



Request For Proposals on design, supply, installation, testing, commissioning, support, and maintenance of High-Performing Computing cluster (HPCC) at SAU

REQUEST FOR PROPOSALS

RFP NO. SAU/ICT/0909202401

February 2025

South Asian University
(a University established by SAARC nations)

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1. Data Sheet

Reference	Description
3.6 – 3.8	<p><u>Tender submissions:</u> should be made in a sealed cover containing technical bid documents and one sealed cover containing the financial bid.</p> <p>Proposals must be submitted to the Office of The <i>Assistant Registrar (Estate & Procurement), South Asian University, Rajpur Road, Maidangarhi, New Delhi 110 068</i> during normal office working hours up to the proposal due date.</p> <p>For detailed Tender Documents / Details / downloads and for any other correction / amendments / modification / extension till the last date of submission of bids, please visit the SAU website: http:// www.sau.int</p> <p>IMPORTANT: BIDS MUST BE PAGINATED SEQUENTIALLY & BOUND PROPERLY. SPECIFIC PAGE NUMBERS FOR EACH ITEM IN FORM 8, FORM 9 AND FORM 10 MUST BE CLEARLY MENTIONED. ABSENCE OF SUCH PAGE NUMBERS MAY LEAD TO NON-INCLUSION OF RELEVANT INFORMATION FOR EVALUATION PURPOSES AT THE RISK & RESPONSIBILITY OF THE BIDDER.</p>
3.3	<p><u>Clarifications:</u> Bidders may submit requests for clarification(s) on this RFP document up to 7 working days before the proposal due date specified below. Any request for clarification must be sent via electronic email (as an editable spreadsheet document attachment) to SAU on the email ID: admin@sau.int</p>
3.5	<p><u>Bid Security (EMD):</u> of Rs. 8,00,000/- (Rupees Eight Lakhs Only) in the form of Account Payee Demand Draft, Fixed Deposit Receipt, Banker's Cheque or Bank Guarantee from any of the commercial banks must be submitted by Bidders. The EMD instrument must be drawn in favour of South Asian University and payable at New Delhi.</p>
3.7(c)	<p><u>Bid Validity:</u> The proposal of the bidder shall be valid for 120 (one hundred and twenty) calendar days from the Proposal Due Date.</p>
3.6	<p><u>Proposal Submissions:</u> Bidders are expected to submit a turnkey solution and the listing of items / components herein is tentative and only depicts minimum requirements. All other items / components required for a total integration of a functional system shall be presumed to have been considered & included in the overall solution submitted by the bidder.</p> <p><u>Proposal Due Date (PDD):</u> The last date of submission of Proposals is as mentioned in the GeM bid document. Proposals shall be opened the same day at 3:30 pm (IST) in the presence of vendor representatives who choose to attend.</p>
3.9.3	<p><u>Presentation:</u> Technical evaluation includes a presentation by the bidder on dates communicated via corrigendum / SAU website in the SAU campus. Bidders must present themselves on the said date and time and no separate communication will be made in this regard.</p>
3.11	<p><u>Selection Basis:</u> of "Successful Bidder" through this RFP is the Quality cum Cost - Based Selection (QCBS) method. The weights given to technical and financial proposals are: Technical = 0.7, Financial = 0.3.</p> <p>The bidder achieving the highest combined technical and financial score will be considered to be the "Successful Bidder".</p>

3.16.1	<u>Warranty</u> : Five years comprehensive onsite warranty for parts & labor (5/5/5). Physical on-site visit by technical experts for maintenance and technical support whenever needed. Warranty shall apply to all parts of the solution, IT & non-IT, that make the overall solution functional.
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2. Background Information

- (a) The South Asian University (SAU) invites responses (“Tenders”) to this Request for Proposals (“RFP”) from Agencies/ firms (“Bidders” or “Applicants”) for undertaking design, supply, installation, testing, commissioning, support, and maintenance of High-Performing Computing (HPC) cluster unit at SAU as described in the “Technical Specifications” and “Scope of Work” in this RFP.
- (b) All clarifications / corrigenda / extensions will be published only on SAU website. The website for accessing the information related to this RFP is: <http://www.sau.int> (the “SAU Website” or “University Website” or “Official Website”). [Note: From the “Home” page access the “Tenders” section to access all the uploaded documents related to this RFP.]
- (c) Proposals must be received no later than the deadline mentioned in the Data Sheet.

3. Instructions to Bidders

3.1. General

- (a) While every effort has been made to provide comprehensive and accurate background information and requirements, Bidders must form their own conclusions about the level of support required.
- (b) All information supplied by Bidders may be treated as contractually binding on the Bidders, on successful award of the assignment by SAU on the basis of this RFP.
- (c) No commitment of any kind, contractual or otherwise shall exist unless and until a formal written contract has been executed by or on behalf of SAU. SAU may cancel this public procurement at any time prior to a formal written contract being executed by or on behalf of SAU.

3.2. Compliant Tenders / Completeness of Response

- (a) Bidders are advised to study all instructions, forms, requirements, appendices and other information in the RFP documents carefully. Submission of the bid / proposal shall be deemed to have been done after careful study and examination of the RFP document with full understanding of its implications.
- (b) Failure to comply with the requirements of this paragraph may render the Proposal non-compliant and the Proposal may be rejected. Bidders must:
 - i. Comply with all requirements as set out within this RFP.
 - ii. Submit the forms as specified in this RFP and respond to each element in the order as set out in this RFP
 - iii. Include all supporting documentation specified in this RFP

3.3. Clarifications & Amendment of RFP Document

- (a) Bidders may submit queries for clarification in the following format as an editable text file via email as specified in the Data Sheet:

S.N o.	RFP Reference (Clause & Page No.)	Content of RFP Requiring Clarification	Points of Clarification

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- (b) Bidders may seek clarification on this RFP document no later than the date specified in the Data sheet. SAU shall not entertain any queries post that date. The bidders are requested to submit an editable text file of the queries through email to SAU's office as mentioned in the Data Sheet.
- (c) At any time before the submission of Proposals, SAU may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the RFP documents by an amendment. All amendments / corrigenda will be posted only on SAU's Official Website as noted above. In order to afford the bidders a reasonable time for taking an amendment into account, or for any other reason, SAU may at its discretion extend the Proposal Due Date.
- (d) Any corrigenda / clarifications posted on the Official Website shall be deemed to be incorporated into this RFP.

3.4. Right to Reject any or all Proposals

- (a) Notwithstanding anything contained in this RFP, SAU reserves the right to accept or reject any Proposals or terminate the Selection Process at any time and without assigning any reasons.
- (b) Without prejudice to the generality of the above, SAU reserves the right to reject any Proposals if:
- i. a misrepresentation is discovered at any time, or
 - ii. the Applicant does not provide, within the time specified by SAU, the supplementary information sought by SAU.
- (c) Fraud, misrepresentation, or any other consent-vitiating response by the bidder may lead to the disqualification of the bidder. If such disqualification occurs after the Proposals have been opened and the highest ranking bidder has been disqualified, SAU reserves the right to consider the next best bidder or take any other measure considered appropriate by SAU, including termination of the Selection Process.
- (d) SAU makes no commitments, express or implied, that this RFP process will result in a business transaction with anyone.

3.5. Bid security / Earnest Money Deposit (EMD)

- (a) Bid Security (EMD) is required to be submitted by each bidder (the "Bid Security") as specified in the Data Sheet.
- (b) Any proposal submitted without EMD, mentioned above, will be summarily rejected. No EMD exemption shall be permitted regardless of the category of the applicant being MSE, startup, or otherwise.
- (c) EMD of all unsuccessful bidders would be refunded by SAU. The EMD, for the amount mentioned above, of the successful bidder would be returned upon submission of Performance Bank Guarantee as per the format provided in this RFP.
- (d) SAU will not be liable to pay any interest on bid security deposits.
- (e) SAU will be entitled to forfeit and appropriate the bid security as a mutually agreed loss and

damage payable to SAU with regard to the RFP and without prejudice to SAU's any other right or remedy under the following conditions:

- i. If a bidder engages in a corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice as envisaged under this RFP¹;
- ii. If a bidder withdraws its Proposal during the period of its validity as specified in this RFP and as extended by the bidder;
- iii. In the case of the selected bidder, if the selected bidder fails to sign the contract or provide the Performance Security within the specified time limit, or
- iv. If the bidder commits any breach of the terms of this RFP or is found to have made a false or misleading representation to SAU.

3.6. Submission of Responses

This is a two-bid tender and each submission should contain:

- (a) Technical Bid / Proposal – should contain all such details as mentioned in the Bid Document along with all required forms and enclosures.
- (b) Financial Bid / Proposal – All admissible taxes, duties and levies etc. must be indicated separately. The financial quote must be in the format specified.
- (c) Earnest Money (security) Deposit

These three parts should be submitted in separate sealed and appropriately superscripted envelopes. Type or print clearly EMD/Technical/Financial, due date and the vendor name/address on all the envelopes. All the three sealed envelopes shall be submitted in a larger envelope with vendor name and address and marked as Request For Proposals on design, supply, installation, testing, commissioning, support, and maintenance of High-Performing Computing cluster (HPCC) at SAU and submitted to the Office of The Assistant Registrar (Estate & Procurement), South Asian University, Rajpur Road, Maidangarhi, New Delhi 110 068 during normal office working hours up to the proposal due date mentioned in the Data Sheet. Tenders will be opened thereafter in the presence of the bidders' representatives who choose to attend.

Bidders are expected to submit a turnkey solution and the listing of items / components herein is tentative and only depicts minimum requirements and all other items / components required for a total integration of a functional system shall be presumed to be a part of the overall solution.

