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IIT Bombay

Corrigendum – I

For (PR No. 1000020460) RFx No. 6100001192 – High Performance Computing Cluster

1. Point No. I. Technical Specification- Row No. 3 (Storage)- 1st paragraph

Original:

Overall 5 petabyte (PiB) of usable file system to be provided for the HPC cluster with SAS/NL-SAS. The overall storage system should be able to deliver 100 Gbps of write throughput (in 1 MB block size) across 5 PB proposed storage systems. It should support hardware/software RAID with at least RAID6 across 5 PiB in 8D+2P array or equivalent. Redundant power, cooling and network ports required. Separate management switches for storage are required. Storage has to be housed in separate racks.

Amended:

Overall 5 petabyte (PiB) of usable file system to be provided for the HPC cluster with SAS/NL-SAS. The overall storage system should be able to deliver 100 Gbps (During acceptance, The vendor should ensure and demonstrate the IOR performance (100GBps) with 50% filled random data.) of write throughput (in 1 MB block size) across 5 PB proposed storage systems. It should support hardware/software RAID with at least RAID6 across 5 PiB in 8D+2P array or equivalent. Redundant power, cooling and network ports required. Separate management switches for storage are required. Storage has to be housed in separate racks.

2. Point No. I. Technical Specification- Row No. 3 (Storage)-2nd paragraph

Original:

3PB of *scratch* area using a parallel file system (Commercially supported Lustre or Spectrum Scale only) over hot-swap SAS/NL-SAS disk and connected via suitable interconnects. File system storage should be connected to master/login and all compute nodes directly through a high bandwidth, low latency network of switches only To be exported as PFS volume to all the compute nodes through suitable interconnects and as NFS volume to the non-compute nodes.

Amended:

3PB of *scratch* area using a parallel file system (Commercially supported Lustre or Spectrum Scale or BeeGFS only) over hot-swap SAS/NL-SAS disk and connected via suitable interconnects. File system storage should be connected to master/login and all compute nodes directly through a high bandwidth.

low latency network of switches only To be exported as PFS volume to all the compute nodes through suitable interconnects and as NFS/PFS volume to the non-compute nodes.

3. Point No. I. Technical Specification - Row No. 3 (Storage) - 3rd paragraph

Original:

2PB of usable *home* storage to be implemented using cluster/parallel file system (Commercially supported Lustre or Spectrum Scale only) over hot-swap SAS/NL-SAS disk. To be exported as PFS volume to all the compute nodes through suitable interconnects and as NFS volume to the non-compute nodes.

Amended:

2PB of usable *home* storage to be implemented using cluster/parallel file system (Commercially supported Lustre or Spectrum Scale or BeeGFS only) over hot-swap SAS/NL-SAS disk. To be exported as PFS volume to all the compute nodes through suitable interconnects and as NFS/PFS volume to the non-compute nodes.

4. Point No. I. Technical Specification- Row No. 3 (Storage)-3rd paragraph-Point No. 3

Original:

For MDT Fail over, MDS Nodes should be configured with an active/passive pair. Metadata should be configured on SSDs only in a separate Storage Array. Metadata and OST related data should not use a common Storage Array

Amended:

For MDT Fail over, MDS Nodes should be configured with an active/passive pair. Metadata should be configured on SSDs only in a separate Storage Array (wherever is applicable). Metadata and OST related data should not use a common Storage Array

5. Point No. I. Technical Specification- Row No. 16 (Additional Characteristics of the overall solution) - Warranty-Last paragraph

Original:

Additional 4th, 5th, 6th, 7th and 8th year AMC (to be quoted separately, may be purchased by IIT Bombay at the beginning of the respective year at the price quoted in this bid.)

Amended:

Additional 4th, 5th, 6th, 7th and 8th year AMC to be quoted along with the price of the solution (may be purchased by IIT Bombay at the beginning of the respective year at the price quoted in this bid.). The collective price will be taken into account for commercial evaluation.

6. Point No. II. Services Level Agreement (SLA) & Warranty-Point No. 7

Original:

A letter of commitment for five years from the date of installation, with respect to Hardware Software, and Firmware support from OEM should be enclosed in the cover for Technical bid. The Offer will be rejected if the OEM fails to attach a letter of commitment.

Amended:

A letter of commitment for eight years from the date of installation, with respect to Hardware Software, and Firmware support from OEM should be enclosed in the cover for Technical bid. The Offer will be rejected if the OEM fails to attach a letter of commitment.

