

Hypothetical Cloud Migration

Kick off

Project Review

NordBank has indicated that they wish to extend their existing data center to the cloud by migrating an internal application to cloud and NordBank are looking for how to configure the cloud platform and recommendations on the target infrastructure for the application.

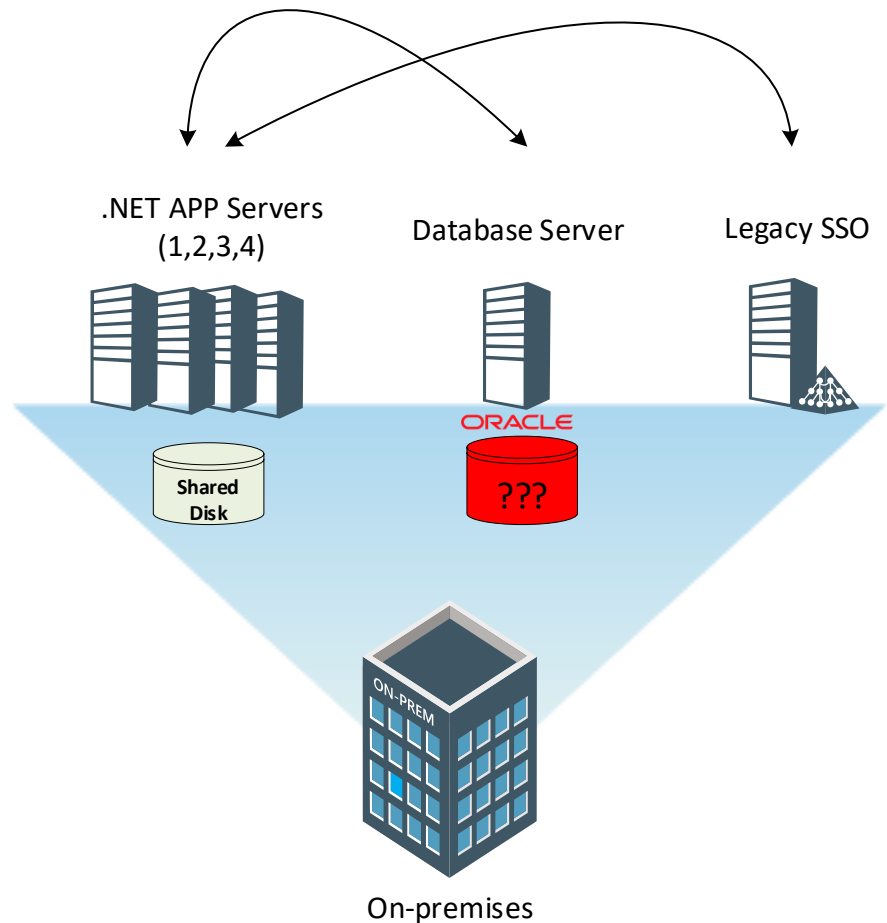
GOALS



NordBank has the following goals with this project:

