PROJECT IMPLEMENTATION UNIT (PIU)
PUNJAB URBAN LAND SYSTEMS ENHANCEMENT (PULSE)
Punjab Land Records Authority (PLRA)
Government of the Punjab
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Subject: <u>**MINUTES OF THE PRE-BID MEETING FOR THE PROVISION AND INSTALLATION OF CORE IT EQUIPMENT FOR PULSE DATA CENTER (PRIMARY & DR SITE) UNDER PIU-PLRA, PULSE PROJECT**</u>

A pre-bid meeting was held on August 29, 2024 at 02:00 PM under the Chairmanship of GIS Specialist, PIU-PLRA, PULSE in the committee room of PULSE for the subject activity. The meeting started with recitation of Holy Quran. The chair welcomed the participants and requested for round of introduction. Attendance Sheet of representatives of potential bidder who attended meeting in person is attached at **"Annex-A"**. Following participants attended the meeting:

1. Mr. Muhammad Sohail Aslam   GIS Specialist, PIU-PLRA, PULSE
2. Mr. Muhammad Islam   Financial Management Specialist, PIU-PLRA, PULSE
3. Mr. M Afzaal Amin Rana   Procurement Specialist, PIU-PLRA, PULSE
4. Mr. Atif Manzoor   DC, DM, SMS Specialist, PIU-PLRA, PULSE
5. Mr. Ali Usman   HR Manager, PMU-BOR, PULSE
6. Mr. M Waqas Bashir   MIS/IT Specialist, PIU-PLRA, PULSE

The following joined the meeting through zoom link:

1. Mr. Asim   F5 Pakistan
2. Mr. Hendry Chandra   F5 Pakistan
3. Mr. Usman Ch   Jazz
4. Mr. Faizan Akhtar   Jazz
5. Mr. Umair   Cisco
6. Mr. Usman Shahid   Cisco
7. Mr. Ali Raza   Dell Technologies
8. Mr. Raheel   HP Enterprise solution architect
9. Mr. Faheem Saeed   CNS Engineering

2.   Procurement Specialist, PIU-PLRA, PULSE apprised the participants regarding the procurement process of subject activity. DC, DM, SMS Specialist PIU-PLRA, PULSE round of introduction regarding SAN Storage, Scale out NAS, Data Protection Software, Cyber Recovery Vault and Backup Solution, Firewall, Load Balancer and OEM. Following queries were responded during the meeting:

Component	OEM / Vendor Queries	PULSE Response
Next Gen Firewall	What is the requirement / use case for <u>14 x 10G/1G RJ45 interfaces PoE</u>; we believe it's not a requirement in DC firewall. At most a small branch firewall may require a PoE interface but even that is debatable.	PoE is not required, the bidder may quote 14 x 10G/1G RJ45 interface support without PoE. (RFB, page # 108, Section VII).

