



## ***Electronic Health Solutions***

### ***REQUEST FOR PROPOSAL***

**Scale-out NAS Storage (Dell EMC Isilon) for the MOH  
EHS data center and PHH datacenter**

**FP Reference Number: RFP-EHS-PROC-25-2022**

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## Transmittal Letter

**Date: 3-July-2022**

**Dear Sir / Madam,**

Electronic Health Solutions “EHS” is in the process of tendering “RFP-EHS-PROC-25-2022” to **Upgrade Existing the Scale-out NAS Storage (Dell EMC Isilon) for the MOH EHS data center and PHH data center.**

Interested companies are encouraged to submit their technical and financial proposals as per the details provided in this RFP. EHS appreciates your timely and accurate response, meanwhile, shall you have any questions please do not hesitate to contact us.

**Procurement Department**

**Tel:** +962 6 580 0461 | Ext. 3050, 3071, & 3067

**Email:** procurement@ehs.com.jo

Yours sincerely,

Electronic Health Solution

## Confidentiality Statement

This Request for Proposal (RFP) contains information proprietary to Electronic Health Solutions, hereafter referred to as "EHS". Each recipient is entrusted to maintain its confidentiality. The information contained in this RFP is provided for the sole purpose of permitting the Bidder to respond to the RFP. This information may not be reproduced in whole or in part without the expressed written permission of EHS.

The recipient shall hereby agree to keep all the information in this RFP confidential and shall not, without prior written permission of EHS, disclose this information to any person other than the employees, agents, subcontractors, and advisors who are required in the course of their duties to execute proposal preparation activities. The recipient shall undertake the responsibility that all such persons are informed of the confidential nature of the information.

No recipient of this RFP shall, without the prior consent of EHS, make any public statements to any third parties in relation to this RFP or the subsequent short-listing of any prospective implementer or the subsequent awarding of any order. Unauthorized release of information or public statements will result in immediate disqualification.

Information provided by each Bidder will be held in confidence and will be used for the sole purpose of evaluating a potential business relationship with the respective Bidder's company. There will be no obligation to maintain the confidentiality of any information that was known to EHS, prior to the receipt of a proposal from the Bidder, or due to becoming publicly known through no fault of EHS, or if received without obligation of confidentiality from a third party owing no obligation of confidentiality to the Bidders.

# Company Abstract

## Company Profile

Electronic Health Solutions (EHS) was founded in 2009 as a non-profit company. EHS is owned by the main stakeholders in health and technology sectors in the Kingdom including Ministry of Health (MoH), Ministry of Information and Communication Technology (MoICT), Royal Medical Services (RMS), King Hussein Cancer Center, King Hussein Institute for Cancer and Biotechnology, Royal Health Awareness Society and Private Hospitals Association.

Hakeem is Jordan's National Electronic Health Records (EHR) initiative by which the healthcare sector will be computerized. The program was inceptioned in October 2009.

The company's mandate is to implement Hakeem in public hospitals, Royal Medical Services sites, Universities Hospitals and King Hussein Cancer Center, in addition to healthcare centers including comprehensive clinics and primary clinics.

## Vision, Mission, Goals, and Objectives

### Vision

Transform and sustain a continuously improving healthcare system in Jordan by leveraging information technology.

### Mission

Provide a secure and accessible platform that enables the storing and sharing of electronic patient health records at all healthcare facilities enrolled in Hakeem.

### Objectives

EHS main objectives are the following:

- 1- Improve Healthcare
- 2- Reduce the Cost of healthcare services.
- 3- Provide Data for Research and Decision Making

### Benefits

- Raising healthcare quality and outcomes by enhancing the accuracy of diagnoses, medication administration, and patient information management;
- Boosting health facilities' efficiency and workflow by saving time and reducing errors in information retrieval;
- Supporting research, scientific studies and, decision-making by supplying the necessary patient data, history and statistics;
- Reducing operating costs by optimizing resource utilization and, preventing lab test repetition.