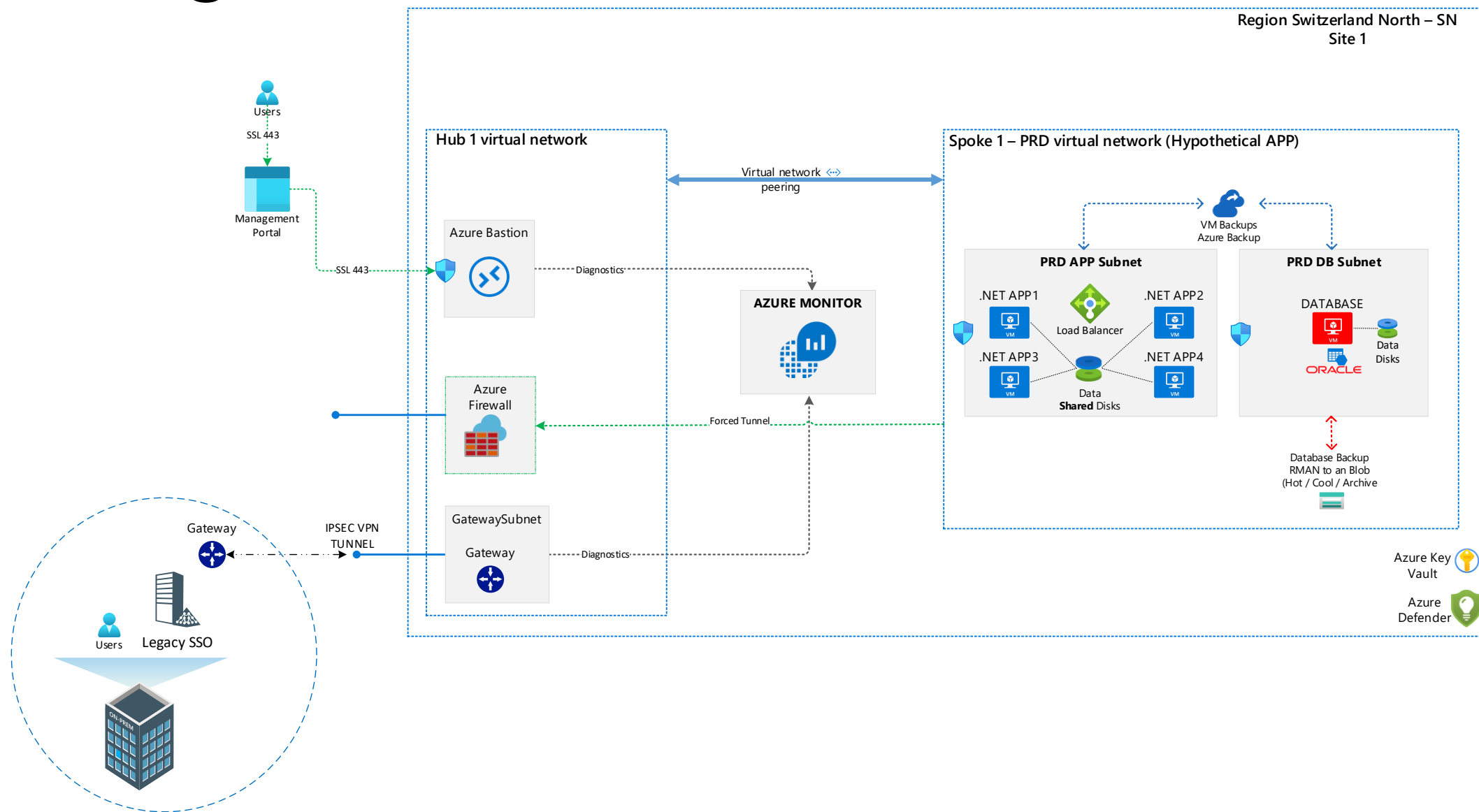
- Ensure the security of the application, as well as compliance with the law.
- Reduce costs
- RTO (one business day)
- The application will need to be accessible from the datacenter

