



سولوسي لجوروتراين، لوكيستيك دان لاتيھن بروني  
Brunei Engineering, Logistics and Training Solutions

## SECTION 2

### TECHNICAL SPECIFICATIONS AND REQUIREMENTS

#### FOR

#### THE SUPPLY, DESIGN, INSTALLATION, IMPLEMENTATION, COMMISSIONING, MAINTENANCE AND SUPPORT OF

#### IT SYSTEMS AND INFRASTRUCTURE REFRESH PROJECT

**TENDER REFERENCE: BELTS/IT/2024/1**

Tender Reference: BELTS/IT/2024/1

Tender Title: The Supply, Design, Installation, Implementation, Commissioning, Maintenance & Support of IT Systems and Infrastructure Refresh Project

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## 1 INTRODUCTION

### 1.1 Objective

- 1.1.1 The tender is issued for a project implementation effort with the main aim for a technology refresh initiative leveraging on the latest hybrid cloud and on premise technology and products. The key implementation objectives are to replace and upgrade BELTS current on premise servers and network appliance that will enhance and compliance to CIS Security Controls Version 8.
- 1.1.2 The project implementation shall also include redundancy and disaster recovery solutions for all critical network infrastructure, appliances and systems such as but are not limited to Domain Controllers, Email and SANS to ensure continuity of business operations. Scalability of the solutions shall also be put into consideration to address future expansions.
- 1.1.3 The expected outcome is to provide a highly secure, highly available and scalable IT systems and infrastructure that support the core business functions towards organizational operational excellence.
- 1.1.4 The tender shall include the supply, design, site preparation, installation, implementation, commissioning of the whole solution inclusive of all systems' hardware, software, network equipment and infrastructure, with maintenance and support over a period of five (5) years. Where possible and deemed appropriate, solution shall be cost-effective by allowing consolidation of physical server hardware, network infrastructure and deployment of bundled software products.
- 1.1.5 The project implementation shall deliver enhanced control and management of all systems and infrastructure centrally from BELTS head office data center to all BELTS sites via secure point-to-point network links.
- 1.1.6 The entire systems and infrastructure implemented shall comply with the CIS Security Controls Version 8 that shall mitigate security risks and vulnerabilities of information systems and assets. It is recommended that the CIS Security Controls to be implemented in line with ISO 27001 standards.

### 1.2 Products and Services Sought

- 1.2.1 Tenderers are invited for the supply, delivery, design, installation, configuration, testing, training, commissioning, maintenance and support of new hardware and software, the project management and other related services for a technology refresh of core IT systems and related infrastructure.
- 1.2.2 Tenderers are required to propose a system solution which can be implemented and commissioned within a strict timeline of **five (5) months** for the entire project's supply, delivery and implementation efforts.
- 1.2.3 The successful Tenderer shall be the Contractor and single point of contact for all products and services offered and shall be fully responsible for the overall project management.
- 2.1.1 The Tenderer shall propose the system solution, including the high-level architecture diagram in **Schedule 9 – Preliminary Design Document** of **Section 3 – Tender Schedules**, which shall demonstrate the capabilities and functions required.

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## 2 TECHNICAL SPECIFICATION AND REQUIREMENTS

### 2.1 Deployment Sites

- 2.1.1 The Tenderer shall install and deploy the systems and the relevant infrastructure and components at the following sites;
- 2.1.1.1 BELTS Head Office, Setia Kenangan Complex, Kiulap (Main Data Centre)
  - 2.1.1.2 BELTS Engineering Office, Tapak Perindustrian Salar, Muara (Branch and Disaster Recovery site)
  - 2.1.1.3 BELTS Training, Training Simulation Centre, Penanjong Garrison, Tutong (Branch site)
  - 2.1.1.4 BELTS State Medical Store, Madaras, Rimba (Branch site)
- 2.1.2 The Tenderer shall propose all server hardware and network equipment/appliance that must come with redundant power supply components for connection to UPS systems at all the deployment and Disaster Recovery (DR) sites.
- 2.1.3 Tenderer must supply a new Uninterrupted Power Supply (UPS) system for **DR site only**. For other deployment sites, existing UPS system are in placed.
- 2.1.4 All server hardware and network equipment/appliance **must fit into existing racks at all deployment sites and DR site**.

Deployment Sites	Dimension	Quantity
BELTS Head Office	42U Height, 600mm Wide x 870mm Depth	2
BELTS Engineering Office	42U Height, 600mm Wide x 870mm Depth	1
BELTS Training Simulation Centre	42U Height, 600mm Wide x 1100mm Depth	1
BELTS DR Site	42U Height, 600mm Wide x 1100mm Depth	1

- 2.1.5 The Tenderer shall include with the supply of all server hardware and network equipment/appliance such as but is not limited to the following components;
- 2.1.5.1 KVM system hardware and other appropriate hardware/component that provides systems' consoles to operate and their management.
  - 2.1.5.2 All wiring, cabling and other components for interconnections between systems at all deployment sites should be properly labelled and documented.

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## 2.2 Network Infrastructure

- 2.2.1 The Tenderer shall provide the physical and logical network architecture design for the proposed system with secure standard-based encrypted transmission using SSL technology via any connection. They must also have redundancy, fail-over and load balancing components to ensure high availability of system.
- 2.2.2 The Tenderer shall supply all new network equipment and appliances stated in [Item 1 – NETWORK INFRASTRUCTURE ANNEX A – TECHNICAL SPECIFICATIONS](#) inclusive of all related software to operate them and in the appropriate quantities, and shall be utilised for but is not limited to the following services and/or functions;
- Firewalls
  - Core Switches
  - Floor Switches
  - External Switches
  - Access Points
  - Patch Panels
  - Intrusion Detection and Prevention
  - Web Application Firewall
  - Email Firewall
  - Proxy Server
- 2.2.3 The Tenderer shall be supplying new network infrastructure for all deployment sites stated in Clause 2.1.1 except for deployment site stated in Clause 2.1.1.4
- 2.2.4 For deployment site stated in **Clause 2.1.1.4** BELTS State Medical Store, Madaras, Rimba, there is an existing network infrastructure with Fortinet network equipment. Hence, the Tenderer shall ensure that the supply of new network infrastructure shall be compatible and work seamlessly with the existing Fortinet equipment.
- 2.2.4.1 However, Tenderer shall supply additional wireless Access Points only in appropriate quantities for BELTS State Medical Store.
- 2.2.5 Deployment should include the implementation of Network Packet Shaper and/or Quality of Service (QoS) to control traffic to ensure the performance of critical applications and services.
- 2.2.6 The tenderer shall provide all network cables required for the proposed network infrastructure (including network connection uplink between the core switch to the 6<sup>th</sup> floor access switch).
- 2.2.7 Where possible, the Tenderer shall implement on the system solution CIS Security Controls Version 8 to enhance the security posture.

## 2.3 Server Infrastructure

- 2.3.1 The Tenderer shall provide the physical and logical server architecture design for the proposed systems with secure standard-based encrypted transmission using SSL technology via any connection. They must also have redundancy, fail-over and load balancing components to ensure high availability of systems.

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- 2.3.2 Where possible, the Tenderer shall implement on the system solution CIS Security Controls Version 8 to enhance the security posture.
- 2.3.3 The Tenderer shall supply all new server hardware inclusive of all related software to operate them and in the appropriate quantities, with minimum technical specifications as stated in [Item 2 – SERVER INFRASTRUCTURE ANNEX A – TECHNICAL SPECIFICATIONS](#). The server hardware shall be utilised for and is not limited to the following services and/or functions;
  - 2.3.3.1 Domain Controller
    - a. Active Directory
    - b. Azure Active Directory
  - 2.3.3.2 DHCP Server
  - 2.3.3.3 SAN Storage
  - 2.3.3.4 Microsoft Exchange Email
  - 2.3.3.5 Microsoft SharePoint
  - 2.3.3.6 Virtualization Host
  - 2.3.3.7 Data Backup and Recovery
  - 2.3.3.8 File Server
- 2.3.4 Where possible and deemed appropriate, consolidation of physical server hardware bundled with relevant software products (where applicable) shall be proposed for a cost-effective approach without compromising high availability and optimal performance, responsiveness and reliability of systems implemented.

