

Annexure A.

Scope of requirements replacement of Core Network Switches

1. INTRODUCTION

Petroleum Agency SA (herein referred to as the “Agency” or “PASA”) is a state-owned company involved in the search for appropriate energy solutions to meet the energy needs of South Africa and the sub-Saharan African region. It also manages the operation and development of the oil and gas assets of the South African government. The company falls under the auspices of the Department of Mineral and Petroleum Resources (DMPR). For more information on the company, you can visit our current website: www.petroleumagency.co.za.

2. PURPOSE

Petroleum Agency SA (PASA) is seeking quotations from suitably qualified Cisco networking Service Providers for the replacement and modernisation of the existing core switching infrastructure.

The existing core environment consists of a pair of Cisco Catalyst 3850-24XS switches. The proposed solution must provide a resilient, highly available and scalable core switching platform while maximising the reuse of the existing transceivers/modules.

Service Providers are requested to provide a complete end-to-end solution, including hardware, software/licensing, optics/transceivers, cables, implementation services, configuration, migration, testing, documentation and support.

3. EXISTING ENVIRONMENT

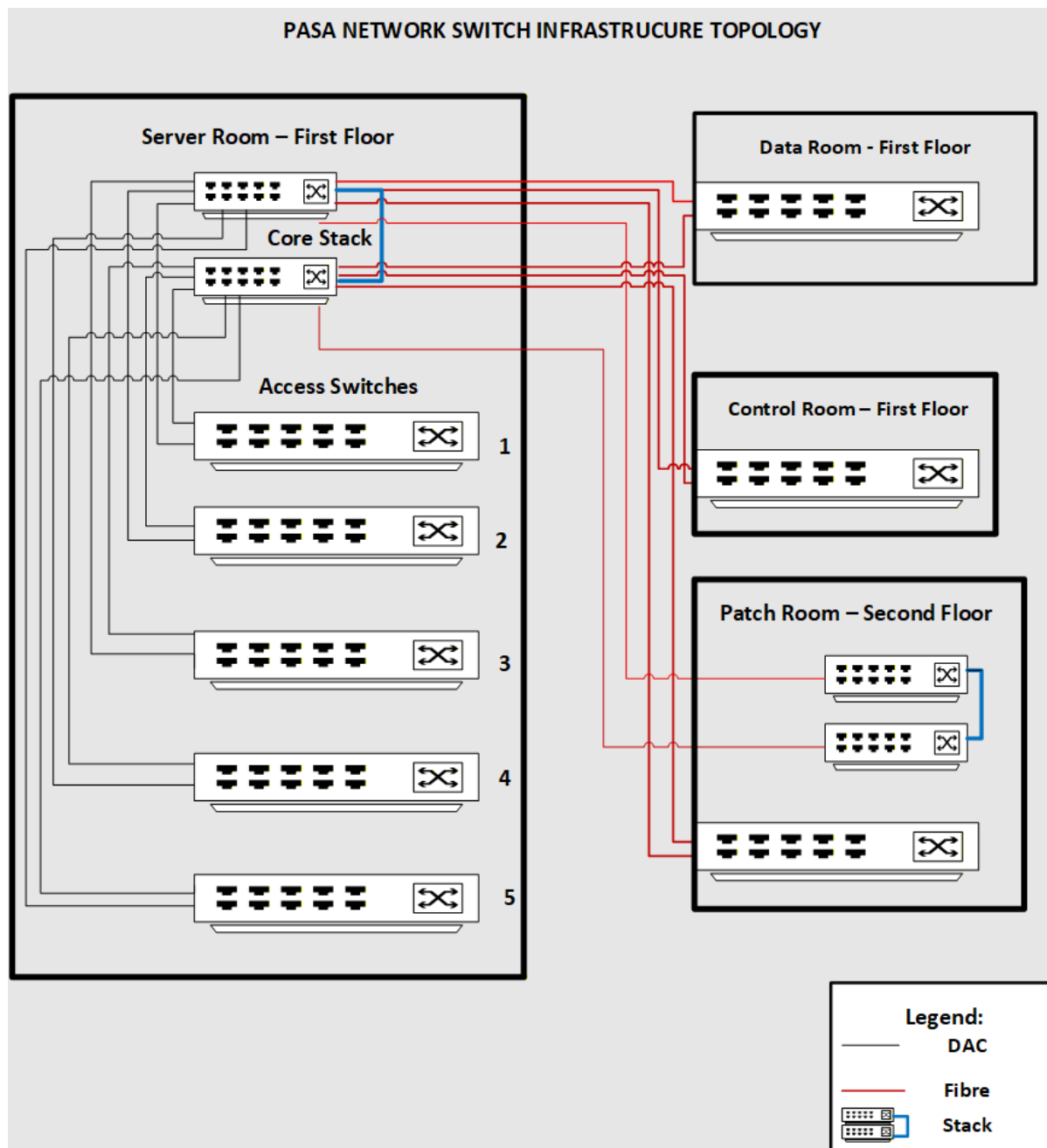
The existing core switching environment includes:

- 2 × Cisco Catalyst 3850-24XS core switches – to which 10 x Access switches are connected
- Existing 10Gbps network connectivity
- Cisco SFP-10G-SR-S 10Gbps optical transceivers – both switches fully populated
- Cisco SFP-H10GB-ACU10M 10Gbps active copper cables – (10 x DAC)

The successful Service Provider shall assess the existing environment and identify existing optics and cabling that remain suitable for reuse. Where deemed fit for purpose, such optics and cabling shall be retained and incorporated into the proposed platform.

The Service Provider must identify any compatibility limitations or additional components required.

Please see the diagram below, which illustrates the existing switch infrastructure topology:



The existing **core network stack comprises two (2) Cisco Catalyst 3850-24XS switches**.