Current Environment

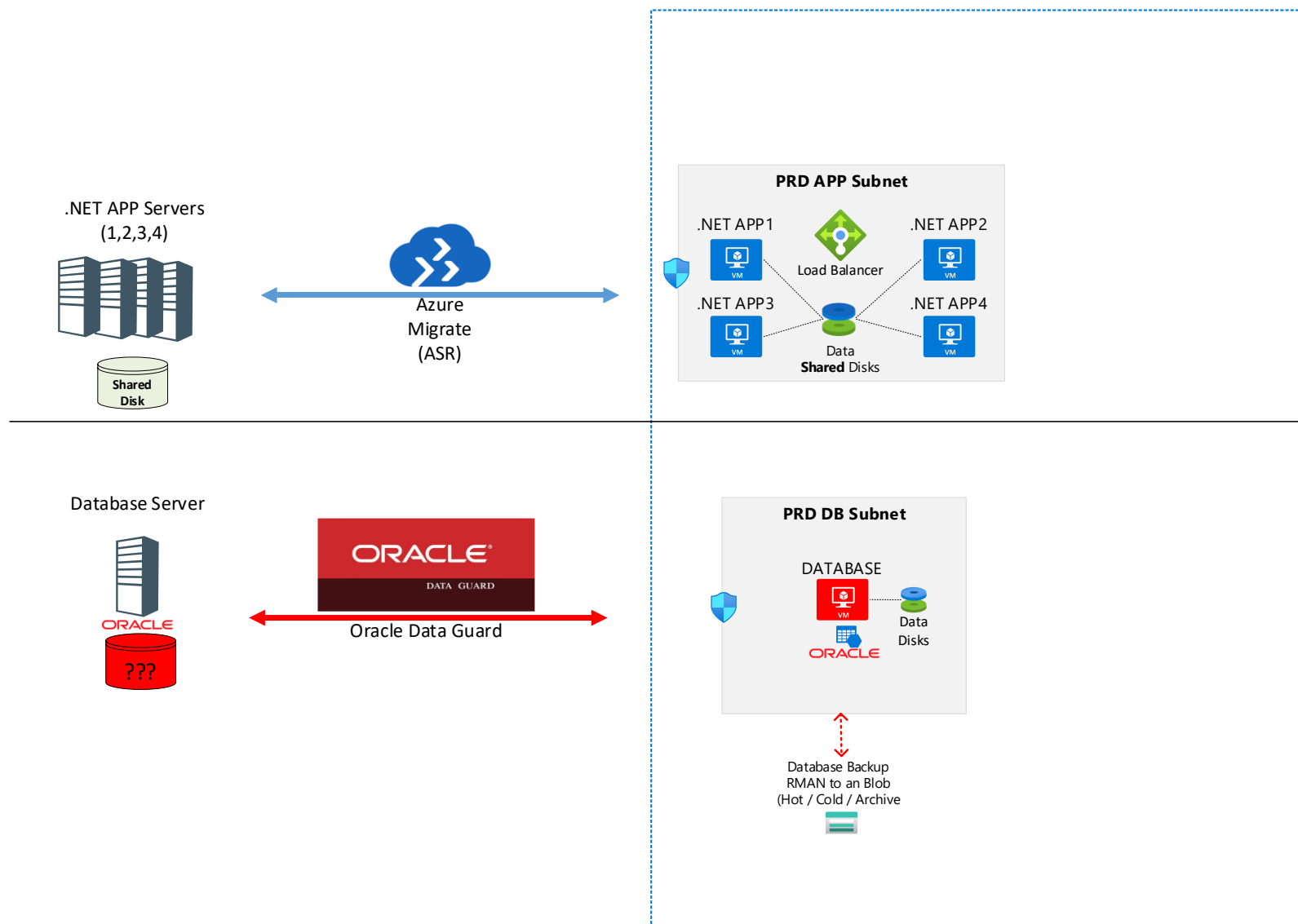


- 4 servers, each with 4 CPU and 16 Gb of RAM
- .NET application (Client/Server)
- The application uses a database containing personal data from the bank's private customers: Oracle, 64Gb of RAM
- The servers use a shared disk system with a total of 4 Tb allocated for the servers
- The application use a legacy SSO solution

