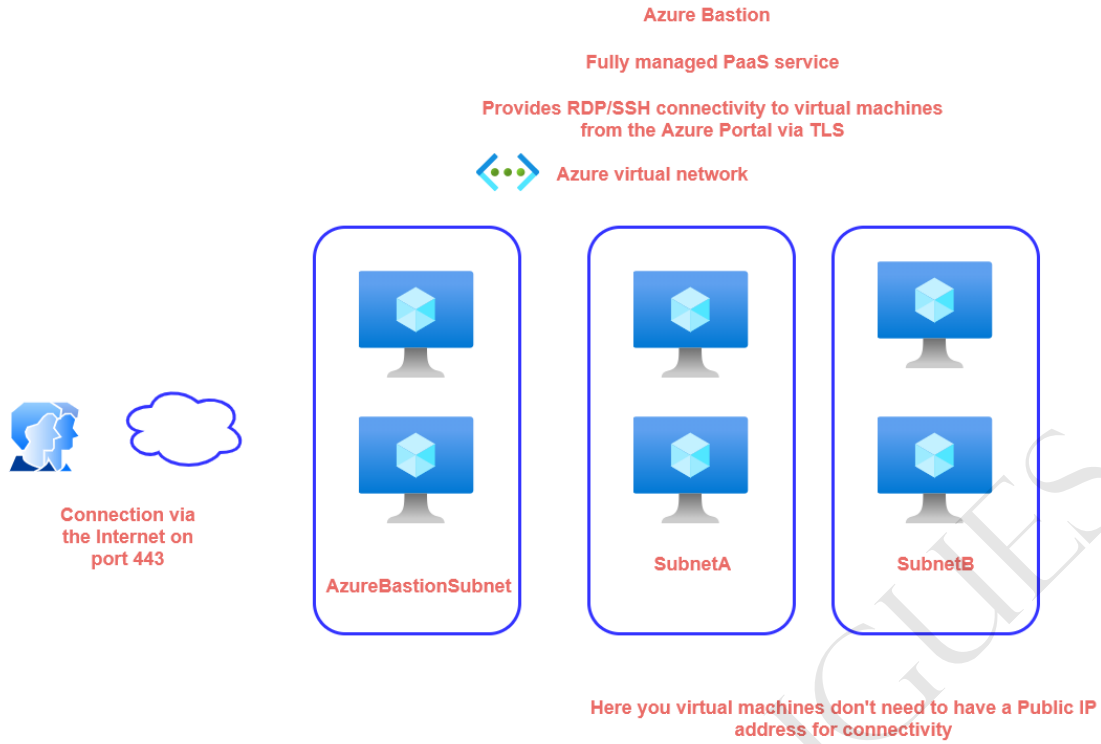


1. Create our environment

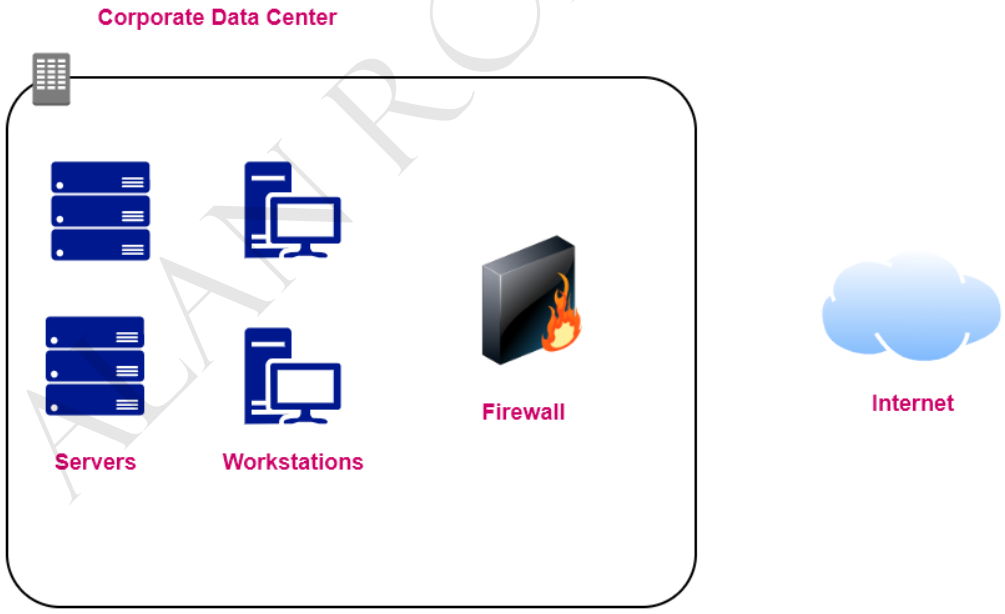
2. Create a user defined route and attach it to SubnetA and SubnetB