The existing switches have reached end-of-life and are to be replaced with current-generation Cisco switches providing equivalent or improved functionality and capacity.

4. PROPOSED CORE ARCHITECTURE

The preferred solution is based on a pair of Cisco Catalyst C9500 series switches operating as a highly available StackWise Virtual pair.

- The primary quotation shall be based on **2 × Cisco Catalyst C9500-24Y4C**
- StackWise Virtual high-availability architecture
- Appropriate high-speed StackWise Virtual links using the available 40/100Gbps interfaces

- Reuse of the existing DACs, AOCs, transceivers and/or optics
- Appropriate software and licensing
- Redundant power supplies/components on each switch
- All hardware and accessories required for a complete operational solution

5. FUNCTIONAL REQUIREMENTS

The proposed core switching solution must:

- Provide a highly available two-switch core architecture.
- Support StackWise Virtual or an equivalent Cisco-supported high-availability architecture.
- Support 10Gbps connectivity to the existing environment.
- Support 25Gbps connectivity for future network expansion.
- Provide appropriate 40/100Gbps interfaces for StackWise Virtual connectivity and future high-speed uplinks.
- Support redundant connectivity to downstream network infrastructure where applicable.
- Support link aggregation/multi-chassis link aggregation functionality appropriate to the proposed architecture.
- Support VLANs, Layer 2 switching and Layer 3 routing required for the existing core environment.
- Support static routing and dynamic routing protocols as required by the existing environment.
- Support IPv4 and IPv6.
- Support QoS.
- Support network management, monitoring, logging and SNMP/telemetry as applicable.
- Provide appropriate security and management features for an enterprise core switching environment.

6. INTERFACE REQUIREMENTS

The preferred C9500-24Y4C solution shall provide, at minimum:

- 24 × 1/10/25Gbps SFP28 interfaces per switch.
- 4 × 40/100Gbps QSFP interfaces per switch.
- Appropriate interfaces/components for the StackWise Virtual interconnects.

7. EXISTING OPTICS AND CABLING

PASA intends to reuse existing 10Gbps infrastructure where technically and commercially appropriate.

The Service Provider must consider and confirm compatibility of existing:

- Cisco SFP-10G-SR-S (x48)
- Cisco SFP-H10GB-ACU10M (x10)

The design must clearly distinguish between:

- Existing equipment that will be reused.
- New equipment required.
- Existing equipment that is not supported or recommended for reuse.

8. LICENSING AND SOFTWARE

- The quotation must include all software licences and subscriptions required
- Cisco IOS XE software version/recommended release
- A minimum 3-year license, appropriate to and fully compatible with the proposed solution
- Indicate whether licensing is perpetual or subscription-based and any optional licenses

9. HARDWARE

The quotation must include all components, equipment, software, licences, accessories and services required to provide a complete and fully operational installation. The Service Provider shall assess the existing environment and identify existing optics, transceivers and cabling that are suitable for reuse. Where technically feasible and deemed fit for purpose, such existing components shall be retained and incorporated into the proposed solution.

The quotation shall include, where applicable:

- Core switches
- Power supplies
- Power cables
- Rack-mounting hardware
- StackWise Virtual interconnect cables/components
- DAC/AOC cables
- SFP/SFP28/QSFP transceivers and optics
- Fibre patch leads
- Copper patch leads
- Required breakout cables
- Recommended spare components, where applicable

- Any other components, accessories, licences or services required to deliver a complete and fully operational solution

10. IMPLEMENTATION SERVICES

A. Planning

- Review of the existing configuration.
- Review of the existing physical and logical topology.
- Review of VLANs, routing, trunks, port channels and uplinks.
- Identification of dependencies and risks.
- Development of a migration plan.
- Development of a rollback plan.

B. Configuration

- Initial switch configuration.
- StackWise Virtual configuration.
- Management configuration.
- VLAN configuration.
- Layer 3/routing configuration.
- Port-channel configuration.
- Uplink configuration.
- QoS configuration where required.
- Monitoring/logging configuration.
- Security hardening appropriate to the environment.

C. Migration

The Service Provider must provide a detailed migration methodology designed to minimise network downtime.

The migration plan must include:

- Pre-migration checks.
- Configuration backup.
- Validation of existing configuration.
- Installation and staging of new switches.
- Migration sequence.

- Service-impacting activities.
- Expected downtime.
- Validation procedures.
- Rollback procedure.

D. Testing and Acceptance

Following implementation, the Service Provider must perform documented testing.

Testing must include, at minimum:

- Switch health checks.
- Interface validation.
- VLAN validation.
- Layer 2 connectivity.
- Layer 3 connectivity.
- Routing validation.
- Link aggregation validation.
- 10Gbps connectivity testing.
- StackWise Virtual status validation.
- Redundancy/failover testing.
- Power/failure resilience testing where practical.
- Monitoring and management validation.
- Verification of all migrated services.

11. DOCUMENTATION

The successful Service Provider must provide updated documentation, including:

- Physical network topology.
- Logical network topology.
- IP addressing information relevant to the implementation.
- VLAN information.
- Port/interface allocation.
- StackWise Virtual configuration/design.
- Device hostnames and management information.

- Hardware inventory.
- Serial numbers.
- Software versions.
- Licence information.
- Configuration backups.
- Migration documentation.
- As-built documentation.

12. SUPPORT AND WARRANTY

The quotation must clearly state the proposed support and warranty arrangements.

Please specify:

- Hardware warranty period.
- Software support.
- Cisco support entitlement.
- Service Provider support hours.
- Remote support availability.
- On-site support availability.
- Target response time.
- Target restoration time.
- Hardware replacement/SLA.
- Escalation process.