3.7. Preparation of Proposal

- (a) The bidder shall be responsible for all costs incurred in connection with participation in this RFP process. SAU will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
- (b) Bidders are requested to submit their Proposal in English language and strictly in the formats provided in this RFP. SAU will evaluate only those Proposals that are received in the specified forms and complete in all respects.
- (c) The Proposal shall be valid for the period mentioned in the data sheet.
- (d) Power of Attorney for Authorised Representative shall be furnished as per the format available in the RFP.
- (e) Proposals are to be prepared and submitted in two parts; viz. Technical Proposal and Financial Proposal. While preparing the Technical Proposal, Coverage and emphasis shall be as per Technical Evaluation Criteria described later. The Technical Proposal shall not

¹ – As per model RFQ of the Ministry of Finance (Guidelines Of The Ministry Of Finance, File No 24(1)/PF II/2006, Ministry Of Finance, Department Of Expenditure)

include any financial information. A Technical Proposal containing material financial information shall be declared non-responsive.

- (f) Typed proposals prepared for submission shall be signed by an Authorised Representative of the bidder who shall initial each page, in **blue ink**. In case of printed and published documents, only the cover shall be initialed. All the alterations, omissions, additions, or any other amendments made to the Proposal shall be initialed by the person(s) signing the Proposal.
- (g) While preparing the Financial Proposal, bidders are expected to take into account the various requirements and conditions stipulated in this RFP document. While submitting the Financial Proposal, the bidders shall ensure the following:
 - i. All the costs associated with the Assignment shall be included in the Financial Proposal and must be tax exclusive. Taxes must be indicated separately. The total amount indicated in the Financial Proposal shall be without any condition attached or subject to any assumption, and shall be final and binding. In case any assumption or condition is indicated in the Financial Proposal, it shall be considered non-responsive and liable to be rejected.
 - ii. The Financial Proposal shall take into account all the expenses and tax liabilities and cost of statutory employee benefits, levies and other impositions applicable under the prevailing law on the bidder and their staff.
- (h) Bidders shall express the prices in Indian Rupees only.
- (i) The proposal should be submitted as per the submission forms prescribed in this RFP.

3.8. Submission, Receipt and Opening of Proposals

- (a) The Proposal, in its complete form in all respects as specified in the RFP, must be submitted by the Proposal Due Date.
- (b) No proposal shall be accepted after the closing time for submission of Proposals as mentioned in the Data Sheet.
- (c) The Technical bid shall be opened first on due date and time as mentioned in the Data Sheet. The time and date of opening of Financial bids of bidders qualifying Technical evaluation shall be communicated to them at a later date.
- (d) All pages of the Technical Bid/Proposal shall be numbered sequentially. The first page shall be the table of contents (as per Form 1) and the last page shall be the Page Numbering Certificate (as per Form 10). Various documents & forms required in the Technical Proposal as indicated below:

Forms

Form 1	Technical Proposal Index
Form 2	Power of Attorney for Authorized Representative
Form 3	Technical Proposal Submission Form
Form 4	Certificate of Financial Turnover from Chartered Accountant
Form 5	Support Undertaking
Form 6	Format for Eligibility Experience

Form 7	Organization Details
Form 8	Eligibility Checklist
Form 9	Technical Evaluation Checklist
Form 10	Technical Specifications Compliance Sheet
Form 11	Page Numbering Certificate

Other Documents

1. ISO Certificate copies
2. Technical documentation
3. Back-to-back support agreement with OEM

3.9. Proposal Evaluation

3.9.1. Initial Scrutiny

Prior to evaluation of Proposals, SAU will determine whether each Proposal is responsive to the requirements of the RFP. SAU may, at its sole discretion, reject any Proposal that is not responsive hereunder. Initial Bid scrutiny will be held and Proposal will be treated as non-responsive if it is:

- Not submitted in as specified in the RFP document
- Received without the Letter of Authorization (Power of Attorney)
- Submitted with incomplete information or subjective / conditional / partial offers
- Submitted without the documents requested
- Non-compliant of any of the clauses stipulated in the RFP
- With lesser validity period than required in the RFP

3.9.2. Eligibility Criteria

After initial scrutiny, responsive bids will be evaluated against the following eligibility criteria. Bids not meeting the eligibility criteria are liable to be rejected.

S.No.	Basic Requirement	Specific Requirement	Documents Required
1.	Turnover	Average Annual Turnover during the last three financial years should be at least Rs. 10 Crores. Further, the bidder should have posted an average annual net profit in the last three financial years.	Form 4 (There is no need to upload entire voluminous balance sheets)
2.	Certification	The bidder should have currently valid (as on proposal due date) ISO certifications: ISO 9001, ISO 14001, ISO 20000-1, ISO 45001.	Copies of valid ISO certificates
3.	Local Presence	The bidder must have a local registered office in Delhi NCR with relevant service engineers, operational for at least five years as on proposal due date.	Registration certificate
4.	Experience	Bidder must have successfully completed at least the following numbers of HPC engagement(s) in the	Form 6

S.No.	Basic Requirement	Specific Requirement	Documents Required
		<p>last five years, of value specified herein:</p> <ul style="list-style-type: none"> <input type="checkbox"/> One project of similar nature of value not less than Rs 6.5 crores; OR <input type="checkbox"/> Two projects of similar nature of value not less than Rs 4.5 crores each; OR <input type="checkbox"/> Three projects of similar nature of value not less than Rs 3.5 crores each <p><u>Note:</u> "similar nature" above implies work related to supplying, installing and maintaining HPC clusters with CPU & GPU nodes and PFS storage of at least 500TB.</p>	
5.	Legal Entity	The bidder should be a Company registered under the Companies Act, 1956 since last 5 years and operating for the last five years.	Form 7
6.	Blacklisting	A self certified letter by the authorized signatory of the bidder that the bidder has never been blacklisted by any Central / State Government body or Public Sector institution or be under a declaration of ineligibility for corrupt or fraudulent practices as on proposal submission date must be submitted on original letter head of the bidder with signature and stamp.	Form 3
7.	Support Undertaking	Undertaking that bidder will be providing all needed support for the installation and maintenance and any re-configuration/customization of the software features wherever required at a later stage for the entire warranty period at no added charges.	Form 5
8.	OEM Support	In case of SI or partner bids, OEM must submit a declaration that onsite support shall be provided by OEM directly as well, as and when needed. Support only through the bidder shall lead to rejection. In addition, onsite hardware/software/network/non-IT service calls including all troubleshooting issues pertaining to HPC-System Admin or User-end issues must be attended by OEM engineer directly.	Letter from OEM on their letterhead
9.	End of Support	No quoted component should have 'End-of-Support' date within six years	OEM document highlighting the

S.No.	Basic Requirement	Specific Requirement	Documents Required
		of the bid submission deadline.	quoted product life-cycle
10.	Manpower	The bidder must have OEM certified manpower for installation and maintenance of the HPC cluster including both IT and non-IT portions.	Form 7

3.9.3. Technical Qualification Criteria

Bidders, whose bids are responsive and fulfil the above eligibility criteria would be scored on the following criteria:

S.No.	Criteria	Max. Score
1.	Average Sales turnover during the last three financial years [for 10 crores 2 points to be given and each additional 1 crore of turnover will be given 1 point - maximum points 5]	5
2.	27001 Certification ^(a)	5
3.	Availability of OEM certified HPC resources – for 1 to 5 persons: 5 points; 6 to 10 persons: 10 points; 11 or more persons: 15 points	15
4.	Successfully executed at least one HPCC supply & commissioning contract ^(b) of value ≥ Rs. 10 crore in the last five years	10
5.	One running HPC maintenance services contract ^(b) of annual value ≥ Rs. 1 crore	10
6.	Bidder is listed in India's Top 100 Supercomputer List, details must be submitted.	10
7.	Bidding company has been in existence and operating for 10 or more years engaged in HPC rackbased cluster supply, installation, support and maintenance. <ul style="list-style-type: none"> • Provide a company registration certificate and one relevant PO copy that is dated 10 or more years in the past from the proposal due date. 	5
8.	A presentation will be made by the bidders on the date and time specified in the data sheet of this tender. The presentation shall be of a maximum of 30 minutes duration for each bidder and should include <ul style="list-style-type: none"> • Vendor's experience and expertise • Compliance with technical specifications • Proposed solution architecture • Project timeline and implementation plan • Warranty / support period plan • Proposed value addition 	40

(a) Provide valid and current certificate copy (b) Include this in FORM 6; For scoring, contracts at S.Nos 4, 5 should be different; same contract will be counted only once

The bidders will be called for a presentation, as part of the technical bid assessment. Each evaluated Proposal will be given a total technical score (S_t). Upon scoring as above, bids with S_t of at least 70 would be technically qualified and their financial bids would be considered. Other lower scoring bids would not be considered further. In case sufficient number of bids do not technically qualify; SAU may, at its discretion, lower the qualifying technical score appropriately.

3.9.4. Financial Bid Evaluation

(a) The format for submitting financial bids is as per Form 13.

- (b) The Financial Bids of technically qualified bidders will be opened on the prescribed date in the presence of bidder representatives who choose to attend.
- (c) Only fixed price financial bids indicating total price for all the deliverables and services specified in this bid document will be considered.
- (d) The bid price will exclude all taxes and levies and shall be in INR as specified in the Financial Bid Form.
- (e) Any conditional bid would be rejected
- (f) Errors & Rectification: Arithmetical errors will be rectified on the following basis: "If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If there is a discrepancy between words and figures, the amount in words will prevail".
- (g) The cost indicated in the Financial Proposal shall be deemed as final and reflecting the total cost of services and should be stated in INR only. The evaluation shall exclude applicable taxes. The lowest Financial Proposal (F_m) will be given a financial score (S_f) of 100 points. The financial scores (S_f) of the other Financial Proposals will be determined using the following formula:

$$S_f = 100 \times F_m / F;$$

in which S_f is the financial score, F_m is the lowest Financial Proposal, and F is the Financial Proposal (in INR) under consideration. F_m shall be considered for the entire three year period in totality.

3.10. Award of Contract

- (a) Proposals will be finally ranked in accordance with their combined technical (S_t) and financial (S_f) scores:

$$S = S_t \times T_w + S_f \times F_w$$

where S is the combined score, and T_w and F_w are weights assigned to Technical Proposal and Financial Proposal as mentioned in the data sheet.