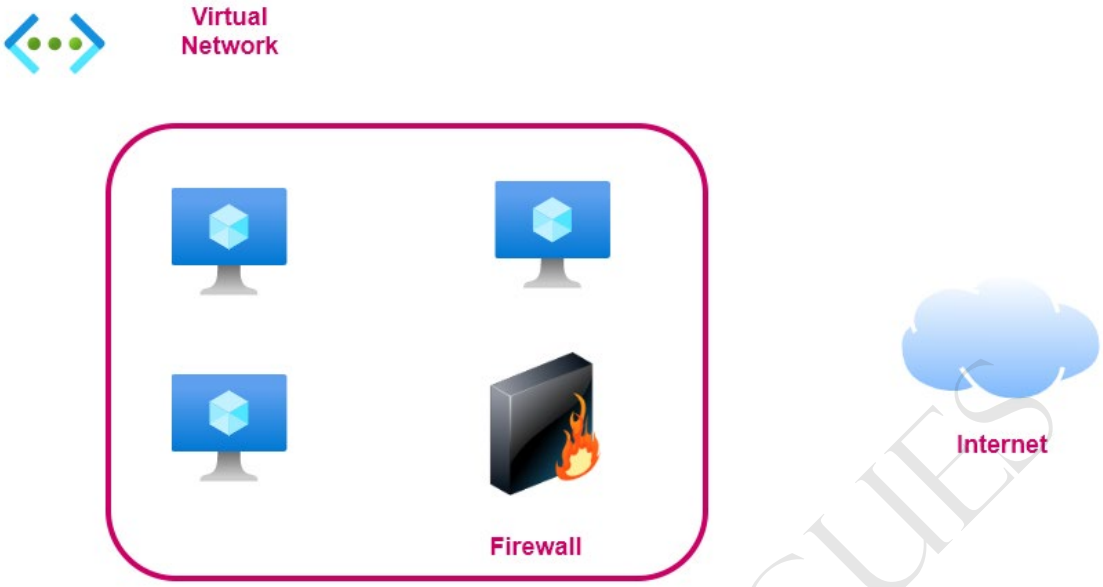
3. Enable routing on the machine in CentralSubnet

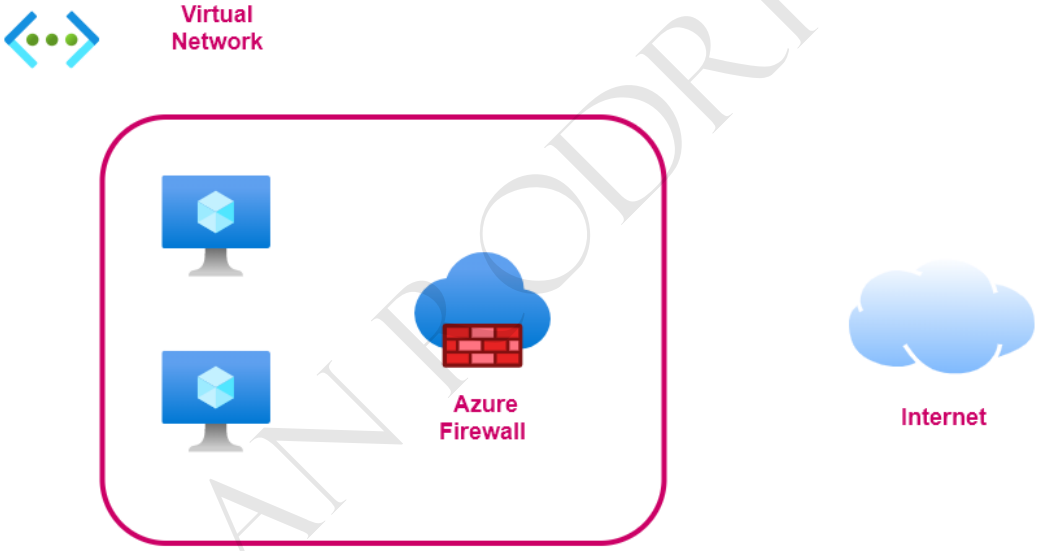
Azure Bastion Service



Azure Firewall







1. Has built-in high availability

2. Can deploy the Azure Firewall Instance across two or more Availability zones - 99.99% SLA

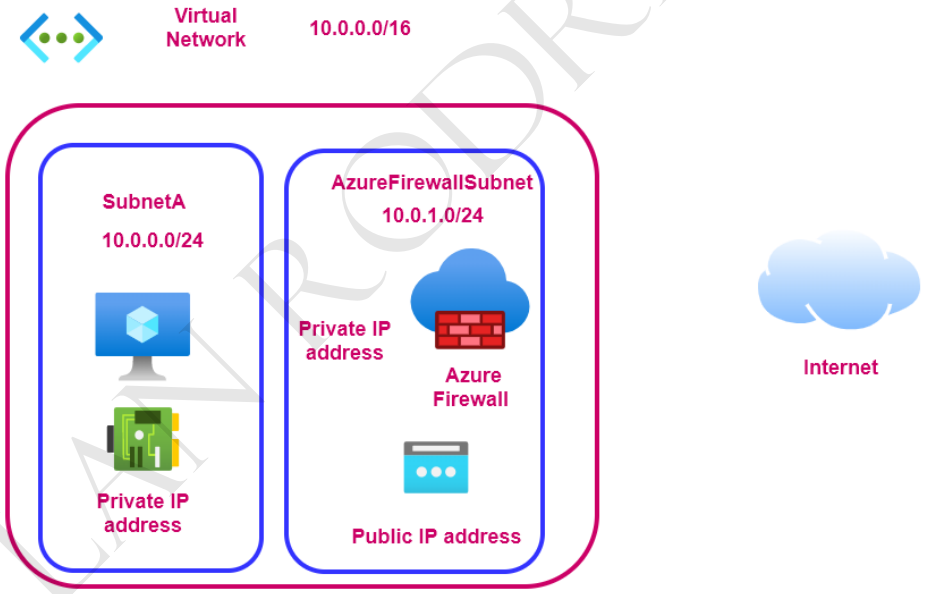
3. You can filter traffic based on fully-qualified domain names