## 1. Contact Information

Any questions regarding this RFP shall be directed to the following email address in writing:

Name:	Procurement Department
Company:	Electronic Health Solutions
Address:	King Hussein Business Park, King Abdullah the second street. 4408 Amman 11952
Telephone / Fax:	Telephone +962 (6) 5800461 EXT3050, 3071Fax +962 (6) 5800466
Email:	<a href="mailto:Procurement@ehs.com.jo">Procurement@ehs.com.jo</a>

The bidder should receive a response from the procurement department, if not please call the following number +962 79 668 1595 Or Tel: +962 6 5800461 | Ext: 3050, 3071.

## 2. General Conditions

Upon participation, the bidder agrees to the following:

1. All costs incurred by Bidder in the preparation of this proposal shall be borne by the Bidder.
2. "EHS" will assume that all statements in writing, made by persons submitting Proposals are true, accurate, complete and, not misleading.
3. "EHS" reserves the right to cancel, at any time, this RFP partially or in its entirety. No legal liability on the part of "EHS" for payment of any kind shall arise and in no event will a cause of action lie with any bidder for the recovery of any cost incurred in connection with preparing or submitting a proposal, in response hereto all efforts initiated or undertaken by the bidder shall be done considering and accepting this fact.
4. Bidder's proposals shall be based on full compliance with the terms, conditions and, requirements of this RFP and its future clarifications and/or amendments.
5. "EHS" shall not be under any obligation to return or save either the original or any copies of any Bidder's Proposals (technical and/or financial), and all documents submitted to "EHS", whether originals or copies, shall be kept or disposed of by "EHS".
6. This Request for Proposal doesn't constitute an offer. "EHS" shall not be under obligation to enter into any agreement with any Bidder in connection with this RFP and responses received.
7. The Bidder's proposals (technical and financial) shall comply with the laws and regulations of the Hashemite Kingdom of Jordan.
8. The Bidder's proposals (technical and financial) shall be compatible with international standards and best practices.
9. As a part of the RFP response, the Bidder is requested to fill out the compliance sheet included in this RFP.
10. The bidder must include in his technical proposal a detailed Bill of Quantity "BOQ" for all proposed and priced items and services. Accordingly, this should be reflected and included in the financial offer with itemized quoted prices for all proposed items.
11. The bidder must commit to providing EHS with the same prices and terms for a period of (1) year starting from the Awarding Letter date for the purpose of Variation Orders
12. The quantities requested in this RFP are subject to increase, decrease or, cancellation as per the actual requirements in the awarding date. In case the quantities decrease, the vendor is responsible to install the available materials from the EHS warehouse.
13. The prices must include all customs, clearance, shipping, and other fees applicable to deliver the materials to EHS's warehouse.

### 3. Bidder Qualifications

1. Bidder should be a Company registered under the Jordanian Ministry of Industry and Trade for more than three years or represented by a company abiding by the aforementioned condition; otherwise, any international or regional bidder must present the formal documents which prove the financial capacity of the company in addition to its commercial registration documents at the country of origin
2. Bidder should have at least three references of similar projects preferably in the health care sector and to be accepted by EHS.
3. The Bidder shall have at least 2 live installations with support as of the date of submission of this bid.
4. The Bidder shall have specialized and certified engineers with relevant technical certification for at least two engineers.
5. The bidder must submit Up-To-Date official documents of registration issued from the Companies Control Department at the Jordanian Ministry of Industry and Trade.
6. The bidder shall be an authorized Top Level Partner of the mother company he represents in this bid. An up-to-date valid official letter/certificate from the mother company shall be submitted by the bidder as part of the bidder's qualification documents, to prove the level of partnership for the bidder.
7. The bidder must have at least (2) two engineers certified by the mother company for the implementation and technical support of the proposed solution.
8. All proposed and supplied equipment\solutions\items\services must be original, brand new (not refurbished) and, licensed by the manufacture (mother company) to be supplied and installed for this project at EHS.
9. All proposed and supplied equipment / solution / items / appliances / hardware must be newly manufactured with manufacture valid warranty and support duration for not less than (7) years from the date of delivery. This implies that supplied products must not be obsolete, phased out of production, out of sales, and support.
10. All proposed and supplied equipment\solutions\items\services must be original, brand new (not refurbished) and, licensed by the manufacture (mother company) to be supplied and installed for this project at EHS.