	Secondly there is a requirement of 25G interfaces / typically these are needed in DC switches or ToR switches where 25Gig interfaces are required for direct connection with compute nodes.	PULSE needs 25G interface support on the firewalls. In a data center's spine and leaf architecture, the firewall must connect directly to a border leaf switch using a 25G interface. Hence, we requested support for 25G interfaces, including SFP28 optics. (RFB, page # 108, Section VII).
Leaf Switches	The document didn't mention about Spine switch, do you have already a Spine deployed? If not, then please confirm if these DC switches will be deployed in collapsed architecture; then using the term Leaf is not logical.	PULSE already has a Cisco ACI network in production. We need to add leaf switches to expand the current network. (RFB, page # 116, Section VII)
	The SDN capability is not clear, please help us understand shall we offer the SDN controller as part of the solution?	If the proposed leaf switch is not compatible with the existing Cisco ACI network then bidder will suggest the necessary components, such as spine switches, leaf switches, and an SDN controller with hardware. (RFB, page # 116, Section VII)
	Lastly the CPU requirement is vendor specific requirement when you have already mentioned Fabric throughput, Interfaces etc. in detail the requirement highlighted below is specific to a Box, these specifications are dependent on the how a certain vendor has designed their DC switch, so we request that you review this requirement too; CPU 4 Cores System Memory 32 GB SSD Drive 64 GB).	The CPU, memory and storage specifications are mentioned to ensure network performance and reliability and inline with the already deployed leaf switches. (RFB, page # 116, Section VII)
SAN	Different architectures are available with different vendors where they can meet core Pulse called out requirements, which are active-active, 99.9999% availability, NSPOF and functionality/intelligence to provide workload placement along with load balancing recommendations. Please clarify if they can be offered?	NVMe based scale-up and scale-out Active-Active architecture where Controllers shall be true active-active so that a single logical unit can be shared across all offered controllers with 99.9999% availability and NSPOF. Storage systems should have native functionality/intelligence to provide workload placement and load balancing recommendation. (RFB, page # 98, Section VII)
	Please clarify if 512 cache is required per controller or overall storage? Please clarify if dual socket processors are required per controller?	Dual socket Intel or Equivalent CPU with 32 cores per controller or Per Array is required. Offered Storage Cache should be minimum 1TB.

			(RFB, page # 98, Section VII)
		Please clarify efficiency factor committed by OEM. Does it have to be a Data Reduction Guarantee from the OEM?	Solution should offer at least 4:1 data reduction guarantee from OEM. (RFB, page # 98, Section VII).
		Pls clarify why we need ports to connect over NFS protocol in the block storage since you have already asked for the separate scale out NAS?	Vendors may propose NFS PROTOCOL to connect over iSCSI ports as optional. 8 x 32Gbps FC ports and 8 x 25GbE ISCSI ports for block access are acceptable as per RFB technical specifications. (RFB, page # 98, Section VII).
		Pls clarify, if the same drive capacity in a single pool is also acceptable?	Same / different drive capacity in a single pool is acceptable. (RFB, page # 98, Section VII).
		Pls clarify why we need NAS server with 256TB SAN specifications as you have already asked for a separate scale out NAS?	SAN solution should be capable to connect NAS / file servers and to create File share up to 256TB if required. Vendors can offer their solution with or without this feature with SAN as we already procuring separate scale out NAS. (RFB, page # 98, Section VII).
		As you have asked for separate NAS, snapshot for NAS volume should not be required with SAN.	Agreed. Snapshot for NAS volume is not required with SAN. (RFB, page # 98, Section VII).
NAS		Include 3 separate clusters - Production, Disaster Recovery, Cyber Vault Airgap Production Cluster: 700 TB usable capacity with Intel CPUs or or equivalent.	Include 2 separate clusters - Production, Disaster Recovery, : 700 TB usable capacity with Intel CPUs or equivalent. (RFB, page # 101, Section VII).
		There seems to be a typo in calculation as 700TB 80% is 560TB whereas in the requirement it is written 660TB. Please clarify?	PULSE requires 560 TB of usable storage, which represents 80% of the total 700 TB allocated for HDD storage. Additionally, 140 TB of usable storage is needed for NVMe, accounting for the remaining 20%. (RFB, page # 101, Section VII).
		Scale-out systems are based on RAIN based protection, which is better as compared to RAID, as RAID is only for traditional storages which cannot scale. As the requirement is for Scale- out NAS, please clarify if RAIN based architecture will be acceptable?	RAIN based architecture is acceptable and with enterprise grade failure protection. (RFB, page # 101, Section VII).
		Please clarify why we have stated 6 controllers or nodes as minimum? You have defined the protection level which	Vendors can propose scale out controllers in any combination with RAIN or RAID architecture with