4. You can also create network filtering rules - Based on source and destination IP address, port and protocol

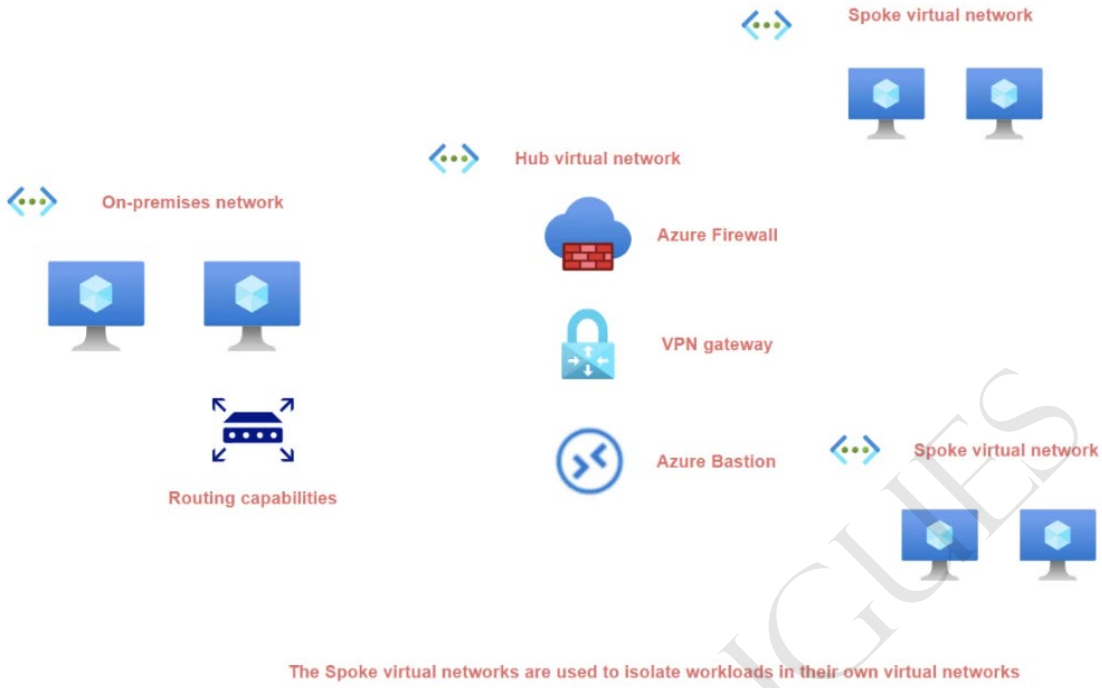
5. It is stateful in nature, so it understands what packets of data to allow

6. It has built-in Threat Intelligence - Here you can get alerts or deny traffic from/to malicious IP addresses and domains

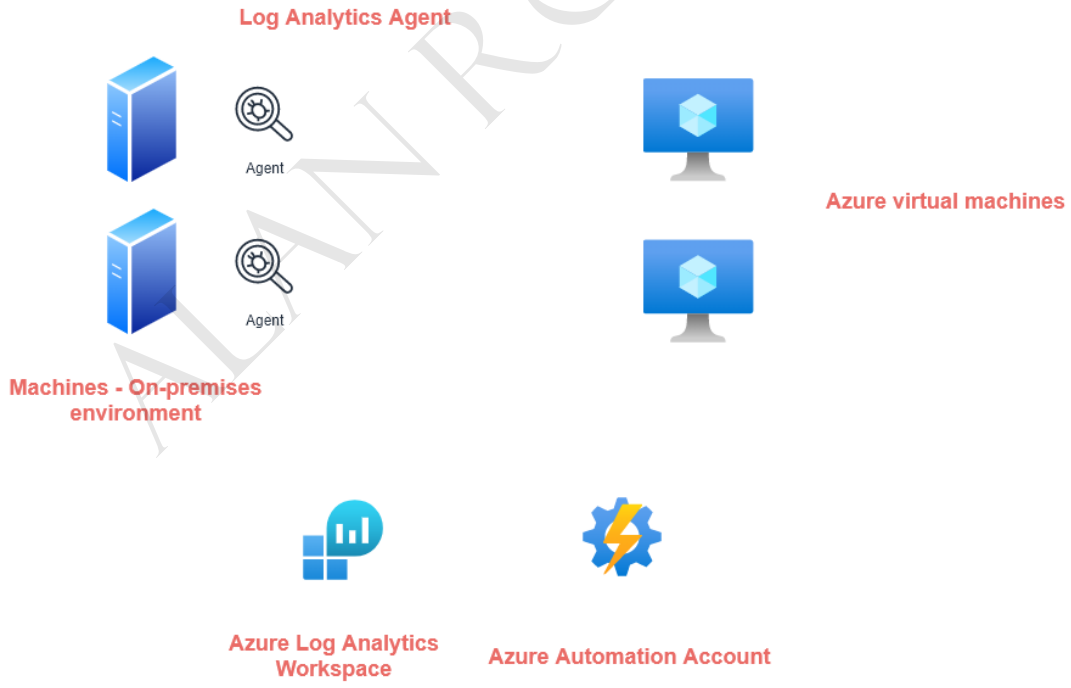
Lab - Azure Firewall – Deployment



Hub and Spoke Architecture



Update Management for Azure Virtual Machines



The need for containers

Isolation

app

app

App dependencies

Third-party libraries

app

app

App dependencies

Third-party libraries

App dependencies

Third-party libraries

Containers helps to package the application along with libraries , frameworks and dependencies that are required.