11. تلتزم الشركة المحال عليها بتحديد نسبة الصيانة و الدعم الفني في العرض المالي للأجهزة المحال عليها للسنوات التي تلي فترة الصيانة المجانية شاملة قطع الغيار و الأيدي العاملة علماً بأن هذا البند سيكون جزء من التقييم المالي للعرض المقدم

The winning bidder is obliged to determine the percentage of maintenance and technical support including spare parts and manpower for the years following the free maintenance duration. This has to be specified clearly in the financial offer for the supplied devices\solutions as per this RFP and will be part of the financial evaluation of the bid.



## 4. RFP Guidelines

### a. RFP Issuance & Submission

Event	Date
1. RFP distribution to vendors	3-July-2022
2. Questionnaire Session	N/A
3. Proposal due date Closure Date	20-July-2022

### b. Queries and Responses

All inquiries during the questions and answers session (Bidder Conference) if conducted must be documented., Verbal clarifications, inquiries or communication are not permitted, and only written communication is accepted.

### c. RFP Acknowledgement

1. Award of the contract resulting from this RFP will be based upon the most responsive vendor whose offer will be the most advantageous to "EHS" in terms of cost, functionality, and other factors as specified elsewhere in this RFP.
2. Vendor has a period of (5) days to acknowledge and accept the awarding letter with its terms and conditions. Delay of acceptance will yield into consideration of rejection.
3. EHS" reserves the right to:
  - a) Accept other than the lowest-priced offer.
  - b) Award a contract on the basis of initial offers received, without discussions or requests for best and final offers.
  - c) Award the RFP contract on a partial basis (i.e. not all requirements requested from a single vendor.)
  - d) Not declare the name of the winning bidder, and awarding details.

### d. Proposal Format Requirements

1. The financial and technical proposals must be submitted separately. Each proposal must be sent in a separate (PDF) electronic file (PDF).
2. The proposals must be sent to the Procurement Department email namely; ([Procurement@ehs.com.jo](mailto:Procurement@ehs.com.jo)). A password divided into (3) portions and not to be less than (9) nine digits must be set on the financial offer.
3. The passwords must be sent through a text message (SMS) to relevant mobile numbers which will be cellular mobile numbers that will be provided to the bidders at a later stage.
4. Pricing must be per site with a breakdown itemized pricing for each item, component, product and services included in the submitted Financial Proposal.
5. The Financial Proposal must specify clearly the compliance with the (5) five years' warranty duration required in the Technical Specification section.

## 5. RFP Terms & Conditions

### a. Evaluation Criteria

1. "EHS" will evaluate each response. Responses will be evaluated on many criteria deemed to be in EHS's best interest, including but not limited to, technical offering, price, warranty, delivery duration, Bidder certification, accreditation, schedule, bidder's capabilities, compliance with bonding, and any other factors that "EHS" determine. The order of these factors does not denote relative importance.
2. "EHS" reserves the right to consider other relevant factors as it deems appropriate in order to obtain the best value.
3. This RFP does not commit "EHS" to select any firm, enter into any agreement, pay any costs incurred in preparing a response or procure or contract for any services or supplies. "EHS" reserves the right to request additional information from the bidders whose response meets "EHS" needs and business objectives without requesting such information from all respondents.

### b. Rejection of Proposals

"EHS" reserves the right to reject any or all offers and discontinue this RFP process without obligation or liability to any potential Vendor.

### c. Proposal Costs and Expenses

No legal liability on the part of "EHS" for payment of any kind shall arise and in no event will a cause of action lie with any bidder for the recovery of any cost incurred in connection with preparing or submitting a proposal. In response hereto all efforts initiated or undertaken by the bidder shall be done considering and accepting this fact.