	can protect data loss against simultaneous 2 disk failures per node or 1x controller/node failure and if the vendor can achieve this functionality using any number of controller configuration meeting the expected performance and availability criteria together with All flash NAS.	hybrid or all flash and their architecture guidelines meet the performance, scalability and protection criteria defined. Vendor will provide performance & sizing data sheets for the proposed configuration. (RFB, page # 101, Section VII).
	If we are allowed to quote All Flash NAS Architecture?	All flash NVMs based NAS architecture can be proposed. (RFB, page # 101, Section VII).
	Pls advise if vendor needs to propose cluster interconnects as well or PULSE will use their own? Preferably we need we must have at least 2 x switches with 32 x 100G ports for Nodes intercommunication.	Vendors must propose Redundant NAS cluster interconnects with 32 x 100G QSFP ports as per HA configuration with NSPOF design and meet the front end back-end performance requirements. Vendor will provide performance & useable sizing data sheets for the proposed configuration with protection levels stated. (RFB, page # 101, Section VII).
	Pls advise if HDFS or any equivalent or better is acceptable?	Hadoop Distributed File System (HDFS) Equivalent or better is acceptable. (RFB, page # 101, Section VII).
SAN SW	Is it fair to assume that SAN Switches will be installed in the same cabinet as the Storage?	Yes, it will be installed in same Rack. (RFB, page # 100, Section VII).
	IF the storage and switches are to be installed in different racks, kindly advise on the distance between the rack, for patch cord calculations.	Yes, it will be installed in same Rack. (RFB, page # 100, Section VII).
DPS	Most Backup Solution providers have transformed their Licenses per VM based, pls specify the QTY of VMs to cover as well. 30 VM's license as per solution should be acceptable?	20 Sockets or VMs License required. Vendor is responsible for provision of all VMs License required for backup solution. (RFB, page # 106, Section VII).
	Suggestion is to please align this capacity to mission critical front-end capacity as mentioned in Cyber vault and backup section of this RFP.	30 TB capacity is related to mission critical front-end capacity as mentioned in Cyber vault. (RFB, page # 106, Section VII).
Backup Appliance	4 x 25Gbps NIC will be acceptable with solution compliance?	Vendor can propose as per their deployment plan with maximum performance and supporting integration at all levels with high availability. (RFB, page # 105, Section VII).

	Open system support is something also dependent on backup software working on top of disk appliance. Besides, all open systems cannot perform on native protocols alone hence at times require customization.	If the functionality is manageable within the proposed solution then it will be acceptable. (RFB, page # 106, Section VII).
Cyber Recovery Vault	All hypervisors will be provided by PULSE for Vault and landing zone?	Yes, all hypervisors will be provided by PULSE for Vault and landing zone. (RFB, page # 108, Section VII).
	Support for all backup software's or any one of them is acceptable?	Support any of the mentioned software will be acceptable. (RFB, page # 108, Section VII).
	2 x 25Gbps Network card is not required in servers since vault's network will be working on 10G as per the networking section of this requirement. Kindly revise the requirement.	2 x dual port 10G cards per server is acceptable. 2x25Gbps Network Card is not required. (RFB, page # 107, Section VII)
	Please remove CDP as it is not required in Cyber Recovery Solution.	Agreed, CDP will be removed. (RFB, page # 107, Section VII)
Blade Chassis	Primary Motive of physical consolidation is not limited to server only via Blade Infrastructure, but consolidation of network is always included. Please advise if vendor can propose consolidated switching fabric inside the chassis as well?	Switching Fabric inside chassis is also allowed. (RFB, page # 94, Section VII).
	200Gbps Internal Connectivity to Chassis backplane is relevant to backplane bandwidth or blade connectivity to fabric interconnect	200Gbps Internal Connectivity to Chassis backplane is relevant to backplane bandwidth capability. (RFB, page # 94, Section VII).
	Each blade switch support independent connectivity to external ToR switch at up to 800 Gbps or 600Gbps for converged is fine as well?	600Gbps or higher will be acceptable for uplinks for both Converged or ToR based interconnects. (RFB, page # 94, Section VII).
Blade Servers	Blades will be deployed for Hyper V environments and all data will be residing inside SAN /boot from SAN so 2 or 4 drives shall be enough for OS RAID will be acceptable?	Blades, Hyper V environments and all data will be residing inside SAN /boot from SAN so minimum 4 drives shall be enough for OS RAID. (RFB, page # 94, Section VII).
	Can vendors propose converged NIC cards to optimize the solution without	Yes, converged NIC will be acceptable with 50Gb Converged