- (b) The Applicant achieving the highest combined technical and financial score will be considered to be the "Successful Bidder" and will be invited for contract signing.
- (c) Prior to the expiration of the validity period, SAU will notify the successful bidder by email, that its proposal has been accepted. In case the tendering process has not been completed within the stipulated period, SAU, may request the bidders to extend the validity period of the bid.
- (d) The notification of award & acceptance thereof by the successful bidder will constitute the formation of a contract. However, the contract shall come into force only upon furnishing of requisite Performance Security. Upon the successful bidder's furnishing of Performance Security, SAU will notify each unsuccessful bidder and return their EMD.
- (e) SAU is not bound to accept the lowest or any tender or to assign any reason for non-acceptance. SAU reserves the right to accept the tender either in full or in part. Conditional tenders will be rejected outright.

- (f) SAU reserves the right to place an order for the full or part of the quotations under any items of work mentioned in the scope of work.

3.11. Performance Security / Guarantee

- (a) Performance Security / Guarantee in the form of a Bank Guarantee (PBG) as per Form 12 and equivalent to 10% of the total cost of the work awarded shall be furnished by the successful bidder within 15 days from the Notification of award.
- (b) The Performance Security must be valid for the contract duration plus two months from the date of the work order. If & when the engagement is extended, the PBG must be renewed so as to maintain a validity of extended contract duration plus two months from the date of extension.
- (c) In case the selected bidder fails to submit a performance guarantee within the time stipulated, SAU at its discretion may cancel the order placed on the selected bidder without giving any notice. SAU shall invoke the performance guarantee in case the successful bidder fails to discharge their contractual obligations during the period or SAU incurs any loss due to the successful bidder's negligence in carrying out the project implementation as per the agreed terms & conditions.
- (d) No interest will be payable by SAU on the Performance Guarantee.

3.12. Fraudulent & Corrupt Practices

The bidders and their representatives, including their officers, employees, agents and advisers shall observe the highest standard of ethics during the selection process. SAU will reject a proposal for award if it determines that the bidder recommended for award has directly or indirectly, including through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as the case may be.

3.13. Resolution of Disputes

Any difference, question, claim, controversy, disagreement or dispute arising from or relating to this Agreement shall be settled amicably through direct and good faith negotiations/consultations between the parties, recognizing their mutual interest and endeavouring to reach a mutually satisfactory solution.

If a dispute is not resolved amicably within 30 days, the dispute shall be referred to arbitration. The arbitrators selected by each party within 15 days of the referral of the matter to arbitration shall appoint a third arbitrator within 10 days of their appointment. If they are unable to do so, the third impartial arbitrator shall be appointed by the President of the South Asian University.

The place of the arbitration shall be New Delhi.

The parties shall bear the costs of the arbitration as determined by the arbitrators.

The Award of the arbitrators shall be final and binding on the parties. The parties undertake to comply with the award without delay. If the Implementer fails to comply with the award, SAU may terminate the Agreement by giving a 30-day notice to the Implementer and/or resort to any other available remedy.

3.14. Technical Specifications & Scope of Work

- (a) Technical specifications must comply with the specifications laid out in **Form 10**.
- (b) The solution should be turnkey, encompassing supply, installation & integration, testing & commissioning of all components followed by training:
1. Network, server, storage, interconnect
 2. Cooling racks, UPS power backup
 3. Allied components for complete HPC integration
 4. Installation and configuration of all hardware and software, ensuring full compatibility
 5. Implementation of operating system and necessary software (cluster managers, compilers, licensed/open source)
 6. Design, configuration, and knowledge transfer
 7. The entire procedure of SITC for IT & non-IT components must be documented so that if necessary SAU may rebuild the same following the submitted document. This submission will be considered as a part of acceptance of project closure.
 8. All Academic Licenses of Software (RHEL) and Compilers (if proposed) should be purchased and binded in the name of SAU and SAU provided Email Address only. OEM or bidder should not bind any license on their Email IDs.
 9. All Perpetual Licenses of Hardware or Monitoring items should be purchased and binded in the name of SAU and SAU provided Email Address only. OEM or bidder should not bind any license on their Email IDs.
 10. The bidder/OEM should show or give evidence that all the Model Numbers and/or Part Numbers of all items/assets (hardware or software) are available till End-of-support in the OEM website/Email.
 11. The presence of the HPC Linux Engineer for the initial proposed months must be ensured by the OEM. Any unapproved or unaware absence of the engineer will be dealt as a non-compliance and appropriate penalty may be charged by SAU authorities.
 12. It is the core responsibility of the OEM only, to submit the asked/required benchmark results at the time of delivery of the project. If the deliverables are not achieved then the bidder/OEM will do the needful and add more hardware cum software resources to the overall HPC setup to achieve that benchmark result. This will attract a penalty to the bidder and the amount will be additionally charged by SAU. This penalty will have no connection or relevance with the PBG. The relevance of PBG will start once the acceptance test has been signed and the HPC cluster has gone into regular Go-Live mode (start of the 1st day of 5 year comprehensive warranty period).
 13. All necessary cables (for both IT and non-IT) should be delivered of appropriate length/model/type/category.
 14. The Redundant Power Supplies (starting from UPS to SMPS) must be supplied and configured in such a way that the entire HPC cluster can run at full load (refer HPL benchmark) if one-half of the Power (within the smart rack) is unavailable. All/any future feasible/possible hardware upgrades must be accounted for quoting appropriate ratings of rPDU/UPS/SMPS etc.
 15. A copy of bill of materials for the entire solution with OEM part number to be submitted along with the technical bids of the bidder.
 16. This is a "turn-key project". Hence, the vendor needs to make sure that the quoted solution is complete in all aspects. Any minor components, found short at the time of system integration, shall be supplied and used without any additional cost or Purchase Order.

- (c) All aspects must be handled by a single bidder, responsible for the entire process from design to commissioning. That is, subcontracting to another bidder by the awarded bidder/OEM is not permissible unless approved by SAU.
- (d) Among other things, the successful bidder will be responsible for:
- Delivery of all physical equipment to the specified site
 - Physical installation of compute nodes, PDUs, and powering on all nodes
 - Software installation, from operating system to binding of nodes including high-availability
 - Verifying users and software executables are available on all nodes
 - Testing to ensure all installed software works as intended
 - Testing to ensure the job scheduler is working with the all nodes
 - Verifying IPMI system installation and management via web interface
 - Testing and verification of interconnect state and data transfer rates
 - Submission of the Benchmark as required in this tender. If the required benchmark is not achieved then the bidder will be responsible to addon more hardware resources to meet that benchmark figure on gratis and a penalty (as decided by SAU) for non-achieving the benchmark in the timely effort may be charged.
- (e) The solution must include comprehensive on-site support, including quarterly system maintenance for at least five years. The bidder shall be responsible for after-sales technical support throughout the warranty period for all IT and non-IT components including attending the user tickets (inclusive of new software installation and troubleshooting of existing jobs).
- (f) Two-day site-specific training and three-day user training must be provided post-installation. Training should cover cluster / infiniband / PFS management, administration, and application software usage. During this period, the documentation submitted by the bidder will be referred to as is basis.
- (g) Delivery should be completed within **eight (08) weeks** of purchase order receipt, and system commissioning, including hardware and software benchmarks, should be finished within **three weeks** of delivery. Delays will attract penalties.
- (h) For all software, including Cluster manager and Workload Management Software, bidder will have to submit an undertaking that they will be providing all needed support for the installation and maintenance and any re-configuration/customization of the software features wherever required at a later stage for the entire warranty period at no added charges.

3.15. Warranty, Support & Service Levels

3.15.1. Warranty

The entire HPC system must come with a five-year comprehensive onsite warranty covering both hardware and software, with support to be provided either by the OEM (documentation in support of this must be included in the technical bid). Warranty shall cover both IT and non-IT components of the solution.

3.15.2. Support

- (a) The OEM should provide a combination of onsite & remote assistance for facility management during the entire warranty period. Post installation and commissioning and after training, *one HPC linux expert must be available onsite for a period of three months.*
- (b) Critical patches and security updates should be applied immediately upon release. Support will be provided to resolve any software/hardware issues including configuration/

reconfiguration support in case of any node/hardware failure/corruption. Support will include the proposed cluster software and day-to-day troubleshooting for system errors arising from the OS/cluster software/job scheduler, etc. whether proprietary or open source.

- (c) Bidder shall be responsible for quarterly maintenance of the system which should be strictly adhered to.
- (d) In no cases, the bidder and OEM can decide on any major change without approval from SAU.
- (e) OEM/bidder cannot/should not install/modify any software/code/data without consent from the user or HPC admin; user data and HPC admin data must be accounted for with utmost care and frequently backed-up whenever necessary.
- (f) OEM/bidder should provide advance replacement of all components; that is if any component stops functioning and needs a replacement then the OEM/bidder must provide a stand-by (returnable) component of same make with full functionality as is where is bases till the replacement with original OEM part is done.

3.15.3. Sixth & Seventh year Comprehensive AMC

Subject to satisfactory performance, the successful bidder shall be awarded a comprehensive AMC with Next Business Day OEM warranty of all supplied hardware and software including licenses and onsite support for two years on expiry of the initial warranty period. Payment for the same will be done on a post quarterly basis, starting from 6th year onwards. AMC costing will be included in price evaluation and determination of L1. All the items (IT & Non IT), excluding the CPU & GPU nodes, should be under 24x7 comprehensive warranty. The CPU & GPU nodes can be in warranty on NBD support basis; with faulty parts / components being replaced with standby parts/components until they can be replaced/repared.

3.15.4. Service Levels

The problems will be classified into two Severity Levels:

- Severity Level – 1** : Problems that can have severe impact on business affecting a large number of users, e.g., any network equipment, server, storage, etc.
 - o Calls to be attended immediately and resolved within 36 hours either through: repair; bringing in a back-up equipment; replacement; or reconfiguration.
 - o Severity Level 1 calls to be resolved within 36 hours regardless of the nature of the day (working or holiday) after the same has been intimated.
- Severity Level – 2**: Only few users are impacted and the problem is not of Severity Level 1
 - o Calls to be attended within the same day and resolved within 72 hours.

Down time: will be calculated as below:

- Down time will be counted as the normal number of calendar days (or part thereof) taken to resolve the problem beyond stipulated resolution time as stated above.