Portability

Operating System

Services

Applications

Virtual Machine

Operating System

Services

Applications

Virtual Machine

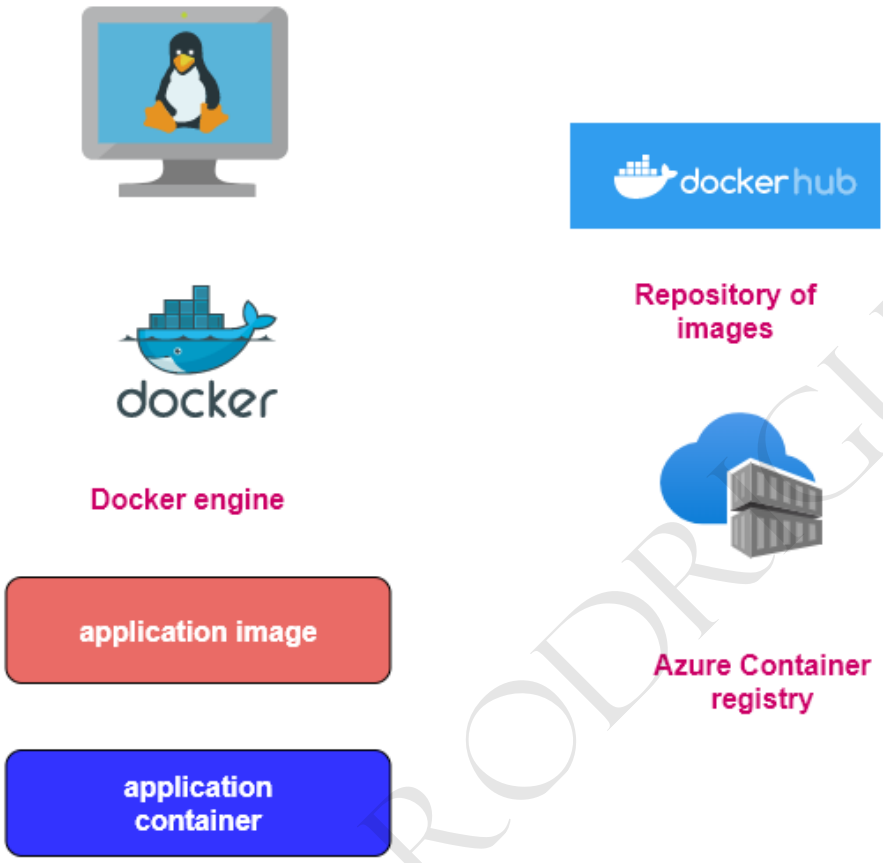
app

App dependencies

Third-party libraries

Physical server

Lab - Azure Container Registry



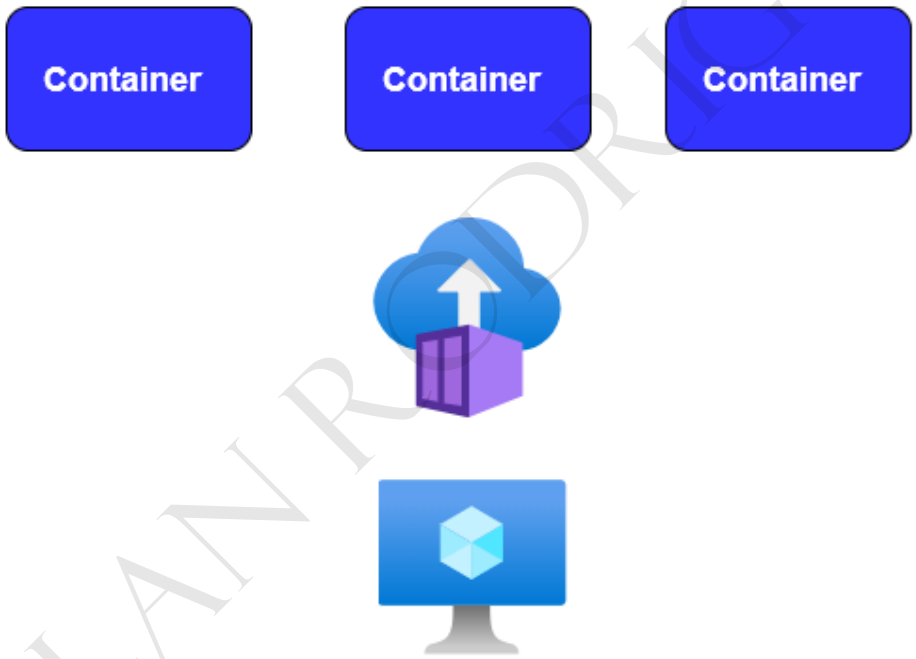
Azure Container Groups

Azure Container groups

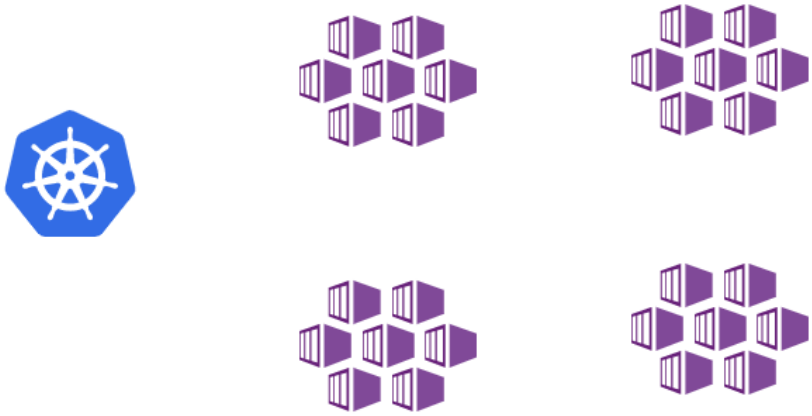
This is a collection of containers that get scheduled on the same host machine

The containers in the container group shared the lifecycle, resources, local network and storage volumes.

