



TENDER DOCUMENT

for

a TURNKEY PROJECT
HIGH PERFORMANCE COMPUTING (HPC) SOLUTION
WITH DATA CENTER FACILITY

Ref. No. CMS/1415/053 dated 27/05/2014

Version 2.0

Revised on July 03, 2014

by

CENTRE FOR MODELING AND SIMULATION
UNIVERSITY OF PUNE
PUNE - 411 007
INDIA

Contents

1	Notification Inviting Tender	4
2	General Conditions of Contract	6
3	Special Conditions of Contract	13
4	Scope of work	25
4.1	Technical Specifications:	26
4.2	Data Center Scope of work:	34
5	Pre qualification for participation	38
6	Benchmark Tests for Technical Evaluation	40
6.1	Benchmark Programs	41
6.1.1	VASP	41
6.1.2	GROMACS	42
7	Evaluation Methodology	44
8	General Instructions to Bidders	46
9	Guidelines to Bidder:	49

Definitions:

PURCHASER:	University of Pune, Ganeshkhind, Pune - 411 007, INDIA.
VENDOR:	shall mean the Original Equipment Manufacturer (OEM) of HPC system.
BIDDER:	shall mean a proprietary firm, a firm in partnership, a limited company (private or Public) or a corporation. It can be OEM or the singly authorized partner of an OEM, who will actually make a bid.
YEAR:	shall mean the 'Financial Year'. (except for the warranty and support period)
SIMILAR WORK:	shall mean supply, installation, testing and commissioning of at-least 60 node HPC cluster with a turnkey data center facility.
BANK GUARANTEE:	shall mean a Bank guarantee (BG) in INR only, issued by a Nationalized bank having branch in / around Pune. The BG should be in the name of "The Registrar, University of Pune, Pune".
CMS:	shall mean Centre for Modeling and Simulation, University of Pune, Pune - 411 007
UNIVERSITY:	shall mean University of Pune, Pune - 411 007
DESTINATION:	shall mean Centre for Modeling and Simulation, University of Pune, Pune - 411 007

1 Notification Inviting Tender

Tenders for purchase and deployment of High performance computing system (HPC) with data-center facility, as a turnkey project, are publicly invited by University of Pune (UoP) from eligible and reputed manufacturers and their distributors, if any, through two bids system, viz Technical bid and Commercial bid.

Sr. No.	Description of work	Bid type	Cost of Bid Document
01	Supply, Installation, and Commissioning of High performance computing system (HPC) with data-center facility, as a turnkey project	TWO bids system	₹ 5000 (non-refundable through demand draft)

1. Information for invitation of Bid:

Name of the Purchaser	University of Pune, Ganeshkhind, Pune 411 007
Name, address and Email ID of the contact person for any clarification	Prof. Anjali Kshirsagar Centre for Modeling and Simulation, University of Pune, Pune 411 007 E-Mail: hpc@unipune.ac.in
Addressee and Address for Bid Submission	Director, Centre for Modeling and Simulation, University of Pune, Pune 411 007
Date till which the response to the Bid should be valid	120 Days from the date of opening of commercial bids.

2. Time Schedule for Tendering:

Publication of Bid Document	May 27, 2014
Site Visit to Inspect Infrastructure	May 30, 2014
Last date for Submission of written Queries for clarifications on bid document	June 04, 2014
Pre-Bid Meeting	June 09, 2014, at 15:00 Hrs (IST)
Last Date of Submission of Bid	July 18, 2014 at 15:00 Hrs (IST)
Opening of Technical Bid	July 18, 2014 at 15:30 Hrs (IST)
Place for Opening of Technical Bid	CMS

3. Interested bidders needs to pay ₹ 5,000/- (Rupees Five Thousand Only) by way of a Demand Draft (DD) of Nationalized/Scheduled Bank drawn in favour of “**The Registrar, University of Pune**”, payable at Pune towards non-refundable cost of Bid Document. This should be submitted along with a technical bid (in same envelop i. e. Technical bid). Bids without DD of appropriate amount will not be considered for evaluation.
4. Interested bidders can download the bid document and benchmark files from <http://cms.unipune.ac.in/announcements/>.
5. The response to the bid shall be valid for a period of 120 days from the date of opening of commercial Bids.
6. All documents / data submitted by the bidders shall be duly signed. Documents / data which are not signed will not be accepted.
7. Conditional bid will not be accepted.
8. The bids must reach to the above mentioned address on or before **July 18, 2014 at 15:00 Hrs (IST)**.
9. A Pre-bid meeting will be held on June 09, 2014, at 15:00 Hrs (IST) in CMS conference hall. All prospective bidders are requested to kindly submit their queries to the email address indicated above so as to reach us latest by June 04, 2014 . The queries received after this date will not be entertained.
10. Bidder needs to submit a Bank Guarantee towards Earnest Money Deposit of the appropriate amount as mentioned in bid document.
11. Bid documents shall be submitted fully in accordance with the requirements of the Terms and Conditions as mentioned in the Bid Document. Bids without cost of bid document, Earnest Money Deposit and other required documents specified in the Bid Document and which do not fulfill all or any of the condition prescribed in the Bid Document or which are incomplete in any respect, will be rejected outright.
12. The technical bids will be evaluated to shortlist the eligible bidders.
13. Bidder whose technical bid is found to be acceptable and who meet the eligibility requirements as specified in bid document will be informed about the date and time of the opening of the commercial bid.
14. Commercial bids of only the short listed eligible bidders will be opened, in the presence of the bidders or their authorized representative, who choose to attend, at the time, place, and date to be informed later.
15. The commercial bids will be opened on the scheduled date and time even in case of absence of the bidder.
16. The Director, CMS and University of Pune reserve the right not to proceed with the project at any stage or to alter the time-schedule or to change the process or procedure to be applied for the project.
17. The Director, CMS and University of Pune reserve the right to accept or reject any or all queries / tenders either in part or in full or to split the order without assigning any reasons therefor.

2 General Conditions of Contract

Instructions to bidder are broad guidelines to be followed while formulating the bid and its submission to the Purchaser. It also describes the methodology for opening and evaluation of bids and consequent award of contract.

1. Eligible Bidders

This Invitation for Bids is open to all suppliers.

2. Cost of Bidding

The Bidder shall bear all costs associated with the preparation and submission of its bid, and “the Purchaser”, will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

3. Fraud and corruption

- (a) The purchaser requires that the bidders, suppliers and contractors observe the highest standard of ethics during the procurement and execution of such contracts. In pursuit of this policy, the following are defined:
 - i. “corrupt practice” means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the procurement process or in contract execution;
 - ii. “fraudulent practice” means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract;
 - iii. “collusive practice” means a scheme or arrangement between two or more bidders, with or without the knowledge of the purchaser, designed to establish bid prices at artificial, noncompetitive levels; and
 - iv. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract.
- (b) The purchaser will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the Contract in question.

4. Pre Bid Meeting

- (a) Pre Bid meeting shall be scheduled on the date and time specified in the Time Schedule as mentioned in the Tender Notice.
- (b) In case of any change in the schedule of Pre-Bid meeting, the changed schedule shall be notified on the <http://cms.unipune.ac.in/announcements/>.

- (c) A maximum of two representatives of each Bidder shall be allowed to participate in the meeting.
- (d) During the course of Pre-Bid meeting, the Bidders will be free to seek clarifications and make suggestions for consideration of the University. The University shall endeavor to provide clarifications and such further information as it may, in its sole discretion, consider appropriate for facilitating a fair, transparent and competitive Bidding Process.
- (e) The point/s, if any, raised by the bidder in writing before the last date of submission of written queries for clarification on the bid document and/or raised by the bidder verbally during the Pre Bid meeting which are accepted by the University will be made available on the <http://cms.unipune.ac.in/announcements/>, and this clarification referred to as “Common Set of Conditions/Deviations” (C.S.D.), shall form part of the Bid Document and which will be common and applicable to all Bidders. The point/s, not finding place in C.S.D. issued after the Pre Bid meeting, is/or deemed to have been rejected by the University. No individual correspondence will be made with the Bidder in this regard.

5. Amendment of Bidding Documents

- (a) At any time prior to the deadline for submission of bids, the CMS may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bidding documents by amendment. The same would also be hosted on the website of the Purchaser and all prospective bidders are expected to surf the website before submitting their bids to take cognizance of the amendments.
- (b) In order to allow prospective bidders reasonable time in which to take the amendment to account in preparing their bids, the Purchaser, at its discretion, may extend the deadline for the submission of bids and host the changes on the website of the Purchaser.

6. Period of Validity of Bids

- (a) Bids shall remain valid for minimum period of 120 days from the date of opening of commercial bids. A bid valid for a shorter period shall be rejected by the Purchaser as non-responsive.
- (b) In exceptional circumstances, the Purchaser may solicit the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing (or by e-mail). The bid security provided shall also be suitably extended. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request will not be permitted to modify its bid.
- (c) Bid evaluation will be based on the bid prices without taking into consideration the above corrections.

7. Preparation of Bids

- (a) A bid with more than two options for same item will be summarily rejected.
- (b) In one bid, bidder can propose only one processor. If a bidder wishes to propose more / alternate processors (from next generation or other OEM) then it needs to be proposed as a separate bid.
- (c) If bidder is submitting more than one solution then both the solutions will be treated as a separate bids/responses.
- (d) Bidder shall submit bundled Data Center (DC) Solution(s) (Maximum 2). The DC solution should not have options inside.
- (e) The tender response should be typewritten in English language.
- (f) Bidders should avoid, as far as possible, correction, overwriting, erasures or postscripts in the bid documents.
- (g) In any case, however, if any corrections, alterations, changes, erasures, amendments and /or additions have to be made in the bids, they should be supported by dated signatures of the same authorized person signing the bid documents.

8. Earnest Money Deposit (EMD) / Bid Security

- (a) The Bidder shall furnish, as part of its bid, a bid security for an amount ₹ 15 Lakhs in the format of Bank guarantee (BG) valid for 60 days beyond the validity of the bid. (See Format on page 66)
- (b) The bid security shall be submitted in its original form. Copies shall not be accepted.
- (c) The bid security shall be payable promptly upon written demand by the purchaser in case any of the conditions listed below are invoked.
 - i. If a Bidder withdraws or amends or modifies or impairs or derogates its bid during the period of bid validity specified by the Bidder in the bid response;
 - ii. In case of a successful Bidder, if the Bidder fails to furnish order acceptance within 15 days of the order or fails to sign the contract and / or fails to furnish Security Deposit within 21 days from the date of contract / order.
- (d) The bid security of unsuccessful bidder will be discharged / returned as promptly as possible positively within a period of 30 days after the expiration of the period of bid validity or placement of order which ever is later, without any interest.
- (e) The successful Bidder's bid security will be discharged upon the Bidder furnishing the security Deposit, without any interest.
- (f) The Bid security shall be submitted in the Technical bid only, failing which the bidder shall be liable to be disqualified.

9. Submission of Bids

- (a) The Bid shall be neatly arranged, plain and legible.
- (b) Each page of the bid shall be duly signed.
- (c) Bid shall not contain any terms and conditions, printed or otherwise, which are not applicable to the Bid or which contravenes terms/conditions stated in this document.
- (d) A conditional bid will be summarily rejected.
- (e) Insertions, postscripts, additions and alterations shall not be recognized, unless confirmed by bidders signature.

10. Deadline for Submission of Bids

- (a) Bids must be received by CMS, Pune before the due date and time at the address specified in the tender document.
- (b) In the event of the specified date for the submission of bids being declared as a holiday for CMS the bid-closing deadline will stand extended to the next working day up to the same time.
- (c) CMS may extend this deadline for submission of bids by amending the bid documents and the same shall be suitably notified on the website.

11. Late Bids

- (a) Any bid received by CMS after the deadline for submission of bids, will not be accepted and returned unopened to the bidder.
- (b) CMS is not responsible for late receipt of bid, if any, due to delay by postal department or courier service.