3.15.5. Right to Alter Quantities

SAU reserves the right to alter either the number of personnel to be deployed or the number of hardware equipment specified in the tender in the event of change in plans. Any decision of SAU in this regard shall be final, conclusive and binding on the bidder. SAU reserves the right to include additional/fewer equipment or manpower in the AMC at the agreed rates during the contract period with the same terms and conditions.

3.16. Prices, Penalties & Payment Terms

- (a) SAU will not accept proposals structured as an open-ended or time and materials contract.
- (b) Payment schedule shall be:
 - 70% payment upon successful delivery of materials and proof of warranty
 - 20% payment upon successful installation, testing & commissioning of all components
 - 10% payment upon completion of documentation and training
- (c) Prices must cover all components, with a detailed Bill of Materials (BOM).
- (d) Liquidated damages at a rate of 0.5% per week (up to a maximum of 10%) will apply for delivery or installation delays. In case of delays exceeding 10 weeks, the contract may be canceled.
- (e) Penalty for delays in rectification of hardware/software issues shall be accumulated on quarterly basis. Accumulation of delays of 10 or more days of down time in any quarter may result in a 1% deduction in the PBG. In case of a 10% deduction accumulating at any time during the entire five year warranty period, the PBG is liable to be forfeited.
- (f) The bidder will not be held liable for any delay attributable to SAU such as not being able to provide the necessary infrastructure, such as site not ready, etc.
- (g) If Bidder fails to rectify the faults within reasonable time, SAU reserves the right to get it rectified through a third party. The entire amount incurred towards rectification of such fault (configuration or otherwise) shall be deducted from bidders PBG amount.
- (h) No escalation of prices shall be permitted on any ground.
- (i) The South Asian University is an International Organization declared by the Central Government in pursuance of Section 3 of the United Nations (Privileges and Immunities) Act, 1947 (46 of 1947) and is therefore entitled to claim refund of Goods and Services Tax (GST) paid on the procurement of Goods and/ or Services. Therefore, any invoice raised should be in conformity with the various provisions of respective GST Acts.

3.17. Termination Clause

SAU reserves the right to terminate the contract with the selected bidder and recover from the selected bidder any expenses incurred by SAU under the following circumstances:

- (a) The selected bidder commits a breach of any of the terms and conditions of the bid.
- (b) The bidder goes into liquidation, voluntarily or otherwise.
- (c) An attachment is levied or continues to be levied for a period of seven days upon effects of the bid.
- (d) If the selected bidder fails to comply with the service levels prescribed in the RFP, it will be a breach of the contract. SAU reserves its right to cancel the award of work in the event of a delay and forfeit the bid security as liquidated damages for the delay.
- (e) If deductions on account of penalty exceed 10% of the performance security.

- (f) In case the selected bidder fails to deliver the required service support, SAU reserves the right to procure the same from alternative sources at the risk, cost and responsibility of the selected bidder.
- (g) After award of the contract, if the selected bidder does not perform satisfactorily or delays execution of the contract, SAU reserves the right to get the balance contract performed by another party of its choice by giving one month's notice for the same. In this event, the selected bidder is bound to make good the additional expenditure, which SAU may have to incur in the performance of the balance contract. This clause is equally applicable if the contract is terminated by the selected bidder.
- (h) SAU reserves the right to recover any dues payable by the selected Bidder from any amount outstanding to the credit of the selected bidder, including the pending bills and/or invoking the bank guarantee / performance security under this contract.
- (i) Undue delay and/or repeated failures to provide services as per tender document by the selected Bidder in the performance of its contract obligations shall also render the bidder liable to any or all of the following consequences:
 1. Forfeiture of its security deposit (PBG).
 2. Termination of the contract for default.

4. Bid Forms

Forms to be filled in by the tenderers for bid submission:

4.1. Form 1 – Technical Proposal Index

The first page of the set of documents to be enclosed in the “Technical Proposal” shall be a *Table of Contents as given below and shall be enclosed as page – 01*. **The last page** must be Form 10.

(add additional items if included)

S.No.	Requirement	Documents Required	Page number of submitted proposal
1.	EMD	As per Data Sheet	
2.	Power of Attorney	Copy of Power of Attorney in the name of the Authorized signatory (Form 2)	
3.	Submission Form	As per Form 3	
4.	Turnover Certificate	As per Form 4	
5.	Support Undertaking	As per Form 5	
6.	Eligibility Experience	As per Form 6	
7.	Organization Details	As per Form 7	
8.	Eligibility Checklist	As per Form 8	
9.	Technical Evaluation Checklist	As per Form 9	
10.	Technical Compliance Sheet	As per Form 10	
11.	OEM back-to-back support document		
12.	ISO Certificate copies		
13.	Product life cycle documents		
14.	Other technical evaluation reference documents		
15.	<<Any other documents>>		
16.	Page Numbering Certificate	As per Form 11	

4.2. Form 2 – Power of Attorney of Authorized Signatory

(Use this format or else bidder company standard format may be used if it exists)

Know all men by these presents, We, [name of organization and address of the registered office] do hereby constitute, nominate, appoint and authorise Mr / Ms [name], son/ daughter/ wife of [name], and presently residing at [address], who is presently employed with/ retained by us and holding the position of [designation] as our true and lawful attorney (hereinafter referred to as the “Authorised Representative”), with power to sub-delegate to any person, to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Proposal for “Request For Proposals on design, supply, installation, testing, commissioning, support, and maintenance of High-Performing Computing cluster (HPCC) at SAU” to the South Asian University (the “Authority”) including but not limited to signing and submission of all applications, proposals and other documents and writings, participating in pre-bid and other conferences and providing information/ responses to the Authority, representing us in all matters before the Authority, signing and execution of all contracts and undertakings consequent to acceptance of our proposal and generally dealing with the Authority in all matters in connection with or relating to or arising out of our Proposal for the said Project and/or upon award thereof to us until the entering into of the Contract with the Authority.

AND, we do hereby agree to ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Authorised Representative pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Authorised Representative in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, [name of organization], THE ABOVE NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS [date in words] DAY OF [month] [year in ‘yyyy’ format].

For [name and registered address of organization]

[Signature]

[Signature, Name &

Designation of Authorized

Signatory]

[Name]

[Designation]

Witnesses:

1. [Signature, name and address of witness]

2. [Signature, name and address of witness]

Notes:

1. The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required the same should be under seal affixed in accordance with the required procedure.
2. Wherever required, the Applicant should submit for verification the extract of the charter documents and other documents such as a resolution/power of attorney in favour of the person executing this Power of Attorney for the delegation of power hereunder on behalf of the Applicant.

4.3. Form 3 – Technical Proposal Submission Form

[Location, Date]

To

The Registrar
South Asian University
Rajpur Road, Maidan Garhi New Delhi – 110068

Phones: +91 - 11 - 20862652 | +91 - 11 - 20862806

Email: registrar@sau.int

RFP No. SAU/ICT/0909202401 for “Request For Proposals on design, supply, installation, testing, commissioning, support, and maintenance of High-Performing Computing cluster (HPCC) at SAU.”

Dear Sir,

With reference to your above mentioned RFP, we, having examined all relevant documents and understood their contents, hereby submit our Technical Proposal. The Proposal is unconditional and unqualified.

Our proposal is compliant with the terms specified in the RFP document.

Our support and maintenance proposal is backed by the following escalation matrix:

Escalation Matrix

After expiry of hours at the first level (Onsite)

Level-2

Contact Name	Contact Phone	Contact E-Mail	When to contact

After expiry of hours at the second level

Level-3

Contact Name	Contact Phone	Contact E-Mail	When to contact

We understand that you are not bound to accept any Proposal you have received. Further:

1. We acknowledge that SAU will be relying on the information provided in the Proposal and the documents accompanying the Proposal for selection of the vendor.
2. We shall make available to SAU any additional information it may deem necessary or require for supplementing or authenticating the Proposal.

3. We acknowledge the right of SAU to reject our application without assigning any reason or otherwise and hereby waive our right to challenge the same on any account whatsoever.
4. We certify that in the last 5 (five) years, we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award against this bidder, nor been expelled from any project or contract by any public authority nor have had any contract terminated by any public authority for breach on our part.
5. We hereby irrevocably waive any right or remedy which we may have at any stage at law or howsoever otherwise arising to challenge or question any decision taken by SAU in connection with the selection of bidder or in connection with the selection process itself in respect of the above mentioned RFP.
6. We agree and undertake to abide by all the terms and conditions of the RFP Document.
7. The prices mentioned in our proposal are in accordance with the terms as specified in bidding documents. All the prices and other terms and conditions of this proposal are valid for a period of 90 calendar days from the last date of submission of bids.
8. We hereby declare that in case the contract is awarded to us, we shall submit the performance security as specified in the above cited RFP.
9. We hereby declare that:
 - (a) We are not involved in any litigation that may have an impact of affecting or compromising the delivery of the goods or services as required under this tender.
 - (b) We are not and never in the past, black-listed by any Central/State Government/Public Sector/Educational Institute Undertaking in India.
 - (c) We undertake that the documents submitted are genuine/authentic and nothing material has been concealed therefrom and that we are not debarred by any Government organization and are competent to have the contract. We understand that the contract is liable to be terminated, if found to be have been obtained, through fraudulent means and/or concealment of information.
10. We have included relevant documentation in support of the eligibility and technical evaluation criteria.

Sincerely Yours,

Authorized Signature [In full and initials]:

Name and Title of Signatory:

Name of Firm:

Address:

of the Bidder)

(Name and seal

4.4. Form 4 – Turnover Certificate

(TO BE ISSUED BY PRACTISING CHARTERED ACCOUNTANT ON THEIR LETTER HEAD)

This is to certify that M/s _____ (Name & Address of Bidder) are in the business of _____ for _____ completed years (considered upto 31st March of the last Financial Year). Their turnover and net profit in each Financial Year during the preceding 03 (three) years are as given below:

Financial Year*	Total Turnover (in INR)	Net Profit (in INR)
Average for three years		[indicate sum of above divided by 3]

*The last three financial years to be counted from the year such data is certifiably available

It is further certified that:

(a) the above Turnover is in line with the Turnover declared by the Bidder in their Income Tax Returns filed under PAN No: _____ which are verified by us; and

(b) the computation of net profit is based on my/our scrutiny of the books of accounts, records and documents, is true and correct to the best of my/our knowledge and as per information provided to my/our satisfaction.

