

# Request for Proposal & Quotation (RFPQ)

for

Symmetric Multiprocessing (SMP) based High Performance Computing (HPC) system with Graphical Processing Units (GPU)

Centre for Modeling and Simulation  
Savitribai Phule Pune University  
Pune 411 007 India

RFPQ date and reference number: CMS/1819/010 dated 9/1/2019

Centre for Modeling and Simulation (CMS), Savitribai Phule Pune University (SPPU) invites quotations for the purchase of a Symmetric Multiprocessing (SMP) based High Performance Computing (HPC) system with Graphical Processing Units (GPU) to support in-house scientific research in material science, data science, biomolecular simulation, etc. We require a turn-key end-to-end solution complete with hardware, software, implementation, and support. This RFPQ provides the minimal technical specifications, and terms and conditions. The phrases “the system”, “system”, and “HPC system” used below mean the Symmetric Multiprocessing (SMP) based High Performance Computing (HPC) system with Graphical Processing Units (GPU) for which quotations are being invited. The phrases “Centre” or “the Centre” refers to Centre for Modeling and Simulation, Savitribai Phule Pune University.

## 1 Minimum technical specifications of the system

Technical specifications which define the *minimal* configuration of the SMP HPC system with GPUs we wish to purchase are available in Table 1.

## 2 Terms and conditions

### 2.1 RFPQ date and reference number

CMS/1819/010 dated 9/1/2019. This should be mentioned on all correspondence related to this RFPQ.

### 2.2 Last date of submission

12/1/2019 during office hours.

### 2.3 Validity of pricing

Till 31/3/2019.

### 2.4 Vendor eligibility

A vendor must satisfy the following requirements to be eligible for submitting a proposal with reference to this RFPQ.

1. The vendor must be an authorized reseller/dealer of an international original equipment manufacturer (OEM) with proven track-record in building and supporting SMP HPC platforms for scientific research.
2. The OEM represented by the vendor must have a presence on the Top 500 supercomputing list <http://www.top500.org/> during last five years.
3. The vendor must have proven and documented track record and experience in setting up HPC systems during last five years.
4. The vendor and the OEM together must have adequate support infrastructure in India, preferably in the Pune region.

Component	Details	Required specification
<b>Processing Units</b>	Cores	Total 80 or more
	Type	Intel Xeon Gold series (Launch year 2017 or later)
	L3 Cache	25MB or more per processor
	Base Frequency	2.4 GHz or more
<b>Memory</b>	Quantity	8GB per core or more
	Type	DDR4 (2666 MHz or better)
	Slots	DIMM, 32 or more
<b>Management Interface</b>		KVM-over-LAN and/or LAN-based. Script- / command-line-based hardware management interface preferred.
<b>Storage</b>	Quantity	10 TB usable after RAID (see below)
	RAID	Hardware RAID supporting RAID levels 5 and 6
	HDD Type	(a) All SSDs (preferable), or (b) a mixture of SSD and SATA, with at least one redundant of each kind.
	Hot-Swappable	Yes
<b>GPU</b>		At least one NVIDIA Quadro P5000 or better
<b>Chassis</b>	Type	2U/3U unit mountable on a standard 19" rack
	Rails	Mounting rails to be provided
	Bays	20+ bays for hot-swap drives (SSD, SATA)
<b>On-Board</b>	Chipset	Intel, C621 or latest
	NIC	Intel Quad Gigabit 10/100/1000 Ethernet controller, redundancy preferred
	CPU Expansion Slots	Preferred
	Graphics	On-board VGA or better
<b>Additional Slots &amp; Ports</b>	PCI-E Slots	At least 5 PCI-E 3.0 x8 and x16 slots
	Ports	Adequate numbers of RJ45 LAN and USB 3.0 ports
<b>Power Supply</b>		1 + 1 (redundant) units of adequate wattage
<b>System Software</b>	Type	Open-source and free
	Operating System	Linux-based. Debian-based linux preferred.
	Scheduler	Torque or equivalent
	Monitoring	Ganglia or equivalent

Table 1: Minimum technical specifications of the system (Sec. 1)

## 2.5 Single-point-of-contact support

The vendor must provide a single point of contact for the

1. proposal and purchase process;
2. implementation; and
3. post-implementation and warranty support.

## 2.6 Proposal & Quotation submission

Proposal & Quotation should be addressed to “Director, Centre for Modeling and Simulation, Savitribai Phule Pune University”, and submitted in two parts, namely,

1. **Part I – Technical proposal**, and
2. **Part II – Commercial/price quotation**

to be submitted in a single sealed envelope, which should indicate the following:

1. Vendor name.
2. Our reference number: CMS/1819/010 dated 9/1/2019.

### 2.6.1 Technical proposal

The technical proposal should include the following.

