

ANNEXURE A:

FIXED TELEPHONY COMMUNICATION ENTERPRISE (FTC)

TECHNICAL REQUIREMENTS

(Technical Requirements)

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ABBREVIATIONS

ABBREVIATION	DESCRIPTION
SP	Service Provider
VoIP	Voice Over Internet Protocol
TCC	Transnet Corporate Centre
TE	Transnet Engineering
TRIM	Transnet Rail Infrastructure Management
TFR	Transnet Freight Rail
TNPA	Transnet National Ports Authority
TP	Transnet Property
TPL	Transnet Pipelines
TPT	Transnet Port Terminals
RFP	Request For Proposal
N-PBX	New Private Branch Exchange
PIN	Personal Identification Number
ESG	Environmental, Social, Governance
FTC	Fixed telephony communication
CMO	Current Mode of Operations
FMO	Future Mode of Operations
NNI	Network-to-Network Interface
N-HPBX	New Hosted Private Branch Exchange
OD	Operating Division
IP	Internet Protocol
SBC	Session Border Controller
SIP	Session Initiation Protocol

1. INTRODUCTION

Transnet operates as an integrated freight transport company, structured around seven Operating Divisions (ODs) that complement each other, ensuring seamless service delivery across its vast operational footprint. The Transnet Group is made up of the following Operating Divisions:

- Transnet Freight Rail (TFR)
- Transnet Rail Infrastructure Management (TRIM)
- Transnet Engineering (TE)
- Transnet National Ports Authority (TNPA)
- Transnet Port Terminals (TPT)
- Transnet Pipelines (TPL)
- Transnet Property (TP)

The seven (7) ODs are supported by the Transnet Corporate Centre (TCC).

These Operating Divisions are located nationwide, with operations in most major cities as well as several smaller towns across South Africa. Consequently, the scope of this Request for Proposal (RFP) covers Transnet's operations on a national scale.

As a State-Owned Company, Transnet continues to make an indelible impact on the lives of all South Africans. With a geographical footprint that spans the entire country,

Transnet is deeply embedded in various aspects of South African life. We are committed to playing a pivotal role in enhancing the quality of life in all the areas where we operate, extending our influence not only to our employees but also to the communities and environments we serve.

2. Background and Purpose of the RFP:

Transnet requires a Fixed Telephony Communication (FTC) PBX-based solution that will replace or take over the current HPBX solution, while ensuring that the existing FTC devices already purchased are retained and fully utilized.

The purpose of this RFP is to obtain proposals for the implementation, support, and maintenance of a Hosted PBX FTC solution (N-PBX) for a contract period of five (5) years, currently managed by Vodacom.

Looking ahead, Transnet's Future Mode of Operations (FMO) is the ubiquitous deployment of Microsoft Teams-based calling for FTC, which will be internally managed by Transnet. Under this model, it is anticipated that less than 5% of FTC devices will remain on the N-PBX solution, with the majority of telephony traffic transitioning to Microsoft Teams.

Transnet's future mode of operations (FMO) will be the ubiquitous deployment of Microsoft Teams-based calling (to be internally managed by Transnet) for FTC, with less than 5% of FTC devices remaining on the N-PBX solution.

To achieve this, aim the FTC program will be executed in 3 phases:

- **Phase 1:** migration from the current Hosted PBX (Vodacom One Business) to the new proposed FTC HPBX Platform (N-HPBX) supplied by Newco Service Provider (the scope of this RFP)
- **Phase 2:** Gradual migration (over 5 years) of FTC users from the new HPBX platform to the MS Teams platform.
- **Phase 3:** Future Mode of Operations (on conclusion of 5-year contract): completion of migration of bulk of FTC from Newco FTC Platform to MS Teams with the balance (i.e. where Teams cannot meet all requirements) remaining with the N-PBX platform.

The details of the phases are provided in the following sections:

2.1 Current Mode of Operations (CMO)

Transnet has made a large investment in both PSTN (Public Switched Telephone Network) and VOIP (Voice over IP) technology, i.e.:

- VOIP: Microsoft teams (via inter alia E5 licensing and shared device licensing) is used for providing Voice over IP services to Transnet employees.
- Hosted PBX solution provided by Vodacom (on One Business platform): temporary solution until new HPBX implemented.
- Yealink devices procured via Vodacom