12. Opening of Bids

- (a) The technical bids will be examined to shortlist the eligible bidders. The technical bids of only the eligible bidders shall be considered for further processing (technical evaluation).
- (b) We may call bidders for clarification and or for demonstration of benchmarks on the system on which they have done benchmarks, during technical evaluation, if required.
- (c) The commercial bids of only those bidders will be opened whose technical bids are found to be acceptable and meeting the eligibility requirements also, as specified in this tender. The qualified bidders will be informed about the date and time of the opening of the commercial bids.
- (d) The commercial bids will be opened in the presence of the bidders or their authorized representative who choose to attend the bid opening, at the time and date to be informed later.

- (e) The bidders or their authorized representatives who attend the bid opening shall sign an attendance register as a proof of having attended the bid opening.
- (f) The bidders name, bid prices, discounts and such other details considered as appropriate by CMS, will be announced at the time of opening of the commercial bids. However, announced details/figures shall be subject to correction, based upon arithmetical verification/ application of correct taxes/duties etc. and as such shall not be considered as final. Corrected Prices, if any, will be considered final for determining ranking of bids.

13. Comparison of Bids

- (a) Only the short-listed bids from the technical evaluation shall be considered for commercial comparison.
- (b) The basis of price comparison will be 'All inclusive' till inside the building of CMS, University of Pune, Pune.
- (c) The price comparison will be done by considering,
The prices of all, IT parts, Entire software stack (compiler, Libraries, PFS etc.), Non-IT parts (Data Center), Commercially supported Scheduler, analytics, Cluster Management Software, Job submission Portal, and Man Power (for Non-IT) charges.
 - Price with 3 year warranty and support.
 - Price with 5 year warranty and support.
 - Factory integration cost (if any).
- (d) In case of multiple options quoted by the bidder, CMS reserves the right to select appropriate option.
- (e) In case of typographical / calculation error, if any, CMS reserves the right to select the lowest price option.
- (f) The prices quoted in foreign currencies, if any, will be converted to Indian Rupees and all inclusive prices till CMS will be considered for comparison. The exchange rates as on date of opening of commercial bids will be taken for price comparison.
- (g) The comparative statement shall also indicate the delivery schedule offered in the technical bid. The bid not adhering to the delivery/ installation period as mentioned in Clause 2.14 of this section will stand rejected. CMS reserves the right to reject the bids not complying with the commercial terms and conditions stipulated in this document.

14. Delivery period / Time-lines

- (a) The supply, installation and commissioning of the Data Center at the site must be completed within 10-12 weeks from the date of placement of supply order/contract by CMS.

- (b) Parallely the machine shall be integrated in the factory with the entire software stack (Including the packages asked for benchmark; CMS will provide the media and license if any) mentioned in this document. OEM / Bidder has to demonstrate the benchmark result on same machine. The CMS technical team will check the machine either physically or remotely. Only after checking the machine, CMS technical team will give permission for dispatch of the machine. Bidder needs to mention the cost of factory (if any) as a separate line item in commercial bid.
- (c) Bidder should take prior permission of the purchaser to dispatch the Machine. The purchaser will give permission to dispatch the material only after completion of 80% Data Center work.
- (d) The supply, installation and commissioning of the HPC machine at site must be completed within 3-4 weeks from the date of delivery of material at CMS site. Part shipment will not be allowed. Bidder has to take care that all material (IT) should reach to CMS as a single consignment.
- (e) Thereafter running of benchmarks and / or completing acceptance criteria as mentioned in next Section of this document is to be completed within 2 weeks.
- (f) It is mandatory for the bidders who respond to this bid to meet these expectations as time is the essence of this contract and is tightly linked to CMS plans of completing the project within the available time frame.

15. Locations for the Supply, Installation, Commissioning & Warranty Services

The items covered by this document are required to be supplied and installed inside the building of Centre for Modeling and Simulation, University of Pune, Pune.

16. Award Criteria

- (a) CMS shall award the contract to the eligible bidder whose technical bid has been accepted and determined as the lowest evaluated commercial bid after approval by the Purchase Committee of the University of Pune.
- (b) The scope of work consists of multiple items. The bidder must quote for all the items mentioned under scope of work. The lowest price criteria shall be applied on the total of all items.
- (c) If more than one bidder happens to quote the same lowest price, University of Pune reserves the right to decide the criteria and further process for awarding the contract.
- (d) CMS reserves the right to reject any bid without assigning reasons therefor.

17. Purchasers Right to amend Scope of Work

- (a) If, for any unforeseen reasons, CMS is required to change the scope of supply, including change in quantity, this change shall be acceptable to the bidder without change in the unit price quoted.
- (b) CMS shall have exclusive right to split the order and place the orders in parts on different bidders (if required).
- (c) CMS shall have exclusive right to change the quantity (maximum decrease by 20%)and bidders shall supply the items accordingly at the quoted item rate and bidder shall not claim any increase in price than the quoted price.
- (d) CMS reserves the right to cancel the tender without assigning any reasons therefor.

18. Corrupt or Fraudulent Practices

- (a) It is expected that the bidders who wish to bid for this project have highest standards of ethics.
- (b) CMS will reject a bid if it determines that the bidder recommended for award has engaged in corrupt or fraudulent practices while competing for this contract;
- (c) CMS may declare a Bidder ineligible, either indefinitely or for a stated duration, to be awarded a contract if it at any time determines that the Bidder has engaged in corrupt and fraudulent practices during the award / execution of contract.

19. Interpretation of the clauses in the tender document

In case of any ambiguity/ dispute in the interpretation of any of the clauses in this Tender Document, CMS's interpretation of the clauses shall be final and binding on all parties.

3 Special Conditions of Contract

1. Prices

- (a) The price quoted shall be considered firm and final and no price escalation will be permitted under any situation.
- (b) Bidders may quote the prices in INR or in any foreign currency. The bidder may also choose to bid partly in INR and partly in foreign currency or using High Seas Sale (HSS).
- (c) The prices quoted should be 'All inclusive till destination'.
- (d) CMS has full (100%) custom duty exemption on HPC related things (i. e. Computer Servers, Nodes, IB switches, storage servers etc.) provided all items come together as a single consignment. For other things, the custom duty is 5.9%, if custom duty exemption certificates are provided. In both the cases, CMS will provide custom duty certificates.
- (e) CMS will provide customs duty exemption certificate (if material is imported). The customs duty payable, if any after availing the exemption / concession will have to be paid by the bidder.
- (f) The price for each line item should be quoted separately.
- (g) The Indian representatives may quote on behalf of their principals abroad. In this case, the bidder should clearly mention the name and address of the supplier abroad on whose name the purchase order is to be placed. An undertaking from this supplier abroad is essential to the effect that all the terms and conditions stipulated in this tender document are acceptable for the purpose of raising the purchase order.

2. Delivery of Material

- (a) All the Material purchased should be delivered on FOR CMS basis.
- (b) CMS will not be responsible for any delay on account of unavailability of persons or machinery to unload the material. The whole responsibility of the material (taking material inside the CMS building and keeping it with proper covering at a safe place as per directives of CMS team) will be of bidder.
- (c) In case the material is being imported, the bidder has to send us the air way bill and the Invoice through an email (to hpc@unipune.ac.in), as early as possible, so that CMS will keep the custom duty exemption certificate ready. CMS will require 2-3 working days to prepare the certificates.

3. Taxes and Duties

- (a) The rates and amounts of taxes and / or duties applicable as on date of bidding, if any, should be mentioned separately. In case of change in

statutory tax structure subsequent to submission of bids, the taxes and / duties applicable as on date of dispatch / invoice will be paid by the purchaser.

- (b) For goods manufactured outside India, the bidder shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside and inside India.
- (c) For goods Manufactured within India, the bidder shall be entirely responsible for all taxes, duties, license fees, etc., incurred till its final manufacture / production.
- (d) If any tax exemptions, reductions, allowances or privileges may be available to the bidder in India, the Purchaser shall make it's best efforts to enable the Supplier to benefit from any such tax savings to the maximum allowable extent.
- (e) All payments due under the contract shall be paid after deduction of statutory levies (at source) (like TDS, IT, etc.) wherever applicable. Vendors are requested to go through <http://unipune.ac.in/admin/FinanceCirculars.aspx>
- (f) The Customs Duty exemption is applicable only in case of bids in foreign currency and where the purchase order is placed on supplier abroad.

4. Commercial Terms and Conditions

- (a) The commercial bid should contain among other things, payment terms, warranty, installation and commissioning charges. These charges will be paid only after successful supply, installation and acceptance. CMS will enter into a contract with the successful bidder which will detail all contractual obligations during warranty period. Bidders have to quote for AMC charges for 2 years after warranty period.
- (b) In case of rupee offer, the component of tax, E.D. and any other statutory levies should be shown separately and not included in the total amount, to enable us to avail exemption.
- (c) In case of imported solutions, insurance should be till CMS site and should not terminate till material reaches to CMS.
- (d) CMS is not exempted from VAT or other taxes. Hence this component may be shown as separate line item wherever applicable.
- (e) Proposals should contain name and contact details viz phone, fax, email of designated person to whom all future communication will be addressed.
- (f) Price should be quoted per unit and the total amount for the required quantity.
- (g) Offer should be valid for 120 days from the date of opening of commercial bids.

- (h) CMS will place the purchase order only on the successful bidder. However if the bidder requires multiple orders to be placed on the system integrator / OEM's, it has to be clearly mentioned in the technical bid with appropriate reasoning. The number of such orders would be limited to three.
- (i) The commercial bid should contain the exact name and address along with email ID and phone number of the company on whom order(s) will be placed.
- (j) The order in INR will be placed on bidders name only.
- (k) It is to be noted that the bidder will be the system integrator (SI) for the total requirement. If OEM is not the bidder, then OEM should ensure that SI understands all the requirements and they together are in a position to execute their respective responsibilities for successful implementation of the contract.

5. Softwares and Software Licenses

- (a) Standard versions of software are to be proposed which will have full functionality and features of the product.
- (b) Licensed software proposed should be from reputed brands and should be certified by Hardware OEM's.
- (c) In case of licensed software, bidder has to submit the authorization letter from the software OEM, clearly stating the support period and agreement to provide upgrades (if any) during the support period.
- (d) The software licenses shall be required in the name of Professor Anjali Kshirsagar, University of Pune, Pune.
- (e) All the softwares shall be with 3 years (and 5 years) 24×7 support from OEM.

6. Security Deposit

- (a) The successful Bidder will be required to furnish, a security deposit for an amount of 5% of the total order value within 15 days of the date of contract/order, in the format of Bank guarantee (See Format on page 66)
- (b) In case the order is in USD, the bidder has to take into account the conversion rate of USD to Rupees on the date of contract / order date to calculate the amount of Security deposit.
- (c) The security deposit shall remain valid for period of 8 months from the date of contract/order.
- (d) The security deposit shall be submitted in its original form. Copies shall not be accepted.

- (e) The security deposit shall be payable promptly upon written demand by the purchaser in case any of the conditions listed below is invoked.
 - i. If a Bidder fails to furnish the material or fails to complete the commissioning of the system in a given time and as per expectation of the purchaser.
- (f) The security deposit will be discharged / returned upon completion of installation, commissioning and final acceptance of entire system and submission of Performance Bank Guarantee, without any interest.

7. Performance Bank Guarantee (PBG)

- (a) Before claiming the final settlement, the successful bidder will be required to furnish the Performance Bank Guarantee in the form of BG for 10% amount of the Order, as per the format (on page 63) attached to this document.
- (b) This performance bank guarantee shall remain valid for the entire period of warranty.
- (c) The PBG shall be submitted in its original form. Copies shall not be accepted.
- (d) The PBG shall be payable promptly upon written demand by the purchaser in case any of the conditions listed below is invoked.
 - i. If bidder fails to perform hot spot analysis after every half year, and re-fix the problem within the said period.
 - ii. If bidder fails to respond within a 4 hour response time.
 - iii. If bidder fails to give support within a given time and as per expectation of purchaser.
 - iv. If bidder shirks his duties.