## 2.4 Domain Controller

- 2.4.1 The Tenderer shall supply, design, install, configure and commission a new server that is able to integrate with Microsoft Entra ID (previously known as Azure Active Directory).
- 2.4.2 Currently BELTS' is using "CORP.RBTS.COM.BN" domain name and the new system solution shall rebrand and use BELTS' new domain name "BELTS.COM.BN".

## 2.5 Storage Area Networks (SANS)

- 2.5.1 BELTS is currently utilizing SAN storage units for central storage of corporate data which comprises users' mailboxes and electronic files. Tenderer shall therefore propose solutions/systems for these Data Storage as well as its Backup and Recovery that meet but not limited to the following key requirements;
  - 2.5.1.1 The Data Storage solution must be able to use and work with **existing one unit of DELL EMC SCv3020 24TB storage capacity**.
  - 2.5.1.2 To supply additional SAN storage unit(s) in the appropriate quantity to meet a minimum 80TB overall storage capacity that can cater the next 5 years. This is to cater to current data storage needs and future data growth.
  - 2.5.1.3 The Tenderer shall also perform data migration effort from existing SAN Storage if required.
  - 2.5.1.4 Automated backup and recovery capabilities utilising high-speed processing for **online and offline backups with data encryption protection to SAN (DR Site)**.

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2.5.1.5 Allow both full and incremental backups configurable in periodic intervals with minimum of two (2) backup sets.

2.5.1.6 Has the capability to archive and store backup media sets at BELTS DR Site as part of business continuity management of BELTS critical corporate data.

## 2.6 DHCP Server

2.6.1 This solution must be designed with DHCP Failover concept with load balancing.

## 2.7 Exchange Email Server Upgrade

2.7.1 System solution shall include an upgrade of the **on-premise Microsoft Exchange system** from current version 2013 to latest version including;

2.7.1.1 Supply of new server hardware inclusive of OS and relevant software licenses for **300 email user accounts**.

2.7.1.2 Currently BELTS are subscribed to Microsoft 365 Exchange licenses, the upgraded server shall be implemented with a hybrid exchange configuration that is able to integrate between the upgraded on-premise Exchange Server with existing Microsoft 365 Exchange Online.

2.7.1.3 The system solution should be able to configure, manage and segregate mailboxes both on cloud and on-premise. This is to address data sovereignty and sensitivity concerns.

2.7.1.4 The upgraded system is required to be integrated with existing FortiMail 200F email gateway appliance. As part of the system upgrade scope of work, the Tenderer shall rebuild and/or reconfigure this existing FortiMail 200F appliance so that the systems work together seamlessly.

2.7.1.5 The Tenderer shall also perform relevant data migration from the existing to the newly upgraded email system.

2.7.1.6 Due to criticality of email services, the Tenderer shall propose an upgraded Exchange email with system high-availability (HA) and automatic fail-over mechanism.

## 2.8 Microsoft SharePoint

2.8.1 The Tenderer shall supply, design, install, configure and commission an on-premise Microsoft SharePoint Server.

2.8.2 The server should be implemented with a hybrid configuration that is able to integrate with BELTS subscribed Microsoft 365 SharePoint data.

2.8.3 The system solution should be able to configure, manage and segregate data both on cloud and on-premise. This is to address data sovereignty and sensitivity concerns.

## 2.9 Business Continuity Management

2.9.1 All systems and network infrastructure shall have redundancy, fail-over and workload balancing to ensure systems' high availability.

2.9.1.1 System solution shall include a disaster recovery capability to be operated at a secondary site that runs at a minimum of 60% capacity of the primary site (i.e.

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BELTS Head Office).

- 2.9.1.2 The DR system will be installed and operated at the secondary site which is located at BELTS Salar site.
- 2.9.1.3 The Tenderer shall provide/advise BELTS the requirements such as but are not limited to environmental (such as room temp & room humidity), server rack space and network bandwidth requirements for HQ to DR Site synchronization accordingly therefore BELTS will be well informed on addressing these requirement.
- 2.9.1.4 The Tenderer shall include as part of the proposal supply, design, build and commission all new relevant hardware, software and other related components in the appropriate quantities to operate the DR system inclusive of all hardware standard manufacturer warranties and relevant software licenses for **5 (five) years** coverage.
- 2.9.1.5 The Tenderer shall include a **Disaster Recovery Plan** no later than **two (2) weeks** prior to the date of Commissioning that includes but is not limited to the following:
  - a. Detailed Standard Operating Procedures for DR Management;
  - b. Quarterly failover checks and procedures;
  - c. Synchronisation mechanism; and,
  - d. Alerts and Reports.

## 2.10 Hardware

- 2.10.1 The Tenderer shall specify the **List of Hardware** to be supplied in **Schedule 6 of Section 3 – Tender Schedules**, in order to meet the requirements of relevant **Clause 2.2 to 2.9** of this **Section 2 – Technical Specifications and Requirements**, whereby the proposed hardware shall meet or exceed the following:
  - 2.10.1.1 Delivers high performance, responsiveness, and reliability of the entire system solution to support the business operations.
  - 2.10.1.2 Delivers high availability and redundancy of the entire system solution to ensure continuity of daily business operations.
  - 2.10.1.3 All new hardware supplied by the Tenderer shall have standard manufacturer warranty from the Original Equipment Manufacturer for a coverage period of **five (5) years**.
- 2.10.2 **Obsolescence Management**
  - 2.10.2.1 The Tenderer shall propose up-to-date hardware for this project, whereby the item's debut to market does not exceed more than **eighteen (18) months** from the Tender Submission Deadline.
  - 2.10.2.2 In the event where the proposed hardware exceeds its debut to market beyond **eighteen (18) months** at the time of Contract Award, the Contractor shall supply and deliver hardware that is equivalent to or better than their initially proposed hardware.

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- 2.10.2.3 The final list of hardware shall require approval from BELTS, prior to supply and delivery.

## 2.11 Software

- 2.11.1 The Tenderer shall propose all software and licenses in order to meet all requirements as stated in relevant **Clause 2.2 to 2.9** of this **Section 2 – Technical Specifications and Requirements**. All software supplied shall be procured with;
- 2.11.1.1 all relevant licenses to operate the entire system and cater for 350 end-users and host machines (physical and virtual);
- 2.11.1.2 inclusive of all costs from the initial acquisition and all subsequent renewal fees for a coverage period of **five (5) years**.
- 2.11.2 The Tenderer shall propose software to cater for all necessary system environments, including the production environment, testing environment, training environment, and etc. whereby the Tenderer shall be responsible for the preparation of their own development and testing environment.
- 2.11.3 The Contractor shall also be responsible to provide its own software/tools to perform all Implementation and Related Services (see **Clause 3**).
- 2.11.4 The full **List of Software and Licenses** shall be included by the Tenderer in **Schedule 7** of **Section 3 – Tender Schedules**.
- 2.11.5 For the software proposed in **Clause 2.11.1** the Tenderer shall propose the newest stable version of software available.
- 2.11.6 All software and utilities package proposed by the Tenderer shall be made available in the British English Language.
- 2.11.7 The Tenderer shall propose for all necessary licenses for software and hardware licenses (if any) listed above, that are required to be installed on site(s) and any required hardware. The full list of licenses to be included in **Schedule 7** of **Section 3 – Tender Schedules**.
- 2.11.8 The Tenderer shall ensure that all software and hardware licences (if any) are sufficiently proposed to enable all devices to operate in full.
- 2.11.9 The Tenderer shall ensure that all licenses provided as per **Clause 2.11.4** shall be valid within the coverage period of five (5) years.
- 2.11.10 The Contractor shall be responsible for scheduling and executing any software updates or patches, and to schedule upgrades or updates as necessary, within the Warranty and Support period. Prior to any upgrades, the Contractor shall also be responsible in ensuring that upgrades or updates shall not negatively impact existing software, and to minimise the period of downtime.
- 2.11.11 The Contractor shall provide the original Installation media and user guide for the proposed solution.