2.2 Newco Mode of Operations

- Transnet needs to migrate from the Vodacom HPBX solution due to the current solution being a limited term contract.
- The objective of this RFP is to request an HPBX hosted FTC solution (N-PBX) to be provided over a period of 5 years in line with the volumes provided in the Dimensioning on **Annexure B**. A Build Operate Transfer model will be utilized where at the end of the contract period the remaining Hosted telephony platform and all associated/dependent
- devices will be transferred to Transnet. A niche (< 5%) group of devices/functions that cannot be accommodated by MS Teams will remain on the N-HPBX.
- The Newco FTC solution should provide the fixed telephony infrastructure for all business applications and communications that are essential to Transnet operations,

2.3 Future Mode of Operations (FMO)

Transnet's FMO will be the ubiquitous deployment of Microsoft Teams-based calling for FTC, and only in very niche scenarios will PSTN capability be provided via the N-HPBX, e.g., advanced executive phones, reception phones, call centers, on-train communication.

To achieve the FMO Transnet will need to

- deploy sufficient network capacity at remote sites.
- complete the migration from MPLS to SD-WAN capability.
- Implement sufficient SBC capacity and redundancy (on-site and geographic)
- Transnet is transitioning to an advanced maturity MS Team house, for the purpose of this 5-year term contract the Service Provider is requested to support the current Yealink devices. Should the Yealink device become faulty in the 5 years period, SP shall propose an alternative suitable device for the current HPBX, and the proposed device should be MS Teams compliant.
- The primary contracting SP must own a valid and current ICASA ECNS license, i.e. the license cannot be held by a subsidiary, partner or affiliate company without clear proof of approval by ICASA.

3. SCOPE OVERVIEW

Transnet is seeking a service provider to provide solutions for its Mobile Voice and Data nationally for a period of five (5) years. It also seeks to improve its current processes for providing these Services to its end user community throughout its locations.

Transnet currently has the following services:

- VoIP Services = ± 26 274 VoIP numbers
- MS Teams calling = ± 8 000 MS Teams numbers currently running on Transnet Owned SBC.
- Hosted Call Centers = ± 10 Call centers

The current Hosted PBX services are currently provided by Vodacom. Vodacom currently provides configurations of the VoIP numbers and the provisions of the Hosted PBX and management.

Figure 1 below is a high-level illustration of the current VoIP architecture provided by Vodacom.