8. Completeness Responsibility

- (a) Notwithstanding the scope of works as stipulated in Section 4 of this document, any equipment or material, engineering or technical services which might not be even specifically mentioned under the scope of supply of the Bidder and which are not expressly excluded there from but which are necessary for the performance of the equipment in accordance with the specifications and executing the contract to establish achievement of performance guarantee parameters, shall be provided for and rendered by the Bidder without any extra charge. Selected Bidder shall agree and accept that Intended system will serve the purpose of CMS only if entire system (including softwares, peripherals etc.) as a whole is fully functional. Hence, in case of supply/installation/commissioning of more than one part/component/system, or if purchase is for both hardware and

software, then contract will be treated as indivisible i.e. if selected bidder-

- i. Fails to perform even in part or
- ii. Performs its obligations partly or
- iii. If performance in part or full is not accepted,

then it shall be treated as failure of performance of whole of contract and bidder/supplier/vendor shall be liable to repay/refund to CMS the entire amount received from CMS as well as to compensate CMS for damages due to delay, loss of reputation/time/data/business opportunities etc. arising directly or indirectly /incidental out of such part/full failure/performance/termination.

- (b) Responsibility and liability of all such parties who will be engaged by principals and also of principals will be joint and several.
- (c) Risk in goods and systems will pass to CMS only after the entire system with data Center has been installed and commissioned and accepted by CMS.

9. Warranty

- (a) All the items supplied and / or installed (HPC + Data Centre) by the bidder, shall carry minimum 3 (three) years (24×7×4, 4 Hrs response time) operational comprehensive warranty from the date of final acceptance of entire system as a whole. The bidder must undertake to provide the installation and warranty service at CMS. The repairing/ rectification/ replacement/ configuration required, if any, of the items under warranty must be done at site only. These items shall not be allowed to be taken outside the country for repairs. The bidder should submit along with the technical bid, the detailed plan for providing installation and warranty services at site. During the warranty period, the bidder shall be fully responsible for the manufacturer's warranty in respect of proper design, quality and workmanship of all systems supplied.
- (b) Bidder needs to give 5 year warranty price as a separate line item in the commercial bid. Purchaser has the right to choose an option of warranty as 3 years or 5 years. Both the 3 year and 5 year warranty prices will be considered for deciding the commercially lowest price for the whole bid. If purchaser opts for 5 year support then this support will be for all items (hw/sw/non-IT) supplied. However it is upto purchaser's decision which option they will order.
- (c) The warranty and support period will start from the date of acceptance of the system.
- (d) During the warranty period, bidder shall attend to all the hardware problems on site and shall replace the defective parts at no extra cost to the purchaser.

- (e) During warranty period, the bidder shall attend to all failures relating to software installation, configuration, management and performance. Periodic maintenance w.r.t. software upgrades, updates, and patches, as well as preventive maintenance, are the responsibilities of the bidder.
- (f) During the warranty period, the preventive maintenance and repairs of the data center components supplied by the bidder are the responsibilities of the bidder.
- (g) The bidder should also clearly indicate post-warranty comprehensive AMC cost, for a period of 2 years, on an annual basis, in the commercial bid.
- (h) We will perform the High performance Linpack (HPL) benchmark quarterly or as per availability of cluster. During the warranty, if some nodes indicate downgrading of performance, then bidder has to fix the problem within 24 hrs. Also after every six months bidder has to perform the hot spot analysis. If there are any hot spots generated, then bidder has to take care of those hot spots within 24 Hrs.
- (i) During the warranty, all complaints shall be rectified within 24 hours from the time of complaint. Beyond 24 hours, an equivalent or better standby shall be provided within 48 hours (for IT) and 72 hours (for NON-IT) from the time of complaint. Failure to do so would result in the invoking of the PBG.
- (j) The PBG will be released by CMS only after the submission of satisfactory performance certificate issued by end user after the completion of warranty period.

10. Payments

The bid quoted in INR:

- (a) 90% of the payment will be made on successful installation & commissioning of entire system at CMS.
- (b) Balance 10% payment will be made against submission of Performance Bank Guarantee as per clause given above.

The bid quoted in foreign currency:

- (c) 90% payment will be made by wire transfer (TT) only after delivery at destination (at site). The payment will be made only in the name of supplier abroad.
- (d) Balance 10% payment will be made by wire transfer (TT) on successful installation, commissioning and completion of the acceptance criteria against submission of Performance Bank Guarantee as per clause given above.
- (e) The Payment transfer operating charges outside and inside India in all above cases, if required, will be to beneficiary's account.

11. Site preparation and installation

- (a) The Bidder is solely responsible for the construction of the equipment sites in compliance with the technical and Data Center specifications defined by the Purchaser.
- (b) The Purchaser will Provide 720 Square ft. room with height about 12 ft. and some open space to accommodate generator and Chillers (if any).
- (c) The purchaser will provide 3 phase raw power up to the installation site.
- (d) A rough sketch of the space available is put on the website. Apart from this bidders are requested to visit the site (if required) and confirm the dimensions and other details before quoting.

12. Certifications

Bidder should do the examination of the data center before acceptance and provide the self certificates related to, fire safety, Power Usage Efficiency, and Hot spot analysis using CFD, with no extra cost to the purchaser.

13. Acceptance Criteria

- (a) As a part of the technical proposal, the bidder has to submit a comprehensive document giving complete details of Installation, commissioning, configuration, and testing of the proposed solution that would be carried out at the customer site.
- (b) The bidder has to demonstrate the performance of the system for meeting the specified HPL performance as well as the performance of benchmark programs as specified in the Bidder's technical bid.
- (c) During the acceptance, the bidder has to demonstrate subsystem/component-wise performance, including storage and interconnect architecture.
- (d) Bidder should provide all the certificates mentioned above.
- (e) If the bidder fails to demonstrate any of the above requirement, the technical team of the CMS will come out with appropriate configuration that should have been quoted, which would have met the HPL ratings and the benchmarks performance, and the bidder has to supply, install and maintain a solution twice that capacity at no extra cost to the purchaser.
- (f) CMS staff will use full system for 72 hrs with full load to check the sustainability and stability of cluster and data center.
- (g) It is to be noted that maximum of two weeks will be available to the bidder to conform to the acceptance test criteria set out.
- (h) Any delay in commissioning or conformance to the acceptance beyond the stipulated time will result in extending the warranty: each day of delay would result in 3 additional days of warranty.

The penalty clause is only applicable for solutions which are considered as technically meeting the requirements, as evaluated by the technical committee. The clause cannot therefore be used as an argument to qualify any solution, which the technical committee considers as not meeting the requirements.

14. Penalty for delayed Delivery and / or Services

- (a) CMS reserves the right to levy penalty @ 0.5% of the total order value per week of delay beyond the scheduled shipment / delivery / implementation of the order / acceptance of system successfully, subject to maximum of 5% of the order value.
- (b) CMS reserves the right to cancel the order in case the delay is more than 5 weeks. In case of cancellation of purchase order due to delay, CMS reserves the right to forfeit the Security Deposit submitted.
- (c) The penalties, if any shall be recovered / deducted from Security Deposit/ Performance Bank Guarantee or any amount payable.
- (d) The delay in supply, installation & commissioning attributed to CMS will not be considered for computing the amount/ period of penalty.

15. Service Level Agreement

- (a) The bidder has to ensure that the solution proposed, as a total turn key solution, to meet the stated requirements, delivers an up-time guarantee of 95% of the entire system. In addition, bidder should also deliver at least 99% up-time for 90% (of the compute and storage capability) of the system, measured on a monthly basis.
- (b) In the event of a failure of any of the sub-systems or components of the proposed solution, the bidder has to ensure that the defects are rectified before end of the next working day for IT and 48-72 hours for NON-IT parts.
- (c) Failure to meet the above requirement will result in extension of the warranty services by 3 days for delay of each day during the warranty period.
- (d) Therefore, the bidder along with the OEM's have to put systems and processes in place to address the above during the period of the contract.

16. Training

- (a) The bidder shall provide training to CMS technical staff for installation, operation and maintenance in hardware and software of the systems including sufficient hands-on training at no extra cost to the purchaser.
- (b) The Bidder has to provide the training at user level and system administrator level for day-to-day operations (User management, Backup Practices, service and data center checkups).

- (c) At the system administration level, the Bidder should provide training on the
 - i. Explanation of System architecture and the flow.
 - ii. Installation and configuration of Hardware and Software
 - iii. Cluster Management and Administration Training
 - iv. Trouble shooting of various components (Scheduler).
 - v. Creating new queues, changing policies of particular queues etc.
 - vi. Regular system administration tasks.
 - vii. Backup procedures.

17. Jurisdiction

- (a) The disputes, legal matters, court matters, if any shall be subject to Pune jurisdiction only.
- (b) Any disputes, legal action/matters, arising out of / resulting from / related or incidental to the tender / quotation / purchase order / invoices / delivery / payments / performance and any other issue / matter / document relevant to this tender and resultant transaction etc. shall be subject to exclusive jurisdiction of Pune courts only.
- (c) Laws of India alone shall govern this tender as well as any or all transactions / documents / deeds / actions / PO arising out of / resulting from this tender.

18. Force Majeure

- (a) CMS may consider relaxing the penalty and delivery requirements, as specified in this document, if and to the extent that, the delay in performance or other failure to perform its obligations under the contract is the result of an Force Majeure.
- (b) Force Majeure is defined as an event of effect that cannot reasonably be anticipated such as acts of God (like earthquakes, floods, storms etc.), acts of states, the direct and indirect consequences of wars (declared or undeclared), hostilities, national emergencies, civil commotion and strikes at successful Bidders premises.

19. Arbitration

- (a) In case any dispute arises between the Parties with respect to this tender, including its interpretation, implementation or alleged material breach of any of its provisions both the Parties hereto shall endeavor to settle such dispute amicably. If the Parties fail to bring about an amicable settlement within a period of 30 (thirty) days, dispute shall be referred the sole arbitrator appointed by the University of Pune.

- (b) Arbitration proceedings shall be conducted in accordance with the provisions of the Arbitration and Conciliation Act, 1996 and Rules made there under, or any legislative amendment or modification made thereto.
- (c) The venue of the arbitration shall be Pune.
- (d) The award given by the arbitrator shall be final and binding on the Parties.
- (e) The language of arbitration shall be English.
- (f) The common cost of the arbitration proceedings shall initially be borne equally by the Parties and finally by the Party against whom the award is passed. Any other costs or expenses incurred by a Party in relation to the arbitration proceedings shall ultimately be borne by the Party as the arbitrator may decide.
- (g) Courts in Pune only shall have the exclusive jurisdiction to try, entertain and decide the matters which are not covered under the Arbitration and conciliation Act.

20. Indemnity

The vendor/bidder shall indemnify, protect and save CMS from/against all claims, losses, costs, damages, expenses, action suits and other proceeding, resulting from infringement of any law pertaining to intellectual property, patent, trademarks, copyrights etc. or such other statutory infringements in respect of all the equipments supplied by vendor.

21. Confidentiality

- (a) The bidder and/or their personnel shall not, either during the term or after expiration of this contract, disclose any proprietary or confidential information relating to the services, contract or the CMS's business or operations without the prior written consent of Purchaser.
- (b) The bidder and/or their personnel shall not, either during the term or after expiration of this contract, undertake any public communication, press/media releases relating to the services, contract, or the CMSs business or operations without the written consent of Purchaser.

22. IPR

Any Intellectual Property created under this project shall solely and exclusively be owned by the purchaser i.e. the University of Pune.

23. Risk and Ownership

- (a) Upon 90% of payment, CMS shall become owner of goods ordered but all risks, responsibilities; liabilities thereof in all goods shall remain with selected bidder till delivery of all goods.
- (b) Part deliveries shall not be treated as deliveries.

- (c) Only full deliveries of all items (entire system (all ordered items -hardware, software, peripherals and other items)) ordered will be considered as delivery.

