SDE-OCTANE

Low Level Design

December 2021

|  |  |
| --- | --- |
| Application name | SDE-OCTANE |
| Business purpose | Maintaining the test case and solutions |
| Business criticality | Very Critical (15 Minutes) |
| Service Owner | Sandip Kute and Manjushree Zope |
| Cost code | 120036050 |
| Supported by | SIS |

In this document text in yellow color is to be considered as a placeholder (or sample data) and thus must be changed or removed as applicable.

In this document text in Grey color is to be considered as an explanation which information is expected in the relevant section and thus must removed before the final document release.

**Important note**: For pure workload migrations of servers, there is no need to complete this document; a simple server request for a new server in Azure created via ITSM request will suffice. You’ll get a readily installed server with the operating system of your choice, but the application re-installation and data transfer remains your duty (e.g. local IT / the application owner).

We need to give an instruction what must be filled in in ITSM server request!

Version History

|  |  |  |  |
| --- | --- | --- | --- |
| **Version** | **Date** | **Changes / Approvals** | **Name** |
|  |  |  |  |
|  |  |  |  |

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# Application Overview

## Scope and Design Objectives

This document details the Low-Level Design (LLD) for SDE- Octane and the migration steps necessary to move the application from its current location to Azure.

The following list provides the reader with the scope for this project and service.

* Assessment of Octane Application for Cloud Compatibility

## General information

Please provide short business context here.

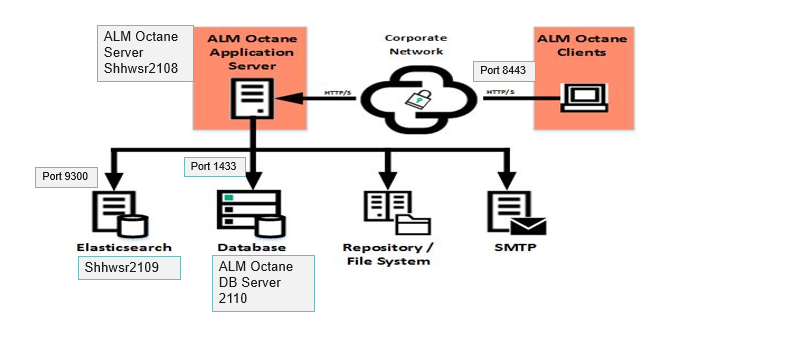
Application is used as test case and design solution.

|  |  |
| --- | --- |
| Attribute | Description |
| Service Name | SDE-OCTANE |
| Service Description | Maintaining the test case and solutions |
| Number of users and their location | Over 700 users Globally |
| Data classification (CIA) | Confidentiality –Confidential  Integrity –High  Availability – Very Critical (15 Minutes) |
| Cost Center | 120036050 |
| KG | CRD |
| Service Owner | Sandip Kute |
| Technical Contact | Sandip Kute <sandip.kute@schindler.com>  Manjushree <manjushree.zope@schindler.com> |

# Application Architecture Design

## High Level Design overview

**Test Environnent**



* This application has test environment.
* The application is accessed from Internal Network.
* The Servers are in GDC Datacentres.

|  |  |  |
| --- | --- | --- |
| **Environment** | **TEST** | **Total** |
| WEB | 2 | 2 |
| DB | 1 | 1 |
| **Grand Total** | **3** | **3** |

Below is the list of Servers within the SDE-Octane Application Stack

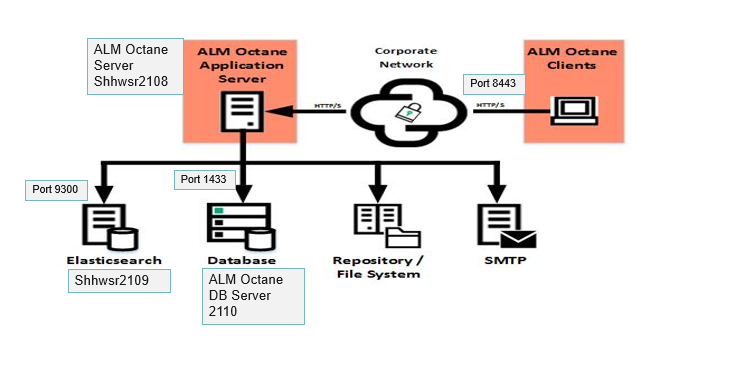
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Server Name** | **IP address** | **Azure IP** | **Function** | **Environment** | **ITSM-Function** |
| SHHWSR2108 | 10.10.158.4 | TBC (awaiting new landing zone network information) | APP | REMEDIATION | SHH Windows Server Octane Test Application Server |
| SHHWSR2109 | 10.10.158.13 | TBC (awaiting new landing zone network information) | APP | REMEDIATION | SHH Windows Server Octane Test Elasticsearch Server |
| SHHWSR2110 | 10.10.159.64 | TBC (awaiting new landing zone network information) | DB | SQL | SHH Windows Server Octane Test MSSQL |

