

ITT2B -Scenario: SCADA

Question

1. Background

- 1.1. SCADA systems are used on the LU network to remotely monitor and control applications / assets e.g. power distribution equipment in substations, Lifts & escalators, Electrical & mechanical assets, Telecoms assets etc.
- 1.2. SCADA control and monitoring enables higher utilisation of maintainer resources and MTTR (mean time to repair) times to be reduced. Personnel attending to site alarms / maintenance activities will be better prepared having obtained (via the SCADA) system health / diagnostic and alarm information ahead of the visit.
- 1.3. Asset health / status and fault alarm data routinely collected (in real-time) via the remote monitoring system can be used by the LU Asset Performance team to inform asset management and maintenance strategies.

2. Requirements

- 2.1. SCADA systems are required to be optimised to deliver system performance to latest LU and relevant industry standards with reduced whole-life costs including low obsolescence risks.
- 2.2. SCADA system design, recommended processes and installation shall comply with any relevant statutory requirements and any related EC directives.
- 2.3. A resilient IP compatible SCADA WAN shall be provided designed to provide 99.999% availability and very low latency, jitter and packet loss.
- 2.4. The SCADA WAN shall be capable of providing connectivity between the LU Connect transmission network and site/station (Ethernet) compatible LAN's
- 2.5. A centralised SCADA network operations/ control management system needs to be provided to facilitate remote configuration, control and monitoring of the network devices.
- 2.6. Network access arrangements shall require user authentication and authorisation
- 2.7. The SCADA design needs to take into account the full range of physical conditions including environmental factors, potential operator error likely to affect system performance.
- 2.8. An appropriate SCADA alarm management strategy should be provided
- 2.9. SCADA networks /sub-systems need to be capable of being expandable and upgradeable without causing any hardware / software conflicts
- 2.10. All SCADA alarms/ events should be time stamped to accuracy within +/- 1 sec of UTC and stored permanently in a fully retrievable log in non-volatile memory. The SCADA time reference signal should be derived from a GPS receiver or equivalent precision source.
- 2.11. SCADA systems need to self-test key functional and system requirements and permanently log and self-report these results via appropriate alarms as necessary
- 2.12. 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 SCADA system requirements ensuring adequate provision of assurance to relevant LU 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. London Underground is installing SCADA networks to remotely control and monitor a range of non-power assets including Telecoms, pumps/ sumps, L&E and E&M assets.
- 4.2. The SCADA network should be sufficiently flexible to actively monitor/collect a wide range of asset related status/ alarm data to a defined level of accuracy and reliability and distribute these to a central SCADA server
- 4.3. To assist in improving Asset management and Asset performance (maintenance) strategies; the SCADA management software is required with the ability to process/ analyse asset data / alarms. The management system should be able to produce asset performance reports.
- 4.4. LU 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 SCADA systems that complied with the key requirements set out in section 3.
 - How would you deliver your key accountabilities?
- 5.2. Give an account summarising your specialist knowledge that demonstrate your SCADA design/ delivery capability (500 words max, from the 1500 available words).