	affecting the performance of overall solution	Network Adapter per Blade or higher. (RFB, page # 95, Section VII).
	512VMs mapping to one NIC seems to be a non-real-world scenario and doesn't have any link with the capability of the solution as real word solution and functionality is not only dependent on NIC rather depending on all physical resources and their virtual mapping on the basis of cores, memory as well.	Vendor can propose minimum 50Gb Converged Adapter per Blade (LAN & SAN) with internal blade chassis interconnects supporting LAN/SAN traffic or via external ToR unified switching as fabric interconnect for LAN /SAN traffic. Should support SR-IOV, RDMA offload to support large number of VM's with reduced CPU utilization. (RFB, page # 95, Section VII).
ToR	If Vendor is allowed to propose Converged fabric inside the chassis rather than relying upon external ToR switching topology minimizing cable management.	Yes, both ToR (Top of Rack) based, and blade chassis based converged fabric is acceptable. For Chassis based converged fabric, minimum requirements are as follows for Multi frame configuration both for PR and DR site: (2 x Active/Active Chassis for PR Site and DR Site)
		Specs for Chassis based converged fabric: Active/Active Blade Chassis infrastructure at each site should support network switch with minimum 50Gb downlinks and 100Gb uplink to DC switch

Redundant Interconnect modules shall be integrated within the chassis such that uplinks from the chassis can be directly connected to core LAN/SAN switches

Active /Active Chassis infra per site must provide 4 x 100G fiber uplinks with redundancy to Core Network Switches with LC cables.

Must provide 4 x 32GB SFP+ uplinks with redundancy to Core SAN Switches with 15m LC cables. |

		Should support multi-module link aggregation (MLAG) for resiliency against interconnect failure (RFB, page # 95, Section VII).
Management	This will be applicable as per vendor proposed solution either ToR based, or Chassis based fabric interconnects?	Yes. All management features are subject to vendor proposed offering either ToR based switching or Blade Chassis internal Fabric interconnects. (RFB, page # 96, Section VII)
Load Balancer	Application delivery – Please generalize this, as security functionality is more related to WAF/firewall functions, as in this requirement, our main requirement is load-balancing of application. Please remove "Security" keyword	The "Security" keyword as requested will be removed, while ensuring that the primary functionalities required in RFP will remain intact. (RFB, page # 112, Section VII)
	Real Time Information – Please generalize this, as security functionality is more related to WAF/firewall functions, as in this requirement, our main requirement is load-balancing of application. Please remove "Security" keyword	
	Data Analytics- Tracking for "attack point of view" is related to WAF, please remove this keyword "attack point of view" It's not a native Load-Balancer feature, please remove it this requirement.	The "Attack point of view" keyword will be removed, however, the primary functionalities required in RFP will remain intact. (RFB, page # 112, Section VII)
	To comply the required specifications, we would require 2 RU.	1RU / 2RU both are acceptable. (RFB, page # 112, Section VII)
	Application aware appliance - It's not a native Load-Balancer feature, please remove it this requirement.	This requirement will be removed. (RFB, page # 112, Section VII)
	Please remove 'HTTP request processing from servers' as it inaccurately broadens the scope of SSL offloading, which primarily focuses on encryption-related tasks rather than application-level HTTP request management.	This Requirement will be updated. The SSL offloading requirement pertains specifically to the configuration of the load-balancer appliance and does not encompass tasks related to application server-side configurational task. (RFB, page # 112, Section VII)
General Queries	With reference to this clause regarding the specific experience, kindly confirm this specific experience of Bidder or Principal will be accepted.	Clause 1 (b) **Section III - Evaluation and Qualification Criteria of RFB document** is referred for the clarification. The suggestion for revision in criteria will be discussed by the

