

**Application – {Name}**

**Detailed Design**

|  |
| --- |
| **Prepared** **for**: {Client Name} |

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# REVISION HISTORY

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| --- | --- | --- | --- |
| **Version** | **Author(s)** | **Comments** | **Date** |
|  |  |  |  |
|  |  |  |  |
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# INTRODUCTION

Overview

## Purpose

## Scope

# APPLICATION OVERVIEW

The table below provides an overview of the application being migrated:

|  |  |
| --- | --- |
| Information | Details |
| Application Name |  |
| Purpose |  |
| Migration Complexity |  |
| Migration Approach |  |
| Number of Production Environments |  |
| Number of Production VMs |  |
| Number of Non-Production Environments |  |
| Number of Non-Production VMs |  |

*Table 1 – Application Overview*

# REQUIREMENTS

## Requirements

|  |  |
| --- | --- |
| Ref | Azure Design Requirements |
| R01 |  |
| R02 |  |
| R03 |  |
| R04 |  |
| R05 |  |
| R06 |  |
| R07 |  |

## Decisions

|  |  |
| --- | --- |
| **Ref** | **Decision** |
| **D01** |  |
| **D02** |  |

## Assumptions

|  |  |
| --- | --- |
| Ref | Assumption |
| A01 |  |

## Risks

|  |  |
| --- | --- |
| Ref | Assumption |
| Ri01 |  |

# PROPOSED SOLUTION

## Application Landing Zone Overview

*Figure 1 - Application Azure Landing Zone*

## Proposed Architecture Diagram

Figure 2 - Application landing zone overview

# DETAILED SPECIFICATIONS

Naming Conventions

**Environment ID**

The Environment ID inherits the cloud provider code, and has a sequential number added to it.

|  |  |  |  |
| --- | --- | --- | --- |
| Provider | Environment | Subscription Name | Environment ID |
| ` |  |  |  |

*Table 3 – Naming Taxonomy – Environment ID Table*

**Naming Construction**

|  |  |  |
| --- | --- | --- |
| Part | Character Count | Description |
| Resource Type |  |  |
| Environment ID |  |  |
| Product ID |  |  |
| Environment Type ID |  |  |
| Product Instance ID |  |  |
| Resource Instance ID |  |  |

*Table 4 – Naming Taxonomy – Naming Construct Table*

*Figure 3 – Example Showing Naming Convention Topology*

## Resource Tagging

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # | Tags | Description | Mandatory at Build | Values |
| 1 | *Project Name* |  |  |  |
| 2 | *Owner* |  |  |  |
| 3 | *Env* |  |  |  |
| 4 | *Approver* |  |  |  |
| 5 | *Project Code* |  |  |  |
| 6 | *BudgetApproval* |  |  |  |
| 7 | *StartDate* |  |  |  |
| 8 | *EndDate* |  |  |  |
| 9 | *DR* |  |  |  |
| 10 | *ServiceClass* |  |  |  |
| 11 | *DataSensitivity* |  |  |  |
| 12 | *Criticality* |  |  |  |

*Figure 5 – Resource Tagging Table*

Regions and Locations

|  |  |  |  |
| --- | --- | --- | --- |
| Region | Location | Availability Zones | DR Capabilities |
|  |  |  |  |
|  |  |  |  |

*Table 9 – Azure Regions Table*

Subscriptions

Application workloads will get dedicated subscriptions per application and per environment (for example, Development, UAT and Production). This allows for both workload and environmental specific role-based access control, policy and compliance to be applied at the subscription level.

The following new subscriptions will be deployed for the production environment:

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Type | Resources Deployed | Management Group |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

Figure 10 – Subscription Configuration

Resource Groups

All Azure resources are created within resource groups inside subscriptions which act as an identity boundary and allow fine grained role-based access control to be applied at the resource or resource group level.

The general guidance is to apply resource groups to resources that constitute an application life cycle.

The table below provides the specification of the new Azure Resource Groups to be deployed.

|  |  |  |  |
| --- | --- | --- | --- |
| Azure Resource Group | Workload-Function | Region | Subscription |
|  |  |  |  |
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Figure 11 – Resource Group Configuration

Virtual Networks

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Virtual Network | Region | CIDR | Range of Host Addresses | Hosts | Resource Group |
|  |  |  |  |  |  |
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Figure 12 – Virtual Network Configuration

Subnets

The table below provides the specification of the subnets to be deployed within the Virtual Networks.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Virtual Network | Subnet | CIDR | Range of Host Addresses | Hosts |
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Figure 13 – Subnet Configuration

Firewall Rules

The tables below provide the specification of the firewall rule configuration for {Application} to be deployed in the existing Azure Firewall Policies.