## Low Level Design

Provide Low Level design description here. DO NOT add configuration settings here.

* Add LLD diagram if possible
* Add technical Azure infrastructure design details here
* What main Azure services are used
* How many tiers apllication has and what are they
* What are the main data flows and and how the data is exchanged
* Provide any application secific technical constrains and requirements

**Test Environment**



## Azure infra components

**Provide** Azure resources top level configuration settings here.

* Regions
* Subscriptions
* Resource Groups

|  |  |  |  |
| --- | --- | --- | --- |
| Description | PROD | NON-PROD | Notes |
| Subscription | NA | s-sis-ch-nonprod-01 | NA |
| Azure Regions | NA | Switzerland North | NA |
| Resource Group | NA | rg-crd-nonprod-octane-01 | NA |

### Compute services

List all virtual servers here

#### Virtual Servers

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Server Name** | **Data Center** | **Operating Center** | **RAM (GB)** | **Core** | **Disk Size GB** |
| SHHWSR2108 | GDC | Win Server 2019 Standard Edition 64-bit | 8 | 4 | 290 |
| SHHWSR2109 | GDC | Win Server 2019 Standard Edition 64-bit | 8 | 4 | 290 |

#### DB Servers (MS SQL on IaaS)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Server Name | Data Centre | Operating System | RAM (GB) | Cores | Disk Size GB |
| SHHWSR2110 | GDC | Win Server 2019 Standard Edition 64-bit | 16 | 4 | 2464 |

### Storage Services and external fileshares

List all Azure Storage services instances used and external storage provider like NAS/NFS/iSCSI shares, etc.

|  |  |  |  |
| --- | --- | --- | --- |
| Name | Purpose | Type / Tier | Path |
| NA | NA | NA |  |

### Networking and Connectivity

List Azure network services and/or FW configuration settings like FW rules

#### Azure Network Componets

|  |  |  |  |
| --- | --- | --- | --- |
| Component Name | PROD | NON-PROD | Reference ID |
| VNet | NA | CH-NonProd |  |
| Subnet | NA | sub-remediation-iaas-01  10.44.18.128/25 |  |

**SQL**

|  |  |  |  |
| --- | --- | --- | --- |
| Component Name | PROD | NON-PROD | Reference ID |
| VNet | NA | CH-NonProd |  |
| Subnet | NA | sub-remediation-iaas-01  10.44.18.128/25 |  |

#### Service Interfaces List / FW Rules

Test Environment

Please refer the link: [Network Firewall Rules](https://schindlerglobal.sharepoint.com/:x:/s/SISCloudAdoption/EUXHv8ZJaG1Jsiw9a5OTS3gBJo8_R2w1TUvAgDQAqbdZFg?e=f02HOm) (SHHWSR2108, SHHWSR2109, SHHWSR2110 )

**Internet**

|  |  |  |  |
| --- | --- | --- | --- |
| Servers | Internet Required | URL to be Whitelist | Remarks |
| All | No | NA | NA |

### 

### 3.3.4Azure Application Gateway / WAF / Azure FW

|  |  |
| --- | --- |
| Attribute | Value |
| Azure App Gateway Name | agw-prod-network-shhnag0002 |
| Backend Server | TBC ( Azure Ip) |
| Backend Ports | 8443 |
| Azure App Gateway Public Endpoint | AO Will Provide |

### Certificates

|  |  |  |
| --- | --- | --- |
| **External URL** | **Issued to** | **Issuer** |
| NA | NA | NA |

|  |  |  |
| --- | --- | --- |
| **Internal URL** | **Issued to** | **Issuer** |
| shhwsr2108.global.schindler.com | global.schindler.com | Schindler-Intermediate-CA-G02-01 |

### Shared Infrastructure Sevices

List Azure shared infrastructure services like backup, logging, monitoring, alerting, etc.