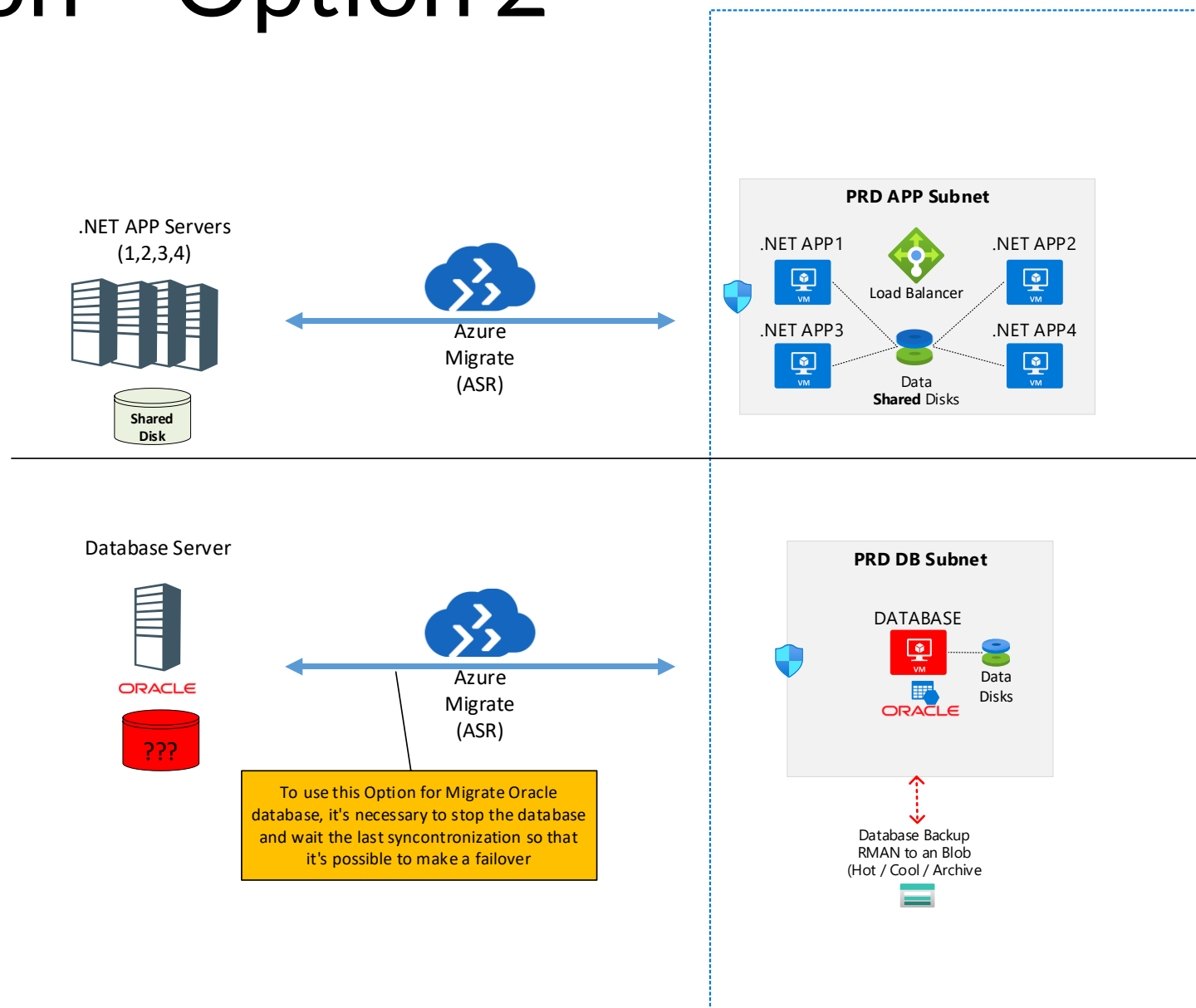
Design Solution



Migration – Option 1



Migration – Option 2



Core Technologies Solution

- **HUB SPOKE Topology:** The hub virtual network acts as a central point of connectivity to many spoke virtual networks. The hub can also be used as the connectivity point to your on-premises networks. The spoke virtual networks peer with the hub and can be used to isolate workloads.
- **Azure Firewall:** Azure Firewall is a managed, cloud-based network security service that protects your Azure Virtual Network resources. It's a fully stateful firewall as a service with built-in high availability and unrestricted cloud scalability.
- **Azure Policy:** Azure Policy helps to enforce organizational standards and to assess compliance at-scale. Through its compliance dashboard, it provides an aggregated view to evaluate the overall state of the environment, with the ability to drill down to the per-resource, per-policy granularity.
- **Azure Security Center:** Azure Security Center is a unified infrastructure security management system that strengthens the security posture of your data centers, and provides advanced threat protection across your hybrid workloads in the cloud - whether they're in Azure or not - as well as on premises.