### d. Bid, Performance, Advance payment, and Warranty Bonds

1. Unconditional Bid Bond valid for (3) three months with an amount of (JoD 15,000.00) Fifteen Thousand Jordanian Dinar to be renewed automatically must be submitted by every participating bidder.
2. Advance payment LG, is to be submitted against any required advanced payment.
3. Unconditional Performance Bond for (10%) of the total amount of the awarded value shall be submitted by the winning bidder and within (5) working days from the date of the award. The Performance bond must remain valid for the total duration of the the implementation of the project and until the delivered solution is finally received and accepted by EHS. This Performance Bond will be replaced by the Maintenance LG after items delivered installed and finally accepted duly. The Maintenance Bond will remain valid until the end of the warranty duration. In case the winning bidder fails to submit the performance bond, EHS reserves the right to cancel the contract and liquidate the bid bond without reverting to the bidder.

## e. Penalties

In the event, the bidder fails to deliver according to the agreed time (for either the initial agreed delivery date or any of the subsequent delivery dates). The Bidder must pay EHS a delay penalty of (1%) of the total contract amount for each calendar week of delay. The maximum penalty for delays shall not exceed (10%) of the total contract value. The payment or deduction of such penalty shall not relieve the winning bidder from its obligations to complete the services or from any other obligations and liabilities under this bid.

## f. Payment Terms

### 1- Payment terms:

- 20% Advance Payment against "Advance Payment LG"
- 20% upon items delivery
- 20% upon installation or implementation
- 40% on final EHS acceptance.

In case the winning bidder fails to comply with the "Advance Payment LG" term set for the first payment, hence, the winning bidders will be entitled to receive (40%) of the total contract value after the fulfillment of the delivery and initial receiving conditions "إستلام توريد" set forth in this RFP.

- ### 2- Payment currency shall be in Jordanian Dinar (USD and Euro exchange rate will be calculated at the currencies exchange rate issued by Central Bank of Jordan at the payment date).

## g. Terms of Delivery

Delivery, Installation and, Implementation within (8-12) Weeks from the date of the purchase order at the EHS HQ offices or any of "Hakeem" Project sites. Final acceptance is required by EHS, and penalties for delays will be imposed as per the condition specified in clause (5.e) of this RFP.

## h. Offer Expiry Date

The validity of the Proposal shall be no less than (90) days unless clearly mentioned differently.

The prices must remain fixed and valid for (90) days from the date of the invitation for bid closing date and shall be clearly stated in the technical and commercial bids.

## 6. Financial Compliance Sheet

#	Description	Comply (Yes/No)	Reference in the proposal
1	The bidder shall comply with all points included in the general conditions section		
2	The bidder shall comply with all points included in the bidder qualifications section		
3	The bidder shall comply with all points included in the RFP guideline section		
4	The bidder shall comply with all points included in the RFP terms and conditions section		

## 7. Objectives

EHS invites technically complete and commercially competitive bids from reputed bidders for Supply, Installation, Configuration, Testing and Implementation for Upgrade Existing Scale out NAS Storage (Dell EMC Isilon) for EHS and PHH datacenter or to provide new scale out storage with below specs provides in section “**6” New Solution Technical Specifications**”.

Item No.	Descriptions & Minimum Technical Specification	Site/Location	Qty
1	Upgrade Existing Scale out NAS Storage (Dell EMC Isilon) for MOH EHS datacenter with below Specs.	EHS	1
2	Upgrade Existing Scale out NAS Storage (Dell EMC Isilon) for MOH PHH datacenter with below Specs.	PHH	1

## 8. Business Requirements

To address the following business requirements:

1. Install the systems and related software as per EHS needs.
2. Provide continues support for Hakeem systems.

## 9. Submittals

The bidders’ proposal shall include the following:

1. Compliance sheets (for both technical and financial).
2. Data sheets for all proposed options.
3. Service level agreement (SLA).
4. Project team details.
5. Detailed BOQ.