24. No Claim Certificate

- (a) The qualified Bidder shall be required to submit a “No Claim Certificate” to CMS on successful completion of work.
- (b) The bidder shall not be entitled to make any claim, whatsoever, against CMS under or by virtue of or arising out of this contract.

25. Insurance

In case of purchase on FOR CMS basis, the items to be supplied will be insured by the bidder against all risks of loss or damage from the date of shipment till the time they are delivered at CMS site. However, taking out insurance policy shall not absolve supplier from his responsibility and liability of replacing same part/system in the event of loss/damage/misplacement etc.

26. Termination

- (a) Validity of purchase order/contract will remain till fulfillment of all obligations (including but not limited to providing comprehensive warranty / support till completion of three/five years from acceptance of the entire integrated system as a whole) of bidder / supplier / vendor / contractor. Bidders / suppliers / vendors acknowledge and agree that building (supply / installation, commissioning etc.) and maintaining of the HPC facility along with Data Center is of paramount importance and matter of immense reputation/pride to nation and CMS. Hence timely performance of all obligations is essence of contract. Therefore CMS may terminate/cancel the purchase order / contract by giving one months notice, without assigning any reason or by giving 10 days notice if defect / delay / under or non performance is not cured by vendor / supplier within time limit given by CMS.
- (b) Bidders / suppliers / vendors agree and accept that they shall be liable to pay damages claimed by CMS, in the event of termination / breach of terms of this tender / purchase order / contract etc.
- (c) Selected bidders / suppliers / vendors may terminate the contract by at least 30 days written notice, only in the event of non payment of undisputed invoices. Except this situation, suppliers / vendors shall not have right of termination.

27. NON WAIVER

The failure or neglect by either of the Parties to enforce any of the terms shall not be construed as a waiver of its rights preventing subsequent enforcement of such provision or recovery of damages for breach thereof.

28. Severability

The invalidity or unenforceability of any provision shall not affect the validity or enforceability of any other provision that shall continue in full force and effect except for any such invalid and unenforceable provision.

29. Headings

The headings shall not limit, alter or affect the meaning of the Clauses headed by them and are solely for the purpose of easy reference, pursuant to this Clause.

4 Scope of work

The scope of the procurement will cover the following tasks:

Part-I: HPC system

1. Supply and installation of compute and storage requirement based on benchmark suite with latest hardwares and softwares (see the section 4.1 for **minimum** requirements).
2. Supply and installation of latest standardized softwares, scientific libraries, compilers supported by OEM / Bidder for HPC system.
3. Providing 24×7×4 (4 Hrs. response time) operational support for hardware, software and storage by the OEM, and Application porting and run time queries by the bidder for a period of THREE / FIVE years post installation and acceptance.
4. The following applications will be used. The list is not exhaustive and may change. VASP (4.6 and 5.3), Wein2K, Quantum Espresso, SIESTA, ABINIT, Nanolab, TranSIESTA, GAMESS, Gaussian, MedeA-VASP, GROMACS, NAMD, LAMPS, CP2K.
5. Installation of the packages (mentioned above) which are GPU and or MIC enabled.

Part-II: Data Center facility

6. Building a data center facility to accommodate the proposed HPC system with flexibility and scalability, UPS systems, diesel backup power systems, fire retardant system (that is, dry systems), security monitoring systems, Rodent Repellent System, mechanical systems (such as HVAC), maximum (peak/power consumption at full load) 20 KW per Rack load, and of minimum tier II type. In-Row cooling system with cold aisle solution will be preferred.
7. We will provide RAW power and 720 sq. ft. room with approximate height of 12 ft. Rough sketch of a data center design is kept on a website. For more details please visit the site by a prior intimation.
8. Separate cost of each component (mentioned above) needs to be provided by the bidder.
9. Providing 24×7×4 operational support for a period of THREE / FIVE years post installation and acceptance.
10. OEM needs to give following information:
Total number of racks required, total power requirement for the system and cooling, all details like cooling type etc.
11. The entire data center has to be implemented as a turnkey solution that includes electrical, mechanical, network, and some civil work. This also includes OEM / Non-OEM racks, fire warning, access control system etc. (see the section 4.2 for detailed scope of work and for expected makes).

12. Bidder should give us additional two racks for future expansion along with this solution and must take into account this extra 35 KW IT load (i. e. TWO racks extra load) while designing the total power, cooling, PDU, and footprint requirement. In future we may populate these racks with compute nodes, network switches, and storage.
13. The UPS and Cooling sizing must be done by considering, i) IT load proposed and ii) 35 KW extra load. Bidder should not consider this 35 KW load while filling FORMAT 3.
14. The total number of RACKS should not exceed 10.
15. The bidder should quote the Man Power requirement (without accommodation and other expenses) to maintain the NON-IT (i. e. Data Center) part between 9 AM to 5 PM. Bidder should quote for one number of manpower requirement, with his / her qualifications in the technical bid, and his / her payment (per annum) details for a year, in commercial bid. CMS will use this while doing commercial comparison (deciding commercially lower one) but we may not add this in the Order. CMS will not bare any expenses (Accommodation, travel, DA etc.) of the manpower proposed.

4.1 Technical Specifications:

1	System Architecture	<ul style="list-style-type: none"> ● Tightly integrated cluster with 64 bit processor Intel Xeon E5-2695 V2 series 12 core at 2.4 GHz clock speed/Intel Xeon E5-2697 V2 series 12 core at 2.7 GHz clock speed, or next generation CPU (minimum 12 core) connected with FDR/QDR80 Infiniband or equivalent proprietary interconnect. CMS reserves the right to choose the processor. <p>OR</p> <p>Tightly integrated cluster with 64 bit processor Power7+ at 4.2 GHz, connected with QDR Infiniband interconnect</p> <ul style="list-style-type: none"> ● Only 1U or 2U size server will be accepted. Dense server / Chassis based solutions will be accepted. Blade servers will not be accepted. ● All the servers should have fully populated 2 CPU sockets per node.
2	Compute Power	<ul style="list-style-type: none"> ● A base system of at least 43 TFLOPS (only CPU i.e. without any accelerator/coprocessors (MIC) or GPU nodes) of sustained compute power on HPL (turbo off mode) and minimum peak performance of 50 TFLOPS.

3	Operating System	<ul style="list-style-type: none"> • 64-bit Linux base (open source) server version with support.
4	Compute nodes	<ul style="list-style-type: none"> • The compute nodes should be only 1U/2U size server / Dense server designed for HPC solution. • All nodes should be hot pluggable with RAS features.
5	I/O slots	<ul style="list-style-type: none"> • Minimum 2 × Gigabit Ethernet Ports, 1 × IB port
6	HDD	<ul style="list-style-type: none"> • The compute node should have 1×300 GB SATA HDD OR Disk less compute nodes should have boot raid with equal capacity of all compute nodes.
7	Memory	<ul style="list-style-type: none"> • 128 GB per node DDR3 at 1600 MHz (for x86 architecture) or 1066 MHz (for non-x86 architecture). • 20 percent of total number of CPU nodes of a proposed solution should have 256 GB per node DDR3 at 1600 MHz (for x86 architecture) or 1066 MHz (for non-x86 architecture).
8	Interconnect Topology	<ul style="list-style-type: none"> • 100% non-blocking Infiniband interconnect with RPS feature. Preferably with fat tree architecture. • Out of the all proposed switches (IB) at least 2 switches should be provided for sub-net management utility. • External dedicated managed Gigabit Ethernet switch(s) for cluster management should be provided. <ul style="list-style-type: none"> • 48 ports, L2 Gigabit Ethernet switch with 2×10G ports or better for uplink. • Port trunking/ Bonding capability • High speed stacking capability • CAT6 Cables of appropriate length to suite the solution for GigE connectivity. • Power cables should be compatible with the quoted rack. • Rack mounting kit

9	Management	<ul style="list-style-type: none">• Dedicated management port with Intelligent Platform Management Interface (IPMI) 2.0 or equivalent for all nodes (CPU+GPU/MIC). Must support features such as KVM over LAN. Must include full-featured license, if any
10	High Performance Linpack (HPL) Benchmarking	<ul style="list-style-type: none">• Bidder should report the best HPL performance and efficiency on the base system proposed with turbo mode off. Bidder needs to give actual HPL performance of $n/10$, $n/5$, $n/3$, and $n/2$ nodes and they may estimate it for proposed number of nodes (where n is number of compute nodes proposed, excluding nodes with MIC & GPU). The bidder needs to demonstrate the estimated performance on the proposed system at the time of acceptance.• Bidder should give the copy of HPL benchmark report with technical bid.• At the time of acceptance, bidders needs to run the HPL on the whole system (CPU + GPU and MIC) and to give us the benchmark value.

Login Nodes (2 units dedicated)

11	Configuration	<ul style="list-style-type: none"> ● 2 dedicated units which will act as Master nodes of configuration: Dual socket servers with same processor as of compute nodes. ● Minimum 128 GB DDR3 at 1600 MHz (for x86 architecture) or 1066 MHz (for non-x86 architecture) RAM. ● At least 3 numbers of SATA, total raw capacity at least 4 TB with Hardware RAID 6 controller. ● BIOS with capability to boot from LAN (PXE boot) and USB. Minimum 2 × Gigabit Ethernet Ports. At least 1 GbE network ports with PXE boot capability. ● At least 3 USB ports and DVD +/- RW drive. ● Redundant and hot-plug power supply. 2 IB ports ● Bidder should ensure that both Master nodes should work in High availability mode to the important services like scheduler, cluster management, authentication services, monitoring compute node and kick start services. <p>OR</p> <p>As per supported by proprietary architecture but matching the requirement, if proposed.</p>
12	Console	<ul style="list-style-type: none"> ● 19 inch 1U rack Console (Qty. 1) with keyboard and Mouse.
13	Management	<ul style="list-style-type: none"> ● Dedicated management port with IPMI 2.0 or equivalent to monitor & manage utility nodes, head nodes, storage nodes. Must support features such as KVM over LAN. Must include full-featured license, if any

Nodes with GPU / coprocessors

14	General Requirement	<ul style="list-style-type: none"> ● Proposed solution should have additional 4 nodes with latest NVIDIA Tesla K20 GPU and 4 nodes with Intel Xeon Phi coprocessors 5110P in 1:1 (CPU:GPU or CPU:MIC) proportion. ● Nodes with GPU / co-processor should not be counted while calculating performance on HPL for benchmarking.
----	----------------------------	--

15	Configuration	<ul style="list-style-type: none"> • Fully populated dual socket servers with same configuration as of compute nodes. • Minimum 128 GB DDR3-1600MHz RAM. • 64 bit processor Intel Xeon E5-2695 V2 series 12 core at 2.4 GHz clock speed / Intel Xeon E5-2697 V2 series 12 core at 2.7 GHz clock speed • Each node should have 2 GPU / coprocessor in 1:1 ratio. Minimum 2 × Gigabit Ethernet Ports and 1 IB port <p>OR</p> <p>As per supported by proprietary architecture but matching the requirement, if proposed.</p>
16	Programming Environment	<ul style="list-style-type: none"> • Programming environment should support the proposed GPU / Coprocessors.
17	Compiler	<ul style="list-style-type: none"> • PGI compiler suite for GPU nodes with perpetual license and support included.

Software and Implementation

18	General Requirements	<ul style="list-style-type: none"> • The proposed HPC cluster system should be deployed with <ul style="list-style-type: none"> (a) an open-source Linux-based operating system with support; tools for cluster installation and management that support node-group and repository manager for deploying updates, patches, etc., or for quickly re-imaging new nodes with no interruption in uptime; (b) compilers, MPI, and code development tools; tools for monitoring cluster health, resource usage; and a job scheduler (c) installation/integration of user-specific scientific applications (see sec. 4); (d) integration of all software components so as to make the complete HPC cluster system fully functional and usable (e.g., integration of the scheduler with MPI, any license managers, etc.).
19	Operating System	<ul style="list-style-type: none"> • Open source Linux based HPC Operating system supported by OEM.