Place :

Date :

M No.:

Name:

Signature:

SEAL

4.5. Form 5 – Undertaking By The Bidder

To

The Registrar
South Asian University
Rajpur Road, Maidangarhi, New Delhi – 110068

Phones: +91 - 11 - 20862652 | +91 - 11 - 20862806

Email: registrar@sau.int

UNDERTAKING

RFP No. SAU/ICT/0909202401 for “Request For Proposals on design, supply, installation, testing, commissioning, support, and maintenance of High-Performing Computing cluster (HPCC) at SAU.”

We hereby undertake to provide all needed support for installation and maintenance of the aforementioned HPC cluster and any re-configuration/customization of the software features whenever required at a later stage for the entire warranty period at no additional charges. If the 6th and 7th year comprehensive AMC is awarded to us, this undertaking shall hold good during such year-6/year-7 period also.

We shall also be responsible for quarterly onsite maintenance of the system during the period of the warranty and comprehensive AMC.

Authorized Signatory

Name:

Designation:

Seal:

Date:

4.6. Form 6 – Eligibility Experience

S. No.	Customer* (Name, Address, Contact person)	Calendar Month & Year of Work Order (MMM, YYYY)	Value of Order (INR)	Page No. of the Proof Document**

*Limit references to the period of five years from Proposal Due Date (PDD). References must pertain to services similar to those being solicited through this RFP. **Experience must be supported by copies of work orders & Completion certificates from the client; OR Work Order + Self Certificate of Completion. In case of running contracts citation, reference letter from client; OR Work Order + Self Certificate.

Ten (or more) Year Old Experience

- Please mention below ONE relevant PO which is at least ten years old from the PDD of this tender (for scoring on technical criteria 10 of Section 3.9.3)

Customer (Name, Address, Contact person)	Calendar Month & Year of Work Order (MMM, YYYY)	Value of Order (INR)	Page No. of the Proof Document***
	<at least 10+ years from PDD>		

***Experience must be supported by copies of work orders & Completion certificates from the client; OR Work Order + Self Certificate of Completion.

Signature (Name and Designation)

Official Stamp

Date:

4.7. Form 7 – Organization Details

Details filled in this form must be accompanied by sufficient documentary evidence, in order to verify the correctness of the information.

S.No.	Item	Details	Page No. of the Proof Document
1.	Name, Designation and Contact Details of the Person Authorized to Make Commitments to the University		
2.	Company Registration No. (Copy of the Registration Certificate to be attached)		
3.	PAN No. (Copy of the Certificate to be attached)		
4.	GST No. (Copy of the Certificate to be attached)		

List of OEM Certified Resources having HPC expertise (Sections 3.9.2 & 3.9.3)

S.No	Area of Specialization	Number of employees* on company rolls for more than six months who have five or more years of experience on proposal due date*
1.		
2.		

***INCLUDE a listing of the engineers separately with their names & experience**

I hereby certify that the information furnished above is full and correct to the best of my knowledge.

Signature (Name and Designation)

Official Stamp

Date:

4.8. Form 8 – Eligibility Checklist

S.No.	Basic Requirement	Specific Requirement	Documents Required	Page No of Proof Document in Technical Bid
1.	Turnover	Average Annual Turnover during the last three financial years should be at least Rs. 10 Crores. Further, the bidder should have posted an average annual net profit in the last three financial years.	Form 4 (There is no need to upload entire voluminous balance sheets)	
2.	Certification	The bidder should have currently valid (as on proposal due date) ISO certifications: ISO 9001, ISO 14001, ISO 20000-1, ISO 45001	Copies of valid ISO certificates	
3.	Local Presence	The bidder must have a local registered office in Delhi NCR with relevant service engineers, operational for at least five years as on proposal due date.	Registration certificate	
4.	Experience	<p>Bidder must have successfully completed at least the following numbers of HPC engagement(s) in the last five years, of value specified herein:</p> <ul style="list-style-type: none"> <input type="checkbox"/> One project of similar nature of value not less than Rs 6.5 crores; OR <input type="checkbox"/> Two projects of similar nature of value not less than Rs 4.5 crores each; OR <input type="checkbox"/> Three projects of similar nature of value not less than Rs 3.5 crores each <p><u>Note:</u> “similar nature” above implies work related to supplying, installing and maintaining HPC clusters with CPU & GPU nodes and PFS storage of at least 500TB.</p>	Form 6	
5.	Legal Entity	The bidder should be a Company registered under the	Form 6, Form 7	

S.No.	Basic Requirement	Specific Requirement	Documents Required	Page No of Proof Document in Technical Bid
		Companies Act, 1956 since last 5 years and operating for the last five years.		
6.	Blacklisting	A self certified letter by the authorized signatory of the bidder that the bidder has not been blacklisted in the past by any Central / State Government body or Public Sector institution or any autonomous institute or be under a declaration of ineligibility for corrupt or fraudulent practices as on proposal submission date must be submitted on original letter head of the bidder with signature and stamp.	Form 3	
7.	Support Undertaking	Undertaking that bidder will be providing all needed support for the installation and maintenance and any re-configuration/customization of the software features wherever required at a later stage for the entire warranty period at no added charges.	Form 5	
8.	OEM Support	In case of SI or partner bids, OEM must submit a declaration that onsite support shall be provided by OEM directly as well, as and when needed. Support only through the bidder shall lead to rejection. In addition, onsite hardware service calls must be attended by OEM engineers directly.	Letter from OEM on their letterhead	
9.	End Support of	No quoted component should have an 'End-of-Support' date within six years of the bid submission deadline.	OEM document highlighting the quoted product life-cycle	
10.	Manpower	The bidder must have OEM certified manpower for installation and maintenance of the HPC cluster.	Form 7	

4.9. Form 9 – Technical Evaluation Checklist

S.No	Criteria	Max. Score	Your Score	Page No of Proof Document in Technical Bid
1.	Average Sales turnover during the last three financial years [for 10 crores 2 points to be given and each additional 1 crore of turnover will be given 1 point - maximum points 5]	5		
2.	27001 Certification ^(a)	5		
3.	Availability of OEM certified HPC resources – for 1 to 5 persons: 5 points; 6 to 10 persons: 10 points; 11 or more persons: 15 points	15		
4.	Successfully executed at least one HPCC supply & commissioning contract ^(b) of value \geq Rs. 10 crore in the last five years	10		
5.	One running HPC maintenance services contract ^(b) of annual value \geq Rs. 1 crore	10		
6.	Bidder is listed in India's Top 100 Supercomputer List, details must be submitted.	10		
7.	Bidding company has been in existence and operating for 10 or more years engaged in HPC rack based cluster supply, installation, support and maintenance. <ul style="list-style-type: none"> • Provide company registration certificate and one relevant PO copy that is dated 10 or more years in the past from proposal due date. 	5		
8.	A presentation will be made by the bidders on the date and time specified in the data sheet of this tender. The presentation shall be of a maximum of 30 minutes duration for each bidder and should include <ul style="list-style-type: none"> • Vendor's experience and expertise • Compliance with technical specifications • Proposed solution architecture • Project timeline and implementation plan • Warranty / support period plan • Proposed value addition 	40	–	–

(a) Provide valid and current certificate copy (b) Include this in FORM 6; For scoring, contracts at S.Nos 4, 5 should be different; same contract will be counted only once

(c) Self-certify; SAU may ask for a site visit to verify claim (d) Include this in FORM 7

4.10. Form 10 – Technical Compliance Sheet

Item 1: Master System – 2 Qty

Item	Technical Specification	Compliance (Y/N)	Page no of proof document
Form Factor	Max. 2U (including all units) rack mounted with sliding rails		
Configured CPUs	Min Two or more x86 Architecture based server Processors*, Each CPU with at least 40 Cores, 2.0GHz Base or higher with 105MB Cache or more. The CPU used for Master system, Compute System and GPU Compute System (i.e., the CPU of the GPU systems) should be the same.		
Performance Benchmark	1.Specrate2017_fp_base >730 2.Specrate2017_int_base >600 System OEM must have listed SPEC benchmark score as aforementioned in www.spec.org with the same model or a model from the similar series, with same CPU configuration as quoted in the bid.		
NVMe Support	At least one or more drive /Slots must have native support for NVMe drives.		
Memory configured	1024GB DDR5 4400MHz or better Registered ECC RAM installed from day one, fully in a balanced configuration. Total 16 Dimm Slots.		
Disks Bays	At least 8 or more SATA HDD/SSD Bays.		
SSD & HDD	4 x 1920GB or higher Ent. Nvme SSD Drives installed in Raid 0+1 from day one. Hardware RAID is necessary		
I/O slots	2 x PCIe 5.0 x8 LP slot(s), 4 x PCIe 5.0 x16 LP slot(s) bandwidth based slots		
Interconnect	2 x 1G Lan Ports with thru onboard or add on Controller. HDR IB (200Gb/s) card with 1 QSFP56 ports and cables must be supply for interconnect.		
Other ports	1 x 1G (IPMI) dedicated port, 1 x VGA, 2 x USB 3.0 Ports.		
OS Certification	System should be certified and supported for Stable version of RHEL (9.0 or above) Operating system. Certificate copy from Redhat must be attached with bid documents.		
Power Supply	N+N redundant hot-swap Power Supplies.		
Cooling Subsystem	Monitoring of the cooling sub system of server through metering utility, with speed control, and PWM.		
Power & temperature	Real-time power meter, graphing, thresholds, alerts & capping with historical log data. Temperature monitoring vide indicators		
Installation	Installation, Testing, Training, and Implementation costs for all above mentioned solution must be included from day one. (Should be done by OEM Engineers)		
High-Availability	The two master nodes must be configured in High-Availability (HA) mode so that whenever one goes down, the other node should immediately take up the role of the primary server running scheduler (comm, serv, schd, control) and also the user should not feel any interference while running the jobs. The jobs (including IDs) should not get		

	affected owing to any such downtime. The HA should be configured in such a way that all file-systems and user-sessions are seamlessly available to the end-user. For HA implementation, a dedicated common storage of at least 10TB usable in SSD. Appropriate licensing for OS & applications should be a part of the solution.		
System Management Utility	Dedicated IPMI Management Port with Activated Licenses. Out of band Management Capabilities, Stack with a full IPMI implementation, Hardware Health monitor, Remote power control Etc. Product datasheet/manual must confirm the compliance. Appropriate configuration should be made for uniform GUI based monitoring of entire HPC cluster.		
System Security	Secure Boot (Firmware and Bios Level Security), Hardware root of trust/Dual Root of Trust, Malicious Code Free Design (Certified by OEM), Network card secure firmware boot, Detail mentioned document must be submitted with technical bid. Along with hardware security, appropriate software and OS hardening must be done in joint collaboration with SAU admins and as per industry standards keeping in view the scientific needs of SAU research group.		
Warranty	Minimum 5 years comprehensive Part, Labor, Onsite service calls must be attended by OEM engineer directly.		