## 10. Current setup technical specifications:

### **EHS DC:**

ISILON Cluster with below HW configuration:

- 10 x A200 nodes each with:
- Each Node Specs:
  - o 60TB SATA drives with 15 x 4TB SATA Drives
  - o 64 GB Memory.
  - o 400GB SSD capacity.
  - o 2 x 10G ports for Front-end connectivity.
  - o 2 x 10G ports for back-end connectivity.
- 2x SWITCH 10GBE 24P 2PS CELESTICA for back-end connectivity.
- 2x 48X10G SWITCHES 4048 s.
- RACK ASSY TITAN D 40U 4 PDU SINGLE PHASE.

**TOTAL: 600TB Raw Capacity**

**TOTAL: 527TB (480TiB) Net Usable Capacity with +2d:1n protection and file > 2MB**

- 5 years ProSupport and Next Business Day Onsite Service
- Software's:
  - o Insight
  - o Smart Connect
  - o Smart Pools
  - o SyncIQ

### **PHH DC:**

ISILON Cluster with below HW configuration:

- 10 x A200 nodes each with:
- Each Node Specs:
  - o 60TB SATA drives with 15 x 4TB SATA Drives
  - o 64 GB Memory
  - o 400GB SSD capacity
  - o 2 x 10G ports for Front-end connectivity
  - o 2 x 10G ports for back-end connectivity.
- 2x SWITCH 10GBE 24P 2PS CELESTICA for back-end connectivity.
- 2x 48X10G SWITCHES 4048 s.
- RACK ASSY TITAN D 40U 4 PDU SINGLE PHASE

**TOTAL: 600TB Raw Capacity**

**TOTAL: 527TB (480TiB) Net Usable Capacity with +2d:1n protection and file > 2MB**

- 5 years ProSupport and Next Business Day Onsite Service

- Software's:
  - Insight
  - Smart Connect
  - Smart Pools
  - SynclQ

### 3. Technical specifications to Upgrade Current setup:

EHS is soliciting proposals to Upgrade existing Dell EMC Isilon scale out storage for both sites with the following options and specifications:

**Option 1:**

Add 2x A200 Nodes with same existing node configuration and specification.

- All existing Storage licensed features should be included on the upgrade.
- 5 years' vendor support

**Option2:**

Add Minimum 713 TiB usable storage using A200 Nodes with 12 TB disks configuration and below technical specifications.

- 64 GB Memory
- 800GB SSD capacity
- 2 x 10G ports for Front-end connectivity
- 2 x 10G ports for Front-end connectivity
- All existing Storage licensed features should be included on the upgrade.
- 5 years' vendor support

**Option3:**

Add Minimum 713 TiB usable storage using A300 Nodes with 16 TB disks configuration and below technical specifications.

- 96 GB Memory
- 800GB SSD capacity
- 2 x 10G ports for Front-end connectivity
- 2 x 10G ports for Front-end connectivity
- All existing Storage licensed features should be included on the upgrade.
- 5 years' vendor support.

