Indian Institute of Science (IISc)
Bangalore - 560012

Department of Computational and Data Sciences (CDS)
IISc

Notice Inviting Tender (NIT) under
Two-Cover Bid System

for

Supply and Installation of H100-based GPU System
[Global Tender]

[GTE Request approved by Ministry vide ref FNo 51-03/2023-TS.VII dated December 6, 2023]

Enquiry or Tender No: IISc/Purchase/SERC/2023/GPU-System/1
Date: December 26, 2023

Chair
Supercomputer Education and Research Centre (SERC)
Indian Institute of Science (IISc)
Bangalore – 560012, India
Email: tender.serc@iisc.ac.in

Contents

1. Preamble

The Supercomputer Education and Research Centre (SERC) in Indian Institute of Science (IISc) is a leading supercomputing centre in the country, possessing state-of-the art computing facilities, catering to the ever-increasing demands of high performance computing for scientific and engineering research. The supercomputer systems in SERC are used for large-scale simulations in various scientific domains.

The community of AI/ML researchers in IISc has significantly expanded over the past few years. New initiatives including the Kotak AI/ML Center and MTech-AI program have also been contributing to this growth. The AI/ML research by the community needs powerful machine for training large models in reasonably fast time. Such a machine has to be hosted in SERC for centralized use by the Institute's AI/ML community. It is planned to procure a multi-accelerator server under Global Tender Enquiry, with latest hardware and AI/ML software stack suitable for modern-day AI/ML standards. This server, with large memory in the accelerators, is intended to enable researchers to tackle larger datasets, experiment with advanced algorithms, and achieve faster convergence.

2. Technical Details

2.1 Hardware and Software Configuration

Components	Specifications
Processors & performance (per node, minimum)	Dual 56-core 4th Gen Intel® Xeon® scalable processors, with GPU card of 8 x 80GB memory, Tensor core of 600+, 120+ RT Cores and 18,000+ CUDA Cores with Accelerators. Minimum of 500Tflops peak performance double precision tensor and 28PFlops for FP8. GPU topology to CPU should be 4:1 (4GPU connected to 1CPU)
Number of GPUs and GPU Communication	8 x H100 cards with 80GB memory, Tensor core of 600+, 120+ RT Cores and 18,000+ CUDA Cores with Accelerators, NV Switch 4x configured, minimum 900GB/s bidirectional communication bandwidth.
Performance	~500TF Double precision Tensor Performance, ~28 PetaFlops FP8 performance

Multi Instance GPU	Single GPU can be partitioned into as many as 7 GPU instances
Internal switches	4 internal NV-Switches gen4 for GPU connectivity, PCIe Gen5
System Memory	The system should be configured with Minimum 2TB DDR5 RAM with all slots populated
GPU Memory	Minimum 80GB per GPU, 640GB Per node minimum memory
CUDA Cores	Minimum 16896 or above, per GPU
Tensor Cores	Minimum 456 or above per GPU
Network	Four OSFP ports serving eight single-port supporting 400Gb/s Infiniband / Ethernet Two dual-port – 400Gb/s Infiniband / Ethernet. Will need Eight Single port Supporting 400Gbps Infiniband or Ethernet. The Switch side connector will be DAC.
Internal Storage	Two 1.92 TB M.2 NVMe drives for OS
	Internal storage –30TB U.2 NVMe drives for storage/cache with appropriate RAID.
Security Features	System should support Secure Firmware Updates, Support for Trusted Platform Module enabled within the BIOS for secure cryptographic key generation, Secure storage space and Self-encrypting drive. System should support encrypted computing
Power requirements	11.3 KW or less; hot plug & redundant power supply
Rack space	8U/node
System Network (IPMI)	1/10 Gbps network
OS Support	Red Hat Enterprise Linux /CentOS/ Ubuntu Linux. Quoted OS should be under Enterprise support from OEM. The OS should be tuned to the 8 x 80GB GPU requirement and should be OEM pre-loaded and should have enterprise support.
AI Enterprise Software	Licensed AI Enterprise software & subscription for each and every GPUs to be included from day one of Installation.
Containers and Required DL SDKs with Support	Some of the basic, SDK/library/containers we will use in the system: CUDA toolkit, CUDA tuned Neural Network (cuDNN) Primitives TensorRT Inference Engine CUDA tuned BLAS (cuBLAS) CUDA tuned Sparse Matrix Operations (cuSPARSE) Multi-GPU Communications (NCCL) Industry SDKs – NVIDIA Merlin, DeepStream, ISAAC, Nemo, Morpheus
Software Support	The quoted system should be certified on the Nvidia AI Enterprise Software Stack - Rapids, Tao, TensorRT, Triton Inference. Models: Google Speech Commands v1 – MatchboxNet, TransformerXL-Base (AMP) for Pytorch, WaveGlow LJS 256 Channels, BioBERTBaseCasedSQuADv1, Tacotron2 LJSpeech
Scalability & Cluster software	System should be scalable with multi node cluster. Software support & cluster tools to be supplied along with product. Full-stack reference designs with all of the leading Storage providers.
Warranty & Support	3 Years warranty. 4th and 5th year warranty to be quoted separately.
The Hardware must be listed under MLCommons Training (3.0) for the mentioned Benchmarks, supporting published link to be shared during submission	BM: Image classification Dataset: ImageNet Time: less than 15 minutes BM: Image Segmentation (medical) Dataset: KiTS19 Time: less than 15 minutes BM: Object Detection Lightweight Dataset: OpenImages Time: less than 40 minutes BM: Object Detection Heavyweight Dataset: COCO Time: less than 22 minutes