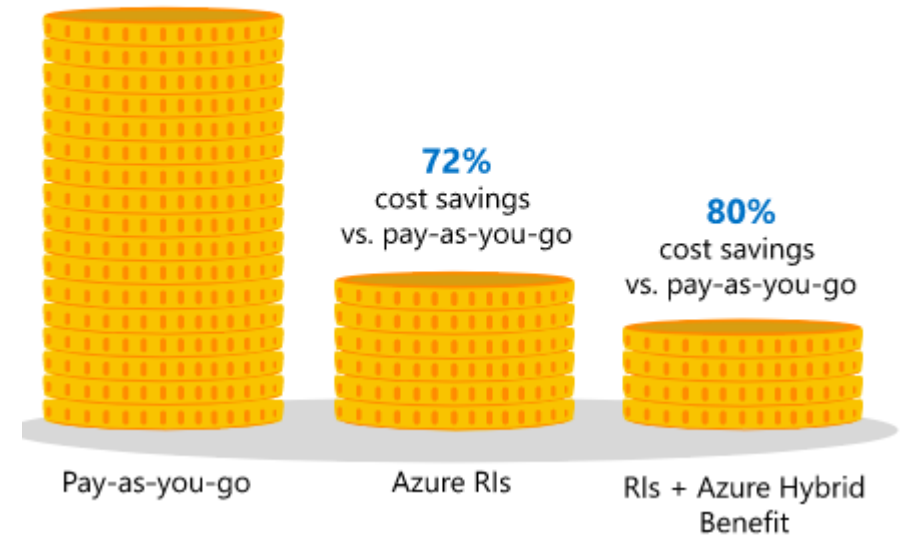
Requirements

- communication ports of the application with clients
- communication ports of the application with the Database
- communication ports with legacy SSO
- at least 15mbps link recommended
- day for CUTOVER
- before migration, local backup must be guaranteed
- stakeholders should be notified
- it must be checked if the application points to an DNS and not IP Address
- Definition of a regulated security compliance

Save costs

- Oracle bring your own license azure
<https://www.oracle.com/assets/cloud-licensing-070579.pdf>
- Azure Hybrid Benefit
<https://azure.microsoft.com/en-us/pricing/hybrid-benefit/>
- Azure Reserved Virtual Machine Instances
<https://azure.microsoft.com/en-us/pricing/reserved-vm-instances/>

Save up to **80%** with RIs and Azure Hybrid Benefit



NordBank - PYG Scenario

- **Total €3,131.27**

Service type	Custom name	Region	Description	Estimated monthly cost
Virtual Machines	APP Servers	Switzerland North	4 D4s v4 (4 vCPUs, 16 GB RAM) x 730 Hours; Windows – (OS Only); Pay as you go; 1 managed disk – S6, 100 transaction units; Inter Region transfer type, 5 GB outbound data transfer from Switzerland North to East Asia	€1,165.36
Storage Accounts	Shared DATA Disk	Switzerland North	Managed Disks, Premium SSD, LRS Redundancy, P50 Disk Type 1 Disks; Pay as you go	€551.62
Virtual Machines	Database Server	Switzerland North	1 E8s v4 (8 vCPUs, 64 GB RAM) x 730 Hours; Linux – CentOS; Pay as you go; 1 managed disk – P4; Inter Region transfer type, 5 GB outbound data transfer from Switzerland North to East Asia	€471.28
Storage Accounts	DB - DATA Disk	Switzerland North	Managed Disks, Premium SSD, LRS Redundancy, P10 Disk Type 1 Disks; Pay as you go	€21.94
Azure Firewall		Switzerland North	Standard tier, 1 Logical firewall units x 730 Hours, 500 GB Data processed	€776.26
Azure Defender		Switzerland North	5 VM nodes x 730 Hours, 0 App Service nodes x 730 Hours, 0 SQL Database servers x 730 Hours, 0 Storage transactions, 0 IoT Devices, 0 IoT Message transactions, 0 Kubernetes vCores x 730 Hours, 0 Azure Container Registry images, 0 Key Vault transactions	€61.56
Azure Monitor	Log Analytics - 6 Months Retention	Switzerland North	5 VMs monitored, 2 GB average log size, 180 additional days of data retention	€23.02
VPN Gateway		Switzerland North	VPN Gateways, Basic VPN tier, 730 gateway hours, 10 S2S tunnels, 128 P2S tunnels, 500 GB, VPN outbound VPN gateway type	€55.56
IP Addresses	Public IP For VPN	Switzerland North	1 Dynamic IP Addresses, 0 Static IP Addresses	€2.46
IP Addresses	Public IP For Azure Firewall	Switzerland North	0 Dynamic IP Addresses, 1 Static IP Addresses	€2.22

