SCOPE OF WORK

RFP

For

Transnet Group's

Long-term Archive Storage System

SCOPE:

This event aims to improve the performance, scalability, and efficiency of Transnet's on-premises ICT infrastructure, as well as to reduce the complexity and costs of managing and maintaining the data, details specifications will be outlined in the Master Services Agreement between Transnet Limited ("Transnet") and Service Provider.

1. Table of Contents

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Definitions:

Product	Explanation
What is an archive storage	Archive storage refers to a data repository used for information that is not required in day-to-day operations but may need to be retrieved periodically. By leveraging archive storage solutions, organizations can significantly reduce long-term data management costs while ensuring secure retention of documents and records over extended periods.
Huawei Cloud Stack (HCS)	The HCS private cloud infrastructure is currently operational across Transnet's data centers, including Queens Warehouse and the Vodacom Data Center in Johannesburg.
Archiving	The strategic use of cost-efficient storage tiers to retain data over extended periods, primarily to meet regulatory requirements and support long-term access needs
Huawei ManageOne	A cloud management platform (CMP) engineered to deliver centralized oversight and orchestration of cloud resources, data center operations, and IT infrastructure across private, public, and hybrid environments.
Offline/real-time analysis	AI-driven data processing capabilities embedded within storage systems, enabling both batch (offline) and stream (real-time) analytics to support scalable, insight-rich operations.
Interactive query	Processes and diagnostic tools that enable users to monitor and interpret how a database executes specific SQL queries—often in real time—to optimize performance, troubleshoot inefficiencies, and enhance query design.
Multi-mode data processing	The capacity of a data platform to seamlessly support diverse processing paradigms including batch, streaming, interactive, and graph analytics enabling scalable, real-time insights across complex data ecosystems.
Object Storage Service (OBS)	Designed to store unstructured data with high scalability, long-term durability, and cost-efficiency ideal for supporting analytics, archiving, and compliance across diverse workloads.
EverGreen	A storage lifecycle capability that facilitates seamless controller upgrades without requiring data migration, even when underlying hardware reaches End of Service (EOS), thereby minimizing disruption and preserving data integrity.
Veritas NetBackup (NBU)	A robust enterprise-grade solution designed for comprehensive data backup, recovery, and business continuity across distributed IT environments.

Product	Explanation
Internet Data Center (IDC)	A dedicated facility designed to host computer systems and critical components including storage arrays, networking hardware, and power management infrastructure supporting secure, scalable IT operations.
End of Service (EOS)	The stage in a product's lifecycle when the vendor officially discontinues support, including updates, patches, and technical assistance commonly referred to as End of Support (EOS).
Data size units	1 PB = 1024 TB 1 TB = 1024 GB
Backup Battery Unit (BBU)	A Backup Battery Unit (BBU) is a dedicated power module that delivers emergency backup electricity to connected devices, safeguarding against data loss and system disruption during power outages.

1.

2. Overview and Objectives

1.1 Background

Transnet is currently managing a rapidly expanding volume of data stored across diverse formats, resulting in escalating costs tied to both infrastructure maintenance and annual data growth. The physical rack space and overall data center footprint continue to increase, driving up associated operational expenses such as power and cooling.

To address these challenges, Transnet has identified the need to migrate historical data to a more cost-effective Tier 3 storage solution. The existing environment comprises a mix of virtual and physical workloads, including NAS deployments and large-scale database systems distributed across multiple storage pools.

In anticipation of future reuse and to align with emerging AI-driven initiatives, Transnet seeks to implement a reliable and economically sustainable archiving system.

This project aims to establish a unified, long-term archive storage solution that accommodates both current data center workloads and historical backup datasets, ensuring scalability, compliance, and operational efficiency.

1.2 The Objective of the Transnet's Long-term Archive Storage System

Transnet has successfully deployed an on-premises private cloud solution that underpins its critical workloads, including transversal services currently utilized by operating divisions such as TP, TCC, TE, and TFR. Aligned with the broader ICT strategy, Transnet has identified the need to implement a long-term archive storage system to mitigate rising online storage costs and improve data lifecycle efficiency.

This archiving capability will be designed to serve the entire Transnet estate, ensuring scalable, cost-effective retention of historical and operational data. Through this solution, Transnet aims to unlock the following strategic benefits:

- **Reduced Infrastructure Costs:** By offloading infrequently accessed data to lower-cost storage tiers.
- **Improved Data Governance:** Supporting compliance and retention policies across divisions.
- **Enhanced Operational Efficiency:** Freeing up primary storage for high-performance workloads.
- **Future-Ready Architecture**: Enabling AI-driven insights from archived datasets.

- **Unified Data Management:** The unified data management platform could reduce costs from both maintaining current data/infrastructure and rate of data growth yearly.

- **Regulatory Compliance Requirements:** South Africa has strict national regulatory requirements, asking enterprise to keep operation data for 5 to 10 years. Long-term data retention has become a rigid demand.

- **Data Security:** Ransomware poses a significant threat to enterprises, enabling data ransom detection while providing security features such as WORM and rapid recovery of archived Data.