		Procurement Committee and advice will be sought from the bank. The decision will be shared with bidders accordingly.
	Kindly confirm that the specific experience of Principal (OEM) will be accepted to qualify as this is turnkey project which includes 4-5 Principals?	Refer to Clause 1 (b) **Section III - Evaluation and Qualification Criteria of RFB document** "*The Bidder shall demonstrate that it has successfully completed at least One (1) contract within the last seven (7) years prior to bid submission deadline, each with a value of at least PKR 850 million that have been successfully and substantially completed and that are similar in nature and complexity to the Goods and Related Services under the Contract. For a joint venture, this requirement may be met by all members combined.* *Note: The value of contracts executed by different JV members shall not be combined to meet the threshold.*" The suggestion for revision in criteria will be discussed by the Procurement Committee and advice will be sought from the bank. The decision will be shared with bidders accordingly.
	As per industry standard, the customers usually ask for separate lots for such huge requirements. It is requested to please accept the total value of three (3) projects instead of one. This is important for a healthy competition otherwise it will limit the good partners who may qualify 100% of technical requirements but this single term can restrict them to participate which will result in low participation.	Clause 1 (b) **Section III - Evaluation and Qualification Criteria of RFB document** is referred for the clarification. The suggestion for revision in criteria will be discussed by the Procurement Committee and advice will be sought from the bank. The decision will be shared with bidders accordingly.
	This clause is restricting the technically qualified bidders. A bidder does have the experience of various similar projects more than the specified value in a single year, but a single contract for specific value may restrict the bidders to compete in this tender. It is requested to please consider the experience of Principals as well so that a bidder who has highly	The standard RFB template of World Bank is used and the Clause 1 (b) **Section III - Evaluation and Qualification Criteria of RFB document** do not restrict any bidder but invite bids from the bidders having relevant experience. The suggestion for revision in criteria will be discussed by the

technical team can qualify in this tender. This will increase the competition among bidders and PULSE will get the best discounts and better price.	Procurement Committee and advice will be sought from the bank. The decision will be shared with bidders accordingly.
Please consider value of more than one similar project to meet this specific criterion. This is essential for better competition in this tender to get appropriate solution and best prices.	The criteria is very generic and simple. Only 1 project is required as per **Section III - Evaluation and Qualification Criteria** of RFB. The suggestion for revision in criteria will be discussed by the Procurement Committee and advice will be sought from the bank. The decision will be shared with bidders accordingly.
OEM//Principal relevant training and certifications (local and foreign) for PULSE team **(4 resources)** against Blade Solution, Storage Solution, Security and Network solution for every resource person. (Please clarify whether the training should be focused on individual products within these solutions or on the solutions.)	Trainings required for all the components for the stated number of persons.
As 20% is the technical weightage, kindly clarify that if BOQ is not fully compliant to RFP specs then there will be deduction of technical marks or bid will be considered as non-responsive.	Refer to Clause 2, **Section III - Evaluation and Qualification Criteria** "*Assessment of adequacy of Technical Part with the requirements defined in the BDS ITB 32.4. Moreover, the **technical specifications** given in the technical specifications section **must be met by the bidder**.*"

The meeting concluded with an expression of gratitude.

Financial Mgt. Specialist
PIU-PLRA, PULSE
(Member)

HR Manager
PMU-BOR, PULSE
(Member)

Procurement Specialist
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DC, DM, SMS Specialist
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MIS/IT Specialist
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(In-Attendance)

GIS Specialist
PIU-PLRA, PULSE
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