20	Workload and Cluster Management	<ul style="list-style-type: none">● Latest stable release of a reputed workload and cluster management software suite. Scheduling and cluster management software should support policy-based workload management, graphical cluster administration interface, monitoring and reporting tools, and a job scheduler etc.● Bidder needs to quote commercially supported cluster management software, Job Scheduler along with analytics software and job submission portal in a commercial bid as separate line item. Licensing for web portal and Analytics module to be quoted for 10 concurrent users perpetual and floating user's basis.● These software should have following features:<ul style="list-style-type: none">● Q management with Pre-emptive scheduling● Job monitoring and management● Job submission plugins● GPU / MIC enabled scheduling with checkpoint and restart.● It should have web-based job submission for users● Should have simple mechanism for adding / editing / deleting new / old applications.● Role based login should be given (e.g. Administrator and user level)● Accounting and reporting with total utilization of resources in chart format presentation.● Remote visualization for real time application output monitoring.● Restricting users to login to compute nodes & give secure connection via portal.
----	--	---

21	Compilers and MPI	<ul style="list-style-type: none">• Latest Intel or XL or Licensed proprietary compiler consisting of C, C++ and FORTRAN 77, FORTRAN 90, and FORTRAN 95 with at least 5 user floating Academic license for each, with Support.• Software tools namely MPI, OpenMP, VTune performance amplifier, trace analyzer and collector for Linux and other libraries / development kit required to run jobs should be quoted with minimum of 5 user licenses, with support wherever applicable.• In addition, open source compilers should be available.
22	Scientific Applications	<ul style="list-style-type: none">• Installation, integration and any performance tuning of<ol style="list-style-type: none">(a) standard numerical libraries (BLAS, LAPACK, ATLAS, FFTW etc.),(b) All the packages mentioned in section 4 (source codes will be provided by us) and other standard open-source scientific tools/applications in consultation with the CMS's technical team.
23	HPC Cluster Implementation	<ul style="list-style-type: none">• End-goals of implementation are<ol style="list-style-type: none">(a) the deployment of the HPC cluster system complete with hardware, OS, cluster ware and user-specified software, so that it is functional and usable for the end-user for scientific / computational research and(b) a clear demonstration of the same.

Storage and Backup

24	Storage Requirement	Intel sourced and commercially supported by OEM Lustre 2.x PFS OR GPFS with Hardware RAID storage and commercially supported by OEM
25	Storage Capacity & performance	<ul style="list-style-type: none"> ● Scratch Space: 100TB usable capacity with RAID6(8+2) with 8 GB/s write throughput performance. Read performance should not be less than write. ● Home Space: 150TB usable capacity with RAID6(8+2) with 4 GB/s write throughput performance over NFS (version 3 or 4) through IB. Read performance should not be less than write. ● Archive Space: 150TB usable capacity with RAID6(8+2) with 4 GB/s write throughput performance over NFS (version 3 or 4) through IB. Read performance should not be less than write. Ability to move data automatically based on policies between home and archive space.
26	Disks Type	<ul style="list-style-type: none"> ● 900GB or higher capacity 10K RPM SAS disks for scratch space. ● 2TB or higher capacity 7.2K RPM Enterprise SATA or NL SAS disks for home and archive space. ● There must be one global hot spare for every 40 disks.
27	I/O Nodes	<ul style="list-style-type: none"> ● Minimum 4 I/O servers must be quoted with same CPU configuration as that of compute nodes and 64GB memory with OEM supported OS required for PFS.
28	Connectivity	<ul style="list-style-type: none"> ● Native Infiniband ports to storage solution and IB connectivity to cluster. ● All 3 file systems must be available on all compute nodes with archive space available only to administrator.
29	Scalability	<ul style="list-style-type: none"> ● Scalable to double usable capacity just by adding disks, and enclosures (i.e. without adding additional controllers or licenses)
30	Availability	<ul style="list-style-type: none"> ● There must not be any single point of failure in entire storage solution.

31	Benchmarks	<ul style="list-style-type: none"> • Open-source IOR/IOZone benchmarks running on compute nodes with 1 MB block size and file size double than total storage cache and I/O node memory. • Benchmarks must be run on compute nodes where each node is writing to same shared file as well as each node writing to separate unique file. • Both output (shared file & file per process) must be submitted along with tender response.
32	Footprint	<ul style="list-style-type: none"> • Storage solution must not consume more than 1 × 42U rack. Bidders must provide peak power, cooling and weight for the storage solution.
33	Management	<ul style="list-style-type: none"> • Storage solution must have a management and monitoring console for hardware RAID system and parallel file system.
34	PFS Features	<ul style="list-style-type: none"> • User & Group Quota • Ability to read and write in parallel to same file or different files. • Data striping across multiple I/O nodes and RAID6 LUNS • Ability to transparently recover from client, server and network failures without losing data.

4.2 Data Center Scope of work:

35	Civil & Interiors	<ul style="list-style-type: none"> • Raise flooring (minimum height 300mm) with UDL of 1250-Kgs and point load of 450 Kg equivalent to USF 1200 for Data Center area. • Two hours Fire Rated Gypsum Partitioning with a 2 hours fire rated glass window for visibility. • Two hours fire rated door and painting • Core cutting / Making holes in walls • Closing windows, making holes, recesses in walls and closing the same with proper finish with approved fire resistant sealant. • Removal of walls and finishing. Dismantling of fans, lights and false ceiling. • Single leaf glass (12 mm) trap door of minimum width 1.2 mtr at the entrance. • The height of trap door and first door of data center area must be of 8 ft.
----	------------------------------	---

36	Electrical System	<ul style="list-style-type: none"> ● Main DC LT panel with 20% spare capacity breakers. ● UPS, PDU with isolation transformer ● Required cables as per IEC standards (all inside cables should be FLRS cables). ● LED Lighting required in Data Centre and CFL lighting to cover outside area (DG and Cooling outdoor units) ● Emergency UPS and Emergency Lighting required in Data Centre and to cover outside area (DG and Cooling outdoor units). ● Earthing for UPS and Electrical Panels should be done using copper maintenance free chemical earth pit. ● Lighting and Raw power DB. ● Lighting fixture, cabling, rubber mats.
37	DG Set	<ul style="list-style-type: none"> ● Prime power rated DG set, Class C M.S. fuel piping (if required). ● DG should support entire data center. ● Necessary foundation for DG set. ● AMF panel for DG set. ● Earthing for DG system. ● Exhaust piping and safety Equipments.
38	UPS	<ul style="list-style-type: none"> ● IGBT Based Transformer less either normal UPS (N+1 Configuration) OR modular architecture UPS ($2 \times (N + 1)$ configuration) system with minimum 20 KVA modules (3-phase input, 3-phase output) with 30 minute Battery backup at full load in a given configuration, with battery rack, Interlinks, cables between UPS and Batteries. ● UPS must be ISO 9001 & ISO 14001 certified manufacturer. ● Input Power Factor should be 0.99 while the Output Power Factor should be either 0.9 or 1 ● UPS System should have BMS facility. ● Batteries should be maintenance free (SMF). All details should be specified for the battery (brand, quantity and A-H rating). ● Separate UPS (with battery backup about 20 min) needs to be given for Emergency Lighting, Cooling blades of In row cooling, and safety and security system.

39	Cooling System	<ul style="list-style-type: none"> ● In-Row cooling system (Chilled Water based, chiller: Air Cooled with R410a) with cold aisle containment (CAC) in N+1 configuration which will support proposed and future IT hardware to maintain temp between 17 to 22 degree Celsius inside CAC with Sequential Controller. ● Scroll compressor with EC fans. ● Variable speed pump. ● BMS connectivity for in-row chilled water and chiller. ● Dual power supply to cool blades. ● In row cooler with inbuilt drain pump. ● RCC foundation for outdoor units. ● Temperature and differential settings display. ● Energy efficient solution with lowest kW/TR. ● Comfort Air conditioning system which will support for UPS/Electrical room with redundancy and BMS room to maintain temperature between 24 to 26 degree Celsius.
40	Safety and Security System	<ul style="list-style-type: none"> ● Fire Alarm System for entire area. ● Fire suppression system for actual rack areas and fire extinguisher (standard ABC type) for battery, UPS, Electrical panel and BMS area. For Server room fire suppression system must be automatic. ● VESDA for server room. ● Access Control System - Biometric at main entrance of server room ● CCTV system (IP Cameras) covering entire area including Data center, and outside area (Genset, cooling unit and main entrance of Data center) with 30 days backup. PTZ cameras at DG. ● Rodent Repellent System, Water leak detection system. ● Building Management System : DG including fuel indicators, UPS, Cooling, Electrical should be integrated on BMS software.

Expected Makes for Data Center parts

Sr. No.	Material	Expected Makes
01	Fire Alarm System	Siemens / Honeywell / Tyco / UTC / Edward
02	Access Control System	Cardex / DDS / Lenel / Siemens / Honeywell / Schneider
03	ASPIRATION System-VESDA	System Sensor / Xtralis / Mega pro / Airsense / Sage fire
04	Gas Suppression Novec1230	UTC / Nitin fire / Topaz.
05	Rodent Repellent System	Maser / Rscat / Jayfire
06	CCTV	Siemens / Honeywell / Schneider
07	UPS System	Emerson / Socomec / EATON / Delta / APC / Schneider / CONSUL / Cyber Power
08	Cooling System	Emerson / Uniflair / Stulz / Bluebox / CANOVATE / GEA Ecoflex / Rittal
09	Electrical MCB / MCCB's	Schneider / L&T / Legrand
10	LED Light fittings	Wipro / Philips / Bajaj
11	Fire rated partitioning	Saint gobain gyproc india formerly india gypsum
12	Raised Flooring	Unitile Leban USF 1200 / Anteras / United Access Floor
13	Building Management System	Honeywell-WEBS / ALC / TAC
14	Comfort AC	Bluestar / Daikin / Voltas / LG
15	Diesel Generator	Kirloskar / Cummins / Mahindra
16	Cables	Polycab / KEI / Ravin / RR Kabel
17	Cable Tray	Cablofil / Shivshakti / Equivalent
18	Paint	Berger / Asian / Nerolac
19	Fire rated glass	Saint Gobain Gyproc India / Equivalent
20	Water Leak detection system	Sontay / TycoJay fire / Saini / TTK
21	Battery	Rocket / Quanta / Base

5 Pre qualification for participation

3.1 **Vendor Eligibility:** A OEM must satisfy the following requirements to be eligible for bidding.

- (a) International original equipment manufacturers (OEM) with proven track-record in building and supporting HPC cluster platforms for scientific research.
- (b) Continuous direct presence on <http://www.top500.org/> during last three years, with minimum 7 entries in the latest release of November 2013 list.
- (c) Adequate direct support infrastructure in India (preferably in the Pune region).
- (d) Adequate representation in India's scientific establishments.

3.2 **Designated Partner:** An eligible vendor may designate, at their discretion and convenience, only one designated partner to,

- (i) represent the vendor during the process,
- (ii) for implementing the HPC cluster system with data center facility and
- (iii) for providing all post-implementation service and support.

Vendor with more than one partner will be disqualified.

Designated partner Eligibility: A partner must satisfy the following requirements to be eligible

- (a) Designated partner must be provided with explicit authorization letters, in original, from the OEM, clearly stating that the partner is an authorized dealer of OEM as well as they (OEM) would facilitate the partner on regular basis with technology / products updates and extend support for the warranty period. In absence of such undertaking, the tender response is liable to be rejected.
- (b) Partner should have experience of implementing and supporting minimum 3 Linux based HPC cluster systems since April 1, 2010 in scientific establishments in India.
- (c) Out of these three HPC systems, at least one must be of size 20 TF (peak) or more and remaining two must be of size of at least 5TF (peak) or above, in government organizations. Partner needs to provide relevant PO (which must be in the name of partner), contract, installation report.
- (d) Partner should have experience of building and supporting data center facility. Adequate documented experience during last three years in setting up data center facility needs to be provided by the partner.
- (e) Partner needs to provide a document showing a minimum annual sales turnover of ₹ 20 Crores during the last three consecutive years.