The deployment of the container group can be done via a Resource Manager template of a YAML file.



Kubernetes



Managing containers at scale

Azure Kubernetes - Managed service for Kubernetes on Azure

Kubernetes is used to orchestrate your containers for hosting your applications

Manage security operations

What is the Azure Monitor Service?

Azure Monitor

Metrics for Azure resources

CPU Usage
Disk Metrics
Network stats

Alerts

Activity Logs

Control Place activities

When a virtual machine is stopped

When a virtual machine is created

Log Analytics Workspace

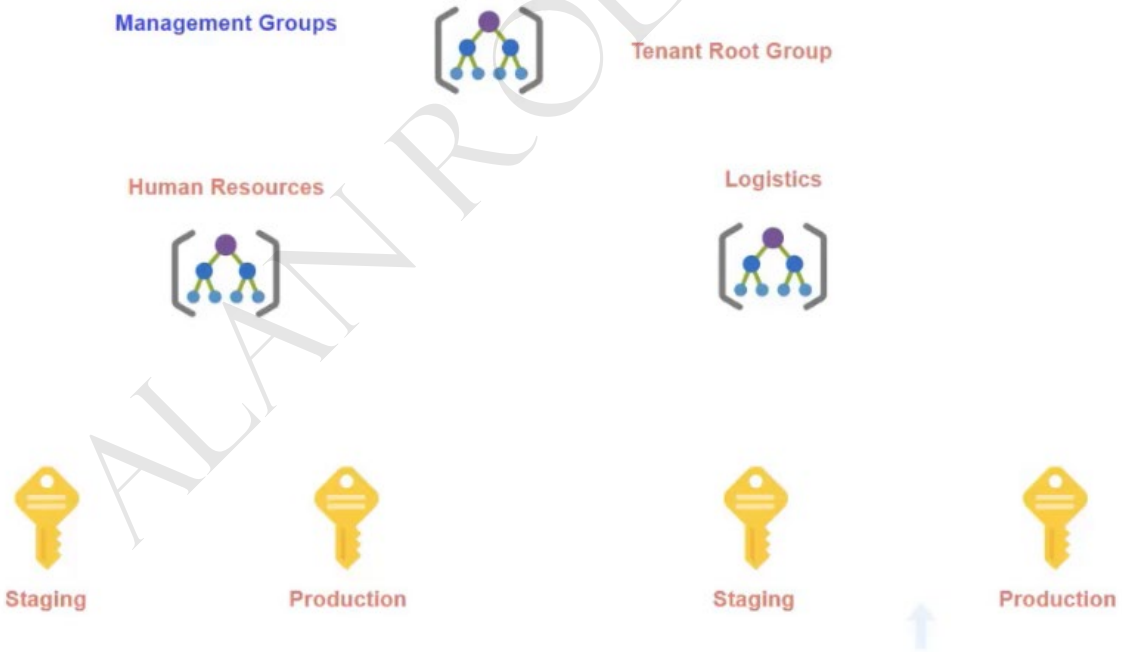
Central Solution for all of your logs

Application Insights

Performance Management system for your live applications

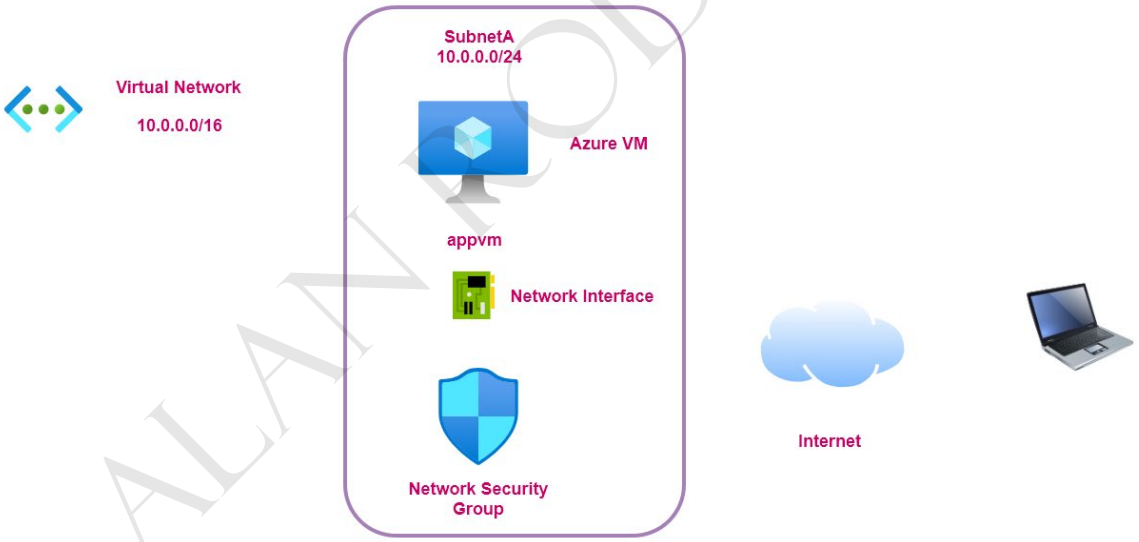
What is a Log Analytics Workspace?

Management Groups

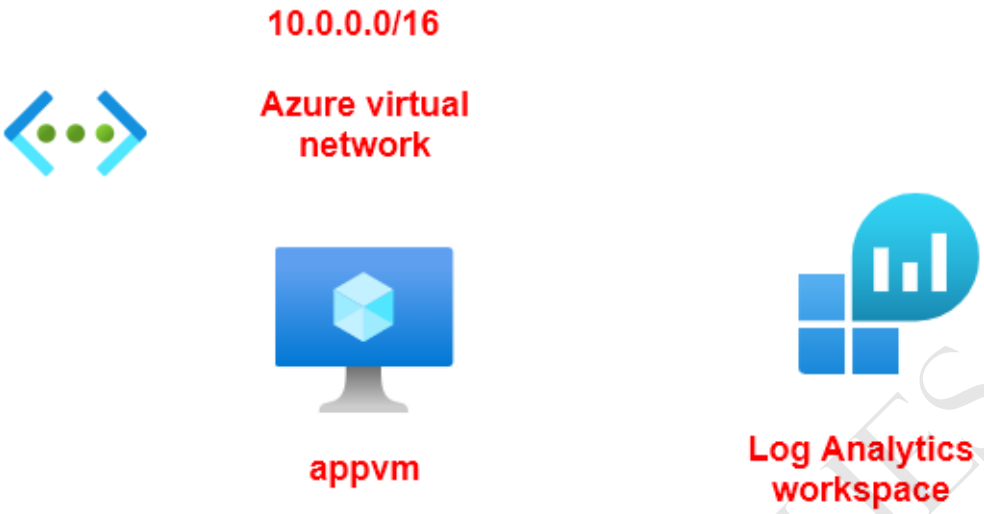


Azure Blueprints

Microsoft Defender - Just-in-Time VM Access



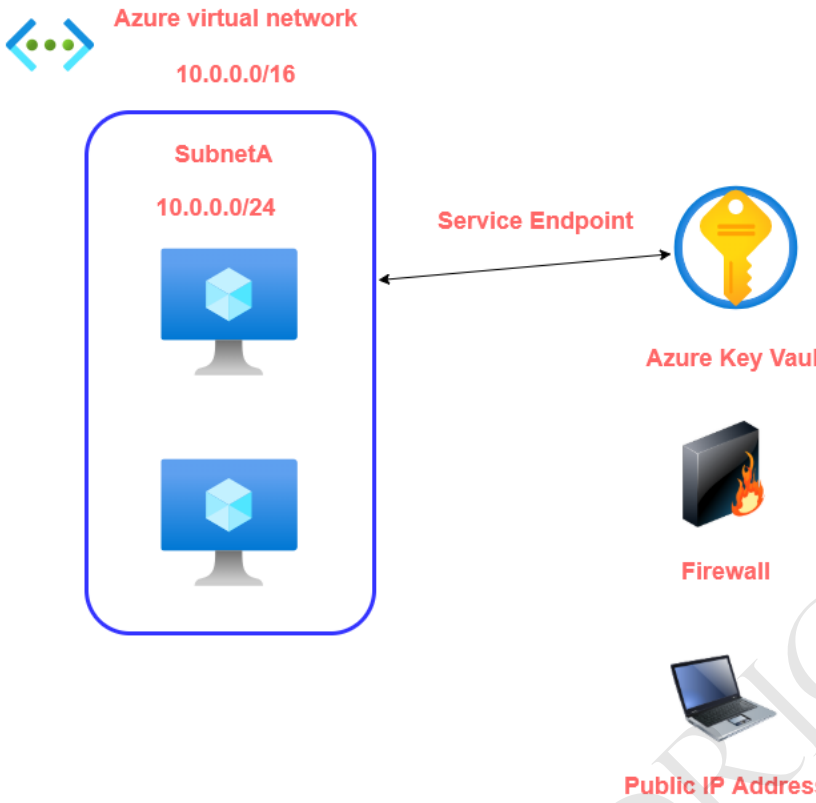
Microsoft Defender - Deploying the Log Analytics agent