	BM: Speech recognition Dataset: LibriSpeech Time: less than 20 minutes Benchmark: NLP Dataset: Wikipedia Time: less than 8 minutes Benchmark: Recommendation Dataset: Criteo Time: less than 7 minutes
Cluster Management & Scheduler	Cluster management for system provisioning and monitoring needs to be included, The Cluster Manager must support multiple of hardware vendors. The Cluster Manager must allow for the easy deployment and management of servers across multiple data centers, the public cloud, and edge locations as a single shared infrastructure through a single interface. The Cluster Manager must provide the automatic repurposing of nodes between multiple HPC workload managers and Kubernetes clusters. Highly Scalable Job Scheduling system to be included.

3. Bidder's Eligibility Criteria

1. Should have supplied and installed at least five accelerator-based based HPC/AI systems to govt. institution/organization in India during August 1, 2021 - July 31, 2023.
2. The bidder must have a proven record of maintaining and managing similar items.
3. Bidders should include necessary document for establishing points 1 and above with necessary proof in terms POs and customer contact details
4. Should produce authorization from the OEM, if the solution involves an OEM different from the bidder.
5. The bidder must comply with the provisions of Office Memorandum F/No/6/18/2019-PPD dated 23rd July 2020, issued by Public Procurement Division, Department of Expenditure, Ministry of Finance, GoI.

4. Acceptance Criteria

1. The systems should be installed, commissioned and demonstrated for the components and parameters specified in the bid and P.O by the successful bidder, for the solution to be accepted.
2. It is to be noted that maximum of two weeks will be available (after Installation & Commissioning) to the bidder to conform to this acceptance test criterion set out.
3. Any delay in commissioning or conformance to the acceptance beyond the stipulated time will result in extending the warranty: Each day of delay would result in 3 additional days of warranty.
4. This penalty clause is only applicable for solutions which are considered as technically meeting the requirements, as evaluated by the technical committee. The clause cannot therefore be used as an argument to qualify any solution, which the technical committee considers as not meeting the requirements.

5. Technical Details / BoQ Compliance Sheet (to be submitted with Technical Bid)

Note: DO NOT MENTION THE PRICES IN THIS BoQ COMPLIANCE SHEET. THIS WILL LEAD TO AUTOMATIC DISQUALIFICATION OF THE BIDS.

SNo	Item Description	[Only answer YES/NO in this column. DO NOT MENTION THE PRICE]
1	H100-based GPU system with detailed specifications, including 3-year warranty	
2	Software installation cost, if any	

6. Organization of the Technical Bid

The technical bid should strictly be organized in the following sequence only.

Note: IISc reserves the right to disqualify any bid that does not provide all the required data and not following the organization given below.

1. A cover letter from the bidder. Among other things, the cover letter should certify that all the requirements of the tender are provided, and the offered solutions meet and comply with the technical and other specifications of the tender.
2. The bidder must not be blacklisted by any Central / State Govt. Organizations of India as on date of submission of the bids. A certificate or undertaking to this effect must be submitted.
3. Proofs for bidder's eligibility criteria as given in Section 3.
4. A copy of the masked Commercial bid has to be given in the technical offer (unpriced Bill of Material (BoM).
5. Undertaking as per the format in **Annexure A.**
6. The copy of registration certificate or a declaration in compliance with the provisions stipulated in office memorandum F/No/6/18/2019-PPD dated 23 July 2020 issued by Public Procurement Division, Dept. of Expenditure, Ministry of Finance, GoI.
7. Technical details of the items required in the tender.
8. Manufacturer Authorization Forms (MAFs) or letters from the OEMs to the bidder for each of the components.
9. Terms and conditions of the offer.
10. A certificate agreeing to all the terms and conditions mentioned in the tender.
11. Appendix
    a. Supporting technical materials including brochures.
    b. Any other information or documents that the bidder/OEMs deem necessary.