### 3 IMPLEMENTATION AND RELATED SERVICES

#### 3.1 General Requirements

- 3.1.1 Implementation and Related Services refer to the services provided by the awarded Tenderer (“The Contractor”) from the commencement of the Implementation Phase of the project to the complete and stable business operation of the solution, and includes the following:
- 3.1.1.1 Project Management;
  - 3.1.1.2 Implementation Services;
  - 3.1.1.3 Installation and Integration;
  - 3.1.1.4 User Acceptance Testing;
  - 3.1.1.5 Change Management;
  - 3.1.1.6 Data Migration;
  - 3.1.1.7 Training;
  - 3.1.1.8 Warranty; and,
  - 3.1.1.9 Maintenance and Support.
- 3.1.2 The Contractor shall warrant that the proposed overall solution design, infrastructure, components, and related maintenance and support services shall achieve but are not limited to the following expectations:
- 3.1.2.1 Value for Money;
  - 3.1.2.2 Positive Return on Investment;
  - 3.1.2.3 Highly Efficient and Highly Available; and,
  - 3.1.2.4 Robust and Scalable, with a minimum service life of **five (5) years**.
- 3.1.3 BELTS shall furnish the Contractor with pertinent information, knowledge, and assistance as the Contractor may reasonably and properly require to enable it to perform its obligations stipulated in this tender.
- 3.1.4 The Contractor shall exercise all reasonable skills, care, and diligence in its conduct of the implementation and related services.
- 3.1.5 The Contractor shall comply with all reasonable instructions of the BELTS Project Team so far as they are applicable to the implementation and related services. Nothing in this paragraph shall be deemed to affect the responsibility of the Contractor in connection with the duties undertaken by it under this Tender.

#### 3.2 Project Management

- 3.2.1 The Tenderer is required to submit an initial **Project Implementation Plan** in **Schedule 8 of Section 3 – Tender Schedules** for the Implementation and Related Services as listed in **Clause 3.1.1**, which includes at minimum the following:
- 3.2.1.1 Overview of Project Management approach;
  - 3.2.1.2 Estimated Project Duration;

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- 3.2.1.3 Overview of Project Stages and estimated duration, to be displayed on a Project Timeline or Gantt Chart;
  - 3.2.1.4 Description of key activities, deliverables, or project milestones at each Project Stage; and,
  - 3.2.1.5 Identification of initial risks and their mitigation (**Risk Management Plan**).
- 3.2.2 The Contractor shall produce a **Detailed Project Implementation Plan** within **one (1) week** after Contract Award, which includes detailed breakdown of the works to be conducted, and describes at minimum but not limited to:
  - 3.2.2.1 A Detailed Project Master Schedule
  - 3.2.2.2 The detailed breakdown of activities (Work Breakdown Structure) and their duration and sequence
  - 3.2.2.3 Project Milestones
  - 3.2.2.4 Project Resource Requirements required for specific stages in the Implementation Phase
  - 3.2.2.5 Project Deliverables to be produced on completing specific Project Milestones
  - 3.2.2.6 Project and Quality Management Approach such as Project Governance
  - 3.2.2.7 Approach for continuous Risk Identification
- 3.2.3 The Contractor shall nominate, at minimum, one full-time Project Manager, whereby the responsibilities of the Project Manager shall be, but not limited to, the following:
  - 3.2.3.1 Perform day-to-day planning, control, and administration of the project, including acting as liaison between other suppliers/sub-contractors and the project team;
  - 3.2.3.2 Oversee, control, prepare Progress Reports, and monitor the performance of all services throughout the Implementation Phase, in accordance to the **Detailed Project Implementation Plan**;
  - 3.2.3.3 Advise BELTS in a timely manner on any deviations from the Detailed Project Implementation Plan, and to recommend appropriate preventive and corrective actions;
  - 3.2.3.4 Ensure the successful implementation of the solution within the specified schedule and timeframe, and in accordance to the specifications and performance expectations; and,
  - 3.2.3.5 Attend regular and ad-hoc meetings, progress briefings, and reviews for end-stage evaluations for project milestones as required by BELTS.
- 3.2.4 Replacement or substitution of the full-time Project Manager shall require the prior written consent of BELTS. In the event that the proposed human resource suddenly becomes unavailable, the Contractor shall be responsible to find an acceptable, qualified, and equivalent substitute within **three (3) working days**.
- 3.2.5 The Contractor shall provide quality management and assurance services, including regular quality checks on Implementation and Related Services, as well as quality assurance on all the deliverables.
- 3.2.6 In addition, the Contractor shall be responsible for managing and overseeing all the works and services performed during the Implementation Phase, including those provided by its Sub-Contractor(s).

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### 3.3 Implementation Services

3.3.1 The Tenderer shall submit in **Schedule 4 of Section 3 – Tender Schedules**, their company and proposed personnel's track records or past experiences in similar IT refresh project implementation and deliverables of the proposed hardware, software, appliances and systems including any supporting qualifications or references.

#### 3.3.2 Design

3.3.2.1 The Tenderer shall submit a **Preliminary Design Document** in **Schedule 9 of Section 3 – Tender Schedules** for the proposed solution, in accordance to the requirements and specifications in **Clause 2**.

3.3.2.2 On award, the Contractor shall conduct a detailed system and architecture analysis and design exercise taking into considerations the existing infrastructure and systems at all deployment sites, and submit a **Detailed Design Document** as part of the Implementation Services for the proposed solution for the review and approval by BELTS.

3.3.2.3 The **Detailed Design Document** shall be developed no more than **four (4) weeks** after the commencement of the Contractor's services.

3.3.2.4 The Contractor shall be responsible for revising and re-submitting the **Detailed Design Document** subject to amendments, discrepancies, or requirements as identified by BELTS.

#### 3.3.3 Develop

3.3.3.1 The Contractor shall develop the proposed solution based on the approved **Detailed Design Document** as stated in **Clause 3.3.2.2**.

3.3.3.2 Any deviation to the **Detailed Design Document** shall be formally communicated to BELTS via the Project Manager, and shall require the prior written consent of BELTS before its execution.

#### 3.3.4 Supply

3.3.4.1 The Contractor shall ensure that the supplied hardware and software does not deviate from those listed in **Clause 2**, without prior written consent from BELTS.

3.3.4.2 In the event of product discontinuity or unavailability for items to be supplied, the Contractor shall secure a suitable replacement of the product with similar or higher specifications than those stated in **Clause 2**.

3.3.4.3 The Contractor shall ensure that the replacement item as per **Clause 3.3.4.2** above is compatible to the proposed solution and application.

3.3.4.4 The Contractor shall submit the **Bill of Materials (BOM)** as part of the Implementation Services for the proposed solution, which shall consist of all products to be supplied no more than **four (4) weeks** prior to the date of delivery, for the review and approval by BELTS.

3.3.4.5 The prices for the supply of hardware and software shall be firm and fixed, and detailed in **Schedule 18 of Section 3 – Tender Schedules**.

#### 3.3.5 Delivery

3.3.5.1 The Contractor shall deliver the hardware and software to be supplied, in accordance to the scheduled date within **Detailed Project Implementation Plan as**

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per stated in **Clause 3.2.2**.

- 3.3.5.2 The Contractor shall be responsible for provisioning all the necessary equipment, tools, and etc. to perform the delivery services to the designated BELTS site(s), at no additional cost to BELTS.

### 3.3.6 Installation

- 3.3.6.1 The Tenderer shall inform BELTS of any alterations, modifications, or renovations required to the designated BELTS site(s), in order to successfully install the proposed solution, and shall be appropriately costed as part of the supply of hardware and software in **Schedule 18 of Section 3 – Tender Schedules**. Additional alteration, modification, or renovations shall be considered as part of the works, and shall come at no additional cost to BELTS.
- 3.3.6.2 The Contractor shall submit an **Installation Test Plan** as part of the Implementation Services for the proposed solution, no more than **two (2) weeks** prior to the commencement of the Installation Testing period for BELTS's review and approval.
- 3.3.6.3 The Contractor shall perform installation services of all the hardware and software to be supplied including wiring/cabling for the interconnection between various components and/or systems at the designated BELTS site(s) in accordance to the design and specifications proposed.
- 3.3.6.4 The Contractor shall ensure that all delivered hardware are installed with the relevant and required drivers, software and application.
- 3.3.6.5 The Contractor shall take all necessary measures to minimise interruption or downtime to BELTS operations during the installation works.
- 3.3.6.6 The Contractor and its workers shall observe all ordinances and/or regulations enforced in Brunei Darussalam, as well as maintain compliance to any procedures and/or instructions deemed reasonably necessary by the responsible organisation throughout the performance of Installation Services at all designated site locations.
- 3.3.6.7 The Contractor shall also take appropriate measures to protect the installation sites and the existing facilities from damaged caused by the installation works.
- 3.3.6.8 The Contractor shall ensure that all hardware and software are installed to good working conditions, and perform all installation tests to the satisfaction of BELTS in accordance to the Installation Test Plan as per Clause 3.3.6.2.
- 3.3.6.9 The Contractor shall produce an Installation Test Report to be submitted no more than two (2) weeks upon completing the installation tests as per Clause 3.3.6.8, detailing the outcomes of the installation tests, and shall detail at minimum but not limited to:
- 3.3.6.10 Tabulated testing procedures;
- 3.3.6.11 Outcomes of the test procedures;
- 3.3.6.12 Success or Non-Compliance statements; and,
- 3.3.6.13 Acknowledgement or acceptance of non-compliance statements.
- 3.3.6.14 The Contractor shall be responsible to make-good of any damage to BELTS property at no additional cost to BELTS which may occur as a result of the works performed during installation or at any point of the Implementation Services and as well as the subsequent Maintenance and Support Services.