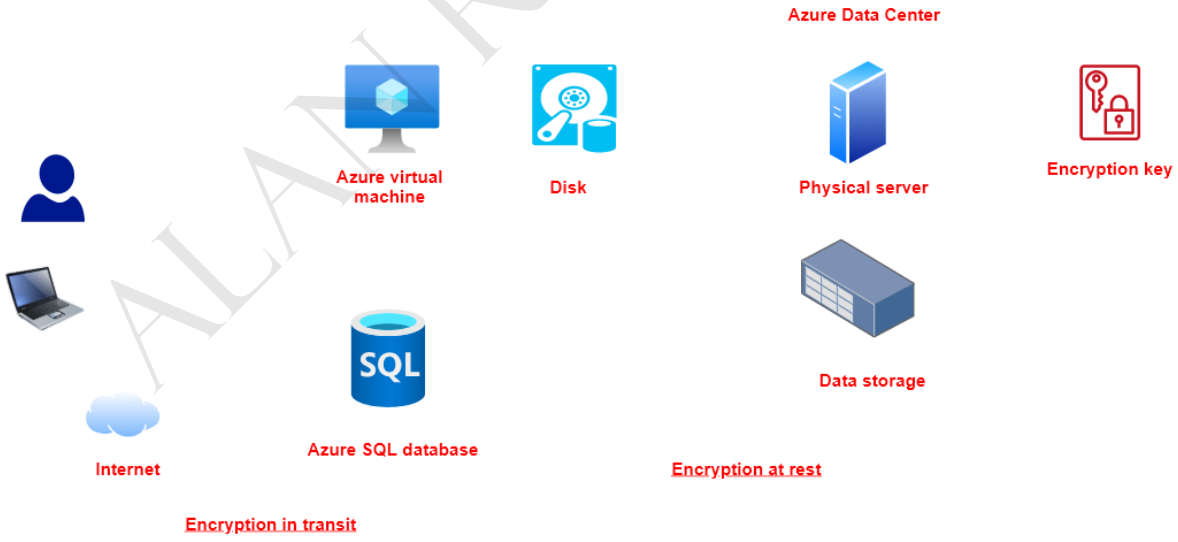
Secure data and applications

The Azure Key vault service

Service Endpoints



Encryption at rest and transit



Managed Service Identity

Clarification on service principal

Azure AD

Application Object

Service Principal

Managed Identity

Azure resources

Azure resources

Lab - Creating an Azure SQL Database

Virtual Machine

IaaS

Install Microsoft SQL Server

Configure the server

Configure high availability

Configure backups

Azure SQL database

PaaS

Here the infrastructure is managed for you

Backups are managed for you

You get built-in high availability

What are Azure Storage Accounts

Azure Storage Accounts

This provides storage on the cloud

Blob

Storing objects
Images, Videos

Table

Storing table data

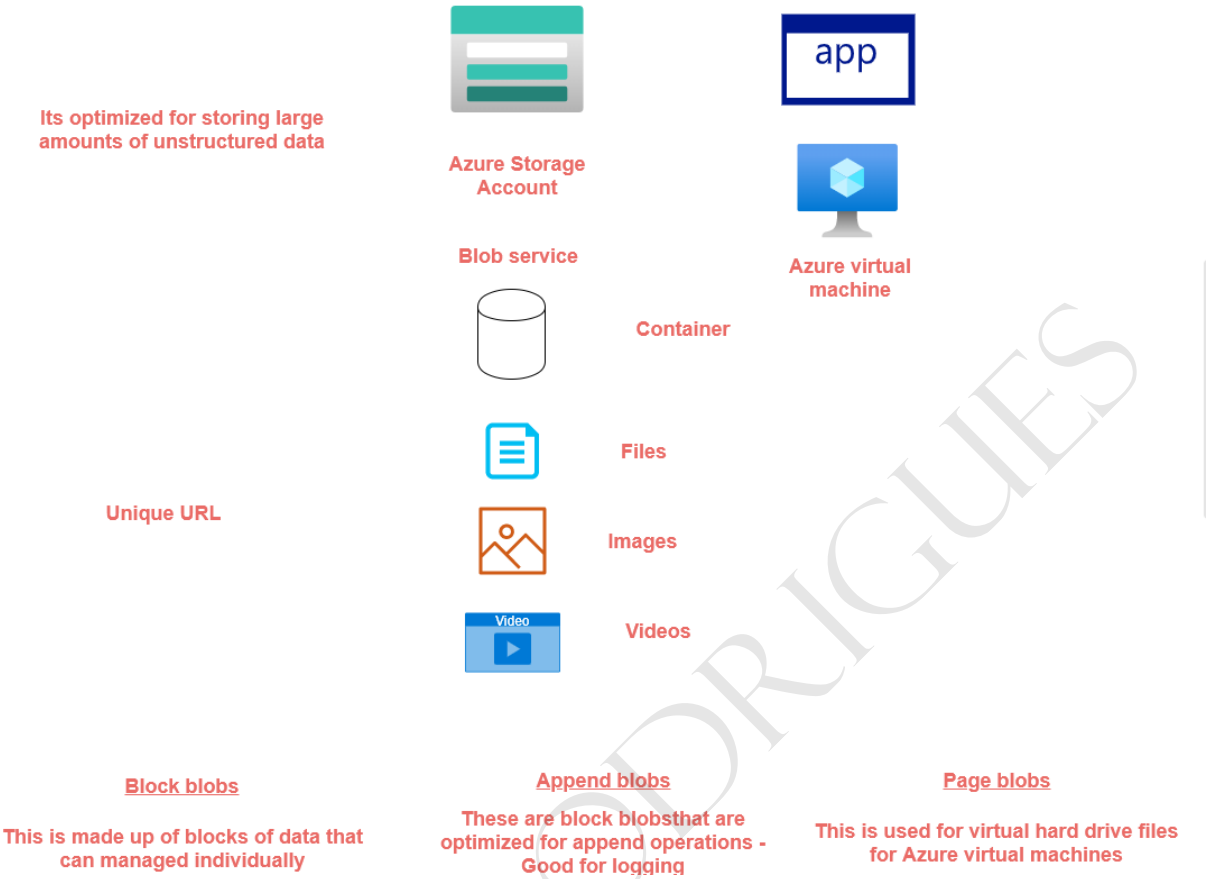
Queue

Storing queues