|  |  |  |  |
| --- | --- | --- | --- |
| Service Component Name | Service | Description | Reference ID |
| Identity | Active Directory Service |  |  |
| DNS | DNS Service |  |  |
| Monitoring | Zabbix | Infra Monitoring |  |
| Backups | Azure Backup |  |  |
| SIEM |  |  |  |
| Networking |  |  |  |

## Requirements and Key Design Decisions

List of architecture Key Design Decisions (KDC) with relevant requirements is provided below:

|  |  |  |  |
| --- | --- | --- | --- |
| Ref. | Key Design Decision Area | Key Design Decision | Justification |
| 1 | Resilience & DR | Azure Geo Redundant Storage (GRS) will be used. | Requirement comes from data availability classification – Very Critical (15 mins) |
| 2 | Resilience & DR | Servers will be placed in Availability zone & Backup will also be available | In Case of Datacentre level failure, the other zone will be available & region level failure will be handled by restoring from Backup |
| 3 | Security/CMDB | Solution will use Azure tags for digital asset management. | ON 0-08100 standard requirement. |
| 4 | Connectivity | Solution will be securely published via internal FW/ App Gateway/ WAF | Azure LZ network design decision for internal exposed services. |
| 5 | Connectivity | Encryption for data in transit – TLS v.1.2 | ON 0-08100 standard requirements for data in transit over public networks. |
| 6 | Hosting Location | Azure Storage Account will be created in North Europe | Solution is deployed in the location closest to dependent Services |
| 7 | Hosting Type | Azure IaaS will be used | Aligned with requirements. |
| 8 | Hosting Type | Azure PaaS services will be used where possible. | Business requirement, LZ design decision. |
| 9 | Monitoring | All solution components must be connected to Azure monitoring services. | ON 0-08100 standard requirement. LZ networking design decision. |
| 10 | Access management | RBAC controlled access for admins and service owners. | The design is using standard LBE Azure infrastructure and patterns only. |
| 12 | Security | FW/WAF intrusion prevention capabilities like AV/IDS/IPS must be enabled. | ON 0-08100 standard requirement. LZ networking design decision. |
| 13 | Security | Azure Storage Encryption will be used for data at rest encryption. | ON 0-08100 standard requirement. Solution security requirement. |

# Licensing, Assumptions and Dependencies

## Assumptions, Issues & Dependencies

The following table provides the reader with an understanding of the **architecture items** only. Note. Project implementation and build RAID items should be captured in the project RAID log.

|  |  |
| --- | --- |
| Category | Description |
| Assumptions | NA |
| Issues | NA |
| Dependencies | Integration with Test Octane to Jira Quality server. |

## Service Life and Decommissioning

The following table provides the reader with an understanding of the solutions service life and any decommissioning required.

|  |  |
| --- | --- |
| Category | Description |
| Service Life | Service will be deployed on a permanent basis. Will be reviewed every 2 years. |
| Decommissioning | Decommission as per the standard Azure services lifecycle. |

## Application Software Components

The following table provides the reader with the major application software components and versions to be implemented as part of this solution.

|  |  |
| --- | --- |
| Software Component Name | Software Component Version |
| n/a | n/a |

## Licenses

The following table provides the reader with the licenses required for the infrastructure deployment.

|  |  |
| --- | --- |
| Software License | Subscription License Qty |
| MS SQL Server | Azure PAYG / BYOL |
| Windows | Azure PAYG / BYOL |

# Integration Architecture

## Interfaces List

The following table provides the reader with a view of the technical integration for the deployment.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Ref | Source | Broker System | Target | Batch (B) / Transactional (T) | Protocol / Port |
| 1 | NA | NA | NA | NA | NA |

## User connections

The following table provides the reader with a view of the technical integration for the deployment.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Ref | Source | Broker System | Target | Batch (B) / Transactional (T) | Protocol / Port |
| 1 | NA | NA | NA | NA | NA |

## Cloud to / from On-Prem Interfaces

The following table provides the reader with a view of the impact to the Schindler on-premises networks for the deployment if applicable.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Ref From 4.1 | Peak(s) or Schedule Time(s) and Days | Firewall Rule? | Max # Per Hour | Max Size | Average Per Hour | Average Size |
|  | n/a |  |  |  |  |  |

# Security

The following section provides the reader with a view of the security considerations considered for the design.

