Quality Council for Trades & Occupations
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Terms of Reference (ToR): Network Redundancy & Wireless Infrastructure Enhancement

1. Purpose

The purpose of this TOR is to enhance the QCTO network by improving resilience, redundancy, and wireless performance.

This includes:

- Deployment of redundant core switching infrastructure
- Introduction of an additional wireless controller for high availability
- Conducting a Wi-Fi survey to optimise coverage and eliminate dead zones

The solution aims to eliminate single points of failure, ensure business continuity, and improve overall network performance.

2. Objectives

- Eliminate single points of failure within the core network
- Provide core network redundancy using dual switches
- Provide wireless controller redundancy for high availability
- Improve wireless coverage and eliminate dead zones
- Enhance network reliability, availability, and performance
- Ensure compatibility with the existing Cisco infrastructure
- Strengthen network security and access control

Support future scalability requirements

3. Background and Current Infrastructure

3.1 Existing Network Infrastructure

The current network infrastructure at QCTO is supported by the following key devices:

- **Cisco Catalyst 9400 and 3x Cisco Catalyst 9300 Series Switches**
  These serve as the core/distribution and access switches, respectively, providing high-performance connectivity and scalability. They form the backbone for data transmission and support the growing number of connected devices.
- **Cisco Catalyst 9800 Series Wireless Controller**
  Manages the wireless network to ensure seamless connectivity and optimal performance for Wi-Fi-enabled devices. It supports 22 Cisco Access Points and manages 3 SSIDs.

- **22x Cisco Access Points (Model: C9120AXI-E)**
  Deployed across QCTO buildings to provide wireless coverage for internal users and external stakeholders. The wireless controller centrally manages these.
- **1 DHCP Server**
  Dynamically assigns IP addresses to devices connecting to the network. The current IP pool is limited to 333 addresses.
- **4x HPE DL380 Gen10 Servers**
  Provide computing resources for various applications and services.
- **1x 30TB MSA 2060 Storage Array**
  Centralised storage for organisational data and backups.

3.2 Current Challenges

- Single point of failure at the core network layer
- No redundancy for the wireless controller
- Potential Wi-Fi coverage gaps and dead zones
- Increasing demand for a stable and resilient network environment

4. Scope of Work

4.1 Supply and delivery

The service provider shall supply two (2) Cisco Catalyst C9300X-24Y-E switches, each inclusive of the required Cisco DNA Advantage licensing. In addition, one (1) Cisco Catalyst CW9800L Wireless Controller shall be supplied to provide redundancy with the existing wireless controller environment. The scope shall further include all necessary accessories required for a complete deployment, including but not limited to transceivers, cabling, and any associated components required for full integration into the existing infrastructure.

4.2 Installation

The service provider shall be responsible for the rack mounting and physical installation of the core switches and wireless controller within the data centre environment. This includes the provision of all power connections, network connectivity, and the integration of the newly supplied equipment into the existing network infrastructure, ensuring minimal disruption to ongoing operations.

4.3 Configuration

The appointed service provider shall configure the two core switches to operate in a high-availability, redundant architecture such as StackWise Virtual or an equivalent solution. This configuration shall include the implementation of redundant uplinks, link aggregation (LACP), and appropriate VLAN segmentation aligned to the organisation’s network design.

In the event of a failure of one core switch, the network must automatically fail over to the secondary switch with minimal disruption to services.

4.4 Professional Wi-Fi Survey

The service provider shall conduct a comprehensive professional wireless site survey across the QCTO work area covering approximately 5,478 m2 accross 3 floors Square metres using enterprise-grade specialised survey equipment.

This survey shall include RF coverage mapping, heat map creation, and detailed analysis of the wireless environment. The survey must identify coverage gaps, dead zones, and potential sources of interference affecting wireless performance.

Based on the findings, the service provider shall provide a detailed report with recommendations for optimising access point placement, improving coverage and performance, and preparing the wireless environment for future enhancements.

4.5 Testing and Validation

The service provider shall perform thorough testing and validation of the implemented solution. This includes verifying core switch redundancy and failover functionality, validating wireless controller high availability and switchover capability, and assessing overall network stability and performance. Wireless coverage improvements must also be validated against the survey results.

4.6 Documentation and Handover

Upon completion, the service provider shall deliver comprehensive documentation, including updated network architecture diagrams, detailed configuration records, and the full Wi-Fi survey report. Knowledge transfer sessions shall also be conducted to equip QCTO IT staff with the necessary skills to manage and maintain the upgraded environment.

5. Deliverables

- Fully implemented redundant core switching environment
- Configured wireless controller high availability solution
- Completed Wi-Fi survey report with recommendations
- Updated network documentation and diagrams
- Test and validation report

6. Evaluation Criteria

6.1.

Evaluation Criterion	Description / Requirements	Points
1. Detailed project plan highlighting Experience enterprise-grade networking in i.e, Switching & Wireless Redundancy	Submission of a comprehensive project plan demonstrating experience in deploying, configuring, and supporting Cisco Catalyst switching, wireless controllers, and high availability solutions.	***10 Points*** **10 Points:** Comprehensive, detailed plan with strong Cisco experience and clear execution approach. **05 Points:** Moderate plan with some gaps. **0 Points:** Incomplete or unclear plan.
2. References from similar projects	Reference letters for comparable projects; Evidence of successful delivery of similar high-speed network backbone projects. The reference letters must be on a client letterhead, dated, signed, and no more than six years old. The bidding company must be a registered Cisco equipment reseller.	***15 Points*** 5 or more references = 15 points 3-4 reference letters = 10 points 2 reference letters = 05 points
3. Lead Cisco Security Engineer	CCIE Security with a valid CCIE number AND a minimum of five years' Cisco network experience	***25 points*** CCIE number for Security = 25 points NO CCIE number for Security = 0 points
4. Lead Network Engineer (Routing and Switching)	CCIE Routing and Switching Certification with a valid CCIE number AND a minimum of five years of Cisco network experience	***20 points*** CCIE number for Routing & Switching = 20 points No relevant certifications = 0 Points
5. Wireless Specialist	Cisco wireless certification (e.g. CCNP Wireless or equivalent) AND minimum 5 years' experience in wireless controller deployment and Wi-Fi survey/design	***10 points*** 10 Points: Relevant certification and experience 0 Points: No relevant certification

Evaluation Criterion	Description / Requirements	Points
6.Wireless survey equipment reseller or resource status	The bidding company must be a registered reseller OR have a resource certified in the product to be used.	***20 Points*** *Registered Wireless Survey Equipment Reseller = 20 points* *OR* *Certified in the Wireless Survey product to be used = 20 points* *NOT a certified reseller nor have a certified resource in the wireless survey product to be used = 0 points*

To qualify, a bidder must score **85/100** or above, across the six criteria.

6.6.4. Support and Maintenance

- Post-implementation support plan (3 months warranty).
- Availability of technical support.
- SLA commitments for uptime and issue resolution.

7. COMPULSORY INFORMATION SESSION

7.1 The QCTO has one site situated in Hatfield, Pretoria.

7.2 It is important to note that site inspection and evaluation of the existing infrastructure is compulsory before sending through your quotation.

8. ENQUIRIES

8.1 For further information, please contact the following QCTO staff members:

Technical enquiries can be directed to:

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