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### 3.3.7 Configuration

- 3.3.7.1 The Contractor shall perform configuration services for the hardware and software as per the scheduled dates in the **Detailed Project Implementation Plan in Clause 3.2.2**, to ensure the proposed solution configuration baselines are recorded and tracked over the duration of the Implementation Services.
- 3.3.7.2 The Contractor shall document all hardware and software configuration states either in its factory default setting or customised settings, of all hardware and software deployed for this project. The configuration states shall be detailed in a **Configuration Management Document**, which shall be delivered no more than **two (2) weeks** after completing the configuration services.

### 3.3.8 Testing

- 3.3.8.1 The Contractor shall perform the Testing services for the proposed solution in accordance to the requirements described in **Clause 3.3.6.8, 3.4.4, and 3.5**.
- 3.3.8.2 All test procedures shall be conducted in the presence of the BELTS representative(s), using the approved test plans.
- 3.3.8.3 The Contractor shall be responsible for provisioning of all the necessary material, resources, equipment, tools, test environments and etc. as needed to perform the test procedures at no additional cost to BELTS.
- 3.3.8.4 In the event that test procedure was not successfully completed, BELTS may call for a re-test, or revision of the test procedure at the expense of the Contractor.

### 3.3.9 Commissioning

- 3.3.9.1 The system shall be commissioned upon completion of all testing procedures and on formal acceptance by BELTS.
- 3.3.9.2 Prior to Commissioning, the Contractor shall ensure that all relevant material has been transferred to the custody of BELTS, and that all services and deliverables to be provided as part of the Implementation Services have been completed and accepted by BELTS.
- 3.3.9.3 The relevant material and deliverables to be accepted by BELTS shall include all items stated in **Clause 4**, and any which might be requested in writing by BELTS over the course of the Implementation Services.
- 3.3.9.4 Following Commissioning, the Contractor shall be responsible for conducting a Post-Implementation Review which shall include but not limited to the following:
  - a. To evaluate the overall solution and services delivered, and ensure that all outstanding issues have been satisfactorily resolved;
  - b. To propose solutions, corrective actions, or improvements to the system and the relevant support services;
  - c. To evaluate utilisation of the system functionality to attain its full usage and productivity; and,
  - d. To determine a system upgrade and support roadmap to ensure sustainability of the system implemented.

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### 3.4 Exchange Email Solution Integration

- 3.4.1 The Tenderer shall submit an **Integration Plan** in **Schedule 10** of **Section 3 – Tender Schedules** as part of this tender proposal, which shall propose the methodology for installing and integrating the proposed solution to the existing system as per the requirements described in **Clause 2.7.1.5**.
- 3.4.2 On award, the Contractor shall update the **Integration Plan** and submit a final version no more than **one (1) month** after the completion of the Design services for BELTS's review and approval. The Contractor shall make use of diagrams, workflows or other methods to describe the approach for delivering the integration requirements.
- 3.4.3 The Contractor shall install and perform integration works in accordance to the approved **Integration Plan** to ensure effective communication of business functions across the proposed solution and any existing systems.
- 3.4.4 On completion of successful Installation and Integration, the Contractor shall be required to perform a **Systems Integration Test** to demonstrate the solution capabilities in meeting the requirements and specifications in **Clause 2.7.1.5**.
- 3.4.5 The Contractor shall prepare and submit a **Systems Integration Test Plan** no more than **two (2) weeks** prior to the scheduled test date for BELTS's review and approval. The test plan shall describe the test procedures which demonstrate clear conformance to the requirements as below:
  - 3.4.5.1 Hardware installed is compatible and integrated to existing system as per **Clause 2.7.1.5**;
  - 3.4.5.2 Software installed is compatible and integrated to existing system as per **Clause 2.7.1.5**;

### 3.5 Acceptance Testing

- 3.5.1 The **User Acceptance Test** shall be performed after all installation, integration, and configuration works have been successfully completed, tested and accepted by BELTS.
- 3.5.2 The proposed acceptance test procedures shall be designed in that the solution demonstrates the relevant system characteristics:
  - 3.5.2.1 Hardware is delivered as per the requirements specified in **Clause 2.10**;
  - 3.5.2.2 Software is delivered as per the requirements specified in **Clause 2.11**;
  - 3.5.2.3 The solution is able to perform and meet the requirements as detailed in **Annex A** of this **Section 2 – Technical Specifications and Requirements Document**, subject to any non-compliance as agreed by BELTS; and,
  - 3.5.2.4 The solution delivered is compatible and fully integrated with existing systems, software, hardware, and infrastructure.
- 3.5.3 The Contractor shall prepare and submit an **Acceptance Test Plan** detailing the acceptance procedures described in **Clause 3.5.2** no more than **two (2) weeks** prior to the scheduled testing period for BELTS's review and approval. If within the reasonable opinion of BELTS that the acceptance procedures do not sufficiently test all the functions and facilities of the system specified, the Contractor shall be responsible for amending the **Acceptance Test Plan** to the satisfaction of BELTS.
- 3.5.4 All acceptance test procedures shall be performed in the presence of nominated BELTS representative(s). In the event that an acceptance test procedure was not successfully

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completed, BELTS may call for a re-test at the expense of the Contractor.

- 3.5.5 The Contractor shall be responsible for providing all labor, materials, transportation, and documentation required to conduct the acceptance tests.
- 3.5.6 On completion of the User Acceptance Test, the Contractor shall be required to submit **two (2)** copies of the **Acceptance Test Report**. An Provisional **Acceptance Certificate** will be issued by BELTS to the Contractor. BELTS shall countersign the **Acceptance Test Report** and Provisional **Acceptance Certificate** to indicate acceptance of deliverables in-line with the system Go-Live date.

### 3.6 Change Management

- 3.6.1 The Contractor shall perform Change Management services, to ensure smooth transition of BELTS personnel onto the implemented solution.
- 3.6.2 The Contractor shall submit a **Change Management Plan**, which shall be submitted to BELTS not more than **one (1) month** after the completion of the Design and Development services for review and approval. The **Change Management Plan** shall provide a description of but is not limited to:
  - 3.6.2.1 Proposed User engagement and transition strategy;
  - 3.6.2.2 Proposed breakdown of change activities and their schedules;
  - 3.6.2.3 Procedures for reviewing change outcomes; and
  - 3.6.2.4 Document version control.

### 3.7 Data Migration

- 3.7.1 The Tenderer shall submit a detailed and comprehensive **Data Migration Plan** in **Schedule 11** of **Section 3 – Tender Schedules** should the Tenderer identified and proposed any data migration needed for this project. Data Migration Plan shall provide information on how the data migration effort shall be conducted.
- 3.7.2 The **Data Migration Plan** shall indicate the proposed methodology for transferring data from BELTS Microsoft Exchange Email and Data Storage & Backup systems and platforms to the new and upgraded systems, including but is not limited to:
  - 3.7.2.1 Breakdown of Data Migration activities;
  - 3.7.2.2 Description of Data Items required for the proposed solution to operate; and,
  - 3.7.2.3 Description of method used for Data Migration.
- 3.7.3 The Tenderer shall list down the use of any hardware and/or software required for the Data Migration effort in **Schedule 6, 7, and 18** of **Section 3 – Tender Schedules** respectively including any applicable licenses which are required for its duration.