### {Region}

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Priority | Rule Collection | Name | Source | Destination | Protocol (TCP) |
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*Figure 14 - Azure Firewall Policy (Network Rules) Configuration*

Load Balancing

### Existing Load Balancing Configuration

Below are the existing Load Balancer rules and mappings:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Environment | FQDN | Load Balancer IP and Port | Backend Host | Backend IP and Port |
| Dev |  |  |  |  |
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| Prod |  |  |  |  |
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| Live Test |  |  |  |  |
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| UAT |  |  |  |  |
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*Table 16 – Current Load Balancer Rules*

### Azure Load Balancing Configuration

Below are the new Azure Load Balancer rules and mappings. In the Event of a DR, the production DNS records will be updated with the new DR IP Addresses. This will be documented in the forthcoming DR runbooks.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Environment | FQDN | Load Balancer IP and Port | Backend Host | Backend IP and Port |
| Dev |  |  |  |  |
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*Table 17 – Azure Load Balancer Rules*

### Azure Load Balancer

The following Azure Load Balancers will be deployed in Azure:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Subscription | Resource Group | Location | SKU | Type |
|  |  |  |  |  |  |
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*Table 18 – Azure Load Balancers*

Virtual Machines

### Existing Virtual Machines

The existing on-premises {Application Name} Virtual Machines used to host the application are detailed below:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | OS | CPU | Memory (GB) | Storage | Role |
|  |  |  |  |  |  |
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*Figure 19 – Existing VMware Virtual Machines (Web)*

### Azure Virtual Machines

An image migration will take place to replicate the Virtual Machines between on-premises and Azure.

The Virtual Machines have been sized in Azure with the same CPU and RAM specification as the current on-premises Virtual Machines. The disks have been sized closely to the existing disks, based on the disk sizes available in Azure.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | OS | Size | Licencing | Storage | Role |
|  |  |  |  |  |  |
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*Figure 20 – Azure Virtual Machines*

Azure Site Recovery

Azure Site Recovery will be used to replicate the production {Application Name} server between {region} and {region}.

Azure Site Recovery components will be deployed as per the configuration below:

### Azure Recovery Service Vault

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Subscription | Resource Group | Region | Immutability |
|  |  |  |  |  |

Figure 21 – Recovery Service Vault Configuration

The following replication policy will used:

**Name:** {name}

|  |  |
| --- | --- |
| Option | Configuration |
| Recovery Point Retention |  |
| App Consistent Snapshot Frequency |  |

*Figure 22 – ASR Policy Table*

### Storage Accounts

#### {region}

|  |  |
| --- | --- |
| **Name** |  |
| **Subscription** |  |
| **Resource Group** |  |
| **Region** |  |
| **Kind** |  |
| **SKU** |  |
| **Access Tier** |  |

Figure 23 – Storage Account Configuration

|  |  |
| --- | --- |
| **Name** |  |
| **Subscription** |  |
| **Resource Group** |  |
| **Region** |  |
| **Kind** |  |
| **SKU** |  |
| **Access Tier** |  |

Figure 24 – Storage Account Configuration

#### {region}

|  |  |
| --- | --- |
| **Name** |  |
| **Subscription** |  |
| **Resource Group** |  |
| **Region** |  |
| **Kind** |  |
| **SKU** |  |
| **Access Tier** |  |

Figure 25 – Storage Account Configuration

|  |  |
| --- | --- |
| **Name** |  |
| **Subscription** |  |
| **Resource Group** |  |
| **Region** |  |
| **Kind** |  |
| **SKU** |  |
| **Access Tier** |  |

Figure 26 – Storage Account Configuration

Virtual Machine Backup

### Azure Recovery Service Vault

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name | Subscription | Resource Group | Region | Immutability |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

Figure 27 – Azure Recovery Service Vault Configuration

### VM Backup Policy

|  |  |
| --- | --- |
| **Name** |  |
| **Frequency** |  |
| **Retention** |  |

Figure 28 – Backup Policy Configuration

Monitoring

|  |  |
| --- | --- |
| Component | Alerting Details |
| Virtual Machines |  |
| Subscription |  |
| Route Table |  |

Figure 29 – AMBA Monitoring Configuration

# APPENDIX

Azure Platform References

|  |  |
| --- | --- |
| Term | Description |
| Azure | Microsoft’s Cloud computing service |
| VM | Virtual Machine |
| VHD | Virtual Hard Disk |
| VNet | Azure Virtual Network |
| NIC | Network Interface Card |
| IP | Internet Protocol |
| VHUB | Virtual Hub |
| VLAN | Virtual Local Area Network |
| VWAN | Virtual Wide Area Network |
| VPN | Virtual Private Network |
| UDR | User Defined Routes |
| WVD – Windows Virtual Desktop | Microsoft Azure virtual desktop solution |
| Azure Files | Azure files storage that supports the SMB access protocol |
| NGS | Network Security Group |
| HDD | Hard Disk Drive |
| SSD | Solid-state Disk Drive |
| AD | Active Directory |
| AAD | Azure Active Directory |
| AD DS | Active Directory Domain Services |
| ADFS | Active Directory Federation Services |
| DC | Domain Controller |
| NVA | Network Virtual Appliance |
| POR | Recovery Point Objective |
| RTO | Recovery Time Objective |
| PIM/PAM | Privileged Identity/Access Management |
| RBAC | Roles Based Access Controls |
| ITSM | Information Technology Service Management |
| CI | Continuous Integration |
| CD | Continuous Deployment |
| Subnet | Subnets enable you to segment the virtual network into one or more sub-networks |
| Load Balancer | A way to distribute work across multiple VM instances |
| ASR | Enables syncing of VMs between on-prem to Azure or between Azure regions (used for migration and DR) |
| Azure Monitor | Maximises the availability and performance of applications by delivering a comprehensive solution for collecting, analysing and acting on telemetry from Cloud resources |
| SMTP | Simple Mail Transport Protocol |
| SSH | Secure Socket Layer |

Figure 30 – Azure Abbreviations

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