1.3 Overview of "AS IS" Transnet Group Data Center Environment

Transnet Group's existing On-premises Cloud solution environment has a Production site in JHB and a disaster recovery site in KZN.

The architecture of the existing environment is as per Figure 1 as follows.

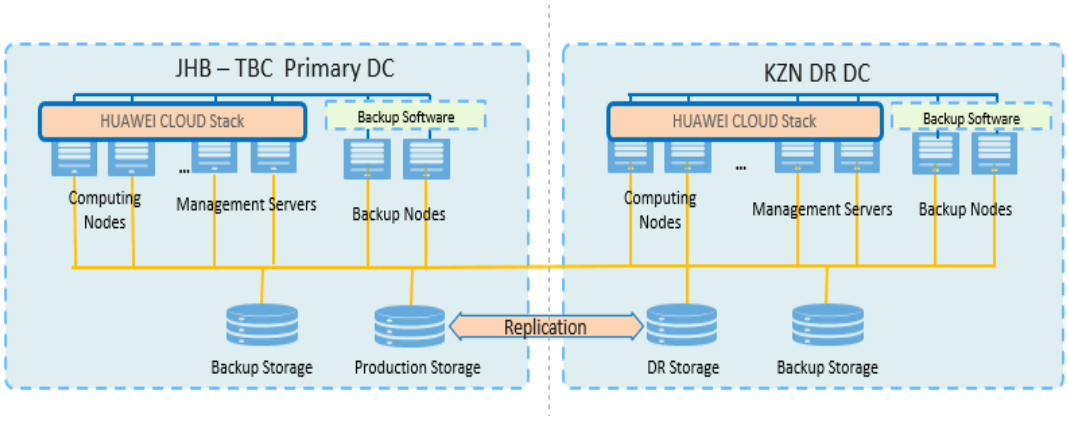

Figure1: Transnet Group Existing Date Center Environment

The features of this environment are available as follows:

Tier 1 Production Storage

High-performance, high-reliability storage designed to support mission-critical production workloads with minimal latency and maximum availability.

Tier 2 Backup Storage

Backup storage automatically captures production data based on predefined backup policies, mitigating the risk of data loss. It optimizes capacity through advanced techniques such as data de-duplication and compression, ensuring efficient resource utilization.

Storage replication-based disaster recovery solution

A tenant-level disaster recovery framework enables self-service protection, allowing tenants to select specific virtual machines (VMs) for replication. The cloud platform orchestrates replication commands directly to the storage layer, ensuring secure, high-performance data transfer between storage systems to support business continuity and rapid recovery.

3. Scope of Work

2.1 "TO BE" Long-Term Archive Storage System Architecture

Bidders are required to design and implement a solution based on an on-premise architecture as per Figure 2 below, which enables unified management and deployment of the data centre to ensure its consistency and scalability.

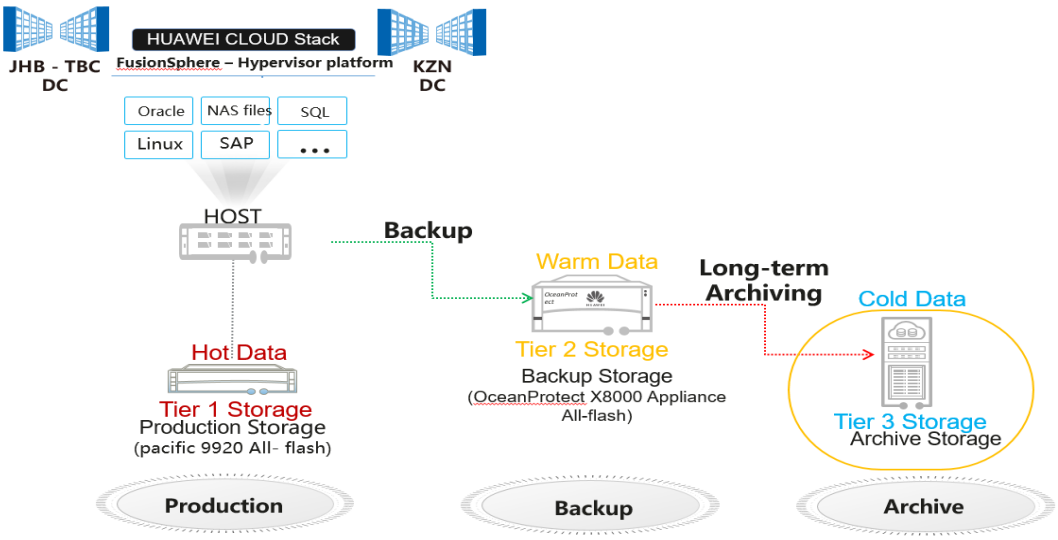

Figure 2: To be High Level Hardware Architecture

The initiative entails the provision, delivery, and deployment of an on-premises infrastructure solution at a Transnet-designated data center facility. The engagement includes comprehensive technical support and maintenance services for a period of 36 months following implementation.