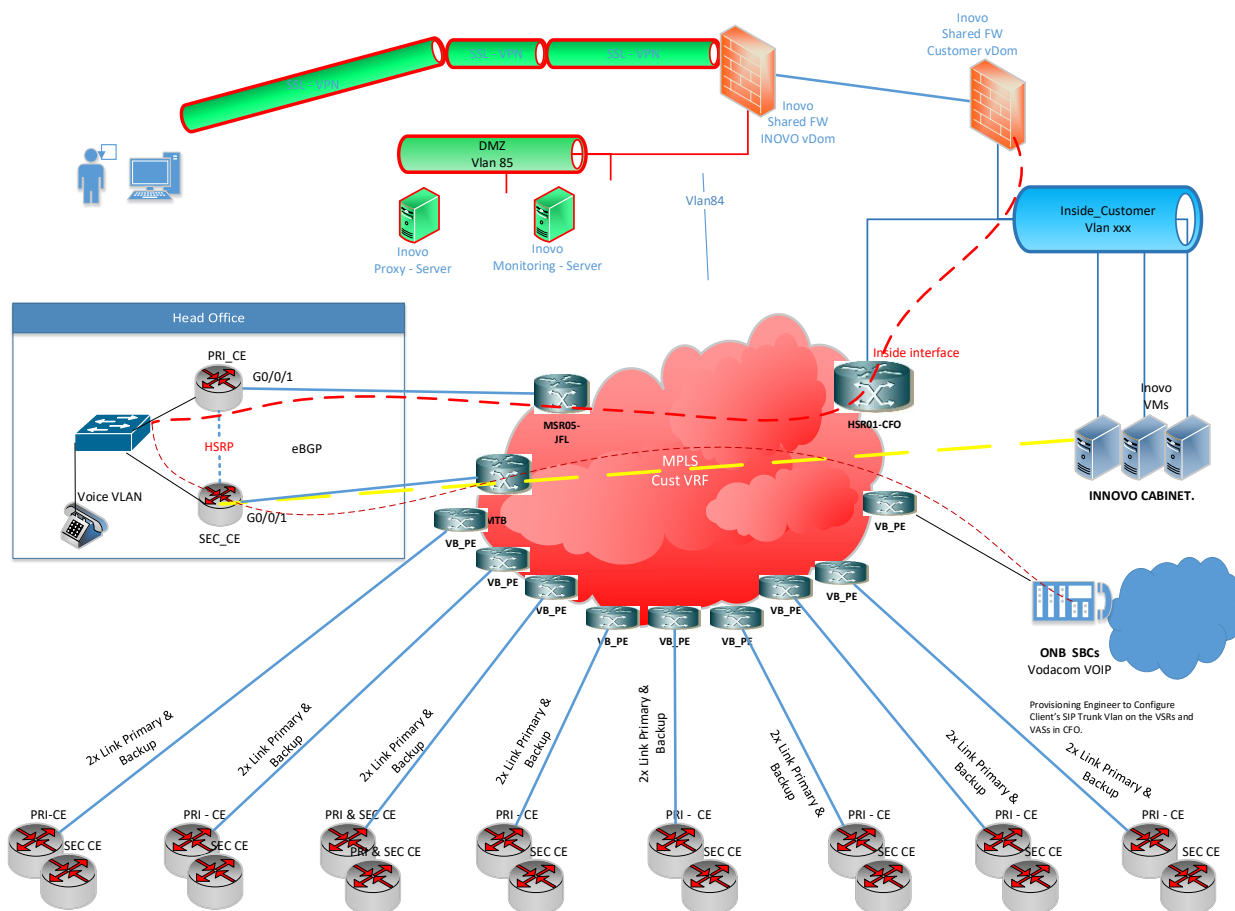


Figure 1: Current Vodacom Architecture

Transnet wishes to appoint a service provider for both VoIP services and MS Teams routing to offer end-to-end services for the environment. **Figure 2** is an illustration of the high-level current and future MS Teams Calling architecture.

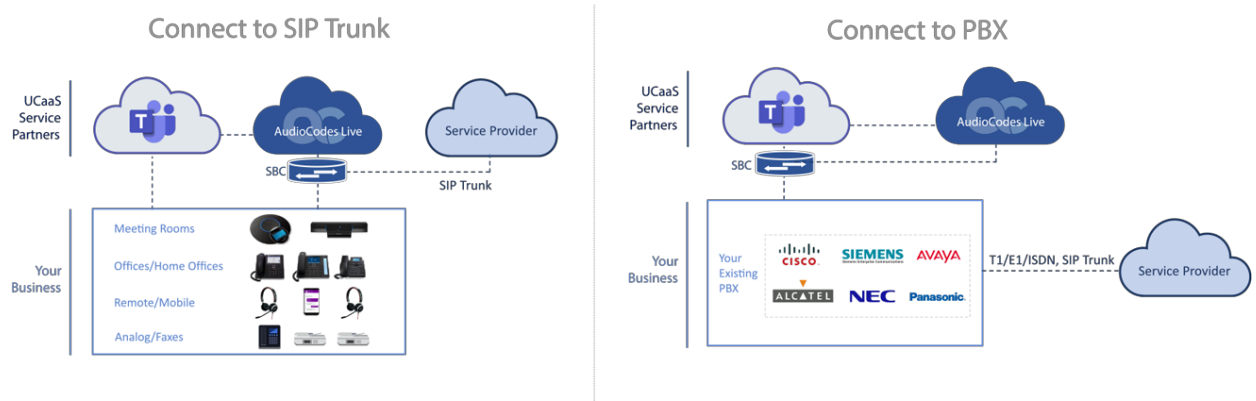


Figure 2: Current MS Teams calling SBC Architecture

Transnet wishes to appoint a service provider for the HOSTED PBX VOICE. Transnet recognizes the need to continuously adapt to new ways of working to enhance employee productivity. Through mobile workforce enablement, Transnet aims to provide reliable, secure, and high-speed connectivity for end-users, whether working away from the office, in the field, or from home. This approach will not only support seamless access to business systems and resources but will also facilitate effective two-way communication between the organization and its employees. By empowering staff with the tools and connectivity they need, Transnet seeks to foster greater collaboration, operational efficiency, and service delivery excellence.

4. TECHNICAL SPECIFICATION

The scope of this RFP has the following components:

- Hosted PBX services to support voice communication across all Transnet sites.
- Contact Centers
- SIP (Session Initiation Protocol) links,
- Hosted PABX VoIP solution (for NOC, port controls, receptionists and Receptionists' area, CTC's)
- Hosted Call Recording
- Usage and Telephone Management Service (TMS)
- Gateways for analogue lines used by TPL
- Dedicated Managed service support desk,

- AudioCodes SBC's Professional services and Support for integration with existing platforms (such as MS Teams).
- Disaster recovery and business continuity capabilities.
- Dedicated 24/7 field service support and SLAs.
- Scalability to accommodate business growth.
- MS Teams Devices and Headsets for ALL ODs.
- Temporal LTE routers in sites where there is no infrastructure.