7. General Terms and Conditions

1. Offer must be submitted under TWO-BID system i.e., "Technical bid" and "Price (Financial) bid" as hard copies in two separate sealed envelopes. These two bids must be enclosed in a larger envelope superscribed as "Bid Submission for H100-based GPU System" within the stipulated period to the indicated mailing address. In addition, **soft copy of only the technical bid** must be sent by email to tender.serc@iisc.ac.in within the stipulated time.
2. The vendors may communicate to the committee through the email ID provided in the first page, which will be the official email for the purpose of this tender. However, the communications from the committee will be made only in pre-bid clarification meeting and through email including corrigendum and short fall requests. While the committee may consider the emails from the vendor, the committee will respond/communicate by email from only the official email ID when absolutely necessary including for example, arranging site visits, arranging possible technical presentations and calling the successful bidder for further discussions. In all other circumstances, no responses or communications will be made by the committee via email or any other means.
1. Any clarifications required by the committee will be sought in possible technical presentations and/or shortfall requests via email. The shortfall requests will precisely point to the tender clauses that are not met by the technical bid. It is the bidder's responsibility to address the shortfall by submitting an adequate and satisfactory shortfall response. No clarifications by email or any other means will be sought or given by the committee.
2. Delayed and/or incomplete tenders are liable to be rejected.
3. The Technical Bid and the Commercial Bid should be duly signed by the authorized representative of the bidder.
4. The bidders are requested to go through the Terms and Conditions detailed in this document, before filling out the tender. Agreeing to the terms and conditions of the tender document (by signing all pages of the copy of a tender document) is a mandatory requirement.
5. A tender, not complying with any of the above conditions is liable to be rejected.
6. IISc reserves the right to cancel the tender at any time without assigning any reason whatsoever.

8. Technical Bid – Terms and Conditions
1. The technical bid should contain all the information and should have the organization as given in Section 7. Bids without the specific information and organization as in Section 8 will be automatically disqualified.
2. No price information must be mentioned in the technical bid. Bids which include price information in the technical bids will be automatically disqualified.
3. Technical bids will be opened first. IISc may seek clarifications after opening of technical bids.
4. The technical evaluations will be made only based on the technical bids and the shortfall responses submitted by the bidder.

9. Commercial Bid – Terms and Conditions

1. Price bids of only technically qualified vendors will be considered. Commercial bid shall be opened for the technically qualified bidders after the technical evaluation.
2. The hardcopy commercial bid of the successful bidder, after the commercial bid opening stage, should contain among other things, unit prices, payment terms, warranty, installation, commissioning etc. as per requirements of IISc mentioned in the tender document. All such conditions must be in line with the tender. In case of any deviation or conditional offer, the bid may be treated as non-responsive and not be considered for evaluation. The Commercial bid

should contain details of the prices for each one of the subsystems of the total offer clearly giving the rate and the quantity. Bundling of the prices is not acceptable.

3. In case of prices quoted in foreign currency, the exchange rate on the date of opening of the commercial bid will be considered for conversion of the foreign currency value to INR value to arrive at the total cost.

4. IISc is registered with DSIR in order to get concession / exemption in Custom Duty (for import). IISc will provide necessary documents required for availing concession / exemption in Custom Duty for import. Bidders should consider these facts while offering their price bids for this tender.

5. Indigenous order should be with GST only and must be on FOR basis. In such cases, any kind of custom duty exemption certificate will not be provided.

6. In case of rupee offer, the component of tax, and any other statutory levies should be shown separately and not included in the total amount, to enable IISc to avail any exemption.

7. In case of imports, the commercial bid should contain among other things, the name and address of the Indian agent, if any, and the agency commission payable to the agent (if any). Import order should be preferably in 'DDP - Delivered Duty Paid – IISc Bangalore' terms. However, we can accept import bids, which is CIP-Bangalore basis also, but in this case, insurance should be on "Warehouse to Warehouse" basis and should not terminate at Bangalore airport. Bids that are FOB or Ex-work basis will not be accepted in case of import order.

8. For DDP, Bill of Entry must be in the name of IISc, Custom duty must be paid by the vendor only. Before release of final payment, all original documents with regard to import must be handed over to IISc, failing which final payment may not be released.