## 11. New Solution Technical Specifications “Scale-Out NAS Technical Requirements”:

<b>One</b> NAS storage system per site(Main datacenter in EHS,DR datacenter in PHH) is required with below technical specifications.	
<b>Feature</b>	<b>Description</b>
<b>Architecture</b>	<ul style="list-style-type: none"> <li>The Proposed Solution must be HW Scale-Out File system storage with native NAS capabilities, no gateways &amp; with no virtualization layer.</li> <li>No additional software must be installed on the clients to assure the functionality of the system.</li> <li>Scale-out storage platform should be an end-to-end appliance from a single vendor.</li> <li>The storage solution must support mixing different type of configurations including All-Flash nodes (SSD or NVMe) for extreme performance requirements, Hybrid nodes (SATA / NL-SAS + SSD) for moderate performance requirements and Archive requirements. These different nodes must be able to be mixed in the same cluster under a <b>single unique namespace</b> and file system with automatic data tiering capabilities between them.</li> </ul>
<b>Protocols</b>	NFS-v3/v4, SMB 1/2/3, HTTP, FTP, REST API, & S3 API
<b>Protection</b>	<ul style="list-style-type: none"> <li>Bidder should include all necessary HW equipment like hard disk drives or nodes/shelves to provide a protection against two simultaneous drives failures in two different nodes or against one complete node failure with all drives attached to it</li> <li>Scale-Out Storage platform should have the capability to apply granular protection on specific directories or files depending on the requirement, on the fly and with no downtime or interruptions</li> <li>Scale-Out platform solution must support File Filtering capabilities based on extensions and Antivirus integration if needed.</li> </ul>
<b>Host Ports</b>	10 Gbe connectivity or better
<b>Required Storage</b>	<ul style="list-style-type: none"> <li>Storage capacity must be at <b>least 1.2 PiB Net Usable capacity</b> using advanced software-based data protection mechanisms scalable to at least 10PBs (best practices for the performance)</li> <li>The Proposed NAS controllers should be configured to offer redundant dedicated NAS controllers with redundant interconnectivity &amp; Single Global Namespace.</li> </ul>
<b>Features</b>	<ul style="list-style-type: none"> <li>Must Support thin provisioning</li> <li>support compression and deduplication is Preferable.</li> <li>Must Support integration with Microsoft Active Directory and granting AD users permissions on SMB shares.</li> <li>Must support proactive vendor cloud based monitoring on appliance with all required licenses enabled from day one</li> <li>Must Support integration with all major public cloud provider</li> </ul>



	<ul style="list-style-type: none"> <li>• Must include technology to containerize files smaller than block size to enhance storage efficiency with license for provided capacity enabled from day one.</li> <li>• All required licenses or features related to PACS must be included and enabled from day one</li> <li>• All required licenses should use perpetual license model not subscription based,</li> <li>• Must Include Real time and historic performance/capacity reporting tool S/W with all licenses require provided from day one</li> <li>• Must include integrated File System Analytics capabilities with data insights allowing real-time data indexing, search capabilities, tagging, storage monitoring with all licenses require provided from day one</li> <li>• Must include load balancing mechanism to guarantee equal utilization of resources with &amp; load balancing of all clients. The platform should have the capabilities to Auto Balance any protocols mentioned above in the document with a variety of policies like Round Robin, Connection Count, CPU Usage &amp; Network Throughput</li> <li>• Must support Data Protection capabilities using Snapshots Technology with Windows VSS Integration. Snapshots should be taken granularly at the directory level</li> <li>• Must support User quotas management capabilities at Directory, Group or User level with advisory, soft, or hard limits and thin provisioning features</li> <li>• Must support an automatic tiering software that allows data to be tiered between different node families within the same cluster &amp; file system using file Metadata, file modified date, access date, file size, etc.</li> <li>• Must include a software to protect critical data against accidental, premature, or malicious alteration or deletion enabling WORM capabilities</li> <li>• The Storage system must include the below SMB &amp; NFS Stack features: <ul style="list-style-type: none"> <li>○ SMB3, NFSv3 &amp; NFSv4 Continuous availability or transparent failover in the event of losing a node without losing the ongoing session or session timing out</li> <li>○ VSS for SMB File Shares</li> </ul> </li> </ul>
<b>Performance</b>	<ul style="list-style-type: none"> <li>• The Storage should have the ability to auto-balance Performance across all controllers and auto-balance capacity across all nodes in the system in order not to create any bottleneck or hot spot.</li> <li>• Linear performance and storage capacity should be achieved by adding storage nodes each with its own Disks, Cache, I/O and CPU processing power to ensure the linear scalability</li> <li>• All storage controllers must be active, contributing to performance and capacity of the system</li> <li>• Bidder should offer benchmarked performance for the offered solution with the offered configuration</li> </ul>
<b>Scalability</b>	<ul style="list-style-type: none"> <li>• The file system capacity should be scalable to 10 Petabytes in a single namespace from day one without any interruption, configuration change or hardware changes, all as a single File System</li> <li>• Upgrades should allow the extra storage and performance to be used in the next minutes by existing workload in order to guarantee consistent performance, even when pushing more load to the storage platform</li> </ul>