*Processor should be of the current generation at the time of supplying.

Item 2: Compute System – 8 Qty

Item	Technical Specification	Compliance (Y/N)	Page no of proof document
Form Factor	Max. 2U (including all units) rack mounted with sliding rails		
Configured CPUs	Min Two or more x86 Architecture based server Processors*, Each CPU with at least 40 Cores, 2.0GHz Base or higher with 105MB Cache or more. The CPU used for Master system, Compute System and GPU Compute System (i.e., the CPU of the GPU systems) should be the same.		
Performance Benchmark	1.Specrate2017_fp_base >730 2.Specrate2017_int_base >600 System OEM must have listed SPEC benchmark score as afore mentioned in www.spec.org with the same model or a model from the similar series, with same CPU configuration as quoted in the bid.		
NVMe Support	At least one or more drive /Slots must have native support for NVMe drives.		
Memory configured	1024GB DDR5 4400MHz or better Registered ECC RAM installed from day one. Total 16Dimm Slots.		
Disks Bays	At least 8 or more SATA HDD/SSD Bays.		
SSD & HDD	960GB or higher Ent. Nvme SSD Drives installed from day one.		
I/O slots	2 x PCIe 5.0 x8 LP slot(s), 4 x PCIe 5.0 x16 LP slot(s) bandwidth based slots		

Interconnect	2 x 1G Lan Ports with thru onboard or add on Controller. HDR IB (200Gb/s) card with 1 QSFP56 ports and cables must be supply for interconnect.		
Other ports	1 x 1G (IPMI) dedicated port, 1 x VGA, 2 x USB 3.0 Ports.		
OS Certification	System should be certified and supported for stable RHEL(9.0 or above) Operating system. Certificate copy from Redhat must be attached with bid documents.		
Power Supply	N+N redundant hot-swap Power Supplies.		
Cooling Subsystem	Monitoring of cooling sub system of server through metering utility, with speed control, and PWM.		
Power & temperature	Real-time power meter, graphing, thresholds, alerts & capping with historical log data. Temperature monitoring vide indicators		
Installation	Installation, Testing, Training, and Implementation costs for all above mentioned solution must be included from day one. (Should be done by OEM Engineers)		
System Management Utility	Dedicated IPMI Management Port with Activated Licenses. Out of band Management Capabilities, Stack with a full IPMI implementation, Hardware Health monitor, Remote power control Etc. Product datasheet/manual must confirm the compliance.		
System Security	Secure Boot (Firmware and Bios Level Security), Hardware root of trust/Dual Root of Trust, Malicious Code Free Design (Certified by OEM), Network card secure firmware boot, Detail mentioned document must be submitted with technical bid. Along with hardware security, appropriate software and OS hardening must be done in joint collaboration with SAU admins and as per industry standards keeping in view the scientific needs of SAU research group.		
Warranty	Minimum 5 years comprehensive Part, Labor, Onsite service calls must be attended by OEM engineer directly.		

*Processor should be of the latest generation

Item 3: GPU Compute System – 2 Qty

Item	Technical Specification	Compliance (Y/N)	Page no of proof document
Form Factor	Max. 8U (including all units) rack mounted with sliding rails		
Configured CPUs	Min Two or more x86 Architecture based server Processors*, Each CPU with at least 40 Cores, 2.0GHz Base or higher with 105MB Cache or more. The CPU used for Master system, Compute System and GPU Compute System (i.e., the CPU of the GPU systems) should be the same.		
Performance	1.Specrate2017_fp_base >730		

Benchmark	2.Specrate2017_int_base >600 System OEM must have listed SPEC benchmark score as afore mentioned in www.spec.org with the same / similar model, with same CPU configuration as quoted in the bid.		
NVMe Support	At least one or more drive /Slots must have native support for NVMe drives.		
Memory configured	2048GB DDR5 4400MHz or better Registered ECC RAM installed from day one. 24Dimm Slots or higher.		
SSD & HDD	960GB or higher Ent Nvme SSD Drives installed in Raid 1 from day one.		
I/O slots	10 × PCIe 5.0 slots including x16 bandwidth based slots		
OS Certification	System should be certified and supported for stable RHEL (9.0 or above) Server Operating system. Certificate copy from Redhat must be attached with bid documents.		
Accelerator	8 x NVIDIA SXM: HGX H200 GPU (141GB or better) CPU-GPU Interconnect - PCIe 5.0 x16 CPU-to-GPU Interconnect GPU-GPU Interconnect - NVIDIA® NVLink® with NVSwitch™ OEM should be listed in NVIDIA "Qualified System Catalog" to ensure build quality compatible with the GPU mentioned. The GPU card should be able to logically slice during the submission of jobs; that is a job can be submitted in all or any of the GPU card through the Workload Manager		
	Latest MLPerf Benchmark reports for below AI workloads must be submitted along with technical bid. Reports must be with log files as well. Benchmarks must be run on quoted system with required 8 no. Of GPU's Benchmark must be run on minimum 80GB GPU. 1.ML Commons : Object identification - Heavy (with 8 GPUs- 120 minutes). 2. ML Commons : NLP BERT (with 8 GPUs- 120 minutes)		
Interconnect	2 x 1G Lan Ports with thru onboard or add on Controller. 8 x HDR IB (200Gb/s) card with 1 QSFP56 ports and cables must be supply for interconnect.		
Other ports	1 x 1G (IPMI) dedicated port, 2 x USB 3.0 Ports.		
Power Supply	N+N redundant hot-swap Power Supplies.		
Industry Standard Compliance	1. ACPI Specification v 2.0 or above Compliant 2. PCIe Base Specification Rev. 4.0 or above Compliant 3. WOL Support 4. PXE Support 5. VGA/Display Port 6. USB Specification 2.7 or above Compliant 7. 80 Plus compliant 8. SMBIOS 2.7 or above 9. Redfish API 10. IPMI 2.0 11. Advanced Encryption Standard (AES) 12. SNMP v3 13. DMTF Systems Management Architecture for		

	Server Hardware Command Line Protocol (SMASH CLP) 14. The HPC setup should be configured with institute's LDAP facility		
Embedded Remote Management	Integrated management controller should support: a. Monitoring fan, power supply, memory, CPU, RAID, NIC for failures. b. Silicon root of trust / Hardware Root of trust, authenticated BIOS, signed firmware updates c. Real-time power meter, temperature monitoring, Policy based administration and management of System Temperature and Cooling Sub-System d. The system management solution should support browser based graphical remote console along with Virtual Power button, remote boot using USB/CD/DVD Drive. It should be capable of offering upgrade of software and patches from a remote client using Media/image/folder; It should support server historical reporting and should have support for system authentication		
Monitoring And Analytics Appliance	Offered server must be provided with management and analytics appliance with below features : 1. Shall have monitoring and analytics engine for proactive management. All required licenses for same shall be included in the offer. 2. Monitoring and analytics engine shall have capability to provide following: • Health and system security monitoring and notification emails • Performance monitoring and anomaly detection • REST API for integrating data with automation, ticketing, and other tools • Visualize server telemetry including key performance, environmental, and power metrics • Displays health, inventory, alerts, performance, and warranty status		
Cooling Subsystem	Monitoring of cooling sub system of server through metering utility, with speed control, and PWM.		
Power & temperature	Real-time power meter, graphing, thresholds, alerts & capping with historical log data. Temperature monitoring vide indicators		
Installation	Installation, Testing, Training, and Implementation costs for all above mentioned solution must be included from day one. (Should be done by OEM Engineers)		
System Management Utility	Dedicated IPMI Management Port with Activated Licenses. Out of band Management Capabilities, Stack with a full IPMI implementation, Hardware Health monitor, Remote power control Etc. Product datasheet/manual must confirm the compliance.		
System Security	Secure Boot (Firmware and Bios Level Security), Hardware root of trust, Malicious Code Free Design (Certified by OEM), Network card secure firmware boot: 1. Cryptographically secure firmware 2. UEFI Secure Boot and Secure Start support 3. Secure Erase 4. Ability to rollback firmware		

	<p>5. TPM 1.2/2.0</p> <p>6. Secure Recovery – recover critical firmware to known good state</p> <p>Along with hardware security, appropriate software and OS hardening must be done in joint collaboration with SAU admins and as per industry standards keeping in view the scientific needs of SAU research group.</p>		
Warranty	Minimum 5 years comprehensive Part, Labor, Onsite service calls must be attended by OEM engineer directly.		