4.1 Technical Requirements – VoIP Services Provisioning (Hosted PBX)

The appointed Service Provider must provision, manage, and maintain a cloud-hosted PBX solution that delivers enterprise-grade voice services, fully aligned with Transnet's communication, collaboration, and digital transformation strategy.

4.1.1 Core VoIP Services

The Hosted PBX solution must provide:

- Cloud-hosted voice platform (geo-redundant, carrier-grade infrastructure, available in South Africa, meeting ICASA and POPIA regulations).
- Enterprise-grade SIP trunking with capacity to scale on-demand.
- Direct Routing for Microsoft Teams to ensure seamless integration with Transnet's Microsoft 365 environment.
- Number Management Services:
 - Geographic and non-geographic number provisioning.
 - Number portability and retention of all existing DDI ranges.
 - Support for short code dialing and internal extension dialing.
- Voice Quality Standards:
 - End-to-end HD voice (G.711, G.722 codecs).
 - QoS, jitter, latency, and packet loss guarantee.
- Resilience: Automatic failover to redundant SBCs or backup routes in case of primary path failure.

4.1.2 Microsoft Teams Integration

- Full integration of Hosted PBX with Microsoft Teams calling (Direct Routing and/or Operator Connect model).
- Native Teams-enabled numbers for external and internal calling.
- Advanced Teams Telephony features:
 - Call Park, call queues, hunt groups, auto-attendants, IVR menus.
 - Shared line appearance, group pickup, team call groups.
 - Voicemail with transcription and integration to Outlook.
- Hybrid Deployment Support: For users migrating gradually from current Vodacom's Hosted PBX to Teams.
- Monitoring & Analytics: Call quality dashboards, MOS scoring, and troubleshooting tools integrated with Teams Admin Center.

4.1.3 Endpoints: Microsoft Teams Devices

The Service Provider must provision, configure, and support the following device types:

- Desk Phones (Certified for Teams)
 - Microsoft Teams-certified IP desk phones with touchscreen interface.
 - Native Teams app support (sign-in with Azure AD credentials).
 - Features: Presence indicators, speed dial, call transfer, voicemail, directory sync.
 - PoE support and dual Ethernet ports for LAN passthrough.
- Conference Room Devices
 - Team-certified conference room systems (audio + video).
 - Integration with Microsoft Teams Rooms (MTR) for boardrooms and meeting rooms.
 - Features: One-touch join, content sharing, proximity join, noise suppression.
 - Devices must include speakerphones, soundbars, cameras, and room controllers.
- Headsets
 - Microsoft Teams-certified wired and wireless headsets.
 - Features: Noise cancellation, wideband audio, busy light indicator, USB/Bluetooth connectivity.
 - Support for softphone use (Teams desktop/mobile app).
- Mobile Soft Clients:
 - Softphone apps for Android/iOS, integrated with Teams.
 - Secure VPN or TLS/SRTP encrypted traffic.

4.1.4 PBX Features & Functionality

- The Hosted PBX must be included at minimum:
 - Auto-attendant and IVR with multi-language support.
 - Call queues and hunt groups with advanced routing (time-of-day, skills-based, geographic).
 - Call recording (on-demand, always-on, selective).
 - Reporting and analytics (call detail records, queue performance, SLA monitoring).
 - Voicemail-to-email and unified messaging.
 - Fax-to-email and email-to-fax services.
 - Emergency call routing with location tagging (E911 equivalent for South Africa).
- Security & Compliance
 - End-to-end encryption (TLS/SRTP) for signaling and media.
 - Compliance with POPIA, GDPR, and ICASA regulations.
 - SBC firewalls and intrusion prevention.
 - Role-based access control for administrators.
 - Multi-factor authentication for Teams and Hosted PBX portals.

- **Management & Support**
 - A centralized self-service portal for administrators and users to manage numbers, users, devices, and billing.
 - 24/7/365 service desk and field service support with SLAs (response, resolution, escalation).
 - Proactive monitoring of SBCs, trunks, and Teams integration.
 - Device firmware management and patching.
 - Quarterly service reviews with performance and usage reporting.
- **Business Continuity & Disaster Recovery**
 - Redundant SBCs across multiple geographic locations.
 - Automatic failover to GSM/backup SIP trunks in case of outages.
 - Ability to re-route calls to alternate numbers, mobile phones, or Teams soft clients during outages.
 - DR testing conducted annually with Transnet IT.
- **Scalability & Future-Readiness**
 - Ability to scale from a few hundred to several thousand extensions across Transnet's ODs.
 - Support for 5G, fixed-wireless access, and next-gen codecs as they become commercially available.
 - Roadmap alignment with Microsoft Teams telephony evolution (Operator Connect, AI-powered transcription, sentiment analysis).
 - Support for integration with future Unified Communications & Contact Centre platforms.