## Security considerations

|  |  |
| --- | --- |
| Category | Description |
| Physical Location Security Considerations | Service is hosted in Azure cloud. According to shared responsibility model Microsoft is responsible for provisioning physical security controls. |
| Data access & governance (Authorization) | * Users are authenticated by LDAP * New admin user access will be provided in scope of the standard Schindler service request |
| Directory Services & Authentication | * Service use Active Directory and some external application for Authentication |
| Privileged access accounts and service/API user accounts | n/a |
| Server security, perimeter security & changes to Schindler firewalls required? | * Azure Firewall will be used * WAF and Azure App Gateway will be used at stage 2 to secure end-users ‘connections. * Azure Storage private endpoints will be used to route traffic via internal FW/WAF for additional security layer. * Direct access to Azure Storage public endpoints is disabled. |
| Legal & Regulatory Compliance | n/a |
| Information Security Considerations (including safeguard of sensitive and personal data) | Data protection controls must comply with Schindler ON 0-08100 Security Baseline. |
| If there is a PaaS (not Schindler Azure/AWS PaaS) or SaaS provider involved in this solution, does the service provider meet targets specified in the CIA classification | No |
| Backup platform, type of backup & scheduling for servers and data | Service owner will maintain a backup copy of the files  GL 01.1 - VM Snapshot Backup Standard, short term  GL 01.1 - VM Snapshot Backup Standard, short term  GL 03.3 - SQL TEST Backup, two weeks |
| Patching schedule, service hours and maintenance windows | Maintenance Windows –  Weekends Only |
| Data archiving, cleansing & purging (life cycle management) | Service owner is responsible for data lifecycle management. |
| Data migration | Azure Migrate will be leverage for VM Replication to target Data will be migrated manually by copying files |
| Data and system audit & monitoring | All events will be monitored using Azure Log Analytics service.  This includes.   * Data changes auditing. * System access auditing. * Security monitoring. |

## Azure Asset Management (tags)

Following tags must be assigned to azure resources created in scope of this service deployment:

|  |  |
| --- | --- |
| Key | Value |
| Cost Center | 120036050 |
| Infra structure service | App |
| KG | SHH |
| Service owner | Sandip Kute |
| Technical contact | Sandip Kute <sandip.kute@schindler.com>  Manjushree <manjushree.zope@schindler.com> |
| confidentiality | Confidential |
| Integrity | High |
| availability | Very Critical (15 mins) |
| Userbase | Around 700 users Globally |

# Application migration planning

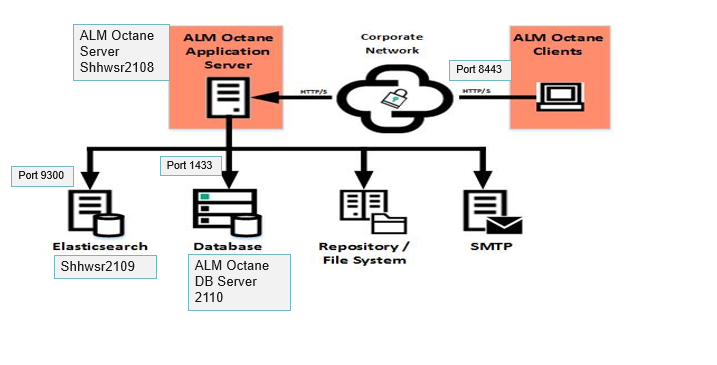
In the first chapter the business application’s setup is assessed. This includes scoping, initial planning, source server definition and description, including dependencies.

## On-premise application design

**Production Environnent**

NA

**Environment Test**



### Migration schedule / timeline

|  |  |
| --- | --- |
| Assessment completion deadline | Nov 2021 |
| Planning and Design completion deadline | 16th December 2021 |
| Pre-Migration Activities completion deadline | NA |
| Migration Execution completion deadline | NA |
| Post Migration activities completion deadline | NA |

### On-premise servers used / required by the application

|  |  |  |  |
| --- | --- | --- | --- |
| **Server name** | **Shared server (yes/no)** | **Migration method** | **Server function/role** |
| NA | NA | NA | NA |

### Components linked to the application

* Application is Linked to LDAP and some external applications for authentication
* Application in dependent on Jira
* Email gateway is used to send email from application.