1. **Vendor information.** Vendor profile, together with relevant information on
  - (a) Authorized dealer/reseller certificate from the OEM.
  - (b) Documented expertise+experience in building HPC systems with Linux-based software setup.
  - (c) Agreements / purchase orders / completion certificates, if any, from clients to whom similar HPC system has been supplied by the vendor in the last 3 years.
  - (d) Support infrastructure in India and in the Pune region.
  - (e) Any presence in India's scientific establishments: Provide sufficiently detailed information including name of the establishment, purpose of the HPC system supplied, nature/configuration of the HPC system, year of purchase, contact person information if available.
  - (f) Any prior presence on the savitribai phule pune university campus.
2. **Complete technical specification of the offered HPC system.** Technical specifications of the offered system must satisfy the minimum requirements of Sec. 1. For the configuration offered, we need the following information:
  - (a) Part numbers / product IDs from the OEM for each of the major component of the hardware configuration offered.
  - (b) Complete spec-sheets, brochures, and URLs to information pages on the vendor's website, etc.
  - (c) Peak power rating of the complete system, plus power and cooling requirements.
  - (d) A clear summary of what is offered over and above the minimum requirements.
  - (e) Warranty statement which complies with the requirements in Sec. 2.11.
  - (f) Details of the (open-source) OS, HPC monitoring and management tools, clusterware, compilers, etc., offered.

### 2.6.2 Commercial/price proposal

The commercial/price proposal should include the following.

1. **Vendor information.** Relevant information about the vendor, including contact details, website of both vendor and OEM, authorized dealer / reseller certificate from the OEM, GST number, etc.
2. Complete pricing details of the offered HPC system, part numbers / product IDs from the OEM for each of the major component of the hardware configuration offered, separate pricing for each major HPC system component, implementation, etc.
3. Warranty statement which complies with the requirements in Sec. 2.11.

All prices are to be quoted in INR, mentioning applicable taxes separately.

## 2.7 Vendor selection

1. All submitted proposals will be screened by a Technical & Advisory Committee (TAC) for their technical merit relative to the needs of proposed scientific research, computing power, power and cooling requirements, etc., and will be ranked accordingly. Technical evaluation of submitted proposals will be based on the hardware configuration offered, vendor and OEM reputation, any prior experience, etc., as deemed fit by the TAC. Hardware configuration/s offered must satisfy the minimum requirements. Proposals & Quotations offering a more-than-the-minimal hardware configuration may be given preferential treatment. In all matters technical, the decision of the TAC will be final.
2. Final pricing negotiations and vendor selection will take place in a Savitribai Phule Pune University Purchase Committee meeting. The date of this meeting will be communicated to qualified vendors.
3. Savitribai Phule Pune University reserves the right to disqualify any or all proposals without giving any reason.

## 2.8 Delivery

A purchase order will be issued by the University to the vendor selected by the Purchase Committee. We expect delivery of the system in its entirety within at most 6 weeks after the date of this purchase order, but preferably as early as possible.

## 2.9 Implementation

We expect implementation of the system to be completed by the vendor within 7-10 days after delivery. End-goals of implementation are:

1. Deployment of the system complete with
  - (a) hardware;
  - (b) system software;
  - (c) any user-provided software such as VASP, Gaussian, Intel Parallel Studio / Compiler Suite, etc.;
2. Clear demonstration that the system is fully functional and usable by an end-user for scientific/computational research.

## 2.10 Testing and certification

The warranty on the system will begin on the date the system is demonstrated by the vendor to the Centre's technical team to be fully operational and working satisfactorily. This date will be decided as follows: Upon completion of implementation of the entire cluster system (hardware+software) by the vendor, the Centre's technical team will test it for not more than one week at full computational load. If no problem of any kind shows up during this test period, the system will be certified by the Centre's technical team as "fully functional and working satisfactorily". If any problems show up, they will need to be corrected by the vendor, and the Centre's technical team will again subject the cluster system through the mandatory testing period. This test cycle will be repeated as many times as required until the cluster system is demonstrated to be fully functional to the Centre's technical team's satisfaction.

## 2.11 Warranty and support

Vendor must provide, in the least,

1. 5-year on-site comprehensive warranty on all hardware, with  $24 \times 7$  support with 4-hour response, and
2. 5-year on-site  $24 \times 7$  support with 4-hour response for software setup including operating system, clusterware, and user-provided software.
3. Single-point-of-contact support for all post-implementation and warranty support needs.

Warranty on the system will begin as soon as it is certified by the Centre's technical team as "fully functional and working satisfactorily".

## 2.12 Payment

Upon certification of the fully-implemented HPC cluster system by the Centre's technical team as "fully-operational and working satisfactorily", Savitribai Phule Pune University will make full payment within 4 weeks in INR.

## 2.13 Acceptance of terms and conditions

All terms and conditions including this one are assumed to be accepted by the vendor.