### 3.8 Training

- 3.8.1 The Tenderer shall submit a detailed and comprehensive **Training Plan** in **Schedule 12** of **Section 3 – Tender Schedules**, which shall provide information on how the Training Package shall be delivered, its breakdown, and scheduling in accordance to the requirements described in **Clause 3.8.7 to 3.8.9**.
- 3.8.2 The **Training Plan** document shall indicate a programme of courses to facilitate training for the

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categories detailed in **Clause 3.8.7.9**, and describes at minimum, but is not limited to the following:

- 3.8.2.1 Training objectives of each course or session;
  - 3.8.2.2 Sequence of learning activities;
  - 3.8.2.3 Outline curriculum of the courses;
  - 3.8.2.4 Category of Trainee, e.g. End-User, Administrator, and etc.;
  - 3.8.2.5 Training mode, e.g. classroom-based, online training, hands-on supervision;
  - 3.8.2.6 Training venue;
  - 3.8.2.7 Required resources;
  - 3.8.2.8 Proposed duration and schedule; and,
  - 3.8.2.9 Post course assessment method, if applicable.
- 3.8.3 The Contractor shall coordinate closely with BELTS to finalise the **Training Plan** in accordance with any amendments and/or requirements from BELTS which may arise during the Implementation Period of the project.
- 3.8.4 The Contractor shall also be responsible for amending the Training Plan should any scheduling conflicts be made aware in writing by BELTS representative.
- 3.8.5 BELTS reserves the right to accept part of or all of the training courses, and the Contractor may be instructed by BELTS to amend the **Training Plan** as necessary.
- 3.8.6 The Contractor shall be responsible for submitting a revised **Training Plan** to BELTS for review and approval prior to commencement of Training Services.
- 3.8.7 **General Requirements**
- 3.8.7.1 The Contractor shall provide training to meet the following objectives:
    - a. To enable BELTS Technical Team to manage and administer all systems on a day-to-day basis, including common troubleshooting, configuration, and routine management through the systems' back-end;
    - b. To enable knowledge transfer from the Contractor to BELTS nominated Technical Team, the capability of providing minimum Level-2 support and maintenance;
  - 3.8.7.2 The Contractor shall provide qualified trainers with the expectation that Trainers are able to communicate well and attend to various training needs of the Trainees at all levels.
  - 3.8.7.3 BELTS may, at its discretion, request for replacement Trainers should the Trainers fail to meet the requirements described in **Clause 3.8.7.1** and **3.8.7.2**.
  - 3.8.7.4 The Contractor shall be responsible for providing all equipment necessary to successfully deliver all trainings. This shall include any devices, equipment, workstations with access to the system, presentation slides, Trainer's guides, and etc., as deemed necessary for efficient delivery of each training course or session.
  - 3.8.7.5 The Contractor shall deliver training preferably on premise, using the systems deployed, unless explicitly instructed or requested by BELTS. The Contractor shall make all reasonable efforts to prepare the training environment in said premises accordingly.
  - 3.8.7.6 The Contractor shall deliver the training in the English language, and shall supply



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all necessary resources and training material in the English language.

- 3.8.7.7 The Contractor shall prepare and supply each Trainee with a complete set of up-to-date **Training Documents** and materials as a deliverable prior to the acceptance of Training services. BELTS reserves the right to reject or delay acceptance of the Training services due to incomplete supply of training material to Trainees.
- 3.8.7.8 All reference and training materials supplied in accordance to **Clause 3.8.7.7** shall become the property of BELTS for reproduction, duplication, transfer, or as otherwise handled by BELTS as they see fit. Master copies of the **Training Documents** shall be provided to BELTS in both hardcopy and softcopy formats.
- 3.8.7.9 The Contractor shall prepare and deliver the following categories of Training:
  - a. End-User Training.
  - b. Administrator Training (minimum Level 2 Support);
- 3.8.7.10 The Contractor shall be responsible for qualifying or ensuring that all trainees are sufficiently trained, and are capable of executing their daily operations on the system without supervision or regular support.

### 3.8.8 End-User Training

- 3.8.8.1 The Contractor shall be responsible for conducting End-User Training for the following;
  - a. Introduction to the new end-user computing system and user login mechanism.
  - b. Training on Microsoft Exchange, Microsoft Sharepoint and Microsoft Office 365 which provide details of any changes to the user interfaces (e.g. menu, ribbon, toolbar, etc) and software features that are different to 2013 version.
  - c. Any other training that the Contractor and BELTS deemed appropriate for end-users to be able to optimally use the systems/software for their daily operational needs that will enhance their productivity.

### 3.8.9 Administrator Training

- 3.8.9.1 The Contractor shall be responsible for conducting Administrator Training for all BELTS Technical Team prior to the commissioning of the System.
- 3.8.9.2 The Contractor shall be responsible for designing and delivering the appropriate mode of training, which is set-up in such a way that it closely replicates or represents the actual workflow and operational processes of the working environment allowing BELTS Technical Team to familiarise with the processes and procedures.
- 3.8.9.3 The training course shall at minimum deliver the following outcomes:
  - a. Familiarisation of the main functionalities of the system, system troubleshooting, monitoring, configuration, and any other relevant administration functions that will enable the System Administrators/Technical Team to perform a minimum of Tier 2 level support maintenance and skill sets.
- 3.8.9.4 In addition, the Contractor shall supply all relevant documentations and reference material required to perform the activities in **Clause 3.8.9.3** as part of the **Training Documents** deliverable.

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### 3.9 Warranties

- 3.9.1 The Contractor shall provide **six (6) months Defects Warranty Period** for the system which shall commence after the all deliverables stated in the Implementation Services are completed, and after acceptance of the entire system. This period is also referred to Stabilisation Warranty Period in which the contractor will be responsible for resolving any defect and/or issue that may arise.
- 3.9.2 The Defects Warranty Period stated in **Clause 3.9.1** shall include Warranty Services which shall not be chargeable to BELTS and includes:
- 3.9.2.1 Replacement or repair of unserviceable hardware parts where any of the items are found to be:
- Defective in design, materials, or workmanship;
  - Supplied as a whole or part of a design or configuration which is not in accordance to the agreed specifications; or,
  - Unable to function properly or meet the desired performance requirements, through no fault of BELTS or its End-Users.
- 3.9.2.2 Replacement, reconfiguring or software where any of the items are found to be:
- Defective in design, materials or workmanship;
  - Incompatible or in conflict with existing platforms, software and/or applications;
  - Supplied as a whole or part of a design or configuration which is not in accordance to the agreed specifications; or,
  - Unable to function properly or meet the desired performance requirements, through no fault of BELTS or its End-Users.

### 3.10 Maintenance and Support

- 3.10.1 Following the expiry of the Defects Warranty Period, the Tenderer shall provide maintenance and support services for the system implemented according to the terms specified and in accordance with the requirements detailed in this **Clause 3.10**.
- 3.10.2 The Tenderer shall propose the **Maintenance and Support Plan** in **Schedule 13** of **Section 3 – Tender Schedules** which shall provide a breakdown of the activities performed, its associated costs in accordance to the requirements detailed in this **Clause 3.10**.
- 3.10.3 The Contractor shall be responsible for providing maintenance and support services in accordance to the **Maintenance and Support Plan** for a period of **five (5) years**.
- 3.10.4 The Tenderer shall detail within the **Maintenance and Support Plan** the various maintenance levels offered, and person(s) responsible (by role) to support the entire system over the duration of the service period. This shall also include details on how the support shall be delivered, i.e. remotely, on-premise and etc.
- 3.10.5 The Tenderer shall also indicate the proposed response times for the different maintenance levels, and expected defect rectification period or downtime.
- 3.10.6 The Contractor shall ensure a suitable **Maintenance and Support Plan** shall enable BELTS to achieve a system availability of **99.9%** availability.
- 3.10.7 The Contractor shall make available, a locally based maintenance and support team, which shall be capable of responding to BELTS maintenance and support requirements up to Level 3 Maintenance and Support capabilities.
- 3.10.8 The Contractor shall establish a direct line, helpdesk and/or email and detailed processes for

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raising customer service requests to be made accessible to BELTS Technical Team, and documented within the **Maintenance and Support Plan**.

3.10.9 The Contractor shall ensure that the direct line, helpdesk and/or email shall be manned and accessible to BELTS Technical Team during normal working hours of **07:00hrs to 19:00hrs Mondays to Saturdays**

3.10.10 The Contractor shall perform maintenance and support services which shall include but are not limited to:

- 3.10.10.1 Providing general guidance and support to BELTS Technical Team in resolving system errors or failures either remotely or on-premise;
- 3.10.10.2 Diagnosing or troubleshooting defects, bugs, or recurring issues, either remotely or on-premise;
- 3.10.10.3 To attempt defect, bug, or issue rectification remotely or on-premise;
- 3.10.10.4 Recording customer complaints or bug reports, and raising issue tickets as End-User reference; and
- 3.10.10.5 Raising defects or identified faults to relevant maintenance and support team for corrective action (as necessary).