NordBank – PYG + Half Scenario

- **Total €2,455.74**

Service type	Custom name	Region	Description	Estimated monthly cost
Virtual Machines	APP Servers - Full Time	Switzerland North	2 D4s v4 (4 vCPUs, 16 GB RAM) x 730 Hours; Windows – (OS Only); Pay as you go; 1 managed disk – S6, 100 transaction units; Inter Region transfer type, 5 GB outbound data transfer from Switzerland North to East Asia	€584.22
Virtual Machines	APP Servers - Half Time	Switzerland North	2 D4s v4 (4 vCPUs, 16 GB RAM) x 240 Hours; Windows – (OS Only); Pay as you go; 1 managed disk – S6, 100 transaction units; Inter Region transfer type, 5 GB outbound data transfer from Switzerland North to East Asia	€194.14
Storage Accounts	Shared DATA Disk	Switzerland North	Managed Disks, Premium SSD, LRS Redundancy, P50 Disk Type 1 Disks; Pay as you go	€551.62
Virtual Machines	Database Server	Switzerland North	1 E8s v4 (8 vCPUs, 64 GB RAM); Linux – CentOS; 3 year reserved; 1 managed disk – P4; Inter Region transfer type, 5 GB outbound data transfer from Switzerland North to East Asia	€182.74
Storage Accounts	DB - DATA Disk	Switzerland North	Managed Disks, Premium SSD, LRS Redundancy, P10 Disk Type 1 Disks; Pay as you go	€21.94
Azure Firewall		Switzerland North	Standard tier, 1 Logical firewall units x 730 Hours, 500 GB Data processed	€776.26
Azure Defender		Switzerland North	5 VM nodes x 730 Hours, 0 App Service nodes x 730 Hours, 0 SQL Database servers x 730 Hours, 0 Storage transactions, 0 IoT Devices, 0 IoT Message transactions, 0 Kubernetes vCores x 730 Hours, 0 Azure Container Registry images, 0 Key Vault transactions	€61.56
Azure Monitor	Log Analytics - 6 Months Retention	Switzerland North	5 VMs monitored, 2 GB average log size, 180 additional days of data retention	€23.02
VPN Gateway		Switzerland North	VPN Gateways, Basic VPN tier, 730 gateway hours, 10 S2S tunnels, 128 P2S tunnels, 500 GB, VPN outbound VPN gateway type	€55.56
IP Addresses	Public IP For VPN	Switzerland North	1 Dynamic IP Addresses, 0 Static IP Addresses	€2.46
IP Addresses	Public IP For Azure Firewall	Switzerland North	0 Dynamic IP Addresses, 1 Static IP Addresses	€2.22

NordBank – RI3Y + AHUB Scenario

• **Total €1,949.95**

Service type	Custom name	Region	Description	Estimated monthly cost
Virtual Machines	APP Servers	Switzerland North	4 D4s v4 (4 vCPUs, 16 GB RAM); AHB for Windows Server – (OS Only); 3 year reserved; 1 managed disk – S6, 100 transaction units; Inter Region transfer type, 5 GB outbound data transfer from Switzerland North to East Asia	€272.58
Storage Accounts	Shared DATA Disk	Switzerland North	Managed Disks, Premium SSD, LRS Redundancy, P50 Disk Type 1 Disks; Pay as you go	€551.62
Virtual Machines	Database Server	Switzerland North	1 E8s v4 (8 vCPUs, 64 GB RAM); Linux – CentOS; 3 year reserved; 1 managed disk – P4; Inter Region transfer type, 5 GB outbound data transfer from Switzerland North to East Asia	€182.74
Storage Accounts	DB - DATA Disk	Switzerland North	Managed Disks, Premium SSD, LRS Redundancy, P10 Disk Type 1 Disks; Pay as you go	€21.94
Azure Firewall		Switzerland North	Standard tier, 1 Logical firewall units x 730 Hours, 500 GB Data processed	€776.26
Azure Defender		Switzerland North	5 VM nodes x 730 Hours, 0 App Service nodes x 730 Hours, 0 SQL Database servers x 730 Hours, 0 Storage transactions, 0 IoT Devices, 0 IoT Message transactions, 0 Kubernetes vCores x 730 Hours, 0 Azure Container Registry images, 0 Key Vault transactions	€61.56
Azure Monitor	Log Analytics - 6 Months Retention	Switzerland North	5 VMs monitored, 2 GB average log size, 180 additional days of data retention	€23.02
VPN Gateway		Switzerland North	VPN Gateways, Basic VPN tier, 730 gateway hours, 10 S2S tunnels, 128 P2S tunnels, 500 GB, VPN outbound VPN gateway type	€55.56
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IP Addresses	Public IP For Azure Firewall	Switzerland North	0 Dynamic IP Addresses, 1 Static IP Addresses	€2.22