The scope can be broken down into the following areas:

- **Hardware:** Supply of all necessary hardware components required to establish the on-premises infrastructure, including but not limited to servers, storage systems, network switches, and associated peripherals.
- **Software:** Provision of software licenses for any new components proposed that fall outside Transnet's existing entitlements—such as infrastructure management platforms, backup and recovery solutions, and monitoring tools.
- **Services:** Allocation of specialist implementation hours to ensure full deployment and operational readiness of both hardware and software components, including configuration, integration, and validation
- **Skills transfer:** Hours required to transfer the knowledge to Transnet system administrators on how to administer the solution going forward (post project) by themselves without any hand holding.
- **Post implementation maintenance:** For a period of 3 years commencing after project is declared complete.

2.2 Hardware/Software Capacity Specification

To accommodate Transnet archive data on service provided, the bidder must design and commission the solution as per the specifications set out in below table:

Resource	Specification requirement
Archive storage capacity	On-Premises storage with 34PB effective capacity in total, no less than 512TB Cache per storage array, support Synchronous and asynchronous replication Supports unified management of current HCS platform. Supports ransomware detection and WORM security features. Supports the dual-controller active-active redundancy architecture. Failure of any component or a single controller will not cause data loss or service interruption. Disk enclosures can be expanded. BBU power failure protection is supported.
Server resources (For Data Migration)	5*server with 24 cores CPU for each, 100TB disk capacity, no less than 512GB RAM.
Migration Tool & service	Client which could migrate current Transnet old backup copies to new archive storage device.
Network capacity	The storage leaf switch must support 48*10GE/25GE and 8*100GE.

Resource	Specification requirement
	Supports network virtualization and applies Dual-device deployment to ensure service reliability.

2.3 On-premises Long-term Archive Storage Features Specification

All hardware, software, networking and service requirements must enable the solution to function as an on-premises long-term archive storage system to be provided by the bidder.

The following capabilities must be present in the long-term archive storage solution:

Long-term Archive Storage Management Capability

- The proposed solution can be managed by Transnet Group's current unified management platform to meet the unified architecture and management of all Transnet datacentres in the future, reducing management difficulties and costs.
- The proposed solution should support customizing the content to be displayed on a dashboard, including capacity, performance, resource statistics, and alarms. Centrally manages alarms of physical devices, and allows you to clear alarms, assign alarms, adjust alarm severities, and set alarm sounds.
- The new archive storage should have built-in backup/archive software, no extra software is needed.

Reliability, Security and Disaster Recovery Capability

- The proposed solution must support multi-controller redundancy, and the controller would have no single point of failure. If a single controller of a node (dual controller) fails, the failed controller will be switched to the other normal controller in seconds, and the archive service shall not be interrupted.
- The proposed solution should have two Active-Active controllers in the archive storage. When one controller failed, the business workload could be switched to the other one immediately.

2.4 Implementation and Maintenance Service Specification

The Bidder should be present when the goods are delivered to help with logistics and to help verify that all goods have been received and that nothing is delivered shortly. The implementation and maintenance services are as follows:

a. **High level design and low-level design:** For the proposed solution, to ensure the solution meets the requirements outline in this RFP Transnet process, the design must be approved by Transnet

Architect before any execution of the implementation in a Transnet owned or Transnet nominated data centre.

b. **Hardware installation and commissioning**: The hardware must be delivered to data centres, assembled, installed, powered up and connected to the network.

c. **Software configuration**: Set up the proposed solution, create the corresponding capacities for each application or database, the operational guide should be provided after the software configurations are completed as a proof of configurations.

d. **Hardware maintenance specification**: Post implementation maintenance for a period of 3 years. Hardware maintenance should include but not limited to the following aspects:

- Routine and proactive maintenance of hardware, including microcode and firmware upgrades to prevent hardware failures.
- Source, deliver, and install hardware spares when hardware failure occurs.
- The service provider must provide 24 x 7 x 365 remote and onsite technical expertise support.
- OEM hardware maintenance and not 3rd party maintenance is required.
- Hardware replacement parts must be brand new, genuine, compatible, and equivalent in performance to existing parts and certified by the OEM.
- All work, including spares must be accompanied by applicable warranties and/or guarantees.
- Where possible, hardware maintenance must be done without the interruption to business. In cases where downtime is required, the service provider must negotiate with Transnet for a downtime period which will be after normal working hours or weekends.
- The service provider must have an established service desk and incident management process.

3 The service SLA/response time is required as follows.

Service Item	Service Coverage Window
Remote Service Centre	Available 24 hours a day, 7 days a week; Responding within 30 minutes;
Spares	Available 9 hours a day, 5 days a week. Spare parts should arrive within the next Business Day (NBD);
Onsite replacement	Available 9 hours a day, 5 days a week. Field engineers should arrive at the site within the next Business Day (NBD);
Faulty parts collections	Available 9 hours a day, 5 days a week;
Operating System Software Updates	Patches and minor releases of OS Software Updates available;
Product Documentation	Product documents and OEM tools should be handed over to Transnet after the implementation;
Skills Transfer / Training	Certified program – 10 x Transnet Employees

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