



Providing Storage Area Network (SAN) Solution with Server High Availability

TERMS OF REFERENCE

Reference Announcement No: (IUL)438-ICTU/438/2017/89

A. PURPOSE

The Ministry of Environment and Energy (MEE) is seeking bids from qualified suppliers who are experienced in supplying, installing and configuring enterprise level Storage Area Network (SAN) solutions. Our objective in acquiring a SAN is to provide a high-speed, shared storage environment that offers flexible storage capacity and performance with a centralized storage solution.

B. OBJECTIVES OF ASSIGNMENT

The objective of this assignment is to supply, install and configure a complete and operational enterprise level Storage Area Network (SAN) solution with server high availability to the Ministry of Environment and Energy.

C. REQUESTED SERVICES AND REQUIREMENTS

1. The proposed solution shall include all hardware, software, licenses and other ancillary equipment and devices are required for a complete solution.
2. The supplier must install and configure the proposed solution to a complete and operational state.
3. Supplier should provide technical and functional support during implementation until the final acceptance and productive use of all system modules.
4. Supplier should provide support and technicians for the migration of data from current local file server to the new SAN system. As well as assist with repointing host to the new SAN migrated data.
5. Supplier should provide the connectivity diagrams and documentation of the proposed solution.
6. The proposed SAN should
 - i. Be in a new factory condition with full warranty
 - ii. Be rack mountable in a standard 4 pedestal rack
 - iii. Include snapshot and cloning features
 - iv. Include Thin Provisioning features
7. The proposed SAN shall contain the following features and functionality ;
 - i. Ability to use a combination of high-end and lower-end storage media



- ii. Ability to create disk groups based on media type
 - iii. Ability to create data replication groups
 - iv. Secure Web based administration interface
 - v. Ability to expand capacity on demand without downtime
 - vi. Ability to replace failed hardware such as controllers, cache batteries, hard disks and power supplies without downtime
 - vii. Ability to report the overall and detailed views of current and historical utilization
 - viii. Ability to report storage resource objects and generate a data usage report that can lead to a charge-back report
 - ix. Comprehensive online and remote monitoring abilities without third-party hardware or software. The solution must be capable of generating email alerts for any critical hardware or software events that may occur
8. The proposed solution must include **HPE ProLiant DL380 G7 SFF Rack Mount Server** (mirror server) with at least **32GB** memory.

D. TECHNICAL SPECIFICATIONS

#	Features	Specifications	Technical Compliance
SAN Solution with Server High Availability			
Storage and Server High Availability			
1.1	Array	<ul style="list-style-type: none"> • Access Type: Block • Form Factor: LFF (3.5 inch) Drives • Should support hot plug expansion and replacement of redundant controllers, enclosures, fans, power supplies, and I/O modules for simple, fast installation and maintenance. 	
1.2	Controllers	Two (2) Redundant Controllers <ul style="list-style-type: none"> • Should support 10GbE iSCSI host connectivity. • Minimum Two (2) host ports per controller • Four (4) x 10G SFP+ to SFP+ 3m Direct Attach Copper Cable Controller Architecture: <ul style="list-style-type: none"> • Minimum 6GB transportable read/write cache per controller • Battery-free cache backup 	
1.3	Enclosures	Expansion Drive Enclosures: Three (03) <ul style="list-style-type: none"> • LFF/SFF array/enclosure mixing in same proposed SAN • Minimum supported number of drives enclosure: 24 SFF/12 LFF • Drive enclosure interface type: 6Gb SAS 	
1.4	Drives	Installed SAS Drives: <ul style="list-style-type: none"> • Six (6) x 2TB 12G SAS 7.2K LFF (3.5in) Hard Drive Supported Drive Capacities: <ul style="list-style-type: none"> • 12G LFF 7.2K SAS Midline (MDL) HDDs • 12G LFF 15K SAS HDDs • 12G LFF SAS SSDs Upgradable RAW Capacity of the SAN: <ul style="list-style-type: none"> • Minimum 480 TB using LFF Drives and expansion enclosures 	
1.5	Software Licenses	Thin Technologies: <ul style="list-style-type: none"> • Thin Provisioning, Space Reclamation, Thin Rebuild Tiering: (should be available for upgrade in future) <ul style="list-style-type: none"> • A Performance tier with SSDs • A Standard SAS tier with Enterprise SAS HDDs • An Archive tier utilizing Midline SAS HDDs. Replication: (should be available for upgrade in future) <ul style="list-style-type: none"> • Snapshots (512), Volume Copy, Remote Snaps 	