## Lift & shift  migration

Source server specification  
Servers will be rehosted to Azure using ASR  
Please refer the [**link**](https://schindlerglobal.sharepoint.com/:x:/r/sites/SISCloudAdoption/Shared%20Documents/03%20Project%20Execution/06%20-%20Migration/GDC/LTI/01-ServerList/GDC-AzureAdoption-MigrationDetailList_LTI.xlsx?d=w6a6199c213a742a4a34faf8c88c67459&csf=1&web=1&e=xfGE30) for server details & detailed inventory for Source & Target information

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Hostname** | **IP Address Onperm** | **Azure IP** | **Function** | **Environment** | **Migration Method** |
| SHHWSR2108 | 10.37.41.6 | TBC (awaiting new landing zone network information) | App | DEV | Rehost |
| SHHWSR2109 | 10.37.41.7 | TBC (awaiting new landing zone network information) | App | DEV | Rehost |
| SHHWSR2110 | 10.37.12.114 | TBC (awaiting new landing zone network information) | SQL | PROD | Replatform |

## Database (DMS) migration

Source server/database specification

Servers will be rehosted to Azure using Azure Migrate  
Please refer the for server details & detailed inventory for Source & Target information

DB server to be lift & shifted in this migration, no changes will be performed on the VM Level

## Share Migration

Copy the below table **for each server or disc storage** to be migrated in this migration!

|  |  |
| --- | --- |
| **Source server** | **Configuration** |
| Host name | NA |
| Source IP address | NA |
| Domain | NA |
| Server or storage size | NA |
| Server OS | NA |

## Internal application dependencies

List and describe all dependencies internal to the application. In case the business application consists of multiple servers this list must also include all dependencies between these servers (related to the same application).

|  |  |
| --- | --- |
| **Dependency** | **Detailed Description** |
| Jira | Application fetches information from Jira |
| LDAP | Application Server dependent on LDAP for Authentication |
| SMTP | Application requires SMTP connection to send emails |
| File Servers | Internal to the Stack |
| MySQL | Dedicated SQL |

## External application dependencies or application interfaces

List and describe all dependencies external to the application. This includes all cases where the business application provides an interface towards other systems.

|  |  |
| --- | --- |
| **Interface** | **Detailed Description** |
| NA |  |

## DNS names / Published websites / Third party connections

|  |  |
| --- | --- |
| **Internal DNS names published** | https://shhwsr2108.global.schindler.com:8443/ |
| **External DNS names** | NA |
| **SMTP relay usage** | smtp.eu.schindler.com |

## DMZ / Firewall rules

In case one or multiple of your servers involved in this migration are sitting in a DMZ or have websites published on them please indicate this information in below table.

|  |  |
| --- | --- |
| Servers in DMZ | Test |

## Performance / response times

In case the Business Application has hard requirements with regards to application performance and or response times and these are critical to the end user’s acceptance of the cloud migration project, these performance / response time measurements must be made **prior** to the migration of the application and properly documented such that a valid baseline is created for later comparison. Please do note that **NO** performance complaints will be accepted post-migration in case no baseline has been provided prior to migration.

<Please include here any response time / performance requirements and measurements you have made **prior** to the application migration>

# Configuration of target situation

For each server to be lift & shifted in this migration  
Please refer the for server details & detailed inventory for Source & Target information

## Database (DMS) migration Target server/database specification

## Share Migration

Copy the below table **for each server or disc storage** to be migrated in this migration!

|  |  |
| --- | --- |
| **Source server** | **Configuration** |
| Host name | NA |
| Source IP address | NA |
| Domain | NA |
| Server or storage size | NA |
| Server OS | NA |

# Migration

The third chapter describes the migration steps for the application server(s). This includes specific pre-migration activities, test case description, steps for conducting the actual migration and finally specific post migration activities.