**3.10.11 General Requirements**

- 3.10.11.1 The Contractor shall ensure that execution of maintenance and support services shall have minimal disruption to BELTS operations, and needs to be pre-planned and scheduled well ahead.
- 3.10.11.2 On completion of any maintenance and support service, the Contractor shall submit a **Maintenance Report** which details at minimum but not limited to the following:
  - a. Identified defects, bugs, issues, and etc.;
  - b. Overview of works performed e.g. inspections, corrective actions, and etc.; and,
  - c. Proposed follow-ups, or date of next activity.

**3.10.12 Preventive Maintenance**

- 3.10.12.1 The Contractor shall provide on-site **quarterly inspections and preventive maintenance** of all hardware and software supplied by the Contractor or its Sub-contractors, in accordance to the **Maintenance and Support Plan**.
- 3.10.12.2 The scope of Preventive Maintenance Services shall include but not limited to:
  - a. Perform routine inspections of hardware and software;
  - b. Ensure that all systems is up-to-date and in good working condition by performing scheduled updates, patches, and fixes;
  - c. Perform Installation and Testing for software updates and patches when new software releases are made available;
  - d. Perform system performance analysis to identify problem areas;
  - e. Provide recommendations for replacement or upgrade of hardware and software components of the system to rectify problem areas or defects; and,
  - f. Perform any other works the Contractor deems necessary to ensure good-working condition of the system.

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- 3.10.12.3 The Contractor shall be responsible for minimising disruptions to daily operations when conducting Preventive Maintenance Services, including scheduling works to be performed during BELTS off-hours.

#### 3.10.13 Corrective Maintenance

- 3.10.13.1 The Contractor shall perform Corrective Maintenance Services to restore the system functions and capabilities on an ad-hoc basis or upon the request of BELTS.
- 3.10.13.2 In the event of a defect or issue arising within the system which necessitates Corrective Maintenance, the Contractor shall make available their expertise in order to:
- Perform the necessary corrective actions which include, assessing, diagnosing, repairing, or resolving the defect/issue in accordance to the Contractor's obligations within the Warranty Period; or,
  - Beyond the Warranty Period, propose the complete scope of rectification or corrective actions required to restore the system functions and capabilities, and its associated costs, to be submitted to BELTS for review and approval;
  - Upon receiving approval or formal instructions to proceed, to repair and rectify the defect/issue in accordance to the proposed work scope; and,
  - Perform any necessary reconfiguration, installation, recovery, re-commissioning, data transfer, or other works as necessary.

## 4 DOCUMENTATION AND DELIVERABLES

### 4.1 General Requirements

- 4.1.1 The Contractor shall be responsible for producing all relevant deliverables and documentations for the purpose of ensuring successful delivery of the proposed solution and the associated services as specified in this Tender.
- 4.1.2 The Contractor shall be responsible for maintaining proper documentation control and versioning for all materials and documentation as required in this **Clause 4.1**.
- 4.1.3 The Contractor shall submit and handover **two (2) printed copies** and **one (1) editable soft copy** format of all deliverables and documentation as required in this **Clause 4.1**, in a format which is compatible with Microsoft Office, in accordance to **Annex B – List of Deliverables and Documentation** of this **Section 2 – Technical Specifications and Requirements**.
- 4.1.4 All deliverables and documentations provided by the Contractor shall be written clearly in the English Language.
- 4.1.5 The Contractor shall be responsible for providing any revised editions, supplementary materials, or new publications relevant to the operation of the proposed solution at no additional cost to BELTS.

#### 4.1.6 Acceptance of Documentation and Deliverables

- 4.1.6.1 The Contractor is required to produce and deliver all the relevant deliverables and documentation in accordance to the descriptions and periods specified in **Annex B** of this **Section 2 – Technical Specifications and Requirements** or as otherwise agreed in the approved **Detailed Project Implementation Plan** as per **Clause 3.2.2**.
- 4.1.6.2 The Contractor shall be responsible for timely submission of the deliverables and documentations to allow for sufficient review, revisions, and acceptance by BELTS.
- 4.1.6.3 Prior to acceptance to the deliverables or documentation by BELTS, the Contractor

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shall be responsible for executing any corrections or amendments to the deliverables or documentation as advised or required by BELTS as a result of the review in **Clause 4.1.6.2**.

**ANNEX A: TECHNICAL SPECIFICATIONS**

Ser	Item	Minimum Specification
<b>1</b>	<b>NETWORK INFRASTRUCTURE</b>  The Tenderer <b>must</b> propose two (2) brand options in the appropriate quantities as per proposed system design and architecture all relevant network appliances follows;  <b>Option 1 : Fortinet</b>  <b>Option 2: Cisco</b>	
<b>1.1</b>	<b>Firewall</b>	<p>Shall have higher specifications than current <i>DELL SonicWall NSA 3600</i>, and must have but not limited to the following components:</p> <ul style="list-style-type: none"> <li>- 2 ports of 10GbE SFP+</li> <li>- Firewall inspection Throughput : Minimum 5Gbps</li> <li>- IPsec VPN throughput : Minimum of 2Gbps</li> <li>- IPS &amp; IDS throughput : Minimum of 2Gbps</li> <li>- Web filtering, Antispam services, Gateway anti-virus</li> <li>- License and support up to minimum 250 SSL VPN concurrent connections</li> <li>- SSL VPN ready</li> <li>- Adjustable rack mount kit</li> <li>- HA ready</li> </ul> <p><i>Note: Tenderer may propose a Unified Threat Management (UTM) Network Firewall.</i></p>

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Ser	Item	Minimum Specification
1.2	Core Switches	<p>Shall have higher specifications than current <i>DELL Networking N4064</i>, and must have but not limited to the following components:</p> <ul style="list-style-type: none"> <li>- 44 ports of 10GBASE-T Ports</li> <li>- 4 ports of 10GbE SFP+</li> <li>- Modular Bay</li> <li>- Stacking functions</li> <li>- Dual power Supply</li> <li>- Adjustable rack mount kit</li> </ul> <p>Shall have common security features such as but not limited to;</p> <ul style="list-style-type: none"> <li>- Port security</li> <li>- IEEE 802.1x</li> <li>- Network layer control</li> <li>- Network access control</li> <li>- DHCP snooping</li> <li>- Dynamic ARP Inspection</li> </ul>

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Ser	Item	Minimum Specification
1.3	Floor Switches	<p>Shall have higher specifications than current <i>DELL Networking N2024P</i>, and must have but not limited to the following components:</p> <ul style="list-style-type: none"> <li>- Layer 2</li> <li>- POE+</li> <li>- RJ45 1GbE auto-sensing ports</li> <li>- 2 ports of 10GbE SFP+</li> <li>- Stacking functions</li> <li>- Dual power supply</li> <li>- Adjustable rack mount kit</li> </ul> <p>Shall have common security features such as but not limited to;</p> <ul style="list-style-type: none"> <li>- Port security</li> <li>- IEEE 802.1x</li> <li>- Network layer control</li> <li>- Network access control</li> <li>- DHCP snooping</li> <li>- Dynamic ARP Inspection</li> </ul>



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Ser	Item	Minimum Specification
1.4	External Switches	<p>Shall have higher specifications than current <i>DELL Networking N2024P</i>, and must have but not limited to the following components:</p> <ul style="list-style-type: none"> <li>- Layer 3</li> <li>- POE+</li> <li>- RJ45 1GbE auto-sensing ports</li> <li>- 10GbE SFP+ ports</li> <li>- Stacking functions</li> <li>- Dual power supply</li> <li>- Adjustable rack mount kit</li> </ul> <p>Shall have common security features such as but not limited to;</p> <ul style="list-style-type: none"> <li>- Port security</li> <li>- IEEE 802.1x</li> <li>- Network layer control</li> <li>- Network access control</li> <li>- DHCP snooping</li> <li>- Dynamic ARP Inspection</li> </ul>
1.5	Wireless Controllers	<p>Shall have higher specifications than current <i>Ruckus ZoneDirector 1200</i>, and must have but not limited to the following components:</p> <ul style="list-style-type: none"> <li>- Supports up to 150 AP's</li> <li>- 1,000 client devices</li> <li>- 256 WLANs,</li> <li>- 802.11ac ready</li> <li>- Compatible with latest Windows OS, Apple iOS and Android OS products</li> <li>- Mac-address Filter minimum 500 mac-addresses</li> <li>- Adjustable rack mount kit</li> </ul>