		Quality of Service: (should be available for upgrade in future) <ul style="list-style-type: none"> Virtual Tier Affinity 	
1.6	RAID Configuration	Virtual Storage RAID levels: <ul style="list-style-type: none"> RAID Level: 1, 5, 6, 10 Linear Storage RAID levels: <ul style="list-style-type: none"> RAID Level: 0, 1, 3, 5, 6, 10, 50 	
1.7	Features	<ul style="list-style-type: none"> Storage based asynchronous snapshot replication Support of both Ethernet and controllers Snapshot based replication technology Fast application recovery with no transaction loss No-single-point-of-failure Hardware 	
1.8	Management	<p>GUI Array Management Utility should be provided</p> <ul style="list-style-type: none"> Administrators should be able to monitor control snapshot space usage. Should be able to prioritize data by assigning appropriate affinity level. Multiple Disk Groups should be able to allocate into a Storage Pool Volumes and Snapshots in a system should be able to be map to LUNs. <p>Management Configuration:</p> <ul style="list-style-type: none"> Protocols Supported SNMP, SMI-S, SSL, SSH, SMTP, FTP, HTTP, Telnet 	
1.9	Compatibility	<p>Should supports HPE ProLiant DL380 G7 SFF Rack Mount Server (Existing)</p> <p>Should support multi-vendor industry standard 32-bit Intel and AMD based (x86) servers.</p> <p>OS Support:</p> <ul style="list-style-type: none"> Microsoft Windows Server 2012 Microsoft Windows Server 2016 VMware MAC OSX OpenVMS 	
1.10	Mirror Server	<p>HP ProLiant DL380 G7 SFF Rack Mount Server</p> <ul style="list-style-type: none"> Two (2) x Intel® Xeon® E5620 (2.40GHz/4-Core/12MB/80W) Processor RAID Controller - 0/1/1+0/5/5+0 Two (2) x 146GB 6G SAS 15K rpm SFF (2.5-inch) Hard Drive Two (2) x 460W Power Supply Kit Four (4) x HP 8GB DDR3-1333 Memory Kit Rail Kit Components 	
1.11	Chassis	2U Rack Height	
1.12	Warranty	Three (3) year hardware replacement warranty and on-site support	
Installation Services:			
2.1	Startup Service	<p>Should provide necessary activities required to deploy the Storage Array into our storage environment.</p> <ul style="list-style-type: none"> Should plan all necessary activities and schedule the delivery of the service at a mutually agreed-upon time during standard business hours. Should provide instructions to review expectations and to validate pre-delivery requirements have been met prior to installation works. Creation of a written installation plan to serve as both the project plan and completion point for this service. Power-on self-tests (POSTs) 	
2.2	Installation	Installation of the array into the customer-provided rack	



		<ul style="list-style-type: none"> • Install appropriate operating system patch levels and firmware version. • Deposit and license activation of any software purchased for the SAN • Deployment of the array configuration design as documented during service planning. • The deployment will include SAN installation and racking, and any configuration/zoning necessary to provide the required connectivity between the SAN and any associated LAN. • The service specialist will connect the array system into an existing operational Ethernet network environment. • Configuration of multipath software instances for each installed physical host. • Creation of configuration documentation as implemented. 	
2.3	Orientation Session	<p>The orientation session during the delivery of the service:</p> <ul style="list-style-type: none"> • Review of the configuration documentation that outlines the storage virtual disk design and related host topology • Highlights of the basic operation of array management and a walk-through of the Web management console • Demonstration of snapshot capabilities and usage. 	
2.4	Engineers	<p>Should be installed by vendor certified engineers:</p> <ul style="list-style-type: none"> • Certification copy of the engineer must be attached. • Should be equipped with all normal toolkit and test equipment needed for the maintenance of the hardware during the warranty period. 	

E. PROPOSAL GUIDE

1. The proposal shall have a breakdown of total cost for the following items;
 - a. Price of the SAN system
 - b. Price of additional software and hardware
 - c. Installation Charges
2. Proposal shall meet all requirements specified under this ToR.
3. Proof of experience in supplying and installation of SAN systems (Reference Letters or any documental proof should be submitted).
4. Technical Specifications of the proposed solution should be mentioned.
5. Quotation validity of 45 days minimum.

F. EVALUATION CRITERIA

The bid evaluation will be done in two stages as follows;

1. Technical Evaluation

A total of 40 points is allocated for this stage. All bidders who do not achieve 30 points in this stage will be disqualified and will not proceed to the next stage.

Duration – 20 points

Experience – 20 points

2. Financial Evaluation



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މިއަދުގެ ބަޔާން ބަލާށެވެ، 20392، ދިވެހިރާއްޖެ.

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A total of 60 points is allocated for this stage. The points will be given to the proposed total price.

G. CLARIFICATIONS

Any clarification regarding this Terms of Reference shall be addressed to;

Procurement Section
Ministry of Environment and Energy
Email: procurement@environment.gov.mv
Phone: +(960) 3018 341