## Move Group

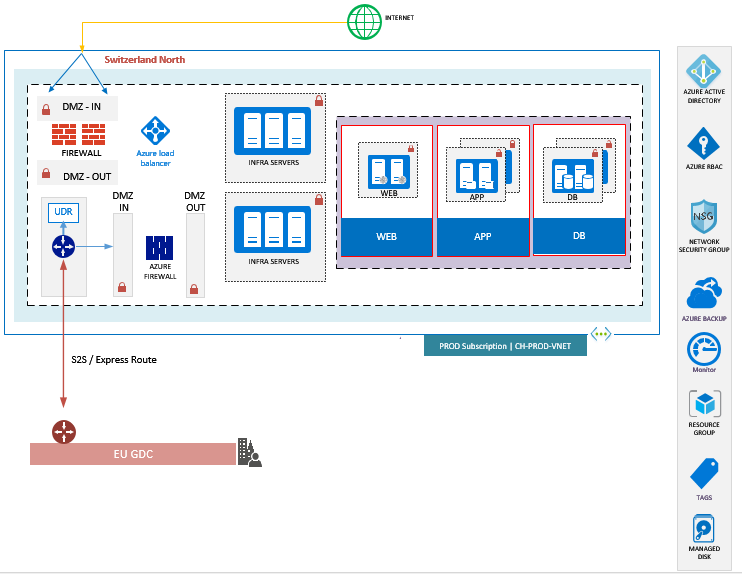
SDE OCTANE will be moved groups based on the Environment

Test

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Hostname** | **IP Address** | **Azure IP** | **Function** | **Environment** | **Application** | **Move Group** | **Wave** |
| SHHWSR2108 | 10.37.41.6 | TBC (awaiting new landing zone network information) | APP | TEST | SDE-OCTANE |  | Wave 2 |
| SHHWSR2109 | 10.37.41.7 | TBC (awaiting new landing zone network information) | App | TEST | SDE-OCTANE |  | Wave 2 |
| SHHWSR2110 | 10.37.12.114 | TBC (awaiting new landing zone network information) | SQL | TEST | SDE-OCTANE |  | Wave 2 |

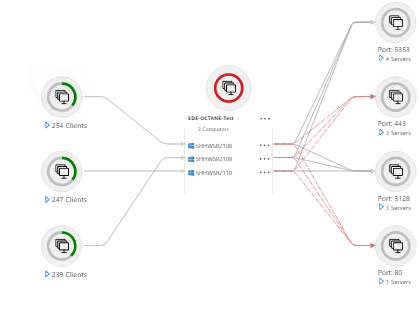
## Target Architecture

* The Servers will be placed in Non-Prod Subscription based on the Environment.
* Based on the Tier the Servers will be placed into the respective Subnet.
* Shared services like monitoring, IDAM, backup will be leveraged from the existing shared infrastructure.



Dependency Map

### Test Environment



## Pre-migration activities

Explain in detail all required pre-migration activities to be completed prior to the migration. If certain steps are time sensitive, please do indicate this!

|  |  |
| --- | --- |
| **Application stop** | Manual – Service Stop by the Application Owners |
| **Application start** | Manual – Service Start by the Application Owners |
| **Block user traffic** | Block on the Load Balancer |
| **Boot order** | Jira apps and SDE- OCTANE Servers |

## Test cases

Detailed description of the test cases that need to be completed after the failover to Azure but during the migration slot. Please note that the test case execution must be done by local IT and or the application responsible.

|  |  |
| --- | --- |
| **Test case name** | **Detailed test case description** |
| NA | NA |
| NA | NA |
| NA | NA |

Overall test coordination lies with the application owner, the migration Team will NOT organize / orchestrate / conduct testing during the outage window!

|  |  |
| --- | --- |
| Overall test effort estimation during outage | 3 Hours |
| Name of test users and their function | Sandip Kute |
| Test acceptance sign off to be given by | Sandip Kute |
| Planned test case execution window | NA |

## Post-migration activities

|  |  |
| --- | --- |
| **DNS** | DNS listed in Section 7.7 needs to be changed to point to New IP in Azure |
| **Load Balancer** | NA |
| **DB Configuration** | Applications needs to be configured to connect to New IP of the DB Server if it is configured with an IP Address |
| **Firewall** | Firewall changes to be performed as per [Section 3.4](#_Service_Interfaces_List) |
| **Monitoring** | Configure Zabbix on Cloud for the New Instance IP as per [Section 6.1](#_Security_considerations) |
| **Backup** | Configure Backup as per [Section 6.1](#_Security_considerations) |

## Continue or fallback decision

After test case execution, the final go / no-go decision must be taken. Please include a detailed description of the specific conditions in which a rollback / fallback will be conducted.

|  |  |
| --- | --- |
| Decision taker for approved fallback to on premise | NA |
| Fall back to on premise servers | NA |
| Individuals to be informed of fallback decision | NA |

## Reconfiguration after testing sign off

Please list in detail all steps that need to be executed after the test cases have been executed and sign off for has been provided.