5 Technical Requirements – AudioCodes (SBC)

5.1. General Requirements

The Service Provider must supply, configure, support, and maintain enterprise-grade Session Border Controllers (SBCs) based on AudioCodes technology to enable secure, reliable, and resilient voice services for Transnet's Fixed Telephony Communication (FTC) and Microsoft Teams calling environment.

The SBC solution must support Transnet's current and future voice strategy, including Microsoft Teams Direct Routing, SIP trunking, and interconnection with legacy and hosted PBX platforms.

5.2. Architecture and Deployment

- The SBC solution must support high availability (HA) architecture with active-active or active-standby configurations.

- The solution must support geographical redundancy, with SBCs deployed in at least two geographically separated locations.
- SBCs must be deployable in:
 - On-premises (physical appliance)
 - Virtualized environments (VMware / Hyper-V / KVM)
 - Hybrid cloud deployments (where applicable)
- SBC sizing must accommodate current call volumes with minimum 30% headroom for future growth.

5.3. Microsoft Teams Direct Routing

- The SBC must be Microsoft Teams Direct Routing certified by Microsoft.
- Full support for:
 - SIP over TLS
 - Media encryption using SRTP
 - Media bypass (where required)
- Seamless integration with Microsoft Teams Phone System and Transnet's internal Teams tenant.
- Support for coexistence between Microsoft Teams, and Hosted PBX platforms during migration phases.

5.4. Security Requirements

- Built-in protection against:
 - SIP-based attacks (DoS/DDoS, toll fraud, spoofing)
 - Unauthorized access and signaling manipulation
- TLS 1.2 or higher encryption for signaling.
- Secure media encryption (SRTP).
- Support for firewall traversal and NAT handling.
- Role-based access control (RBAC) and secure administrative access.

5.5. Interoperability and Standards

- Full compliance with SIP (RFC 3261 and related standards).
- Interoperability with:
 - AudioCodes IP phones
 - Yealink devices (existing Transnet estate)
 - Microsoft Teams-certified devices
 - Hosted PBX (N-PBX) platforms
 - SIP trunks from licensed ECNS providers
- Support for codec negotiation including:
 - G.711
 - G.729
 - Opus (for Teams)

5.6. Performance and Quality of Service

- SBCs must support:
 - Call admission control
 - Quality of Service (QoS) tagging (DSCP)
 - Real-time voice quality monitoring (MOS, jitter, packet loss)
- Ability to prioritize emergency and critical calls.
- Minimum up time of 99.95% per annum per SBC cluster.

5.7. Management, Monitoring and Reporting

- Centralized management via AudioCodes management platforms (e.g. OVOC or equivalent).
- Real-time monitoring of:
 - Call sessions
 - Trunk utilization
 - Faults and alarms
- Detailed reporting including:
 - Call detail records (CDRs)
 - Usage statistics
 - Capacity utilization
- Integration with Transnet's monitoring and service management tools (where applicable).

5.8. Licensing and Scalability

- All required licenses must be included for:
 - SIP sessions
 - Microsoft Teams Direct Routing
 - High availability
 - Security features
- The solution must allow non-disruptive scaling of call capacity and features.
- Licenses must be transferable under a Build-Operate-Transfer (BOT) model at contract termination.

5.9. Configurations, Support and Maintenance

- 24x7x365 support with defined SLAs.
- Proactive monitoring and fault management.
- Software upgrades, patches, and security updates must be included.
- Replacement of faulty SBC hardware or virtual instances within SLA timelines.
- Configuring and managing Session Border Controllers (SBCs).
- Setting up SIP trunking with carriers.
- Optimizing media transcoding for call quality.
- Implementing fraud prevention and secure SIP practices.

5.10. Compliance and Licensing

- The primary Service Provider must hold a valid ICASA ECNS license.
- The SBC solution must comply with all South African telecommunications regulations.
- No reliance on third-party ECNS licensing unless explicitly approved by ICASA.

5.11. Mandatory Compliance (Disqualification Criteria)

- The following are mandatory requirements and must be fully complied with:
 - Microsoft Teams Direct Routing certification
 - High availability and geographic redundancy
 - Secure SIP and media encryption (TLS/SRTP)
 - Interoperability with existing Transnet devices
 - 24x7 enterprise support

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