Used for sending and receiving messages

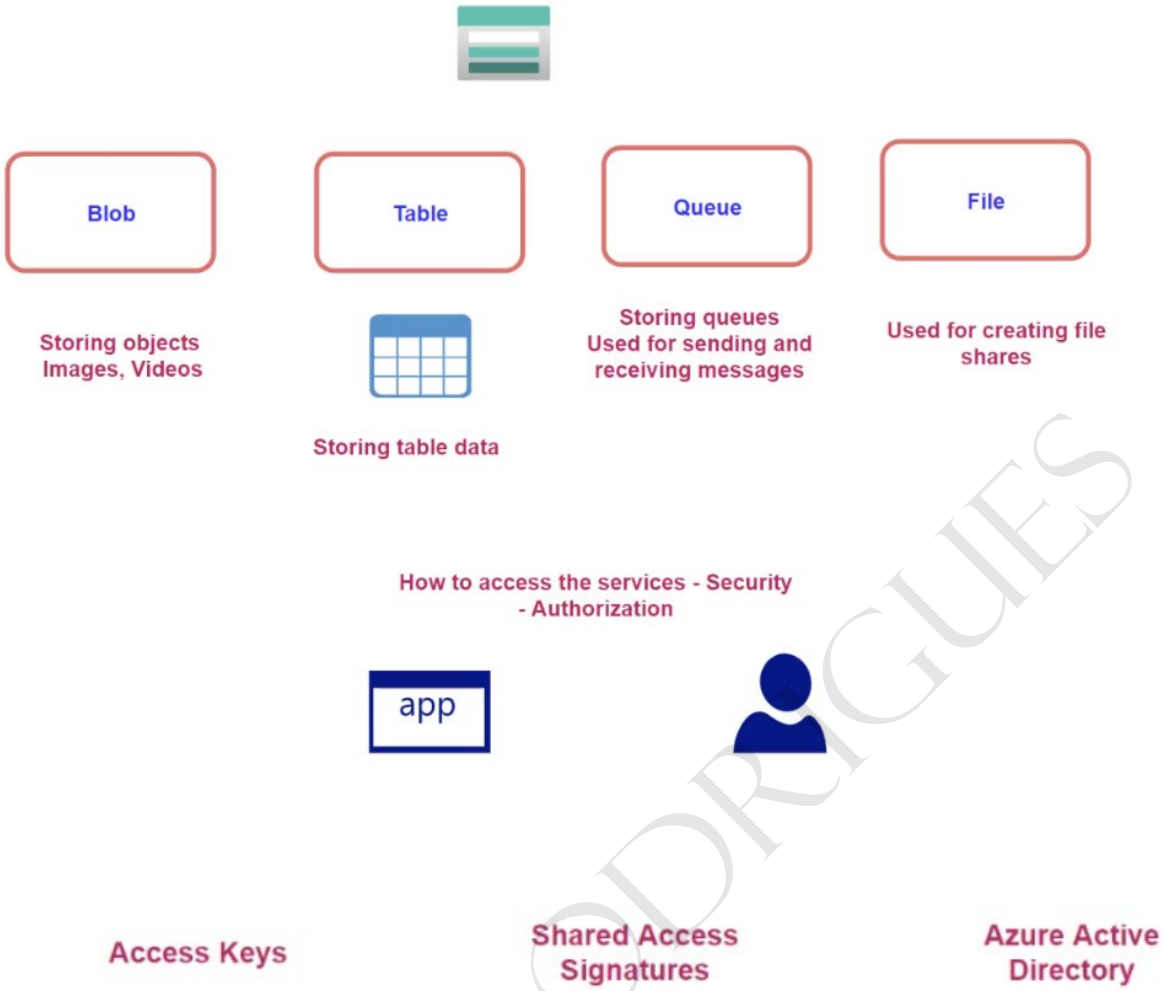
File

Used for creating file shares

Azure Blob service



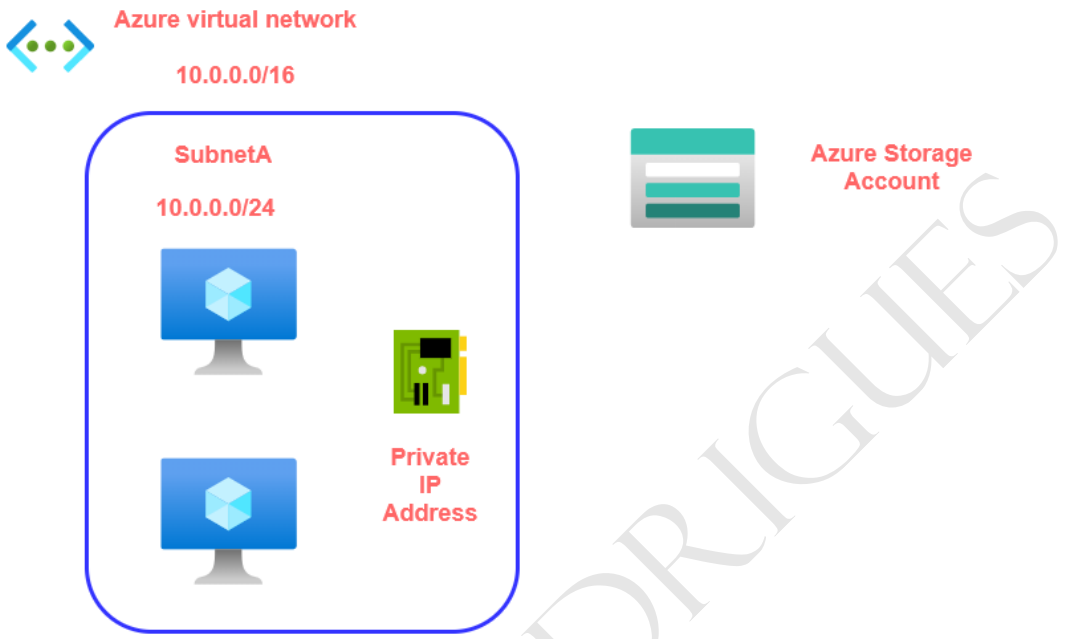
Azure Storage Accounts - Different authorization techniques



Private Endpoints

Azure Private Endpoints are powered by Azure Private Link

It allows you to connect to your PaaS services over a private endpoint in your virtual network



Note on Managed Identity for Function Apps

Azure Function App

Subscription

Resource group

Storage account

Deploying an Azure Web App

Infrastructure as a service

Azure App Service (Azure Web Apps)

Platform as a service

Virtual Machine

1. You don't have to maintain the underlying compute Infrastructure

2. It has features such as Autoscaling and security.

3. It has DevOps capabilities which includes continuous deployment