(f) Partner must have a sales and service office in Pune

3.3 **Bidder Eligibility:** A bidder must satisfy the following requirements to be eligible to take part in this deal.

(a) Bidder (Excluding OEM) should have direct 2 entries as a bidder in last 2 lists (June-2013 or December-2013) of top supercomputers in India (<http://topsupercomputers-india.iisc.ernet.in/>), published by IISC, Bangalore, INDIA.

(b) The bidder should have at least 1 installation of similar work since April 1, 2010.

3.4 **Single-Point-of-Contact Support:** We require a single point of contact with the vendor (OEM) for Hardware support, software support, storage support and purchase process, and with bidder for implementation, post-implementation and warranty support.

6 Benchmark Tests for Technical Evaluation

The solution proposed by the bidder as a response to this document has to adhere to the following two benchmarking (see section 6.1), which must be run on the proposed or similar system and the best execution time (in seconds) must be reported.

Specifically, we need the following data for each of the benchmark tests described in Sec. 6.1:

- a) The bidder needs to use 3, 5, 7, 10, and 15 TFlops (peak) system (only using CPU and turbo off mode) for doing benchmark:
 - Bidder has to calculate node numbers using the given TFlops and use next integer number of nodes for benchmarking, and the actual Tera Flops calculated from using those integer nodes has to be mention in benchmark table. TFLOPS number should not rounded off.
 - Run time, as provided by the Unix time command or equivalent.
 - Output generated by each of the runs (`stdout`, `stderr`, plus any output files). Please make sure that output files do not get overwritten across runs over different number of cores.
- b) Complete and detailed configuration information (hardware configuration + software setup) of the HPC cluster that was used to run these benchmark tests.
- c) Output (`stdout+stderr`) of the compilation sequence for the tools below.
- d) Number of nodes used and peak performance (TF) versus benchmark timings.
 1. In addition to the above, on the proposed solution, performance for the two programs (mentioned in section 6.1) has to be submitted as best time achieved, on a proposed system. More specifically, all the benchmarks must be run on a system having the same architecture (including the same software stack) as the solution proposed. In all cases, the execution times reported should be based on actual runs. No performance prediction of any kind will be allowed. Non-submission of benchmark results with the required details or results on systems that are not the same as the proposed solutions will result in disqualification of the proposal.
 2. Successfully completed execution run results along-with detailed job script, output files, job logs, machine topology used for the run and any other relevant files must be included in the submission. All explanations including optimizations, environment variables and machine topology information for the run must necessarily be included with the submission.
 3. The benchmarks must be run on systems hosted in their labs or on systems delivered by the Partner/OEM. Complete details of the system, including detailed system specifications (similar to that of the technical specifications indicated in this document) along with execution dates, user-id details and email-ids of the site/system administrators of the data center are to be provided. CMS chooses the right to contact the corresponding personnel for seeking additional information

on the execution runs submitted as part of the response. Further, the technical committee may request for benchmarks rerun, wherever required (within a period of 7 days from the date of request for rerun), under the supervision of nominated persons.

4. Bidder needs to submit the table stating jobs (for both application mentioned below) per hour of similar instances on whole cluster along with performance and power usage in same table.

Satisfactory completion of benchmarks as specified above is a mandatory requirement.

6.1 Benchmark Programs

6.1.1 VASP

VASP-4.6 / higher version (<http://www.vasp.at/>), The Vienna Ab initio Simulation Package (VASP) is a computer program for atomic scale materials modeling, e.g. electronic structure calculations and quantum-mechanical molecular dynamics, from first principles.

Instructions / tips for running VASP benchmarks

1. Compilation of gamma version VASP
 - Compilation of gamma version is well documented in VASP manual which is available online.
 - Bidders may use the Makefile given with the input files. If bidders have used their own Makefile then they need to submit it with the benchmark results.
2. Instructions
 - The input files for VASP are: INCAR, POSCAR, POTCAR and KPOINTS
 - Do not change any thing in input.
 - You can change the NPAR value in INCAR file. Generally, NPAR should be set to `_no_of_nodes_`
 - Setting proper NPAR is very crucial in getting the scaling.
3. Running and Results
 - `mpirun -np [No of Cores] vasp.gamma.exe > screen_output`
 - It generates many files. OUTCAR is the most important and contains almost all the information. Bidders needs to submit this OUTCAR with the benchmark results.

For any clarification regarding VASP benchmarking, the bidders are advised to contact

- Dr. Kavita Joshi : kavita.p.joshi@gmail.com
- Prof. Anjali Kshirsagar : hpc@unipune.ac.in

P.S.: All inputs files for VASP are available on the URL:
<http://cms.unipune.ac.in/announcements/>

6.1.2 GROMACS

GROMACS (<http://www.gromacs.org/>) is a versatile package to perform molecular dynamics, i.e. simulate the Newtonian equations of motion for systems with hundreds to millions of particles.

Instructions / tips for running GROMACS benchmarks

1. Compilation of GROMACS 4.6.3

- Visit: <http://www.gromacs.org/Downloads> for download of GROMACS 4.6.3.
- Specify the operating system (version number) on which GROMACS 4.6.3 will be compiled.
- Specify environmental variables used during the start and/or process of compilation.
- Specify all options used with every command used in compilation.
- Specify the cmake version used (CMAKE version 2.8.11.x is required)
- Specify the libraries and compilers with respective version numbers used for compilation. (Any additional options used also should be mentioned).
- Examples of libraries and compilers (Intel MKL Math library, FFTW library, openMPI, Intel compilers)

Important: mdrun executable (created from compilation) for running benchmarks for each run should be double precision.

2. Benchmarks should be done using CPU cores and software on the proposed solution:

Information and instructions:

- Benchmark system contains DPPC + water = 121856 atoms.
- A twin-range group based cut-off is used, 1.8 nm for electrostatics and 1.0 nm for Lennard-Jones interactions.
- Input files can be downloaded from:
http://www.gromacs.org/About_Gromacs/Benchmarks (DPPC zip file contains 3 input files)

- To run simulation runs: first change the value of nsteps in .mdp input file to 150000
- No other change in input files are permitted.
- Please provide the output files for each simulation run.
- Using the information from your output files of each simulation run, complete the following table:

3. You have to provide following information in following format in addition to what is asked in above section.

TFlops (mention your TF number)	Number of Nodes	Number of Cores	Performance: Number of nanoseconds/day	Performance / TFlops
3				
5				
7				
10				
15				

For any clarification regarding GROMACS benchmarking, the bidders are advised to contact

- Dr. Arun Venkatnathan : arun@iiserpune.ac.in
- Prof. Anjali Kshirsagar : hpc@unipune.ac.in

7 Evaluation Methodology

1. The bids received from the bidders will be evaluated by the Technical Committee constituted by the CMS.
2. The evaluation process to identify the successful bidder is based on a Technical evaluation first and then the commercially lowest one amongst the technically qualified bidders.
3. Evaluation of technical bids.
 - (a) In the first stage only the technical bids are evaluated. The mandatory conditions stipulated elsewhere in the document must be adhered to and failure of the same will result in disqualification of the bid.
 - (b) The technical criteria set out for evaluation of the technical offer are given below.

Sr. No.	Description	Max. Score	Min. Score
1	Benchmark Performance Score 1. VASP (~70%) 2. GROMACS (~30%)	70	55
2	Operational Cost	30	15
	Overall Score	100	70

4. The technical scores for the each of the above will be given based on the detailed explanation given below:
 - (a) **Benchmark Performance Criteria:**
Supporting Documents: As specified in the Benchmark test for technical evaluation section.

Scoring Scheme:

1. **VASP:** The weighted average (WA) of all points of the plot of TFlops versus time (in Seconds) required to complete job will be calculated from the data given by the bidders. The benchmarks with smallest WA value will be considered as the best performance (BP).
2. **GROMACS:** The benchmarks with large Performance per TFlops ratio for highest TF count (i.e. 15), will be treated as the best performance.

This best Performance (BP) of a benchmark given by a bidder, would be taken for further calculation. The bidders whose BP is within 15% of the best performance value of respective application benchmark will only be considered for further evaluation.

Calculation of Benchmark Performance Score:

1. VASP execution: The bidder with smallest best performance (x) (in VASP benchmark) would be given 50 marks. The bidder with best performance large than $1.15x$ of the smallest BP will be disqualified. For a bidder having BP which is y times the highest BP ($1.0 \leq y \leq 1.15$), the marks will be awarded as $(50-(y-1)*60)$.

2. GROMACS Benchmark: The bidder with highest best performance (x) (in GROMACS benchmark (ratio of Performance in ns/day to the TFlops)) would be given 20 marks. The bidder with best performance less than $0.85x$ of the highest BP will be disqualified. For a bidder having BP which is y times the highest BP ($1.0 \geq y \geq 0.85$), the marks will be awarded as $(20-(1-y)*40)$.

The addition of these two scores would be treated as the benchmark performance score.

(b) **Operational Cost Criteria:**

Supporting Documents: Necessary documents to support data center requirement (UPS Power and Cooling)

Scoring Scheme: For the purpose of awarding score for this category, we define Rationalized Operational Cost (ROC) as Power Usage Efficiency, $PUE \times$ UPS power required for the proposed system in KVA. The bidder with minimum ROC would be given 30 marks. Solutions having an ROC greater than $1.5X$ of the minimum ROC will be disqualified. For a bidder having an ROC which is Y times the minimum ROC (Y is between 1.0 to 1.5), the marks will be awarded as $(30-(Y-1)*30)$.

5. It is to be noted that only those bidders who score an aggregate of 70 or higher will be considered as technically qualified. Further, a bidder must score the minimum score indicated for each item in order to be qualified. The decision of the technical committee is final and binding on all the bidders.

6. Evaluation of Commercial Bids

- (a) Commercial bids shall be opened for the technically qualified bidders after the technical evaluation. The University will communicate the date and time of opening of the commercial bids only to the qualified bidders.
- (b) Commercial bids will be opened on the said date and time, irrespective of the presence of the bidder / authorized representative.
- (c) Commercial bids which are not in compliance to the terms and conditions set out in the tender will be rejected. The successful commercial bids will be called as commercially qualified bids.
- (d) A bidder with commercially lowest cost amongst the technically and commercially qualified bidder will be declared as the successful bidder and may be eligible for placing an order after approval of Pune University Purchase Committee (PUPC).
- (e) The final order will be placed on a bidder to whom PUPC will recommend as a successful bidder. The final decision of PUPC will be binding to all bidders.

8 General Instructions to Bidders

- 8.1 The instructions mentioned should be read carefully by the organizations before submitting the bid.
- 8.2 If any information sought in this document is missing or not clearly specified by the bidder, it will be assumed that the Organization is not in a position to supply the information.
- 8.3 The benchmark results in the prescribed format along with configuration of the system used. Soft copy of the benchmark output, logs, and other details as specified in benchmark criteria section must be also submitted.
- 8.4 Please note that two parts mentioned in section 4 are integral parts and any bidder has to provide bid for both.
- 8.5 The Purchaser reserves the right to cancel the tendering process at any time without assigning any reason thereof. CMS will not be liable for any loss which may incur to any bidder because of this cancellation.
- 8.6 An undertaking (self certificate) that the Organization has not been blacklisted by any Central/State Government Department/Organization is to be submitted.
- 8.7 Bidder should give us an undertaking stating that the data center component proposed are in compliance with the hardware proposed and as per OEM standards.
- 8.8 Please note that all the pages of response documents should be signed with date and seal of the organization.
- 8.9 Any deviation will not be accepted.
- 8.10 A bidder may propose alternative options (Maximum 2) to the components (except processor) in the same bid, if available.
- 8.11 One OEM can authorize only one designated partner for the execution of this solution. Conversely, one designated partner can represent only one OEM for the execution of this job.
- 8.12 Bidder should have all the necessary statutory requirements like registration of Sales Tax, Service Tax, TIN, LST/CST, VAT, PF, ESI, PAN etc. Enclose proof thereof.
- 8.13 Bidder must submit Net worth / solvency certificate (not older than twelve months) for Rupees One Crore issued by bank with which bidder holds the current account.
- 8.14 Bidder should have an experience of the process required for Data Center ISO certification. After satisfactory installation, bidder may have to help CMS in getting the ISO certification done.
- 8.15 Canvassing in any form would disqualify the bidder from further participation.
- 8.16 All the submitted proposals will be scrutinized on the basis of documents and information furnished by the bidder.