*Processor should be of the latest generation

Item 4: Parallel File System Storage - 1Qty

Item	Technical Specification	Compliance (Y/N)	Page no of proof document
PFS	Only Lustre / GPFS filesystem is acceptable; Storage H/W OEM must take the ownership and provide declaration on letter head for providing support for Parallel File System		
Controller	12Gbps SAS 8 Port Dual Controller. Offered Storage Subsystem should support Raid 1, 5, 6, 0+1. The storage system should have InfiniBand connectivity (HDR 200 Gbps) to the CPU and GPU compute systems		
Scalability	Proposed Solution should be scalable in terms of storage capacity upto 4000 TiB (usable); without discarding existing disks.		
Capacity	Minimum 1000 TiB (usable) 7.2K RPM SAS HDD (12Gbps, 512e, 2.5", Hot Plug) configured in RAID 6 Metadata: More than or equal to 2% of the Usable Storage space. The individual disks used should have a capacity of 18 TB or higher.		
Power Supply	Redundant (N+N), Hot Plug, Mixed Mode		
SAS Cables	Requisite numbers of Cables		
I/O Node-4Qty	<p>To be configured to meet the throughput requirements. Suggested minimum configuration: Processor*: x86, Minimum 32 core, Minimum 2.1 GHz, Minimum 60M Cache)</p> <p>Performance Benchmark - 1.Specrate2017_fp_base >360</p> <p>System OEM must have listed SPEC benchmark score as afore mentioned in www.spec.org with the same model or a model from the similar series, with same CPU configuration as quoted in the bid.</p> <p>Memory: 512GB ECC DDR5 Single Rank RDIMM, 4800 MT/s</p> <p>Hard Drives: 2X1920GB Gen4 Data Center Grade NVMe in RAID 1 for OS and Metadata</p> <p>Fans: Redundant hot-plug high speed system fans</p> <p>Power Supply: Redundant (1+1), Hot Plug, Mixed Mode</p> <p>Interface: HDR IB (200Gb/s) with 1 QSFP56 ports and cables must be supplied for interconnect.</p> <p>Ethernet Interface: 2 X 1000BaseT Ethernet Interface</p>		

	Remote Management: Full Remote Management (KVM over LAN, IPMI 2.0) including Management Software from day 1		
On-site Warranty	5 Years Onsite Comprehensive OEM Warranty with Next Business Day Support along with upgrade and updates		

*Processor should be of the latest generation

Item 5: Smart Rack Solution Qty – 2 (to house the proposed solution)

Cooling, Rack, UPS, and its monitoring/support/services for Training Nodes, Inference Nodes and Storage nodes and Networking Switches. The entire non-IT components is under the scope of the bidder (including Li-ON batteries, cables, door locks etc)			
A	General Requirements	Compliance (Y/N)	Page no of proof document
1	Rack should be completely Insulated and self-contained		
2	Rack design should enable shipping of the rack in (CKD) completely Knock Down condition. Typically, the structure should comprise of extra deep front and rear frames in a welded multi-fold format fastened together with 3 pairs of depth channels to ensure perfect square construction		
B	Material and Construction		
1	Made out of quality CRCA material of various thicknesses, also offers highly rigid and stable structure for loading per rack up to 1500 KG (All load bearing members being made from 1.5mm & 2.0 mm CRCA Steel with added strength by way of multi- fold design)		
2	The rack should comply minimum of IP 54 rating for protection against touch, ingress of foreign bodies and ingress of water.		
3	Surface Finish: Pure polyester Powder Coated Black RAL 9005 with Hot Phosphates		
C	Physical Specifications of Basic Rack with Accessories and a Utility Rack for Mounting Fire Suppression System		
1	42U x 800 mm W x 1500 mm D Rack, Broad Front and Rear Multi-folded Frames offer required level of stability and square-ness to the structure. With all the Required Accessories		
2	Front Convex Transparent Toughened Glass Door with Three-Point Swing Handle Digital Lock & Key		
3	Rear Plain Metal Door with Three-Point Swing Handle Digital Lock & Key		
D	Rack Based Power Distribution Unit (rPDU):		
1.1	Vertical Zero U Based PDU of 1 phase, 32 Amps, IEC C13 x 36 Sockets, IEC C19 x 6 Sockets with 6 Sq.mm x 3 Core or higher and 32 Amps Industrial Plug top with Male Sockets per PDU - 2 Nos. per Rack 32 Amp to ensure fast & reliable connection of UPS O/P power.		
E	Cooling Systems:		
1	Solution provided should have integrated Rack Mounted -		

	Self-contained Split Type Cooling Unit designed for cooling the racks with 24X7 operations in all respect as per ISHRAE/ASHRAE standard and also integrated with remote monitoring system.		
2	The solutions should be DX type to cater Total IT Load as 30KW with N+N Topology		
3	Indoor Cooling Unit should not consume any usable U Space and Rack Side Mount Type should not consume more than 300mm Space		
E.1	Indoor Cooling Unit:		
1	Each Cooling unit will have capacity of 30 KW x 2 Nos. 20 KW Cooling System Split Type Unit with Rack Side Mounted IDU and External ODU. The unit shall be configured to provide air flow/pattern to provide uniform airflow over the entire height of the rack. EC fan /variable speed should be used for maximum efficiency and minimum power cost. A Rotary with BLDC Motor compressor, which permits staples adaptation of the output in partial-load operation. The system will remain in operation in case fan replacement is required. Cooling system will come with monitoring and control panel.		
E.2	Outdoor Cooling Unit:		
1	Copper piping with insulation tube of elastomeric, nitrile foam between each sets of outdoor & indoor unit. Piping to be properly supported by MS clamp. All transmission wiring between indoor to outdoor units should be kept in PVC conduit. The distance between indoor and outdoor unit is considered as 15 meters.		
F	Access Control Lock		
1	General Description: Access Control System boasts of high aesthetics and ultra modern design.		
2	Main Features: <ul style="list-style-type: none"> • Rugged Fingerprint optical sensor with 19K templates • Touchscreen display for configuration of device • Third party HR software compatible device • Compatible to all types of cards • IP65 rated robust enclosure • Wi-Fi, GPRS enabled • CE certified 		
G	Rack Monitoring Unit (RMU)		
1	General Description: Rack Monitoring Unit [RMU] can connect multiple sensors at the front and rear end of the Rack as well as server room. If any Temperature or Humidity value goes beyond threshold or Pre-set value, then the system will generate alarm and connected hooter will sound. In addition to this it has smoke detector for any unprecedented fire casualty with Water-leak detection system. This system completely monitor's Rack's or Server Room's all Environmental parameters.		
2	Main Features: <ul style="list-style-type: none"> • 1U size device fits easily into 19" Rack which make installation easy. • TCP/IP based System, helps to monitor system from remote location. • Dedicated channels for Temperature + Humidity Sensors • Water Leak & Smoke Detection • SNMP traps enabled for critical alarms like temperature 		

	<p>high, water leak, fire etc.</p> <ul style="list-style-type: none"> Alert based SMS/Email configuration in desktop-based software. Dedicated software for various types of reports, graphs & critical event notifications. 		
H	Fire Detection and Suppression System		
1	Delivery of an extinguishing system that detects and extinguishes fires in closed server and network cabinets. Fire Suppression System needs to be mounted Rack near to the Wall of the Server Room		
2	The extinguishing process shall not be electrically conducting and shall be fast and residue free.		
3	It shall be rack mountable device that shall have high sensitivity smoke detection. It shall have a built-in NOVEC 1230 suppression system sufficient for 1 Racks with integrated fire panel, actuator, discharge nozzle and complete piping with necessary accessories.		
4	Fire Detection & Suppression System shall not consume any U of rack space.		
5	The Fire Detection system shall be having two zones for advance Detection.		
I	Rodent Repellent System		
1	Ultrasonic Rodent Repellers are electronic transmitters of high frequency sound (well above the 20 KHz frequency which is the upper limit of the hearing range of the human ear). They emit intensive sound at high decibel levels (sound pressure) that is audible and painful to rodents but is inaudible and harmless to humans. The rodents will usually leave the area being protected by the ultrasound. They do not get killed.		
J	UPS with 30mins Battery Backup other technical specification		
1	Online Double conversion, IGBT technology based UPS should be of 30 kVA in N+ N topology in parallel connection, rack mountable with unity power factor and efficiency up to 96.2%.		
2	Battery backup support should be for 30 minutes on each UPS on full IT load. The backup batteries should be supplied with the necessary arrangements to mount inside the rack.		
3	The batteries should be of Li-on and integrated to the solution in order to measure the electrical characteristics/properties in an integrated dashboard while capturing all measurable data.		
K	Certifications, Environmental and Safety Requirements		
1	Smart Rack Manufacturer shall have ISO 9001:2015, ISO 14001:2004, ISO 27001:2013, ISO 45001: 2018 Certified, EIA 310D, DIN 41498, RoHS, CE, UL Listed company		

Item 6: Network Switch – Qty has been mentioned

Technical Specifications	Compliance (Y/N)	Page no of proof document
General Features:		
40-port Non-blocking Managed HDR 200Gb/s InfiniBand Smart		

Switch with cables with inbuilt RPS - Qty 1		
48-port 1Gig Ethernet Network Switch with industry standard cables (Cat 6a) inbuilt RPS Qty-2. Hand-made cables will not be accepted		
It is pertinent to understand and implement that all the networking schema must be configured in a way that inter-cluster routing for IB, ICMP, Management traffic are well segregated. Needless to mention that there should not be any single point of failure at the ethernet switch level.		
Comprehensive Warranty is 5/5/5 (including cables)		

Item 8: S/W Stack

S. No.	Items / Specifications	Compliance (Y/N)	Page no of proof document
A.	Entire software stack which includes OS, Cluster Manager, Workload Manager, Orchestration Manager, Compiler, Debugger, MPI libraries, etc should be licensed/Open Source wherever asked/applicable		
B.	Software Support for both Serial and Parallel Environment is needed.		
C.	Stable Linux Operating System (RHEL9.0 or above)) with appropriate academic license for 5 years		
D.	Workload Manager with following features		
1	Fully featured version with support backed suite , with no limitation to no of jobs and scalability of Systems		
2	Integrated advanced scheduling features including cross-system scheduling, peer to peer scheduling with advanced fair share & hierarchical fair share reservations, preemption, access control lists (ACLs), Role based access control and backfilling scheduling, multi-cluster scheduling, Meta-scheduling for job scheduling and management across distinct clusters (earlier supplied by clusters are also to be covered)		
3	Power aware job scheduling to support auto shutdown and auto boot of Systems as per the workload to be supported.		
4	Topology-aware scheduling (both inter- and intra-System) to ensure maximum application performance while minimizing cross-job network contention;		
5	Preemption and checkpointing (suspend/checkpoint/requeue) allow users to immediately run high-priority work		
6	Plugin framework for custom health checking, mitigation, and notification capabilities including off-lining flaky Systems, restarting scheduling cycles and requeuing jobs		
7	The Management Suite must offer Web/CLI based Job submission, monitoring, management and 3D remote visualization capability with secure access control which can be integrated with LDAP.		
8	The Cluster Management Suite must Web based tool for administration of HPC including real time monitoring, historical repository based on jobs, users, application etc.		
9	Product Data sheet / Manual for the suite offered must		

	be submitted with bid.		
E.	Cluster Management Software with following features		
1	Unified system management, monitoring toolset for configuration, diagnosis and management of the system,		
2	Cluster manager with provisioning, monitoring and reporting capabilities		
3	Support Package and Image based provisioning		
4	Support Diskfull and diskless cluster deployment		
5	Intuitive web interface to manage and customize the cluster		
6	Customizing networks and compute System profiles through GUI		
7	Customizing compute Systems (upto changing kernel parameter)		
8	Able to Push configuration changes and updates to the compute Systems without reinstalling and rebooting. Product datasheet for the offered S/W suite must be submitted		
9	Offered Stack must have been deployed by OEM / Bidder earlier as well, as part of HPC Solution to Govt organisations during last 3 years – documentary evidence must be provided		

Onsite Performance Benchmarks

The following benchmarks must be run during installation and acceptance phase of the solution implementation.