	<ul style="list-style-type: none"> <li>The storage system must be allowed to expand with new generation hardware without changes to the existing configuration and whilst the system is online. Allowing non-disruptive hardware retirement if/when required.</li> <li>The storage system must support to mix different generations of hardware within the same cluster without any configuration change on the application or storage platform, all forming a single file system to guarantee compatibility and highest ROI</li> </ul>
<b>Supported Drives</b>	NL-SAS, SAS, SSD, NVME
<b>Replication</b>	Must support a native replication software for disaster recovery scenarios with asynchronous replication technology at granular file or directory level with license for provided capacity enabled from day one.
<b>Redundancy</b>	The required solution must provide a highly available storage infrastructure with No Single Point of Failure, this requires that all critical system components be redundant (power supplies, fans, controllers ... etc.).
<b>Non-Disruptive Upgrades</b>	The storage system must support non-disruptive code upgrades along with the ability to rollback to previous code version in the event of compatibility issues
<b>Support</b>	5 years Vendor support
<b>Others</b>	All required switches, cables/transceivers to connect the solution must be included solution Must include required cabinets to host the provided system. Top of Rack Frontend switches to connect provided solution to EHS Datacenter LAN must be included and should support future expansion with specification in below table.

<b>Two</b> Top of Rack switches per site with below specification (Total 4 switches)	
<b>Feature</b>	<b>Description</b>
<b>Hardware &amp; Performance</b>	<p>Shall propose two ToR switches for each data center, total four switches.</p> <ul style="list-style-type: none"> <li>Non-blocking switching capacity</li> <li>Shall supports 1GE and 10GE ports copper and Fiber interfaces</li> <li>Shall supports minimum 2 x 10GE and 40GE uplink ports including the transceivers.</li> <li>Shall support a minimum of 48 1GE/10GE auto-sensing ports</li> <li>Shall provide the required transceivers based on the proposed solution requirements.</li> <li>Device-level fault tolerance, to include the following options: <ul style="list-style-type: none"> <li>Redundant Power Supplies, must be hot swappable</li> <li>Redundant Fans, must be hot swappable</li> <li>Redundant Uplinks</li> </ul> </li> <li>Must have Layer 3/4 capabilities</li> <li>Must support policy based routing</li> <li>Should support IPv6</li> </ul>

	<ul style="list-style-type: none"> <li>• Must support the following Spanning Tree Protocol enhancements:</li> <li>• IEEE 802.1w (Rapid Spanning Tree), and IEEE 802.1s (Multiple Spanning Tree).</li> <li>• Must support local and remote port mirroring (SPAN and RSPAN) for Advanced troubleshooting.</li> <li>• Supports Private VLANs for enhanced security.</li> <li>• Supports Jumbo frame</li> <li>• Support SNMP v1/v2/v3</li> </ul>
<b>Quality of Service</b>	<ul style="list-style-type: none"> <li>• All switches must support QoS with international standardizations with the following specifications: <ul style="list-style-type: none"> <li>○ Per-port QoS configuration</li> <li>○ Support at least for four queues per port in hardware</li> <li>○ Must support QOS marking and Classification 802.1p and IP TOS</li> </ul> </li> </ul>
<b>Security</b>	<ul style="list-style-type: none"> <li>• TACACS and RADIUS, which enable centralized control of the switch and restrict unauthorized users from altering the configuration.</li> <li>• Standard and extended ACLs on all ports.</li> <li>• DHCP snooping and Option 82 insertion</li> <li>• Port security</li> <li>• SSHv1 and SSHv2</li> <li>• Unicast MAC filtering</li> <li>• Unicast port flood blocking</li> <li>• IP source guard</li> </ul>

## 12. Service Level Agreement

Bidder must provide maintenance and support for hardware and software for a period of 60 months starting the date of the EHS's final acceptance of the complete works.

On-site labor and parts must also be included.

Vendor response will be measured and monitored using EHS's Service Management tool.