- 8.17 CMS may obtain clarifications wherever required from the company or from the referred client list in the profile. Based upon the benchmarking, power efficiency, heat generation, scrutiny, officers of those companies / industries that fulfill the pre qualification criteria presentation / interaction on proposed methodology and other conditions as stated above would be shortlisted and that will be final binding on the bidders.
- 8.18 Bidder shall also comprehensively maintain the data center and other infrastructure for trouble free operations for the warranty period from the date of commencement and acceptance of system and Data Center (may be extendable for 2 more years).
- 8.19 A copy of the masked Commercial bid has to be given in the technical offer.
- 8.20 No request for any further extension of the above deadline shall be entertained. Delayed and/or incomplete tenders are liable to rejection.
- 8.21 All the covers should bear the name and address of the bidder.
- 8.22 The Technical Bid and the Commercial Bid shall be duly signed by the authorized representative of the bidder.
- 8.23 The Technical Bid and the Commercial Bid shall be bound separately as complete volumes.
- 8.24 The prices shall not be mentioned in the Technical Bid, failing which the bidder shall be liable to be disqualified.
- 8.25 A tender, not complying with any of the above conditions is liable to rejection. Incomplete proposals are liable to be rejected.
- 8.26 The Purchaser reserves the right to modify the technical specifications or the required quantity at any time. In such case, the bidders will be notified.
- 8.27 The Purchaser reserves the right to accept or reject any proposal, in full or in part, without assigning any reason.
- 8.28 The bidders are requested to go through the Terms and Conditions detailed in this document, before filling out the tender. Agreeing to the terms and conditions of the tender document (by signing all pages of the copy of a tender document) is a mandatory requirement.
- 8.29 With reference to understanding the infrastructure set-up and spare capacity available at CMS, the bidders are requested to visit the site on May 30, 2014 (during working hours). Bidders can send a single consolidated email (to hpc@unipune.ac.in) comprising all their queries (technical and commercial) on or before June 04, 2014 . No further queries or clarification will be entertained. Hence the bidders have to ensure that all queries related to the tender, including those on benchmark programs, are sent before the specified deadline.
- 8.30 A prebid-clarification meeting is scheduled on June 09, 2014, at 15:00 Hrs (IST) as per the timeline given below. No further queries will be entertained after the prebid clarification meeting.

8.31 Schedule of Events:

The tender document, and benchmark input files will be made available on <http://cms.unipune.ac.in/announcements/> from the date of release of the tender. Bidder needs to submit a demand draft of ₹ 5000/- (Rupees Five Thousand only), drawn in favor of “**The Registrar, University of Pune, Pune**” and payable at Pune along with the technical bid.

Release of Tender	May 27, 2014
Site Visit to Inspect Infrastructure	May 30, 2014
Submission of Queries (for Prebid Clarification)	June 04, 2014
Prebid Clarification Meeting	June 09, 2014, at 15:00 Hrs (IST)
Last Date of Submission of Tender Response	July 18, 2014 at 15:00 Hrs (IST)
Date of Opening of Technical bid	July 18, 2014 at 15:30 Hrs (IST)
Place for Opening of Technical bid	CMS

8.32 No request for extension of any deadline will be entertained.

8.33 All information called for in the enclosed forms should be furnished in same format. If any particulars are not applicable in case of the bidder, it should be stated as not applicable. However the bidder is cautioned that not giving complete information called for in the application format or not giving it in clear terms or making any change in the prescribed format or deliberately suppressing the information may result in the bidder being summarily disqualified.

8.34 All the pages of the Tender response shall be numbered and submitted as a package with signed covering letter.

9 Guidelines to Bidder:

A **two-cover system** is proposed for the submission of tender, consisting of

- I. **Technical Bid:** The technical bid should contain
 1. Covering Letter
 2. Bidder's Information (See Format A-1 on page 51)
 3. Certificate of Incorporation
 4. Details of Similar works completed in last three years (See Format A-2a on page 53)
 5. Certificate of completed work from other customers (See Format A-2b on page 55) and installation report(s).
 6. Proposed solution details (See Format A-3 on page 56)
 7. Proposed project execution Methodology (In Applicant's Formant)
 8. Audited annual balance sheet of the company for that last 3 years and Financial information (See Format A-4 on page 58)
 9. Authorization by OEM (in case OEM is not bidder) (See Format A-5 on page 59)
 10. Proposed High Level Project plan for implementation / execution of work for CMS (in Applicant's format)
 11. The Application benchmark results in the prescribed format (See Format A-6 on page 60) along with configuration of the system used and also Storage and HPL benchmark. Soft copy of the benchmark output, logs, and other details as specified in benchmark criteria section must be also submitted.
 12. Overall Compliance Statement
 13. Deviation statement (See Format A-7 on page 61)
 14. Term and Conditions of offer (if any).
 15. Single point of contact information from OEM and bidder (if bidder is not OEM)
 16. Agreeing to the terms and conditions of the tender; A copy of the tender Document , duly signed on each page with seal, must be enclosed.
 17. A copy of masked commercial bid of the bill of materials.
 18. Detailed document on installation, Commissioning, Configuration and Testing.
 19. Net worth / Solvency certificate (not older than twelve months) for Rupees One Crore issued by nationalized bank
 20. Detailed information on key technical strengths in understanding the requirement.

21. Suggestions and views, if any for HPC and data center solution requirements of CMS.
22. Earnest Money Deposit of the appropriate amount as mentioned in section 2.
23. An Undertaking that the Organization has not been blacklisted.
24. An Undertaking about Data center component.
25. All necessary statutory requirements like registration of Sales Tax, Service Tax, TIN, LST/CST, VAT, PF, ESI, PAN etc. Enclose proof thereof.
26. Bidders proposing multiple solutions, must submit items 1-23 above for each solution separately, as self-contained bid and this is a mandatory requirement.
27. Bidders should submit technical bid with index as per the order mentioned above.

II. Commercial Bid: The Commercial bid should contain

1. The commercial bid should contain details of the prices (separately for both warranty periods i. e. 3 and 5) for each one of the subsystems of the total offer giving clearly the unit rate and quantity. Bundling of the prices is not acceptable. (See Format A-8 on page 62)
2. The commercial bids for HPC and Data center should be submitted separately in same envelop. The USD and INR parts must be specified clearly.
3. All the taxes, ED and custom duty (if any) should be mentioned separately and clearly in INR.
4. For optional items the prices have to be quoted separately and CMS reserves the right to decide about the procurement of the same. However the bidder must quote for all optional items.
5. CMS reserves the right to choose the proper number (increase or decrease (Max by 20%)) quantity at the time of placing order. Bidder has to agreed for the same.

All the documents asked must be addressed to, **“The Director, Centre for Modeling and Simulation, University of Pune, Pune 411 007, Maharashtra, INDIA.”**

Covers containing the technical and commercial bids must be individually sealed and superscribed respectively as **“CMS/1415/053 dated 27/05/2014 – Technical Bid”** and **“CMS/1415/053 dated 27/05/2014 – Commercial Bid”**. The two covers must be put in a large enveloped, sealed, superscribed as **“a Turnkey Project High Performance Computing (HPC) Solution With Data Center Facility – CMS/1415/053 dated 27/05/2014”**, and addressed to the addressee and address mentioned above

Non conformance of any of the above can result in disqualification.

FORMAT A-1

BIDDER INFORMATION
 (on Bidders Letterhead)

Sr. No.	Description / Requirements	Response
01	Vendor Name and Address	
02	Designated Partner Name and Address	
03	Bidder's Legal Name	
04	In case of a consortium, legal name of each party:	
05	Bidder's actual; or intended Country of Registration / INC	
06	Bidder's Year of registration / INC (Attach photocopies of original documents of articles of incorporation or registration of firm)	
07	Bidder's Legal Address in country of Registration / INC	
08	Bidder's Authorized Representative's Name:	
	Address:	
	Telephone / Fax Numbers:	
	Email Address:	
09	Is your organization blacklisted by any Central / State Government Department / Organization? (if yes provide details in a separate sheet)	
10	Type of the Bidder	OEM / SI
11	Number of Data-Centers more than 500 Sq. ft. size (provide the information as well as supporting documents of system installed in last three years)	

Sr. No.	Description / Requirements	Response
12	One Similar case with around 60 nodes of HPC and DC build at the same customer location	
13	<p>If bidder is SI:</p> <p>1. Number of HPC projects of size more than 20 TF carried out in past. Also provide info about projects with co-processor / Accelerators. (Provide the information as well as supporting documents of system installed in last three years)</p> <p>2. Number of HPC projects of size more than 5TF and less than 20 TF carried out in last three years</p>	
14	<p>If bidder is OEM:</p> <p>Number of HPC projects of size more than 50 TF carried out in last three years</p>	
15	Is it possible to visit the installation site in case desired. Please provide the contact details of customers with email address.	Yes / No
16	Experience in providing user support and help desk	
17	Facility of NOC to support remotely	
18	Number of trained staff to support the setup. Please provide the details of Engineers with their phone numbers	

Date of Submission:

Signature of Bidder

FORMAT A-2a**DETAILS OF SIMILAR WORK COMPLETED IN LAST 3 YEARS**

(Use similar format for each project separately)

Description / Requirements	Response
Name of Work	
Name of Customer	
Detailed Description of the Work	
PART I: <ul style="list-style-type: none"> ● Details of HPC ● Total number of compute nodes ● Total number of CPU cores ● Details of Accelerator / Coprocessor (if any) ● Performance on HPL Benchmark using CPU cores (in TFlop/s) ● Rpeak (TFlop/s) ● Total Power consumption (kW) ● Total Delivery (Flop/Wattage) ● Storage Details 	
PART II: <ul style="list-style-type: none"> ● Total Power used in Data Centre (in kW) ● Total IT Load (kW) ● Total Non-IT Load (kW) ● Capacity of Chillers/CRAC/PACS Units ● Total Number of IT Racks ● Maximum power density per rack (kW) ● Cooling technology used ● Kind of Security Systems Installed 	
Power usage efficiency (total power / IT power)	
Approximate Value of Contract (In ₹ Crore)	
Location of the Work	
Duration of the job (months)	
Originally Planned Date of Completion	
Actual Date of Completion	
Name of Associate Contractors and functions performed (if any)	

Description / Requirements	Response
Name of Senior professional staff of your firm involved and functions performed	
Customer Contact Person, Designation, Email and Phone Number	
Any Litigation/ Arbitration and Status Thereof	
In case of delay, the principal reason for the same	

Date of Submission:

Signature of Bidder

FORMAT A-2b

CERTIFICATE OF COMPLETED WORK FROM PAST CUSTOMERS

(Furnish this information for each individual work from the CUSTOMERS referred in Forms A-2a for whom the work was executed)

1. Name of work / Project and Location
2. Agreement/Purchase Order Number
3. Estimated Cost
4. Tendered Cost
5. Date of Start
6. Date of Completion
 - a) Stipulated date of completion
 - b) Actual date of completion
7. Amount of compensation levied for delayed completion if any.
8. Performance on HPL Benchmark using CPU cores of HPC system (in TFlop/s)
9. Performance report

Quality of Work	Excellent/ Very good/ Good/ Fair
Resourcefulness	Excellent/ Very good/ Good/ Fair
Responsiveness	Excellent/ Very good/ Good/ Fair
Accessibility to Management when needed	Excellent/ Very good/ Good/ Fair
10. Name of Institute/ Chief Project Manager or Equivalent
11. Contact Details
12. Would you award work again to this Contractor Yes/ No

Date:

Place: (Seal of the Customer)

