

ANNEXURE A

CLOUD HOSTING AND DISASTER RECOVERY SPECIFICATION:

1. Virtual Machines High Availability (virtual servers, standard persistent disk for the OS, VM block-level snapshots).
2. Managed Operating System (includes patching and updates).
3. Storage
4. Security - VM protection (anti-virus) and vulnerability scanning.
5. Backup and restore – customised backup solution.
6. Disaster recovery – Warm DR site and replication
7. Virtual Machine Specification
8. Active Directory and Access Management
9. Setup, configuration, and training (2)
10. 12 months 24/7 support and services

1. Virtual Machines

Provisioning of managed Linux or Windows Virtual Machines (VMs) in the Cloud.

- a) Compute: vCPU and RAM.
- b) Option to upgrade on a monthly basis through the formal request fulfilment process.
- c) Standard persistent disk for the Operating System.
- d) 24/7 Monitoring with monthly reporting.

2. Managed Operating System

- a) Fully managed operating systems.
- b) Operating system patch management: Patching will be done in accordance with the patch installation schedules and implemented based on the PanSALB change management process.
- c) Updates to new releases of operating systems will be done per request. Changes to new operating system releases will be managed through the PanSALB change request management process.

3. Storage

Provisioning of secure storage in the Cloud.

- a) Storage type: Serial Attached Storage (SAS).
- b) Scalable: Option to scale upwards or downwards through the formal request fulfilment process.
- c) Advanced Encryption Standard (AES) 256 to be used for data protection.

4. Security

- a) Security must include anti-virus, threat management and monthly vulnerability assessments.

5. Backup and restore (VM snapshots)

Backup and restore of data hosted in the Cloud.

Service features:

- a) Block-level VM snapshot-based backups executed once every 24 hours.
- b) Disk based primary backups with inline target based de-duplication methods.
- c) Backups replicated to the secondary data center to ensure an off-site backup capability.
- d) The backup policy applied is as follows:
 - i) Daily - Incremental backup – retained for 7 days.
 - ii) Weekly - Synthetic full backup – retained for 4 weeks.
 - iii) Monthly - Full backup – retained for 12 months.
 - iv) Yearly – Full backup - retained for 5 years.
- e) Daily backup monitoring with monthly reporting.
- f) Restore data to a specific former state, undoing changes made since that time, i.e. restore point at the time of the snapshot.
- g) Report on restores concluded for the month.

6. Disaster Recovery

- a) Provides compute and storage resources.
- b) Disaster recovery (DR) capability up to operating system level at a secondary data center for all VMs.
- c) Includes 2x DR tests per year as scheduled by supplier and PanSALB.
- d) Replication (in-line, asynchronous) at hypervisor and storage layer to the secondary data center.
- e) Replication schedule: Every 4 hours (default). Data synchronization schedules can be customized per business requirement.

7. Virtual Machine Specifications

See below the VM Specifications

Description	Qty
Total Number of Primary VMs	4
Total RAM (GB)	72 GB
Total vCPUs	18 vCPU
Total Storage	1 844 GB
Total Primary Microsoft Licenses	4

8. Active Directory and Access Management

AD Domain Controller should be deployed on the Virtual machine for service continuity using the privileged user-account (PUA) or any other solution.