

ITT2B -Scenario: Communications Engineering

Question

1. Background

- 1.1. Communication systems are deployed throughout the TfL to support transportation services, customer information and management and in, depot and station services. Communication systems support is provided locally at station / site control positions and also at centralized (network) and line-based control centers.
- 1.2. TfL services operations rely upon reliable and responsive communication systems for normal (routine), degraded (faults present) and emergency (life threatening) conditions.
- 1.3. Communication networks (e.g. the LU Connect transmission network) can provide a QoS rated bearer service for a range of telecoms and non-telecoms asset traffic.

2. Key Requirements

- 2.1. Communication networks are required to be optimised to the latest TfL and relevant industry standards with reduced whole-life costs including low obsolescence risks.
- 2.2. Communication networks shall comply with statutory requirements / EC directives.
- 2.3. The network design needs to take into account the full range of physical conditions including environmental factors likely to affect network performance.
- 2.4. Communication networks need to be capable of being scalable and upgradeable without causing any hardware / software conflicts.
- 2.5. The network shall be a managed network and be capable of supporting different QoS levels
- 2.6. Network access arrangements shall require user authentication and authorisation
- 2.7. The network shall be IP compatible and designed to provide 99.999% availability and very low latency, jitter and packet loss requirements to enable multicast HD live video streaming and unicast audio streaming to be supported.
- 2.8. The network shall be resilient to single point / catastrophic failures. Malfunctions /failures that could degrade network security shall be prevented by design or detected as an alarm sent to a central monitoring station.
- 2.9. The supplier needs to show how system changes are controlled and overall quality of outputs designs/ documentation/ processes is managed.

3. Key Accountabilities

- 3.1. Manage delivery of Communication network requirements ensuring adequate provision of assurance to relevant TfL stakeholders
- 3.2. Establish and maintain effective relationships with Sponsor and programme team discipline engineers, Operational / user representatives, Network security, third-party suppliers and any other stakeholders.
- 3.3. Ensure dependencies are understood and appropriately managed, both within and across Projects and Programmes, and coordinated with other business units in TfL/LU
- 3.4. Ensure risks and issues are actively managed in accordance with TfL/LU procedures and escalated in a timely manner where necessary.

4. Scenario Description

- 4.1. TfL is seeking to consolidate the many services (required by various TfL depts.) run over disparate networks into a smaller number of IP-compatible integrated core networks.
- 4.2. These integrated networks will provide appropriate levels of security to minimise risks to TfL. QoS levels will be managed in line with user functional / system requirements.
- 4.3. Network consolidation also requires enabling / Interface (hardware/ software) work to be carried out e.g. at stations demarcation points/ other points of presence PoP to ensure a high level of integration of services (e.g. CCTV, voice/data) delivered and received via the network.
- 4.4. At a strategic level network capacity planning/ traffic analysis needs to be carried for the core network(s) and the local networks to inform the design.
- 4.5. TfL is committed to reduce whole-life costs through smart procurement, pragmatic risk management and cost-efficient design/ maintenance strategies.

5. Response Content

- 5.1. In no more than 1500 words contained in a maximum of 4 sides of A4 (pictures, diagrams etc. may be included in the sides of A4 limit) evidence the following:
 - In respect of the provided scenario description, how you would deliver Communication networks that complied with the key requirements set out in section 2.
 - How would you deliver your key accountabilities?
 - How would you ensure that the whole life cost of the proposed solution was understood?
- 5.2. Give an account summarising your specialist knowledge of Communication network design/ delivery capability (500 words max from the available 1500 words)