Signature

FORMAT A-3**DETAILS OF SOLUTION PROPOSED**

Sr. No.	Description / Requirements	Response
PART-I: HPC system		
01	Total number of Compute node (without GPU/MIC) with model number	
02	Processor Used (type, Frequency) with model number	
03	Memory Configured	
04	Peak Performance (TFlop/s) (without GPU / accelerator machines)	
05	Performance with HPL (TFlop/s) (without GPU / accelerator nodes)	
06	Infiniband Configuration (type, total ports, switches, cables)	
07	GPU Cards details with number	
08	Intel Xeon Phi details with number	
09	The storage capacity (usable) i. Total size of storage ii. Usable size after format and Raid iii. Number of controller used iv. Total Cache size	
10	Total HDD type with RAID-5/6 group details	
11	Total throughput expected (separately)	
12	Backup provision details	
13	File system details (type, total IO server, total Metadata server)	
14	Connectivity type front and back end	
15	Compute node dimensions with details	
16	Login node Details	
17	Total Power required (kW) (IT Load)	

Sr. No.	Description / Requirements	Response
18	Total Rack Space required (compute, storage, switches)	
PART-II: Data Center facility		
19	Total Cooling required (for proposed IT load)	
20	Details of Cooling technology proposed	
21	Total Non-IT Load (kW)	
22	Capacity of Chillers/CRAC Units	
23	Total Number of Racks (42U OEM)	
24	Total Number of additional Racks proposed	
25	Maximum power density per rack (kW) (excluding point 24)	
26	Kind of BMS Systems proposed	
27	Total space required (inside/outside)	
28	Total Power required (IT and NON-IT)	
29	Details of UPS proposed	
30	Details about Generator proposed	
31	Power Usage Efficiency (total power / IT power)	
32	Over all Heat Generation in DC area	
33	Overall Noise Generated in DC area	

Date of Submission:

Signature of Bidder

FORMAT A-4

FINANCIAL DETAILS

2013-2014	2012-2013	2011-2012
Annual Turnover for Last 3 Years (in ₹ Crore)		
Annual Turnover from Similar Works for Last 3 Years (in ₹ Crore)		

Enclosures:

Audited Annual Financial Report 2013-2014 certified by Chartered Accountant

Audited Annual Financial Report 2012-2013 certified by Chartered Accountant

Audited Annual Financial Report 2011-2012 certified by Chartered Accountant

Date of submission :

Signature of Applicant

FORMAT A-5

Letter of Authorization from OEM

Company Letterhead

[DATE]

**To,
The Director,
Centre for Modeling and Simulation,
University of Pune,
Pune - 411 007,
Maharashtra, INDIA**

Ref: Supply of Equipment / Software / Solution for the tender (Ref # CMS/1415/053 dated 27/05/2014) for a turnkey project, “High Performance Computing (HPC) solution with data center facility”

Madam,

We < *Name of the company OEM* > having registered office at < *Address of OEM* > who are established and reputed manufacturers/developers of < > hereby authorize < *Name of the Bidder* > having it's registered office < *Address of Bidder* >, to bid negotiate and conclude the contract with you against the above mentioned EoI for the above equipment/software manufactured /developed by us.

We also hereby undertake the responsibility to provide successful implementation, operations and maintenance of the above mentioned equipment/software for the duration as mentioned in the < *Bidder's name* > contract with CMS for the project.

Yours faithfully,

For and on behalf of < *Name of the firm* >

[Signature]

Name:

Designation:

Date:

FORMAT A-6

BENCHMARK RESULTS

Application: VASP

CPU details:

Infiniband switch details:

TFlops	Number of Nodes	Number of Cores	Time in Seconds

Date:

Place:

Signature and Seal of the Bidder

FORMAT A-7

DEVIATION STATEMENT FORM

The following are the particulars of deviations from the requirements of the tender specifications:

CLAUSE	DEVIATION	REMARK (INCLUDING JUSTIFICATION)

Date:

Place:

Signature and Seal of the Bidder

NOTE: Where there is no deviation, the statement should be returned duly signed with an endorsement indicating “No Deviations”.

FORMAT A-8

COMMERCIALS DETAILS

(Use similar format for INR and USD separately)

Details of the material	Unit Price	Taxes*	Actual Unit Price with Taxes	Quantity	Total Price
Total	–	–	–	–	

Date:

Place:

Signature and Seal of the Bidder

* Bidder needs to use separate columns to mention different types of taxes. (i.e. ST,VAT,ED etc.). If there is no tax then please mark it with DASH, do not keep it blank. The blank fields will be treated as ZERO.

FORMAT A-9

PERFORMANCE BANK GUARANTEE

(To be executed on non-judicial Stamp Paper of ₹ 100/- or such higher value as per the Stamp Act of the State in which the Guarantee is issued. Stamp Paper should be in the name of the Bank Issuing the Guarantee.)

To,
The Registrar,
University of Pune,
Ganesh Khind,
Pune 411 007

WHEREAS the University of Pune, Ganeshkhind, Pune 411 007, (hereinafter referred to as 'the University') has placed the Purchase Order No..... dated on (Name and Full Address of the Bidder/Vendor), (hereinafter referred to as 'the Vendor') for supply, installation, commissioning and warranty of 3/5 years at Centre for Modeling and Simulation, Department of the University.

AND WHEREAS the Vendor has accepted the said Purchase Order with the terms and conditions stipulated therein and has agreed to provide the performance bank guarantee towards promises, assurances and fulfillment of its contractual obligations under the said Purchase Order No..... dated

AND WHEREAS the Vendor holds an account with us and at the request of the Vendor and in consideration of the promises, we (Name of the Bank) (hereinafter referred to as 'the Bank'), hereby furnish guarantee as mentioned hereinafter.

1. The Bank agrees that the University shall be at liberty without reference to the Bank and without affecting the full liability of the Bank hereunder, to take any other undertaking or security in respect of the Vendor's obligations and/or liabilities under or in connection with the above said Purchase Order or to vary the terms and conditions of the above said Purchase Order or to grant time and/or indulgence to the Vendor or to reduce/increase or otherwise vary the total contract value or to forebear from enforcement of all or any of the obligations of the Vendor under the said Purchase Order and/or the remedies of the University under any security now or hereafter held by the University. No such dealing/s with the Vendor or release or forbearance, whatsoever, shall have the effect of releasing the Bank from its liability of the University hereunder or of prejudicing the right of the University against the Bank.
2. The Bank agrees that this Guarantee shall be in addition to any other undertaking or guarantee or security, whatsoever, the University may now or at any time has, in relation to its claims or the Vendor's obligation/liabilities under and/or in connection with the above said Purchase Order. The University shall have the full authority to take recourse to or enforce this guarantee in preference

to other undertaking or guarantee or security at its sole discretion and no failure on the part of the University in enforcing or requiring enforcement of any other undertaking or guarantee or security shall have effect of releasing the Bank from its liability hereunder.

3. The Bank hereby agrees and irrevocably undertakes and promises to pay to the University, the amount due and payable under this Guarantee, immediately, on the first written demand from the University, without any cavil, demur, argument, reservations, contest or protest, any sum or sums within the limit of ₹ (Rupees. only), without needing the University to prove or to show grounds or reasons for the demand for the sum/sums specified and/or without any reference to the Vendor. Further, in any such demand made by the University on the Bank shall be conclusive and binding notwithstanding any difference between the University and the Vendor or any dispute pending before any court/arbitrator or any other matter, whatsoever. This Guarantee shall not be determined/discharged/affected by the liquidation, winding up, dissolution or insolvency of the Vendor and will remain valid, binding and operative against the Bank.
4. The Bank agrees that the decision of the University as to whether the Vendor failed to or neglected to perform or discharge his duties/obligations under the said Agreement and whether services provided by the Vendor are free from deficiencies and are in accordance with or not with the terms and conditions of the same Agreement and as to the amount payable to the University by the Bank hereunder, shall be final and binding on the Bank.
5. The Bank hereby waives the necessity of demanding the amount from the Vendor by the University, before presenting us with the demand and guarantees that we are the primary obligee and not just a surety of the Vendor and the University shall be entitled to enforce the Guarantee against the Bank as a principal debtor, in the first instance, without proceeding against the Vendor.
6. The Bank hereby waives all rights at any time inconsistent with the terms of its guarantee and obligations of the Bank in terms hereof shall not be affected or suspended by reason of any dispute/s having been raised by the Vendor (whether or not pending before any arbitrator, tribunal or court) or any denial of liability by the Vendor or any order or communication, whatsoever, by the Vendor stopping or preventing or purporting to stop or prevent payment by the Bank to the University hereunder.
7. The Bank agrees that any claim which we have against the Vendor shall be subject to the prior payment and performance in full, of all our obligations hereunder and we will not, without prior written consent of the University, exercise any legal right or remedy of any kind of any such payment or performance so long as the our obligations hereunder remain owing and outstanding.

8. The Bank hereby agrees that this Guarantee shall be irrevocable and our obligations under the same shall not be conditional of any prior notice by us or by the Vendor and this Guarantee shall not be affected by any change in our constitution, the constitution of the Vendor and that of the University.
9. The Bank agrees that this Guarantee shall remain in full force and effect till Unless a Claim or demand is made on the Bank in writing under this Guarantee within the period of six months from the date of expiry of this Guarantee, all rights of the University under the said Guarantee shall be forfeited and the Bank shall be relieved and discharged for all liabilities hereunder. It shall also continue to be enforceable till all the dues of the University under and by virtue by the said Purchase Order has been fully paid and its claims satisfied or discharged or till the University informs that all the terms and conditions of the said Purchase Order has been fully and properly carried out by the Vendor and accordingly discharged this Guarantee.
10. The Bank, in exercise of the power vested in it, has given this Guarantee and has authorized (mention the name of the person) to execute the same on behalf of the Bank.

Date:

Place:

Signature of authorized office of the Bank

Name and Designation of the officer

Seal, name and Address of the Bank.

Address of the Branch in Pune.

FORMAT A-10

BANK GUARANTEE

(for EMD and Security Deposit)

(To be executed on non-judicial Stamp Paper of ₹ 100/- or such higher value as per the Stamp Act of the State in which the Guarantee is issued. Stamp Paper should be in the name of the Bank Issuing the Guarantee.)

To,
The Registrar,
University of Pune,
Ganesh Khind,
Pune 411 007

Whereas (hereinafter called 'the tenderer') has submitted their offer dated for the supply of (hereinafter called "the tender"). Against the purchaser's tender reference number KNOW ALL MEN by these presents that WE ofhaving our registered office at are bound unto (hereinafter called "the Purchaser"). In the sum of

For which payment will and truly to be made to the said purchaser, the Bank binds itself, its successors and assigns by these presents. Sealed with the Common Seal of the said Bank this day of 2014.

THE CONDITIONS OF THIS OBLIGATIONS ARE:

- (1) If the tenderer withdraws or amends or modifies or impairs or derogates from the Tender in any respect within the period of validity of this tender.
- (2) If the tenderer having been notified of the acceptance of his tender by the Purchaser during the period of its validity:-
- (3) If the tenderer fails to furnish the Performance Bank Guarantee for the due Performance of the contract.
- (4) Fails or refuses to accept/execute the contract.
- (5) Fails to furnish material or fails to commissioning of the system in a given time and as per expectations of purchaser.

We undertake to pay the Purchaser up to the above amount upon receipt of its first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser will note that the amount claimed by it is due to it owing to the occurrence of one or both the two conditions, specifying the occurred condition or conditions.

Notwithstanding anything contrary contained in any law for the time being in force or banking practice, this guarantee shall not be assignable or transferable by the beneficiary. Notice or invocation by any person such as assignee, transferee or agent of beneficiary shall not be entertained by the Bank. Any invocation of guarantee can be made only by the beneficiary directly.

This guarantee will remain in force up to and including days after the period of tender validity and any demand in respect thereof should reach the Bank not later than the above date

Date:

Place:

Signature of authorized office of the Bank

Name and Designation of the officer

Seal, name and Address of the Bank.

Address of the Branch in Pune.