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Ser	Item	Minimum Specification
1.6	Wireless Access Points	<p>Indoor Wireless AP</p> <ul style="list-style-type: none"><li>- Dual radio (802.11 b/g/n and 802.11 a/n/ac)</li><li>- Internal antennas</li><li>- 10/100/1000 RJ45 port</li><li>- POE</li><li>- Include ceiling/wall mount kit</li><li>- License with support</li><li>- Compatible with latest Windows OS, Apple iOS and Android products</li></ul>

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Ser	Item	Minimum Specification
2	<b>SERVER INFRASTRUCTURE</b>  The Tenderer <b>must</b> propose two (2) brand options in the appropriate quantities as per proposed system design and architecture all relevant server hardware follows;  <b>Option 1: Dell</b>  <b>Option 2: HPE</b>	
2.1	<b>Domain Controller DC &amp; DR</b>	<ul style="list-style-type: none"> <li>- OS: Windows Server 2022 (64 bit)</li> <li>- Processor: Intel® Xeon® Scalable processors</li> <li>- Memory: 32GB RAM. 16 DDR4 DIMM slots</li> <li>- Storage: 1TB RAID 1. Flexible storage with up to 10 x 2.5 SAS/SATA/SSD</li> <li>- 10GBASE-T Ports port</li> </ul>
2.2	<b>Virtualization Host 1</b>	<ul style="list-style-type: none"> <li>- OS: Windows Server 2022 (64 bit)</li> <li>- Processor: Intel® Xeon® Scalable processors 96 cores</li> <li>- Memory: 512GB RAM. 32 DDR4 DIMM slots</li> <li>- Storage: 4TB RAID 1. Flexible storage with up to 10 x 2.5 SAS/SATA/SSD</li> <li>- 10GBASE-T Ports port</li> </ul>
2.3	<b>Backup Host</b>	<ul style="list-style-type: none"> <li>- OS: Windows Server 2022 (64 bit)</li> <li>- Processor: Intel® Xeon® Scalable processors</li> <li>- Memory: 64GB RAM. 32 DDR4 DIMM slots</li> <li>- Storage: 1TB RAID 1. Flexible storage with up to 10 x 2.5 SAS/SATA/SSD</li> <li>- 10GBASE-T Ports port</li> </ul>
2.4	<b>Virtualization Host 2 (For Exchange Server) DC &amp; DR</b>	<ul style="list-style-type: none"> <li>- OS: Windows Server 2022 (64 bit)</li> <li>- Processor: Intel® Xeon® Scalable processors 96 cores</li> <li>- Memory: 512GB RAM. 32 DDR4 DIMM slots</li> <li>- Storage: 1TB RAID 1. Flexible storage with up to 10 x 2.5 SAS/SATA/SSD</li> <li>- 10GBASE-T Ports port</li> </ul>

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2.6	<b>Virtualization Host 3 (Development environment/Staging Host)</b>	<ul style="list-style-type: none"> <li>- OS: Windows Server 2022 (64 bit)</li> <li>- Processor: Intel® Xeon® Scalable processors 96 cores</li> <li>- Memory: 128GB RAM. 32 DDR4 DIMM slots</li> <li>- Storage: 1TB RAID 1. Flexible storage with up to 10 x 2.5 SAS/SATA/SSD</li> <li>- 10GBASE-T Ports port</li> </ul>
2.6	<b>SAN Storage DC &amp; DR</b>	<p>Equivalent or higher than current DELL EMC SCv3020 SAN Storage;</p> <ul style="list-style-type: none"> <li>- Chassis Format: All-in-one (dual controllers, internal drive bays, networking) with expansion options</li> <li>- Rack Size: 3U</li> <li>- Processor: Intel® Xeon® Processor <del>E5-2603v4, 1.7GHz, 6 cores</del></li> <li>- Memory: 32GB per SCv3xxx array (16GB per controller)</li> <li>- OS: Dell Storage Center OS (SCOS) 7.2 or greater</li> </ul>

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Ser	Item
<b>3</b>	<b>GENERAL SYSTEM REQUIREMENTS</b>
<b>3.1</b>	<b>Controlled Use of Administrative Privileges</b>
3.1.1	<b>Maintain Inventory of Administrative Accounts</b> <i>Use automated tools to inventory all administrative accounts, including domain and local accounts, to ensure that only authorized individuals have elevated privileges.</i>
3.1.2	<b>Ensure the Use of Dedicated Administrative Accounts</b> <i>Ensure that all users with administrative account access use a dedicated or secondary account for elevated activities. This account should only be used for administrative activities and not Internet browsing, email, or similar activities.</i>
3.1.3	<b>Use Unique Passwords</b> <i>Where multi-factor authentication is not supported (such as local administrator, root, or service accounts), accounts will use passwords that are unique to that system.</i>
3.1.4	<b>Use Multi-Factor Authentication for All Administrative Access</b> <i>Use multi-factor authentication and encrypted channels for all administrative account access.</i>
3.1.5	<b>Use Dedicated Workstations For All Administrative Tasks</b> <i>Ensure administrators use a dedicated machine or all administrative tasks or tasks requiring administrative access. This machine will be segmented from the organization's primary network and not be allowed Internet access. This machine will not be used for reading email, composing documents, or browsing the Internet.</i>
3.1.6	<b>Limit Access to Scripting Tools</b> <i>Limit access to scripting tools (such as Microsoft® PowerShell and Python) to only administrative or development users with the need to access those capabilities.</i>
3.1.7	<b>Log and Alert on Changes to Administrative Group Membership</b> <i>Configure systems to issue a log entry and alert when an account is added to or removed from any group assigned administrative privileges.</i>
3.1.8	<b>Log and Alert on Unsuccessful Administrative Account Login</b> <i>Configure systems to issue a log entry and alert on unsuccessful logins to an administrative account.</i>

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<b>3.2</b>	<b>Secure Configuration for Hardware and Software on Mobile Devices, Laptops, Workstations, and Servers</b>
3.2.1	<b>Establish Secure Configurations</b> <i>Maintain documented security configuration standards for all authorized operating systems and software.</i>
3.2.2	<b>Maintain Secure Images</b> <i>Maintain secure images or templates for all systems in the enterprise based on the organizations approved configuration standards. Any new system deployment or existing system that becomes compromised should be imaged using one of those images or templates.</i>
3.2.3	<b>Securely Store Master Images</b> <i>Store the master images and templates on securely configured servers, validated with integrity monitoring tools, to ensure that only authorized changes to the images are possible.</i>
3.2.4	<b>Deploy System Configuration Management Tools</b> <i>Deploy system configuration management tools that will automatically enforce and redeploy configuration settings to systems at regularly scheduled intervals.</i>
3.2.5	<b>Implement Automated Configuration Monitoring Systems</b> <i>Utilize a Security Content Automation Protocol (SCAP) compliant configuration monitoring system to verify all security configuration elements, catalog approved exceptions, and alert when unauthorized changes occur.</i>
<b>3.3</b>	<b>Maintenance, Monitoring, and Analysis of Audit Logs</b>
3.3.1	<b>Utilize Three Synchronized Time Sources</b> <i>Use at least three synchronized time sources from which all servers and network devices retrieve time information on a regular basis so that timestamps in logs are consistent.</i>
3.3.2	<b>Activate Audit Logging</b> <i>Ensure that local logging has been enabled on all systems and networking devices.</i>
3.3.3	<b>Enable Detailed Logging</b> <i>Enable system logging to include detailed information such as an event source, date, user, timestamp, source addresses, destination addresses, and other useful elements.</i>
3.3.4	<b>Ensure Adequate Storage for Logs</b> <i>Ensure that all systems that store logs have adequate storage space for the logs generated.</i>