During the Maintenance period, the Bidder must provide the following:

- Preventive maintenance program and provide preventive maintenance scheduled visit every three months.
- Health check report after every preventive visit, Weekly support cases report and Monthly meetings to assess the support cases and support procedures.
- Support methodology and escalation matrix including contact details.
- Manufacturer support for all components.
- The Vendor is responsible for maintaining spare parts to meet the "availability" and "resolution time" targets at no additional cost.
- The Vendor will provide workshops and/or on-site training if necessary or if requested by EHS.
- The Vendor will support, configure and resolve problems whenever needed and/or if requested by EHS.
- The Vendor will commit to providing quality assurance for any major configuration changes whenever requested by EHS. Any change must be done within the EHS change management process.
- The Vendor is responsible for the following support service compliance points:
  - Firmware updates, patches, and new releases
  - Provide all related support and required preventive maintenance consultation.
- Support 24/7 for any critical problem
- Deploying new patches released by the manufacturer free of charge upon EHS's demand.
- Assistance to EHS staff for any configuration modification.
- Perform minor and major software upgrades upon request by EHS
- Handle all support requests submitted within or outside working hours without extra charges.
- Maintain a detailed inventory of all equipment, including running OS, Utilization, Configuration, etc...- This inventory should be shared with EHS Team on monthly basis
- All Equipment, software and Licenses should be covered back to back by Vendor support without any exception and EHS should have access to these contracts.
- Actively monitoring alarms, and security alerts, and take actions according to the severity level of the incident.

### **Incident Management**

Severity level will be determined by EHS upon opening each individual support case.

Incidents and issues covered by this contract are to be treated by the bidder according to the case severity based on the following resolution timeline:

• **Case Severity 1:** Functionality down or there is critical impact to end-user's business operations.

This request should be answered 24/7 with no additional cost for outside working hours. A team should be assigned to work on the issue until it is resolved.

• **Case Severity 2:** A certain functionality is severely degraded or end-user's business operations are negatively impacted by unacceptable network performance.

This request should be answered 24/7. A team should be assigned to work on the issue until it is resolved.

- **Case Severity 3:** Functionality is impaired, although most business operations remain functional. This request will be handled only within working hours.
- **Severity Level 4:** Product Enhancement request or information is required on product capabilities, installation, or configuration. There is little or no impact to End User's business operation

During the resolution of a problem, EHS engineers shall stay informed about the advancement of the resolution process.

Following the completion of any Service, Bidder will provide a report which will be reviewed and confirmed by both parties. The Report shall indicate the exact time at which an intervention began, the equipment that was serviced or replaced, the corrective measures that were taken, and the amount of time needed for the intervention since the manifestation of the problem till functionality is restored.

Insuring and maintaining full, safe and enhanced performance for the Datacenter and any related items, along with all required support and prevention procedures with the following targets:

Severity Level	Response Time	Arrival On Site
Severity 1	30 min	90 minutes
Severity 2	1 hour	2 hours
Severity 3	8 hours	8 hours
Severity 4	12 hours	12 hours

- Throughout the execution of the SLA, vendors should not rely on system redundancy as a permanent resolution
- **Response time:** the time it takes to send back an acknowledgement of an issue and commence the process of developing a resolution

### Terms and Penalties

Additional hours exceeding the allowable downtime will be subject to penalty. The minimum accepted system availability is 99.99% yearly uptime. Under all circumstances, the "resolution time" must not exceed 24 hours for severity level 3 and 48 hours for severity level 4. In addition, the "response time" and the "arrival on site time" must be met with each Severity Level.

The bidder will be subject to penalty if he does not meet the "response time", "arrival on site" and "resolution time". The following table shows all the penalties under this SLA contract.

Penalty condition	Penalty amount per hour JoD			
	Severity 1	Severity 2	Severity 3	Severity 4
Failed to achieve 99.99% availability target	400	300	0	0
Failed to achieve "response time"	400	300	100	50
Failed to achieve "arrival on site time"	400	300	100	50
Failed to achieve "resolution time"	0	0	100	50



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