Roles



Project Leader

Bruno Kieling
NordCloud



Cloud Engineer

Bruno Silva
NordCloud



System Administrator

Clairo Dornes
NordBank



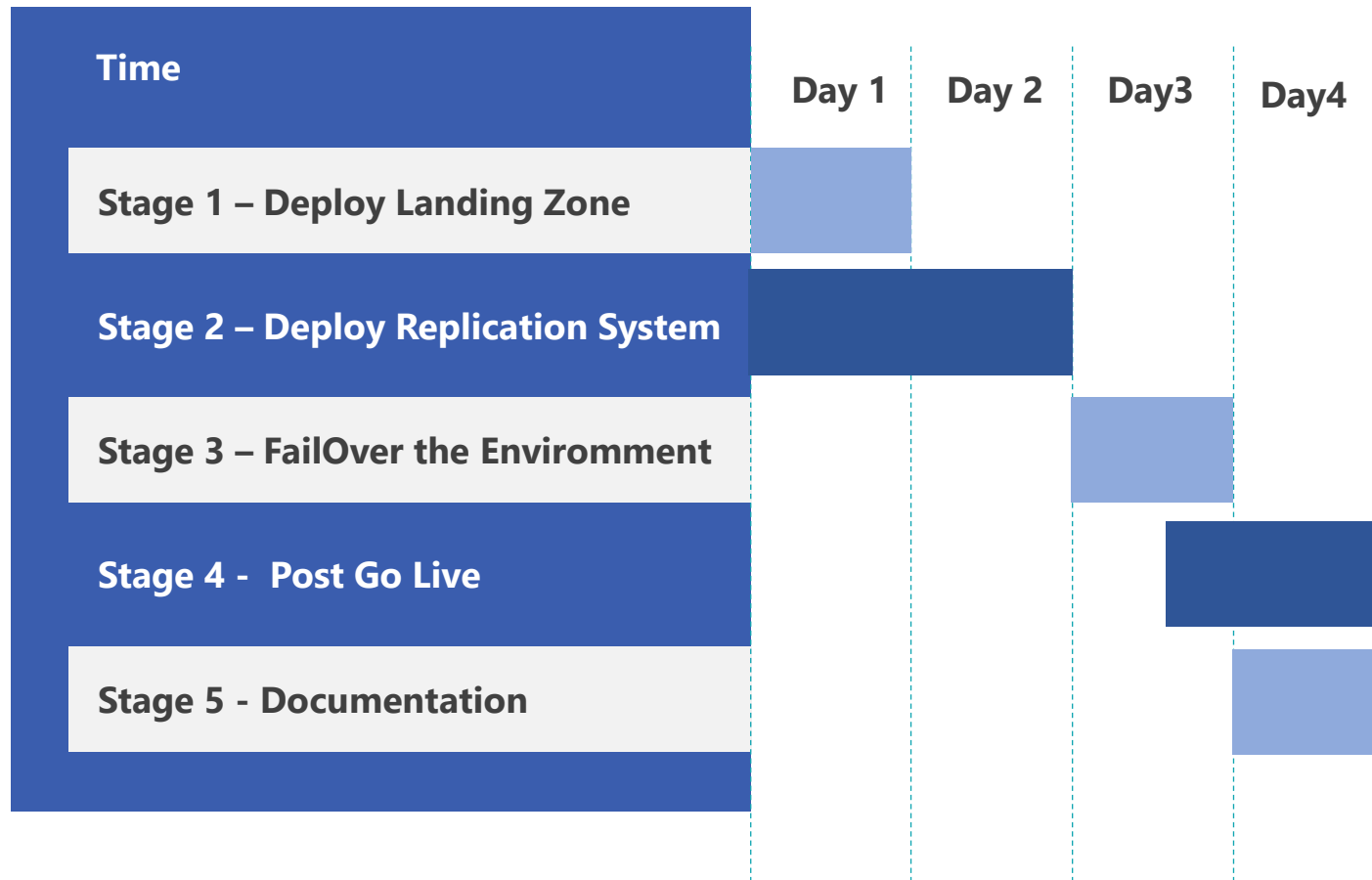
Sponsor

Deivid Soares
NordBank

Responsibility assignment

RACI	Bruno Kieling	Bruno Silva	Clairo Dornes	Deivid Soares
Stage 1 – Deploy Landing Zone	I	R	I	-
Stage 2 – Deploy Replication System	I	R	I	-
Stage 3 – FailOver the Enviromment	IA	R	R	IA
Stage 4 - Post Go Live	CI	R	R	-
Stage 5 - Documentation	R	R	CA	IA

PROJECT TIMELINE



THANK YOU