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**ANNEX B: LIST OF DELIVERABLES AND DOCUMENTATION**

No	Deliverable or Documentation Name	Description
1	Hardware Documentation	<p>The deliverables for Hardware consist of but are not limited to:</p> <ul style="list-style-type: none"> <li>• Hardware Setup, Installation, and Configuration Instructions</li> <li>• Hardware Administration and Maintenance Manuals</li> <li>• Equipment Operating Procedures</li> <li>• Hardware Technical Specifications and Warranties</li> <li>• Technical Manuals</li> </ul>
2	Software Documentation and Deliverables	<p>The deliverables for Software consist of but are not limited to:</p> <ul style="list-style-type: none"> <li>• Software License Specifications</li> <li>• Software Setup, Installation, and Configuration Instructions</li> <li>• System Integration Configuration Manual</li> <li>• System Administration and Maintenance Manuals</li> <li>• Operation Procedure Manuals</li> <li>• Technical Manuals</li> <li>• Original Installation Media</li> </ul>
3	Detailed Project Implementation Plan	<p>A document which shall contain the plan for implementing the proposed solution, and describes at minimum:</p> <ul style="list-style-type: none"> <li>• A Detailed Project Master Schedule</li> <li>• The detailed breakdown of activities (Work Breakdown Structure) and their duration and sequence</li> <li>• Project Milestones</li> <li>• Project Resource Requirements required for specific stages in the Implementation Phase</li> <li>• Project Deliverables to be produced on completing specific Project Milestones</li> <li>• Project and Quality Management Approach such as Project Governance</li> <li>• Approach for continuous Risk Identification</li> </ul>
4	Risk Management Plan	<p>A periodically updated document which shall describe the risks and issues identified by the Project Manager or the Project Team, its severity and likelihood, as well as mitigation strategies to minimise its effect on the project.</p>

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No.	Deliverable or Documentation Name	Description
5	Progress Reports	Periodic reports to be submitted by the Project Manager, which shall include information on the following: <ul style="list-style-type: none"> <li>• Status of Project Completion</li> <li>• Summary of Activities from Last Reporting Period</li> <li>• Upcoming Activities and Deliverables</li> <li>• Issues raised</li> <li>• Decisions or Actions required</li> </ul>
6	Detailed Design Document	A document which shall provide a detailed description of the proposed solution, its features and functional characteristics, the detailed system design, architecture and relevant diagrams, and communication interfaces.
7	Bill of Materials (BOM)	A document which shall provide a serialised list of all Hardware and Software procured and supplied as part of the proposed solution, which shall detail at minimum: <ul style="list-style-type: none"> <li>• Name and Description of product</li> <li>• Quantity Supplied</li> <li>• Serial No. or Identifier</li> <li>• OS and firmware version</li> </ul>
8	Delivery Acceptance Report	A document which shall provide proof of acceptance of the delivery of the Hardware and Software items to BELTS premises, and shall contain a verification signature from an authorised BELTS personnel.
9	Installation Test Plan	A document which shall describe the Installation Test procedure(s) to be conducted as part of the Installation Test, and shall detail at minimum: <ul style="list-style-type: none"> <li>• Scheduled date(s) of Installation Test(s)</li> <li>• Person(s) required</li> <li>• Resource(s) required</li> <li>• List of Installation Procedures</li> <li>• Pass-Fail Criteria for each procedure</li> </ul>
10	Installation Test Report	A tabulated report of the Installation Test procedures executed as per the Installation Test Plan. The report shall contain the outcomes (Pass/Fail) of the Installation Test(s), statements of non-compliance, statements of acceptance, as well as proposed corrective actions and action plans as necessary, including any necessary re-tests.
11	Configuration Management Document	A version-controlled document which shall describe the system architecture, its sub-systems, and its components for both hardware and software, as well as the configurations and states as set during delivery, or as modified during the implementation phase.



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No.	Deliverable or Documentation Name	Description
12	Integration Plan	<p>A document which shall describe the proposed approach for integrating the proposed solution to BELTS existing solution. It shall detail at minimum:</p> <ul style="list-style-type: none"> <li>• List of systems to be integrated</li> <li>• Identification of integration interfaces</li> <li>• Proposed method of integration</li> <li>• Alternative options for integration (if available)</li> <li>• Sequence of integration activities</li> </ul>
13	Systems Integration Test Plan	<p>A document which shall describe the Systems Integration Test procedure(s) to be conducted as part of the Systems Integration Test, and shall detail at minimum:</p> <ul style="list-style-type: none"> <li>• Scheduled date(s) of Integration Test(s)</li> <li>• Person(s) required</li> <li>• Resource(s) required</li> <li>• List of Integration Procedures</li> <li>• Pass-Fail Criteria for each procedure</li> </ul>
14	Systems Integration Test Report	<p>A tabulated report of the Integration Test procedures executed as per the Systems Integration Test Plan. The report shall contain the outcomes (Pass/Fail) of the Integration Test(s), statements of non-compliance, statements of acceptance, as well as proposed corrective actions and action plans as necessary, including any necessary re-tests.</p>
15	Acceptance Test Plan	<p>A document which shall describe the Acceptance Test procedure(s) to be conducted as part of the User Acceptance Test, and shall detail at minimum:</p> <ul style="list-style-type: none"> <li>• Scheduled date(s) of Acceptance Test(s)</li> <li>• Person(s) required</li> <li>• Resource(s) required</li> <li>• List of Acceptance Procedures</li> <li>• Pass-Fail Criteria for each procedure</li> </ul>
16	Acceptance Test Report	<p>A tabulated report of the Acceptance Test procedures executed as per the Acceptance Test Plan. The report shall contain the outcomes (Pass/Fail) of the Acceptance Test(s), statements of non-compliance, statements of acceptance, as well as proposed corrective actions and action plans as necessary, including any necessary re-tests. The report shall include the verification and signature by BELTS to signify acceptance of the test report.</p>

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No.	Deliverable or Documentation Name	Description
17	Change Management Plan	<p>A document which shall describe the Change Management effort required for successful implementation of the system, and shall detail at minimum:</p> <ul style="list-style-type: none"> <li>• Changes to Business Process or Workflows</li> <li>• Affected roles</li> <li>• Proposed User engagement and transition strategy</li> <li>• Proposed breakdown of change activities, and their schedules</li> <li>• Procedures for reviewing change outcomes</li> </ul>
18	Data Migration Plan	<p>A document which shall describe the Data Migration effort required for transferring existing BELTS data into the proposed system, and shall detail at minimum:</p> <ul style="list-style-type: none"> <li>• Breakdown of Data Migration activities and their schedules</li> <li>• Description of Data Items required for the proposed solution to operate</li> </ul>
19	Training Plan	<p>A document which shall describe the programme of training courses to facilitate training for the End-User and Technical Team. The Training Plan shall detail at minimum:</p> <ul style="list-style-type: none"> <li>• Training objectives of each course or session</li> <li>• Sequence of learning activities</li> <li>• Outline curriculum of the courses</li> <li>• Category of Trainee, e.g. End-User, Administrator, and etc.</li> <li>• Training mode, e.g. classroom-based, online training, hands-on supervision</li> <li>• Training venue</li> <li>• Required resources</li> <li>• Proposed duration and schedule</li> <li>• Post course assessment method, if applicable.</li> </ul>
20	Training Documents	<p>This deliverable shall consist of all the relevant documents, and learning materials, both digital and physical copies, which are to be distributed to the trainees during the Training sessions.</p>
21	Maintenance Report	<p>A document which shall be provided on completion of a scheduled or unscheduled support activity. The document shall detail at minimum:</p> <ul style="list-style-type: none"> <li>• Description of works performed</li> <li>• Identification of any defects or issues</li> <li>• Recommended or Corrective actions to be undertaken</li> <li>• Next scheduled support activity</li> </ul>

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No.	Deliverable or Documentation Name	Description
22	Business Continuity Process	<p>This deliverable shall contain plans and procedures for sustaining business operations in the event of temporary system outage or malfunction and shall address and detail at minimum:</p> <ul style="list-style-type: none"> <li>• Detailed Policies and Procedures for Business Impact and its analysis, including: <ul style="list-style-type: none"> <li>○ Preventative controls; and,</li> <li>○ Recovery strategy,</li> </ul> </li> <li>• Periodic auto-generated reports for last checks; and,</li> <li>• Templates for manual activities, and recording and upload process.</li> </ul>
23	Disaster Recovery Plan	<p>This deliverable shall contain plans and procedures for recovering business operations in the event that a disaster or negative event results in a loss of business functions at the primary site. The plan shall detail at minimum:</p> <ul style="list-style-type: none"> <li>• Detailed Policies and Procedures for DR Management;</li> <li>• Quarterly failover checks and procedures;</li> <li>• Synchronisation mechanism; and,</li> <li>• Alerts and Reports</li> </ul>