9. For CIP, IISc will arrange for custom clearance from Bangalore Airport, however it will be sole responsibility of the vendor to provide all documents (e.g. Airway Bill, Invoice, Packing List, Bill of Lading etc.) required for filing of Bill of Entry and custom clearance must be provided to IISc well in advance. In case of any penalty / fine / demurrage is imposed due to delayed submission of documents from the vendor, then such amount will be deducted from the bill of vendor while releasing the payment.

10. Proposals should contain the name and contact details, viz., phone, fax, and email of the designated person to whom all future communication will be addressed. The contact details should also be mentioned on the overall envelope.

11. Prices should be quoted in detail, for all the subsystems given in the Technical Specifications part of the tender. Further, bid and **price validity should be for three months** from the date of opening of the technical bids.

12. IISc will place the purchase order only on the successful bidder as per the decision of IISc. In this regard, decision of IISc will be final and binding.

10. Payment Terms

1. The total project cost will consist of Equipment supply and installation and comprehensive warranty for three years from the acceptance and successful installation as decided by IISc.

2. 100% payment shall be released by IISc against delivery, inspection, successful installation, commissioning, and acceptance of the equipment at IISc Bengaluru in good and functional condition and to the entire satisfaction of the Purchaser (IISc).

3. Payment will be subject to deduction of TDS as per rules / laws and any other deduction as per PO terms.

4. The total solution as per the agreed bill of materials must be supplied within 4 weeks after receiving a firm PO from IISc. The installation and acceptance must be completed within a week after supply of the equipment.

5. Liquidated Damage: As time is the essence for this procurement, hence the ordered materials are required to be delivered and installed in all respects within the stipulated period in the purchase

order failing which penalty for late delivery and installation will be imposed at the rate 1% of the total order value per week or part thereof for the delayed period subject to maximum of 10% of the total order value and this liquidated damage will be deducted during the payment of the invoice / bill of the supplier. Earliest / expected delivery period should be clearly indicated in the technical bid.

11. Important Dates

1. Release of tender: December 27, 2023.
2. Last date for sending queries: January 3, 2024, 5 PM IST. Queries may be sent to tender.serc@iisc.ac.in.
3. Release of corrigendum to the tender based on the queries, if necessary: January 4, 2024, 5 PM IST.
4. Start date for submission of the bid: January 5, 2024, 10 AM IST.
5. Last date for submission of the bid: January 19, 2024, 5PM IST.
   a. Hard copy submission: The bid in the form of an envelope containing the hard copies of both the technical and commercial bids, in two sealed envelopes, should be submitted and reach the below-mentioned mailing address by the same date, 6 PM IST. Note that the hard copy of the technical bid should exactly match with the soft copy submitted.
   b. Soft copy submission: **Soft copy of only the technical bid** must be sent by email to tender.serc@iisc.ac.in by the above-mentioned time. **No soft copy of commercial bid should be submitted**. Soft copy submission of commercial bid at any stage before the opening of the hard copy commercial bid will lead to disqualification of the bid.

Mailing address:
Chair
Supercomputer Education and Research Centre (SERC)
Indian Institute of Science (IISc)
Bangalore – 560012
India

12. Annexure A - Undertaking

Date:

To:
The Chair
Supercomputer Education and Research Centre
Indian Institute of Science
Bangalore – 560012, India

Subject: Undertaking as per GFR – 2017, Rule 170(iii)

Dear Sir,

We, the undersigned, offer to carry out the project including Products/items, components etc. as per tender at IISc, Bangalore, in response to your Tender No **IISc/Purchase/SERC/2023/GPU-System/1**. We are hereby submitting our proposal for the same, which includes Technical bid and the Financial Bid. As a part of the eligibility requirement stipulated in the said tender document, we hereby submit a declaration as given below:

1. We will not withdraw or amend or modify or impair or derogate the our bid partly or fully or any condition of it after tender opening, during the period of tender validity (six months from the date of opening of the technical bid),
2. In case, we are declared as successful bidder and an order is placed on us, we will submit the acceptance in writing within 7 days of placement of order on us.
3. In case of failure on our part to deliver/provide the item/installation/service as per the order's terms and conditions within the stipulated period, we are aware that we shall be declared as ineligible for the said tender and /or debarred from any future bidding process of IISc or any Government entity for a period of minimum one year.
4. The undersigned is authorized to sign this undertaking.

Yours sincerely,

Authorized Signatory:

Name and Title of Signatory:
e-mail:
Mobile No: