Request for Proposal
for

Supply, Installation, Testing, Commissioning & Maintenance of

"**High Performance Computing System and Storage (HPCS)"**

Tender No. **AIMSCS/HPCS/1/2018**

Location: Hyderabad

31st May 2018

CR Rao Advanced Institute of Mathematics, Statistics and Computer Science (AIMSCS),
University of Hyderabad Campus,
Hyderabad – 500046.
http://www.crraoaimscs.org

May 2018

SECTION 1

NOTICE INVITING TENDER (NIT)

The CR Rao Advanced Institute of Mathematics, Statistics and Computer Science (AIMSCS), is a research institute that envisages the coming together of the best of minds in the fields of Mathematics, Statistics and Computer Science in an enabling environment. The CR Rao AIMSCS invites sealed tenders under "Two Bid" format from reputed manufacturers/authorised dealers/bidders for the procurement of High Performance Computing System and Storage (HPCS) systems towards:

Supply, Installation, Testing and Commissioning of "High Performance Computing System and Storage (HPCS)" and other accessories, at the premises of the CR Rao AIMSCS, Hyderabad.

Table below lists Components of the High Performance Computing and Storage

HPC: CPU + GPU Cluster	HPC System with CPU + GPU nodes of 100 TFLOPS of sustained HP LINPACK performance
HPC Storage	100 TB usable high performance storage

Details of the tender are as below:

Sl. No.	Description	Tentative Deadline
1.	Release/issue of tender document	31st May 2018
2.	Submission of written queries for clarification on the bid document	8th June 2018
3.	Pre-bid meeting (Venue: CR Rao AIMSCS, UoH Campus, Hyderabad)	11:00AM 11th June 2018
4.	Replies to written queries of prospective bidders	11:00 AM 29th June 2018
5.	Receipt of bids	02:00 PM 20th July 2018
6.	Technical bid opening	03:00 PM 20th July 2018
7.	Commercial bid opening	Will be informed later

6. EMD (Refundable): All bids must be accompanied by an **EMD (Earnest Money Deposit) of Rs. 3 Lakhs (Rupees Three Lakhs only)** in the form of bank guarantee from a nationalised bank or in the form of a demand draft from a nationalised bank or scheduled bank registered with RBI drawn in favour of **Director, CR Rao AIMSCS, Hyderabad**. The EMD should remain valid for a period of 45days beyond price bid validity period.
7. The EMD should reach **CR Rao AIMSCS** along with the technical bid, otherwise the bid will not be considered.

The tender document may be downloaded from the website: https://www.crraoaimscs.org.

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SECTION 2

INSTRUCTION TO BIDDERS

2.1 General

2.1.1 AIMSCS is inviting proposals from bidders for a HPCS system with the following subcomponents:

Table: Components of the High Performance Computing and Storage

HPC: CPU + GPU Cluster	HPC System with CPU + GPU nodes of 100 TFLOPS of sustained HP LINPACK performance as per technical specifications at para 2.5 of Section 2.
HPC Storage	100 TB usable high performance storage as per technical specifications at para 2.5.7 of Section 2.

2,2 INTRODUCTION

2.2.1 The CR Rao Advanced Institute of Mathematics, Statistics and Computer Science (AIMSCS), is a research institute that envisages the coming together of the best of minds in the fields of Mathematics, Statistics and Computer Science in an enabling environment. The CR Rao AIMSCS invites sealed tenders under "Two Bid" format from reputed manufacturers/authorised dealers/bidders for the procurement of High Performance Computing System and Storage (HPCS) systems as mentioned in this tender document.

2.2.2. Interested vendors are requested to send their sealed tenders under "Two Bid" System for supply of the HPC system and storages. Bidders are requested to go through the tender document (general terms & conditions, prescribed formats, etc.) before they submit their proposals.

2.2.3 The receipt of bids and processing of technical and financial bids is done manually by the Committees of the CR Rao AIMSCS duly constituted for the said purpose by the competent authority. Accordingly, all bids MUST be submitted to the office of CR Rao AIMSCS by **Registered/Speed Post** in hardcopy on or before the last date and time as indicated above. The bid should be addressed and dispatched to **The Director, CR Rao AIMSCS, University of Hyderabad campus, Prof. CR Rao Road, Gachibowli, and Hyderabad-500046**. Late/delyed bids shall not be considered for further processing under any circumstances.

2.2.4 The tender document along with details of terms and conditions can be downloaded, free of cost, from our website http://www.crraoaimscs.org.

2.2.5 The bid proposals are to be sent in three separate sealed envelopes.

(i) Technical bid
(ii) Commercial bid
These two envelopes are required to be kept in one sealed envelope.

2.3 SCOPE OF WORK

2.3.1 CR Rao AIMSCS is inviting proposals from bidders for a HPCS system with the following subcomponents:

Table 1: Components of the High Performance Computing and Storage

HPC: CPU + GPU Cluster	HPC System with CPU + GPU nodes (see detailed technical specification in 2.5 of Section 2) of 100 TFLOPS of sustained HP Linpack (HPL) performance. The HPL performance must be demonstrated using all the Compute nodes (including the GPU cards). The compute power of master nodes, I/O nodes and the FPGA node should not be used for HPL demonstration.
HPC Storage	100 TB usable high performance storage (see detailed specification in para 2.5.7 of Section 2) with an IOR performance of 2 GB/s.

2.3.2. The proposed system will be housed in the existing CR Rao AIMSCS building.

2.3.3 The solution proposed by the bidders is expected to be a total turn-key solution meeting all the stipulated requirements: supply, installation, commissioning, integration of the compute and storage system along with warranty services for a period of three years and commitment for post warranty Annual Maintenance Contract (AMC) for a further period of three years.

2.3.3 The bidders have to ensure that the resources (personnel) allocated for each one of the above tasks are competent and capable to meet all the technical requirements in order to ensure that the broad objective of delivery of services as per expectations is fully met.

2.4 SPECIFICATIONS AND TECHNICAL DETAILS

2.4.1 The proposed system should have a total compute capability of 100 TFLOPS of sustained HPL performance with CPU-GPU combination.

2.5. TECHNICAL SPECIFICATIONS OF THE PROPOSED HPC SOLUTION

2.5.1 Composition of Nodes: The proposed solution should have two Master nodes **(in HA)** and Compute nodes in a single rack. The bidder/OEMs is expected to submit the pictorial layout, with interconnect and so on, of the proposed solution along with relevant product brochures. Detailed specifications are given below:

2.5.2 General Specifications and Conditions

i. The HPC cluster solutions must have rack mounttable nodes or chassis based nodes housed in a single rack of appropriate size.

ii. Entire system comprising of master nodes, I/O nodes, storage, compute nodes, switches.

iii. Hardware and software **higher/better** than the specified once are acceptable but performance must be ensured.

iv. The cluster should support remote console access to all the servers.

v. The nodes/server/chassis/enclosures should be populated with redundant (1+1) power supplies of required capacity rating available for the proposed model.

vi. The OEM/bidder must carry out a detailed cooling/power requirement study for the proposed system within the above mentioned area designated for this deployment; these should be reported in the technical bid.

vii. All hardware components must be compatible with each other. Additional items necessary for integration into cabinets including the necessary PDU, power cables, network cables, etc. must be included in the detailed Bill of Materials (BOM).

viii. All equipment must be compatible with Indian electrical standards and codes.

ix. Engineering documentation on the physical sizes and weights of all major and minor components must be submitted.

x. The entire solution should be based on certified hardware/software components which are fully validated and supported.

xi. Installation and configuration of HPC cluster activities, including on-site benchmarking, should be carried out by direct OEM/System Integrator (SI) engineers only.

2.5.3.

a. One time system administration training (3-5 days) should be provided to the CR Rao AIMSCS personnel.

b. The bidder must provide onsite engineer (Level-2) for general shift (9AM to 5PM) for a year. The engineer should have BE/B.Tech degree in computer science and minimum two years of experience in HPC and system administration. The cost for this should be provided as an optional and separate line item in the price bid.

c. The price of major components/subsystems (e.g., node, interconnect switch, GPU card, FPGA accelerator card, and storage server, disks), as well as optional **items should be quoted as separate line items in the price bid.**

d. The proposed Interconnection Network should support (expandable) up to16 nodes and the Interconnection switch should consist of at least 24 non-blocking ports. Also the interconnect switch much have 30% of the ports as free for future expansion.

e. The complete solution, both hardware and software, should have **three year on-site** comprehensive warranty and **next business day on-site support.**

f. The OEM/bidder should also quote for post warranty AMC cost per year for a period of three years.

g. The OEM/bidder should have installed a similar system of minimum 100TF peak performance in the country and maintained the same for at least one year during the last five years.

h. The OEM/bidder should have local support in Hyderabad.

i. System administration training shall be done periodically (roughly once in 6 months) at optional cost.

2.5.4 Specifications of the Compute Nodes with GPU: (required number to meet the 100 TF of Sustained Linpack Performance)

a. Each node should have dual CPUs and dual GPUs: 2 x Intel® Xeon-Gold 6130 (**Skylake)** (2.1GHz/16-core/120W) or higher/AMD EPYC 7401 (2.0

GHz/24cores/180W) or higher /ARM thunder X2 (ARM CN99XX series at 2.0 GHz or higher)/ IBM Power8+/9 (3.6 GHz/8Cores) or higher or equivalent and with 2 x NVIDIA P100 with minimum 12 GB per card or higher /2 x ATI Radeon (FirePro of Vega Series) GPU with minimum 12 GB per card or higher, with at least 4TF DP per─card connected by PCIe Gen3/NVLink Computational Accelerator.

b. Each node should be configured with at least 4GB memory per CPU core and the memory (DIMMS) should be in a fully balanced configuration with ECC DDR4 RDIMMS Dual Rank (**2666** MHz or better). Should have expandability of RAM of **768** GB.

c. Each node should be configured appropriately for connecting to **FDR InfiniBand /Omnipath switch**.

d. If the compute nodes have local disk (for operating system booting), it should be configured with 2x1TB @ 7200 RPM SATA / NL-SAS disks.

e. Each compute node should be equipped with redundant (1+1) power supply.

f. Compute Node Serviceability – Each Compute node should be individually serviceable without effecting the functioning of rest of the cluster.

g. Remote Management – Out of band remote management capability with IPMI 2.0 support.

2.5.5 Specifications of the FPGA Accelerator: Maximum 1 No.

a. Node should have dual CPUs and dual GPU's: 2 x Intel® Xeon-Gold 6130 (**Skylake)** (2.1GHz/16-core/120W) or higher/AMD EPYC 7401 (2.0 GHz/24cores/180W) or higher /ARM thunder X2 (ARM CN99XX series at 2.0 GHz or higher)/ IBM Power8+/9 (3.6 GHz/8Cores) or higher or equivalent and with one FPGA accelerator card (Xilinx Virtex-7 690T / Xilinx , Virtex-7 485T/ Xilinx Kintex-7 325T/ Xilinx Zynq-7000 7Z045).

b. Each node should be configured with at least 4GB memory per CPU core and the memory (DIMMS) should be in a fully balanced configuration with ECC DDR4 RDIMMS Dual Rank (**2666** MHz or better). Should have expandability of RAM of **768** GB.

c. The node should be configured appropriately for connecting to **FDR InfiniBand /Omnipath switch.**

d. If the node has local disk (for operating system booting), it should be configured with 2x1TB @ 7200 RPM SATA / NL-SAS disks or higher.

e. The node should be equipped with redundant (1+1) power supply.

f. Remote Management – Out of band remote management capability with IPMI 2.0 support.

2.5.6 Specifications of the Master Node: 1+1 = 2 Nos

a. Each master node should have architecture same as the compute node, but without the GPU card.
b. Each master node should have 2x4TB Hard disk SATA/ NL-SAS disk or higher.
c. Two Master nodes should be in High Availability mode.

2.5.7. HPC Storage Specifications: 1 No

a. Parallel File System (PFS) of minimum 100 **TB** usable capacity in hardware RAID 6 (8+2) or equivalent layout with a minimum of 2 GB/s demonstrable write performance on IOR and two global hot spare disks.
b. The IOR benchmark should be run from the compute nodes and using 1 MB block size and the output file size used for IOR should be double than the I/O server memory and storage cache. IOR performance should be demonstrated on-site as part of the acceptance test.
c. The I/O servers required for demonstrating the IOR performance should be part of the storage solution and the hardware and software on the I/O nodes should be configured appropriately to meet the performance.
d. Components used for building the storage solution such as I/O nodes, controllers, etc. should rack mountable and mounted in a rack.

e. The I/O nodes, if not embedded into the storage box, should run any popular version of LINUX.

f. The storage solution should not have any single point of failure including the I/O servers, controllers, storage array, power supply, etc.

g. Individual Hard Disk Drives used for the building the storage solution should be of at least 4 TB or higher capacity SATA/NL-SAS disks at 7200 RPM or higher.

h. All components like cables, connectors, etc. for integration of the storage solution should be included in the quotation.

2.5.8 Rack mount LCD monitor with KVM switch (foldable, at least 17''), keyboard and mouse.

2.5.9 Cluster and Administration Interconnects

a. Primary Interconnect switch should be InfiniBand FDR or higher / Omnipath supporting a minimum of **24 ports** (presently populate ports to connect the compute nodes, master nodes, FPGA node, and storage I/O nodes). The interconnect switch should be sized appropriately to have at least 30% of ports as free for future expansion of the cluster.

b. All the Compute nodes, Master nodes, FPGA nodes, and Storage nodes have to be connected using a high speed InfiniBand/Omnipath switch.

c. All the required software along with licenses should be provided for the fabric management.

d. Required cables to connect all compute, master, and storage nodes should be part of the solution.

e. Admin and management network should be through a separate Gigabit Network. All nodes need to be connected to the admin network. The required Gigabit Ethernet switch and cables for the same also to be provided. The quantity to be decided as per the solution requirement.

2.5.10 Software Stack

2.5.10.1 Operating System

a. Any popular open source version of LINUX for all the Compute nodes, Master nodes and Storage nodes should be supplied.

b. Compute nodes to be installed as bare bone and highly optimized for computing

purpose without any overheads like GUI etc.

2.5.10.2 Cluster Management Software:

The solution should have cluster management software with the following features:

a. The software should handle all the nodes provided in the solution.
b. A solution should be fully supported by the OEM/bidder.
c. Extensive cluster monitoring capability to drill down to a node-level performance parameters using intuitive GUI and with well-designed graphical reports for all the nodes.
d. The software should run on the Master nodes on HA configuration.

2.5.10.3 Job Management Software:

The Solution should have an open-source workload management software with the following features:

a. The job scheduler should support all Compute nodes including the one with an FPGA accelerator.
b. It should support checkpoint and restart capability.
c. The job scheduler should run on the Master nodes.

2.5.10.4 Compilers, Libraries and Other Softwares

a. C/C++ , Fortran, CUDA and OpenCL compilers with runtime libs, profilers and debuggers should be installed.
b. Communication libraries for MPI/OpenMP/pthreads should be provided. Vendor specific versions like MPICH2/MVAPICH/OpenMPI should also be installed.
c. OEM supported platform specific compilers suite including C, C++, Fortran, MPI, math kernel library supporting at least five users (floating licenses). Any license cost for this should be mentioned as a separate line item in the price bid.
d. Scientific programs: Python, Numpy, SciPy, Setuptools, IPython, pythondev, pythonnumpy, pythonmatplotlib, pythontk, pythonlxml, PyReadline, MDAnalysis should be installed.
e. Scientific and Math Kernel Libraries. OEM Supported platform specific mathematical and scientific libraries for BLAS, LAPACK, Scalapack, fftw, hdf5, netcdf, etc. should be installed.

f. Softwares: Vim, Gvim, NTPD, GRACE, BC, VMD and Perl, gdb, PAPI should be installed.

g. Open Source performance debuggers should be installed.

2.5.11. Other Scope of Work

a. HPC cluster has to be supplied, installed, commissioned and maintained (as per specified specifications) along with technical documents. Installation/configuration and upgradation of HPC cluster activities should be carried out by **direct OEM's/Bidder's engineers** only.

b. The solution should have PFS Storage **100TB** usable capacity with RAID 6 configuration with minimum 4 GB/s write throughput performance.

c. The main items of the solution are

   i. Compute nodes

   ii. FPGA node

   iii. Master nodes – 2 Nos

   iv. Interconnect FDR InfiniBand /Omnipath Switch – based on proposed solution

   v. PFS Storage **100TB** with necessary I/O nodes.

   vi. Complete Software Stack

      a. Operating System – LINUX – as per solution proposed

      b. Compilers, libraries and other software

      c. Cluster Management Software – As per solution proposed

      d. Work Load Management Software – As per the solution proposed

   vii. Programming Tools

   viii. All the required accessories needed for supplied HPC and storage.

d. During the warrantee/AMC period, OS upgradation or re-installation (if needed) should be carried out without any charges.

e. OEM/bidder should attend every warranty call within 24 hours and rectify the problem.

f. Bidder/OEM must commit in writing the post warranty AMC charges for a period of 3 years. Bidder/OEM should quote AMC cost/per year only as a percentage of total cost of HPC system.

g. It is to be noted that L1 will be decided by adding AMC cost to the total cost of HPC. Post-Warranty AMC cost will be paid on a quarterly basis at end of each quarter.

2.5.12 Training:

System administration training (onsite) – 3 days shall include for general system administration with documentation including tasks such as user/node management, installation/upgrade, InfiniBand or Omnipath, as applicable, CMS and overall management of HPC cluster.

2.5.13 Documentation:

Documentation should include:

a. Bringing up and shutting down the cluster and storage.
b. Basic troubleshooting of compute nodes, InfiniBand/Ominpath, I/O and storage nodes, master nodes, etc.
c. Step by step installation guide for entire HPC implementation/configuration from scratch.
d. Installation/ATP document should contain all IP address and passwords of all devices like compute nodes, switches, I/O nodes, storage nodes, master nodes and other managed devices.

2.5.14 Acceptance Test Procedure

a. Physical Inspection

i. Visual inspection against any damage
ii. Verification of make, model and list of deliverables as per SO.
iii. Obtain OEM test certificate and data sheet for all the subsystems

b. **Functional test:** All the functionality of the installed cluster should be tested and demonstrated including cluster management, running MPI programs, testing of PFS.

c. **Burn-in Test**: This should be done for duration of 48 hours.

d. **Performance test:** The offered HPC system and storage should be demonstrated for the followings:

i).HPL ratings (peak & sustained) for the entire cluster configuration (including all compute nodes and GPU cards in them) must be provided. The OEM/bidder should run HPL onsite and demonstrate a performance of at least 100 TFLOPS.

ii).IOR performance of the storage solution must be provided. The OEM/bidder should run IOR onsite and demonstrate a write performance of at least 2 GB/s.

iii).User developed Codes/ Commercial codes may be required to be loaded and run **successfully** on the HPC cluster.

h. The acceptance test must also be re-run as per CR Rao AIMSCS request for a period of upto **Two weeks**.

Note: Detailed plan of testing will be given to the selected bidder/OEM at the time of installation.

2.5.15 General points

a. If bid is submitted by System Integrator, Manufacturer Authorization Letter from the OEMs should be submitted.

b. During warranty period if any hard disk fails, the same should be replaced by a new hard disk by the bidder/OEM free of cost and the defective hard disk shall not be returned to the bidder/OEM as per CR Rao AIMSCS disk retention policy.

c. Bidder/OEM must carry out a detailed cooling/Power requirement study for the proposed system within the above-mentioned area designated for this deployment.

d. Bidder/OEM must submit a diagram on integrating various sub-systems into the cluster.

e. The proposal must include a detailed datasheet for every single IT component included in your proposal and the necessary technical whitepapers discussing the features, performance and optimization techniques.

f. All bidders/OEMs are required to submit the documentation or proof of compliance along with the bid failing which the bids are liable to be rejected.

g. All the hardware components and parts should have spare part support for 7 years (from the date of installation/acceptance). A letter to this effect should be given by OEMs of individual components.

h. Acceptance testing period should be mentioned. A Gantt chart/Pert Chart on the total solution implementation must be enclosed.

i. If required End User Certificate will be given to any OEM as per the format submitted along with bid.

j. Bidder/OEM has to provide drawings explaining the solutions. Bidder/OEM has to submit the power, cooling for the proposed solution.

2.5.16 INFRASTRUCTURE REQUIREMENT:

a. Space

It is desirable to limit the real estate space for the complete system less than 500 sq. ft

b. Cooling

It is desirable to limit the cooling required for the system to be less than 25 TR.

c. UPS/DG Support

It is desirable to limit the power required for the system capacity of 100 KVA of UPS/DG System.

SECTION – 3

GENERAL TERMS AND CONDITIONS

3.1 BIDDER'S ELIGIBILITY CRITERIA

3.1.1 The bidder should have implemented a 16 node HPC system in at least at one customer site in the last 3 years.

3.1.2 The bidder must have a proven record of maintaining and managing at least one system for a period of 1 (one) year with in the last 3 years. Appropriate documentary evidence with a letter from the customer reporting the details of the maintenance/management responsibilities and the performance of the bidder should also be included in the technical bid of the proposal.

3.1.3 The bidder is expected to be a company with an annual turn-over of Rs. 5 Crores in each of the last 3 financial years.

3.1.4, The bidder (along with their OEM) should have proven record of having demonstrated their competence and capability, as a team, to deliver all the services expected during the contract period.

3.1.5 The OEM should have local support in Hyderabad.

3.2 EVALUATON OF BIDS

3.2.1 Technical Evaluation: Technical evaluation will be carried out by a Technical Evaluation Committee (TEC), duly constituted by the Competent Authority. Evaluation will be carried out as detailed below

a. TEC will examine all the bid(s) to determine whether the bidder qualifies the essential eligibility and pre-qualification criteria i.e. submission of EMD (submission of original instruments prior to bid due date & time) and bidder eligibility criteria.

b. All the supporting documents submitted will be examined to determine whether they are complying with the eligibility criteria of Technical bid.

c. During the evaluation of the technical bids, compliance of the bidder solution with necessary documentary evidence will be checked upon. Evaluation criteria will include fulfilment of all specifications mentioned in the bid. A compliance sheet

submitted as per Technical bid shall be verified. Corresponding to each technical specification in the compliance statement, relevant serial numbers/ page numbers / line numbers etc. in the data sheet/ published documentation shall be provided for verification. Non-compliance of any of the technical specifications/requirements may lead to rejection of the bid. However, the final decision will be based on the recommendation of the TEC.

The bidder shall submit the documentation in detail for the technical evaluation of the bid.

3.2.2 Commercial bid evaluation: Commercial bids shall be opened for the technically qualified bidders after the technical evaluation. The Institute will communicate the date and time of opening of the commercial bids to the qualified bidders.

3.2.2 Commercial bids will be opened on the said date and time, irrespective of the presence of the bidder / authorized representative.

3.2.3 Commercial bids which are not in compliance to the terms and conditions set out in the tender will be rejected.

3.3 Acceptance Criteria

The acceptance test criteria will include the following.

3.3.1 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.

3.3.2 The bidder has to demonstrate the performance of the system for meeting the specified HPL performance and IOR performance.

3.3.3 During the acceptance, the bidder has to demonstrate subsystem/ component-wise performance, including storage and interconnect architecture.

3.3.4 Any delay in commissioning or conformance to the acceptance beyond the stipulated time will result in extending the warranty: each day of delay would results in 3 additional days of warranty.

3.4 SERVICE LEVEL AGREEMENT

3.4.1 The bidder has to ensure that the solution proposed, as a total turnkey solution, to meet the stated requirements, delivers an uptime guarantee of 95% of the entire system, in addition, should also deliver at least 99% uptime for 90% (of the compute and storage capability) of the system, measured on a monthly basis.

3.4.1 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.

3.4.2 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.

Therefore, the bidder along with the OEMs has to put systems and processes in place to address the above during the period of the contract.

3.5 WARRANTY

3.5.1 Warranty services for the system supplied by the successful bidder should be valid for a period of 3 years from the date of acceptance of the equipment. Warranty service charges (in Indian rupees) have to be explicitly mentioned as a separate line item in the Commercial bid.

3.5.2 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 the systems supplied.

3.5.3 During the warranty period, the bidder shall attend to all the hardware problems on site and shall replace the defective parts at no extra cost to the purchaser. The Defective HDD will not be given as and when it is replaced.

i. During the 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.

ii. The bidder should also clearly indicate post-warranty comprehensive AMC cost, as a percentage of the equipment cost, for a period of 3 years, on an annual basis, in the Commercial bid.

3.6 GUIDELINES TO BIDDERS

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

a. **Technical bid:** The technical bid should contain

i. EMD
ii. Executive Summary of the proposal
iii. Technical details of the proposed subsystems in the prescribed format
iv. Overall Compliance Statement
v. Terms and conditions of the offer.
vi. Supporting technical material, including brochures.
vii. Audited annual balance sheet of the company for the last 3 years
viii. Supporting documents for bidder's eligibility criteria
ix. 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;
x. A copy of the masked Commercial bid of the bill-of-materials.
xi. Detailed document on Installation, Commissioning, Configuration and Testing.

b. **Commercial bid:**

- The Commercial bid should contain details of the prices for each one of the subsystems of the total offer giving clearly the part number, quantity and the rate.
- Line item prices for optional items.
- **Covers containing the technical and commercial bids must be individually sealed and superscribed respectively as "HPCS Technical Bid (CR Rao AIMSCS)" and "HPCS Commercial Bid (CR Rao AIMSCS)". The two covers must be put in a larger enveloped, sealed, superscribed as "High Performance Computing System and Storage (HPCS) for CR Rao AIMSCS" Non-conformance of any of the above can result in disqualification.**

3.7 ADDITIONAL GUIDELINES

a. The total solution as per the agreed bill of materials has to be supplied within 4 – 6 weeks after receiving a firm PO from CR Rao AIMSCS and the installation to be complete within 2-3 weeks after supply of the equipment.

b. CR Rao AIMSCS is eligible for customs and excise duty exemption under notification **DSIR (51/96- customs as amended and 10/97-central excise as amended respectively.)** Hence please quote the ED component, if any, separately so as to avail exemption on issue of certificate by us. Bidders planning to quote any imported solution have to give the offer in the respective currency.

c. The offer has to clearly state the components of pricing separately. Warranty services and any other charges have to be quoted as separate line items.

d. A copy of the masked Commercial bid has to be given in the technical offer and the process followed by the Institute is a two cover bid system.

e. No request for any further extension of the above deadline shall be entertained. Delayed and/or incomplete tenders are liable to rejection.

f. All the covers should bear the name and address of the bidder.

g. The Technical bid and the Commercial bid should be duly signed by the authorized representative of the bidder.

h. The Technical bid and the Commercial bid should be bound separately as complete volumes.

i. The prices should not be mentioned in the Technical bid.

j. A tender, not complying with any of the above conditions is liable to rejection. Incomplete proposals are liable to be rejected.

k. The Director, CR Rao AIMSCS reserves the right to modify the technical specifications or the required quantity at any time. In such case, the bidders will be notified.

l. The Director, CR Rao AIMSCS reserves the right to accept or reject any proposal, in full or in part, without assigning any reason.

m. 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.

3.8 COMMERCIAL TERMS & 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. CR Rao AIMSCS 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 3 years after the 3 year 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 imports, the commercial bid should contain among other things the name and address of the Indian agent, if any and the agency commission payable to him. Agency commission part will be deducted from FOB value, and will be paid to him by us separately in equivalent Indian rupees. Please quote the prices for shipment on preferably “FOB” terms.

d. In respect of imported solution, CR Rao AIMSCS will arrange for customs clearance, at Hyderabad airport, which will be final destination airport. Hence costs related to customs/clearance need not be included in the offer.

e. In CIF offers of imported solutions, insurance should be on “Warehouse to Warehouse” basis and should not terminate at Hyderabad airport.

f. CR Rao AIMSCS is not exempted from GST or any other taxes. Hence this component may be shown as separate line item wherever applicable.

g. Proposals should contain name and contact details viz phone, fax, email of designated person to which all future communication will be addressed.

h. Price should be quoted per unit and the total amount for the required quantity.

i. Offer should be valid for 90 days from the date of opening of tenders.

j. The bidder should provide part numbers make, model, brochures/catalogues/data sheets/manuals of items quoted along with the bid. Partial bid is liable to be rejected.

k. Self-attested copies of documents related to PAN/GSTIN No. of the bidder should be submitted along with the tender document.

3.9 Price Negotiations

The price quoted by the lowest responsive tenderer (L1) will be evaluated for reasonableness and the price may be negotiated with L1 only and, if it reduces the price to the desired level, contract may be concluded with L1.

3.10 Completion of Work

The entire supply and installation should be completed within 60 days of acceptance of the work order from CR Rao AIMSCS.

3.11 PAYMENT TERMS

3.11.1 For Imports:

Payment would be through irrevocable Letter of Credit (LC) opened through our bankers. The bids should clearly state the name of the foreign banker on which the LC is to be opened along with terms& conditions. Please note that FOB and CIF prices separately are to be quoted.

Payment will be made through Letter of Credit (LC. LC will be opened for 100% of the order value. 90% payment will be released through our authorized banker against dispatch documents and against 10% PBG, which needs to be submitted before opening of the L.C. Balance 10% will be released against delivery, inspection and successful installation, commissioning and acceptance by the user of the equipment at our site.(sight at draft or wire transfer is not allowed)

3.11.2 For Indigenous:

a. 90% of basic price shall be paid against delivery of items at CR Rao AIMSCS.

b. Balance 10% plus installation charges will be paid after successful installation and aacceptance.
c. Tax amount will be reimbursed after submission of proof of payment.

3.12 Penalties:

a. If the selected bidder fails to execute the order in time as per the terms and conditions stipulated therein, it will be open to CR RAO AIMSCS to recover liquidated damages for delay in delivery and installation from the firm at the rate of 1% of the value of the equipment per week subject to a maximum of 5% of the total order value. The L.D charges can be increased to 10% in case of gross violation of the Purchase Order terms as decided by Professor-in-Charge, CR RAO AIMSCS.
b. In the event of the failure by the vendor to secure acceptance of the HPC solution by CR RAO AIMSCS after the completion of this contract, CR RAO AIMSCS reserves the option to recover from the vendor as liquidated damages and not by way of penalty for the period after the said 30 days, until acceptance a sum equivalent to 2% (two percent) of the contract value for each month of the failure of vendor up to a maximum of 10%, to secure acceptance or part thereof without prejudice to the purchasers other remedies under the contract. Provided no such deduction shall be made if the delay is on account of the purchaser.
c. The requirement to be met through this tender is one numbers of HPC system at CR RAO AIMSCS Hyderabad. Installation of this HPC solution should be completed and Accepted within One month period. The selected vendor shall give an undertaking that the installation process shall not exceed one month period from the date of receipt of Purchase Order. If there is any delay in installation due to the vendor, the penalty clauses 1% per week and maximum up to 10 % of the order value, which shall be recovered from any money that is due to be paid to the vendor However, this penalty clause will not be applicable if the delay is due to the purchaser or if the site of installation is not made ready by the purchaser.
d. It will also be open to CR RAO AIMSCS alternatively, to arrange procurement of the required equipment from any other source at the risk and cost of the firm, which

accepted the order but failed to execute the order according to stipulated terms agreed upon.

e. CR RAO AIMSCS reserves the right to increase or decrease the quantity of goods and services originally specified in the tender document without any change in unit price or other terms and conditions at the time of award of contract.

f. Bidder should give undertaking that the quoted prices are the minimum and they have not quoted the same item on lesser rates than those being offered to CR RAO AIMSCS, to any other customer nor they will do so till the validity of offer or execution of the purchase order, whichever is later.

g. A client list along with the satisfactory installation certificate of similar equipment supplied to Govt./ Semi govt./ reputed private Institute must be submitted, without which their offer may not be considered for evaluation and rejected.

h. The bidder shall not sublet / transfer / assign or otherwise part with the acceptance to the tender or any part thereof, either directly or indirectly, without the prior written permission of CR RAO AIMSCS.

3.13 Jurisdiction

The disputes, legal matters, court matters, if any shall be subject to Hyderabad, Telangana, India jurisdiction only.

3.14 Modification & Withdrawal of bids

The bidder may modify or withdraw his bid after bid submission provided that the written notice of the modification/withdrawal as well as the modification /withdrawal itself is done prior to the deadline prescribed for submission of bid.

3.15 Rejection of Bid

One or more of the following reasons will render a bid liable to be rejected summarily:-

- A Conditional bid or a bid with conditions other than those specified in the tender documents
- A bid received with validity for a shorter period than prescribed.

- Any attempt to negotiate directly or indirectly by tenderers with the authority to whom the tender is submitted or with the authority who is competent to accept the tender or endeavours to secure interest for actual or prospective tender or to influence by any means will disqualify the tender and same will be summarily rejected.

3.16 Force majeure

CR Rao AIMSCS 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. 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 / state agencies, the direct and indirect consequences of wars (declared or undeclared), hostilities, national emergencies, civil commotion and strikes at successful bidder's premises or any other act beyond control of the bidder.

3.17 Arbitration:

All disputes/clams of any kind arising out of supply, commissioning, acceptance, warranty maintenance etc under this Contract, shall be referred by either party (CR Rao AIMSCS or the bidder) after issuance of 30 days' notice in writing to the other party clearly mentioning the nature of dispute to the Sole Arbitrator appointed by CR Rao AIMSCS. The arbitration proceedings shall be conducted in English and as per the provisions of Indian Arbitration and Conciliation Act, 1996. The decision of the Arbitrator shall be final and binding on both the parties.

3.18 Risk and Ownership

All the risks, responsibilities; liabilities thereof in all goods shall remain with selected bidder till final acceptance.

3.19 Insurance

The bidder shall take comprehensive insurance for all equipment supplied and installed against any damages due to accidents, theft, sabotage or any other natural calamities like flood, lightning, etc. The insurance coverage shall be valid till the commissioning of the

system at site. CR Rao AIMSCS shall not pay the contractor any additional cost in this regard.

3.20 Penalty For use of Undue Influence:

Any undue influence by the firm/seller or its representative will be liable or penalty as per DPM'2009 for use of undue influence.

3.21 Effective Date of the Contract

The Purchase order/contract shall come into effect on date of signatures of both the parties on the contract or date of Purchase order (Effective Date) and shall remain valid until the completion of the obligations of the parties under the Purchase order/contract. The deliveries and supplies and performance of the services shall commence from the effective date of the Purchase order/contract.

3.22 Termination of Contract

The Buyer shall have the right to terminate this contract in part or in full in any of the following cases:

a) The delivery of the material/services is delayed for causes not attributable to Force Majeure for more than (01 months) after the scheduled date of delivery
b) The seller is declared bankrupt or becomes insolvent
c) The delivery of material/services is delayed due to causes of Force Majeure by more than (02 months) provided Force Majeure clause is included in contract
d) The Buyer has noticed that the Seller has utilised the services of any Indian/Foreign agent in getting this contract and paid any commission to such individual/company etc.
e) As per decision of the Arbitration Tribunal

3.23 Performance Bank Guarantee

The Bidder will be required to furnish a performance Guarantee by way of Bank Guarantee through a public sector bank or a private sector bank authorized to conduct government business for a sum equal to 10% of the estimated annual contract value within 15 days of release of purchase order/ signing of the contract. Performance Bank Guarantee should be valid up to 60 days beyond the date of warranty. The specimen of PBG is Form DPM – 16 is given in Annexure-1. This is available in MOD website and refers to DPM -2016.

SECTION 4

Commercial bid format

Sl. No	Item as in BOQ	Make/Model Quoted	Rate of GST	Price Masked
1	Compute nodes			
2	Master nodes			
3	FPGA node			
4	Interconnect FDR InfiniBand /Omnipath Switch – based on proposed solution			
5	PFS Storage 100TB with necessary I/O nodes.			
6	Complete Software Stack			
7	Operating System – LINUX – as per solution proposed			
8	Compilers, libraries and other software			
9	Cluster Management Software – As per solution proposed			
10	Work Load Management Software – As per the solution proposed			
11	Programming Tools			
12	Other item related to technical specs			

Optional Items

Sl. No	Item as in BOQ	Make/Model Quoted	Price
1			

Form DPM-15

Performance Bank Guarantee Format

From:
Bank _____

To,
The President of India
Ministry of Defence,
Government of India
New Delhi
Dear Sir,

Whereas you have entered into a contract No._____ dated_____

(hereinafter referred to as the said Contract) with M/s_____, hereinafter referred to as the "seller" for supply of goods as per Part-II of the said contract to the said seller and whereas the Seller has undertaken to produce a bank guarantee for*(%)* of total Contract value amounting to _____ to secure its obligations to the President of India. We the _____ bank hereby expressly, irrevocably and unreservedly undertake and guarantee as principal obligors on behalf of the seller that, in the event that the President of India declares to us that the goods have not been supplied according to the Contractual obligations under the aforementioned contract, we will pay you, on demand and without demur, all and any sum up to a maximum of _____Rupees _____ only. Your written demand shall be conclusive evidence to us that such repayment is due under the terms of the said contract. We undertake to effect payment upon receipt of such written demand.

We shall not be discharged or released from this undertaking and guarantee by any arrangements, variations made between you and the Seller, indulgence to the Seller by you, or by any alterations in the obligations of the Seller or by any forbearance whether as to payment, time performance or otherwise.

In no case shall the amount of this guarantee be increased.
This guarantee shall remain valid for …… months from the date of JRI acceptance of test consignment in India or until all the store, spares and documentation have been supplied according to the contractual obligations under the said contract.

Unless a demand or claim under this guarantee is made on us in writing or on before the aforesaid expiry date as provided in the above referred contract or unless this guarantee is extended by us, all your rights under this guarantee shall be forfeited and we shall be discharged from the liabilities hereunder.

This guarantee shall be a continuing guarantee and shall not be discharged by and change in the constitution of the Bank or in the constitution of M/s_____.