APPENDIX A – ENVIRONMENT OVERVIEW

CORP 5527 – August 2021

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1. Document Overview

## Introduction

This appendix describes Eskom’s current IT infrastructure landscape.

## Document Purpose

Eskom’s infrastructure as well as the required services to operationally support the infrastructure must be supported by the selected Supplier through a Managed Service offering.

## Infrastructure Landscape Overview

The current IT infrastructure landscape is described below.

### Data Centres

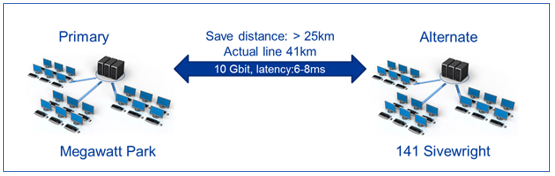
Eskom’s IT Infrastructure is hosted country wide, mainly in its Central and Regional Data Centres however some infrastructure is hosted in server rooms at power stations and corporate offices. There are 25 server rooms in total and 4 Portable Modular Data Centres (PMDCs). The Data Centres, power stations and corporate offices that form part of the Eskom sites are listed below. NB there are several corporate office sites (300+ sites) which are not listed below that host infrastructure.

|  |  |
| --- | --- |
| **Central Data Centres** | |
| **Name** | **Physical Address** |
| 141 – Disaster Recovery site | 141 Sivewright Road,  Johannesburg |
| Eskom Academy of Learning – extension of Production site | Dale Road, Midrand |
| Megawatt Park (MWP) – Central Production site | 1 Maxwell Drive, Sunninghill |
| Eskom Rotek Industries (ERI) PMDC | Lower Germiston Road, Rosherville |

|  |  |  |
| --- | --- | --- |
| **Regional Data Centres** | | |
| **#** | **Name** | **Physical Address** |
| 1 | Bellville | 60 Voortrekker Road, Basement Floor,  Eskom Building, Bellville, 7530 |
| 2 | Bloemfontein | 1st floor Eskom Centre, 120 Henry Street, Westdene, Bloemfontein, 9301 |
| 3 | Brackenfell | Evkom Road, Brackenfell |
| 4 | Duvha | Duvha P/Station, Bethal Road, Witbank, 1034 |
| 5 | Duvha Stabnac | SOC Duvha, Duvha Power station, Bethal Road, Witbank |
| 6 | East London | Eskom SOC, Cnr Bonza Bay Road & Quenera Drive, Beacon Bay, East London, 5241 |
| 7 | Enterprise Park | Sunilaws Office Park, C/R Quenera Drive & Bonza Bay Road, Beacon Bay, 5241 |
| 9 | Mkondeni | 1 Portland Road, Mkondeni |
| 11 | Polokwane | 30 Hans van Rensburg street, Polokwane, 0700 |
| 12 | Rosherville | Lower Germiston Rd, Rosherville, 2002 |
| 13 | Sanhill | Eglin Road, Sunninghill |
| 14 | Simmerpan - Distribution | Cnr.Power and Refinery Road, Germiston |
| 15 | Simmerpan - Transmission | 3d Floor core, Eskom National Control Building, Simmerpan, cnr of Lake (called Refinery on some maps) and Power street, Germiston |
| 16 | Witbank | Cnr Watermeyer & Jellicoe Street, Eskom Park, Witbank, 1035 |

|  |
| --- |
| **Power Stations** |
| **Site** |
| Arnot (Middelburg) |
| Camden (Ermelo) |
| Duvha (Witbank) |
| Grootvlei (Grootvlei) |
| Hendrina (Middelburg) |
| Koeberg(Koeberg) |
| Kendal (Kendal) |
| Komati (Middelburg) |
| Kriel (Kriel) |
| Lethabo (Vanderbijlpark) |
| Matla (Kriel) |
| Medupi (Lephalale) |
| Majuba(Volksrust) |
| Matimba (Lephalale) |
| Kusile (Witbank) |
| Tutuka (Standerton) |
| **Offices** |
| **Site** |
| ECR (Braamfontein) |
| KDP (Klerksdorp) |
| KMB (Kimberley) |
| MNL (Menlyn) |
| Nelspruit (Nelspruit) |
| RTB (Rustenburg) |
| WCC (Durban) |

**Table1: Eskom Site List**

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**Figure 1: Central Production and Disaster Recovery Data Centres**

### Network

The infrastructure in scope is hosted in Eskom facilities. All Network management services for the WAN and Datacentre LAN will be provided by the Eskom Network team.

With respect to connectivity between the Supplier and the Eskom Network, all network connections into the Eskom Network will be established via a vendor neutral side. Eskom will extend its network to the vendor neutral side and connectivity from the Service Provider to the vendor neutral site must be provided and managed by the Service Provider. Connectivity from the vendor neutral site to Eskom will be provided and managed by Eskom.

The network design for the above must include security devices (e.g. Firewalls, etc.) and software to enable connection to Eskom internal systems for integration purposes.