- **HPL Benchmark**

After installation, High Performance Linpack (HPL) must be run onsite during installation of the system for acceptance on:

1. All compute systems using all the CPU cores of the compute system (excluding master system and GPU system).
2. All GPU compute systems using all GPU cards in the system using a GPU variant of HPL.

The HPL run must be repeated three times and the best performance should be reported as part of the installation and acceptance report by the OEM. The sustained HPL performance should be more than 65 % of the peak performance. The peak performance of both the CPU and GPU based computer systems should be calculated and reported by the bidder in the bid document, and these values will be used as a reference for the onsite benchmark.

- **NAMD Benchmarks**

The bidder must run the “STMV (virus) benchmark (1,066,628 atoms, periodic, PME)” as available on the NAMD website² using NAMD stable release³. As of now tested 2.13 version may be used; however, newer versions if used may be appropriately optimized with bug-fixes, multi-GPU scaling factor, Compiler flags etc.

The simulations must be run using the following configurations and the output files for all the runs must be shown at the time of delivery. (File naming convention: NAMD_CPU_Config1.log (for a CPU run) and

² <https://www.ks.uiuc.edu/Research/namd/utilities/>

³ <https://www.ks.uiuc.edu/Development/Download/download.cgi?PackageName=NAMD>

NAMD_GPU_Config2.log (for a GPU run) and so on.

Simulations time: 5ps (numsteps 5000). The numsteps in the config file available on the NAMD website is 500 and must be adjusted to the mentioned value to achieve 5 ps simulation time with regards to the volume and hardware-software-network infrastructure of HPC cluster.

NAMD (CPU): The 5ps simulation must be run using the following configurations:

Config 1: 1 node (using all the compute cores*).

Config 2: 3 nodes (using all the compute cores*)

NAMD (GPU): The 5ps simulation must be run using the following configurations:

Config 3: 1 CPU node (using all the compute cores*) and 1 GPU node.

The Wall Clock and CPU Time from each runs as present in the output file must be documented from all the runs in the following Table to be submitted as part of the benchmarks after delivery.

		Wall Clock	CPU time
NAMD (CPU)	Config 1		
	Config 2		
NAMD (GPU)	Config 3		

Key Notes:

1. The benchmark must run on the required hardware (CPUs, GPUs, and nodes) after delivery. If you are using a newer version of NAMD, take note of any optimizations or changes that may affect performance. Be sure to keep track of versions to ensure reproducibility.
2. Record any additional details such as node configuration or specific environment variables, as these may influence your benchmarking results.
3. For CPU node, the Wall Clock time (s) should not be more than 2000 and for GPU node, the the Wall Clock time (s) should not be more than 500.
4. For CPU node, the CPU time (s) should not be more than 3000 and for GPU node, the CPU+GPU time should not be more than 2000 (all time in seconds unless mentioned explicitly).
5. The performance will depend on appropriate parallelism of HPC Cluster.

• Onsite IOR Benchmark on Integrated HPC and Storage System

The OEM should run IOR benchmark to quantify the read and write performance of the parallel filesystem. The IOR benchmark should be carried out onsite during the installation & acceptance of the system. The IOR should be run simultaneously on all CPU compute systems, GPU compute systems, and the parallel read and write performance obtained on the integrated system (HPC and storage) should be reported as part of the installation and acceptance report by the OEM.

5.1. Form 11 – Page Numbering Certificate

(To be enclosed as last page of Technical Proposal)

<u>CERTIFICATE</u>	
Certified that this Technical Proposal is carrying ____pages (in figures and words) and each page is numbered.	
Date:	Sig. of the tenderer & With seal
<hr/>	
RFP No. SAU/ICT/0909202401 for “Request For Proposals on design, supply, installation, testing, commissioning, support, and maintenance of High-Performing Computing cluster (HPCC) at SAU.”	

5.2. Form 12 – Form of Bank Guarantee for Performance Security

(To be stamped in accordance with Stamp Act)

1. In consideration of South Asian University, New Delhi [hereinafter referred to as SAU, which expression unless repugnant to the context and meaning thereof shall include its successors and assigns] having agreed to exempt M/S _____ [hereinafter referred to as 'supplier / contractor' which expression unless repugnant to the context and meaning thereof shall include its successors and assigns] from depositing with SAU a sum of Rs. _____ towards security / performance guarantee in lieu of the said supplier / contractor having agreed to furnish a bank guarantee for the said sum of Rs. _____ as required under the Terms & Conditions of contract / work order / purchase order no. _____ dated _____ [hereinafter referred to as the order] placed by SAU on the said supplier / contractor. We, (Name of the Bank) _____ (hereinafter referred to as 'the bank' which expression shall include its successors and assigns] do hereby undertake to pay SAU an amount not exceeding Rs. _____ (Rupees _____) on the demand made by SAU on us due to a breach committed by the said supplier / contractor of the Terms & Conditions of the order.
2. We, the Bank do hereby undertake to pay the amounts due & payable under this Guarantee without any demur, merely on demand from SAU stating that the amount claimed as due by way of loss or damage caused to or would be caused to or suffered by SAU New Delhi, by reason of breach by the said Contractor (s) of any Terms & Conditions contained in the said Agreement or by reason of the Contractor (s) failure to perform the said Agreement. Any such demand made on the Bank under this guarantee, the decision of SAU in this count shall be final and binding on the Bank. However, our liability under this guarantee shall be restricted to an amount not exceeding Rs. _____ (Rupees _____).
3. We, the Bank undertake to pay to SAU, any money so demanded notwithstanding any dispute or disputes raised by the Contractor (s) in any suit or proceedings pending before any court or tribunal relating there to our liability for payment there under and the Contractor (s) shall have no claim against us for making such payment.
4. We, the Bank further agree that the Performance Bank Guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Agreement and that it shall continue to be enforceable till all the dues of SAU under or by virtue of the said Agreement have been fully paid and its claims satisfied or discharged or till the Registrar of SAU, New Delhi certifies that the terms & conditions of the said Agreement have been fully and properly carried out by the said Contractor (s) and accordingly discharged the Guarantee. Unless a demand or claim under the Guarantee is made on the Bank in writing on or before _____, the Bank shall be discharged from the all liability under the Guarantee thereafter.
5. We, the Bank further agree with SAU, that SAU shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the Terms and Conditions of the said Agreement or to extend time of performance by the said Contractor(s) from time to time to postpone for any time or from time to time any of the powers exercisable by SAU against the said Contractor(s) and to forbear or enforce any of the Terms & Conditions relating to the said Agreement and the Bank shall not be relieved from its liability by reason of any such variation, or extension being granted to

the said Contactor(s), or any forbearance, act or omission on the part of SAU, or any indulgence by SAU to the said Contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would but for the provision have effect of so relieving the Bank.

- 6. This Guarantee shall not be affected by any change in the constitution or winding up of the Consultant /the Bank or any absorption, merger or amalgamation of the Consultant /the bank with any other Person.
- 7. We, the Bank lastly undertake not to revoke this guarantee during its currency except with the previous consent of SAU in writing.
- 8. Notwithstanding anything contained hereinabove the liability of the Bank in respect of this Guarantee is restricted to Rs. _____ (Rupees _____) and it will remain in force till _____. Unless a demand or claim under this guarantee is made on the Bank in writing within three months from _____ we shall be discharged from all liability under this guarantee.

This Guarantee is valid _____ to _____
 dated the _____ day of _____.
 For _____ (indicate the Name of the Bank).

[Official Address]

Designation

[With Bank Stamp]

5.3. Form 13 – Financial Bid

Tax Exclusive Rates in INR

This being a turnkey solution, the list below is tentative and only depicts minimum requirements and all other components required for a total integration of a functional system shall be presumed to be a part of this listing, even if not expressly mentioned.

S.No	Item	Quantity	Unit Rate (INR)	Total Price (INR)
1	Master System	2		
2	Compute System	8		
3	GPU Compute System	2		
4	PFS Storage Disk Array(s)	1		
5	PFS Storage I/O node(s)	4		
6	Smart Rack Solution	1		
7	Fire Detection & Suppression System	1		
8	Rodent Repellent System	1		
9	UPS	1		
	Ethernet Network Switch	1+1		
10	IB Switch	1		
12	Remote monitoring System	1		
13	S/W Stack	1		
14	Installation	1		
15	Training & Documentation	1		
16	Warranty & Support (5 years)	1		
18	One onsite HPC linux expert for three months post commissioning	1		
19	Year 6 AMC*	1		
20	Year 7 AMC*	1		
			Sub Total	
			GST	
			Total	

*To be paid on post-quarterly basis once the five year warranty period ends. AMC costing to be included in final evaluation; however, its award is subject to satisfactory performance of the successful bidder during the warranty period. The University has the right to terminate the AMC by giving an advance notice of three months if performance is not satisfactory at any time during the AMC period.