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1. Statement of Interest

B3Networks Pte Ltd is an SBO with a direct interest in the technical and operational requirements for establishing IP-based interconnection with Singtel's network.

2. Summary of Submission

Our submission focuses on enhancing the security, quality, and operational reliability of the proposed interconnection framework. We advocate for mandated **SIP over TLS**, **dual-stack IPv4/IPv6** connectivity, and a transition to **HD Voice** codecs while maintaining core compatibility. Furthermore, we propose a formal **99.9% availability SLA** with strict resolution timelines and clear load-shedding benchmarks to prevent arbitrary call rejections.

3. Specific Comments on Draft Schedule 1 Annexures

A. Quality of Service: Codec Optimization for HD Voice

While the draft recommends several narrowband codecs for fixed networks, we propose modernizing the list in Section 5.1.

- **Maintain G.711 Support:** We strongly support the continued mandatory inclusion of **G.711a/u (PCM)** to ensure universal compatibility and baseline voice quality.
- **Remove G.729:** We propose removing **G.729** from the recommended list, as its high compression is no longer necessary given the 1 Gbps minimum interconnection link capacity.
- **Mandate AMR and AMR-WB:** We recommend adding **AMR** and **AMR-WB (G.722.2)** as supported codecs.
- **HD Voice Priority:** Prioritizing **AMR-WB** is essential to enable high-definition voice quality, aligning with modern mobile network standards.

B. Capacity Management: Standardizing "Heavy Load" Benchmarks

Section 7.4.1 suggests the ISBC should reject new INVITE messages when the load is "heavy".

- **Define Thresholds:** We request that "heavy load" be defined by specific **CPU or occupancy percentage thresholds** to prevent arbitrary call rejections.
- **CPS and Concurrent Call Controls:** Clear **Calls Per Second (CPS)** and **Concurrent Call** controls should be provided for quality consistency.
- **Proportional Scaling:** We propose that the **CPS limit be set as a ratio to the concurrent call capacity purchased**, ensuring that higher capacity links receive proportionally higher signaling resources.

C. Network Connectivity: Mandating Dual-Stack (IPv4/IPv6)

The current manual focuses on IPv4 address space for connectivity.

- **Proposed Amendment:** We propose mandating **dual-stack (IPv4 and IPv6)** support for all Interconnect Links.
- **Rationale:** While the protocol stack already recognizes **IPv6** at the Network Layer, the testing specification is limited to IPv4. Dual-stack support is necessary to future-proof the interconnection.

D. Security: Implementation of SIP over TLS

The draft security model highlights IPSec and VPN tunnels as authenticated transport.

- **Proposed Amendment:** We propose that **SIP over TLS (Transport Layer Security)** be explicitly mandated for the signaling plane.
- **Rationale:** TLS provides robust, industry-standard encryption for SIP signaling, which is essential for preventing eavesdropping and impersonation attacks.

E. Operational Reliability: 99.9% SLA and S1 Resolution

Target response times are defined, but there are no committed resolution timeframes.

- **Availability SLA:** We propose a minimum service availability of **99.9%** for all Interconnect Links.
- **S1 Resolution Target:** For "Service Affecting" faults (S1)—such as total loss of SIP signaling or failure of more than one-third of links—we propose a mandatory **4-hour resolution time**.
- **Rationale:** A resolution-based SLA ensures that major service interruptions are addressed with the appropriate urgency to protect the end-user experience.