### Backups

In an effort to secure Eskom Data, a Backup service is required to ensure that Data is protected from hardware failure or human error. Eskom leverages on its Enterprise backup environment for all backup requirements. Eskom utilises NetBackup software for the backup of its servers/application environments and Spectrum Protect software for the backup of its SAP environment. The Supplier will be responsible for installation and provisioning of backups for environments in the landscape. The Backup service must include but is not limited to:

1.      Reporting – Daily Success Rate and Billing

2.      Backup Infrastructure Capacity Management

3.      Backup Services – Resources

4.      License Management for the Backup Software

**BACKUP TOPOLOGY**

**Central Topology – Veritas NetBackup**

Eskom subscribes to the D2D2T/C (Disk to Disk to Tape or Cloud) Backups in which the Backup to disk at the primary site (Megawatt Park) and replicate the Data to the disk at the secondary site (141- Doornfontein), depending on the SLP (Storage Lifecycle Policy), the Data will then be written off to the cloud or tape once it has reached the applicable retention threshold.

**Central Topology - IBM Spectrum Protect**

Due to incapability within NetBackup to Backup SAP HANA on Power, IBM Spectrum Protect (TSM) was implemented to fulfil this function, this too subscribes to the D2D (Disk to Disk) with no tape or cloud capability

**Regional Topology 1 – Eskom Regional Offices**

For the Regional Offices within Eskom we have adopted D2T/C (Disk to Tape or Cloud), this topology allows Eskom to write Backup Data to cloud as a means of an offsite storage.

**Regional Topology 1 – Eskom Regional Offices**

For these sites we only writing data to the MSDP (Media Server Deduplication Pool), however we are exploring the possibility of creating a Backup Data replication targets at the Regional Offices as a long term plan

**BACKUP INFRASTRUCTURE COMPOSITION**

**Backup Software** – Preferred Backup Software deployed in the Eskom GIT environment is VERITAS NetBackup, currently running version 7.5 but upgrading to 8.3 before the third Quarter 2021. Eskom utilises Spectrum Protect software for the backup of its SAP environment.

NB. Eskom may require the Supplier to supply the Spectrum software for the SAP backups. Please supply pricing to show support costs for these backups and include a separate view for the Spectrum software cost. Eskom will have the option to supply this software itself or opt for the Supplier to supply this software.

**Hardware and Backup Media**

|  |  |
| --- | --- |
| **Description** | **Platform** |
| **OPS Centre** | Based on x86 platform running Linux (SLES 12) |
| **Master Servers** | Based on x86 platform running Linux (SLES 12) |
| **Media Servers** | Based on x86 platform running Linux (SLES 12) |
| **Backup Device (STU)** | Currently we have Quantum DXI supporting OST **on 10 GBe** |
| **Tape Library** | Currently we Have Quantum Scalar Devices with LTO7 Drives |
| **Cloud** | Long Term Retention (5-7 yrs.) Backups are written off to the S3 cloud |
| **Backup Nodes** | Based on P-Series (RISC) on SLES 12 |
| **Backup Storage** | IBM ESS - Pure Flash 900 and HP StoreOnce |
| **Blade Server** | HP 3PAR SP |

**Table 2: Hardware and Backup Media**

Backup schedule required:



**Table 4: Backup Schedule (Schedule may need to be updated based on application requirements)**

### Storage

Eskom leverages of a SAN attached block storage as our shared storage deployment, but will not be limited to this in the future and may most likely utilise Network Attached storage as well as Hyper Converged infrastructure in various forms among other storage deployments.

Eskom is also not limited to any specific vendor’s storage although we always strive towards standardization as far as possible.

The Supplier will be responsible for the installation and provisioning of storage for environments in the landscape and also responsible for supporting and maintaining the storage solution (including the SAN switches) and any migration of data where needed.

### Server Infrastructure Landscape

Eskom’s current server infrastructure landscape is described below.

The Supplier is expected to perform the following general responsibilities:

* Server installation and provisioning activities
* Server operations activities
* Server change management activities

Server Infrastructure Overview:

* Eskom uses physical and virtual servers based on Windows, Linux or UNIX both in stand-alone and in cluster configurations and requires three possible levels of services: Standard (98.5% availability), Advanced (99.5% availability) and Premium (99.9% availability). Server run on X86 and RISC based hardware.
* The Supplier should have skills in the following technology areas to support Eskom’s Servers (including but not limited to):
  + Operating Systems (including associated cluster software):
    - Windows Server
    - Linux (e.g., SUSE, Red Hat, Oracle-Linux, etc.)
    - UNIX (e.g., AIX, HP-UX, Solaris, etc.)
  + Hypervisors:
    - VMware
    - Power VM
  + Replication Software:
    - SRM

## Infrastructure requiring Hardware Support and Maintenance

Please refer to **Appendix D\_Hardware List for Support and Maintenance** for details.