7. TENDER EVALUATION-(b) Stage- II (Financial evaluation through Reverse Auction)-Point No. 4:

Original:

Electronic Reverse Auction may be carried out only if bids received are not competitive. The details of the financial bidding phase will be announced to the short-listed bidder(s) at a later date. Bidders should quote a single figure which includes all the cost of the project only in INR. The successful bidder will submit the item wise bifurcation of a single figure quoted within 24 hours.

Amended:

Electronic reverse auction will be carried out after the commercial bid opening. The details of the financial bidding phase will be announced to the short-listed bidder(s) at a later date. Bidders should quote a single figure which includes all the cost of the project only in INR. The successful bidder will submit the item wise bifurcation of a single figure quoted within 24 hours.

8. Point No. IV. Bid Evaluation - Technical Bid Evaluation - Solution superiority:

Original:

No	Particulars	Bid	Presentation	Total
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Amended:

No	Particulars	Bid	Total
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9. Point No. IV. Bid Evaluation - Benchmark Programs:

Original:

Application	Version	Where to download	Input Deck	Where to Run
CODE I		https://www.me.iitb.ac.in/~sgopalak/benchmarkOpenMP/laplace_dynamic.c		CPU only
WRF	Version 4.3.3 (bug fix release)	https://github.com/wrf-model/WRF/releases/tag/v4.3.3	Standard "conus2.5km" benchmark (https://www2.mmm.ucar.edu/WG2bench/conus_2.5_v3/), with extended length of forecast and 1 hourly output frequency. This is a single domain benchmark with 129 million grid points and grid resolution of 2.5km. This should scale up to 32 nodes or more	CPU only

OpenFOAM	Version 2206	https://www.openfoam.com/news/main-news/openfoam-v2206	1. pisoFoam - motorbike case with LES. tutorials/incompressible/pisoFoam/LES/ 2. interPhaseDyMFoam - propeller /tutorials/multiphase/interPhaseChangeDyMFoam/propeller	CPU Only
PETSc		https://www.mcs.anl.gov/petsc/	Mpi size = 10000	CPU and Accelerator

Amended:

Application	Version	Where to download	Input Deck	Where to Run
CODE I		https://www.me.iitb.ac.in/~sgopalak/benchmarkOpenMP/laplace_dynamic.c	#define NC 50000 #define NR 50000	CPU only
WRF	Version 4.3.3 (bug fix release)	https://github.com/wrf-model/WRF/releases/tag/v4.3.3	Standard "conus2.5km" benchmark (https://www2.mmm.ucar.edu/WG2bench/conus_2.5_v3/), This is a single domain benchmark with 129 million grid points and grid resolution of 2.5km.	CPU only

OpenFOAM	Version 2206	https://www.openfoam.com/news/main-news/openfoam-v2206	<p>1. pisoFoam - motorbike case with LES.</p> <p>tutorials/incompressible/pisoFoam/LES/</p> <p>Only LES reporting is fine</p> <p>And</p> <p>"endTime 0.01;" in system/controlDict file</p> <p>2. interPhaseDyMFoam - propeller</p> <p>/tutorials/multiphase/interPhaseChangeDyMFoam/propeller</p> <p>"endTime 0.35;" in lesFiles/controlDict file</p>	CPU Only
PETSc		https://www.mcs.anl.gov/petsc/wrapper/src/ksp/ksp/tutorials/ex12.c	<p>Problem size - 4000</p> <p>./ex12 -m 4000 -n 4000</p>	CPU Only
		https://gitlab.com/petsc/petsc/-/blob/main/src/ksp/ksp/tutorials/bench_ksp_solve.c	<p>problem size - 250</p> <p>./bench_ksp_solve -n 250 (uses 250x250x250 grid)</p>	CPU + accelerator

10. Point No. IV. Bid Evaluation - Benchmark Programs:

Original:

MPI scalability test (on CPU only nodes): On 1 core per socket

Amended:

MPI scalability test (on CPU only nodes)

11. Point No. IV. Bid Evaluation – OEM Profile - Row No. 4:

Original:

The OEM should have adequate documented experience in setting up three one HPC clusters capable of at least two 500+ TeraFLOPs (CPU only RMax RPeak) or three HPC clusters capable of at least 250+ TeraFLOPs (CPU only RMax RPeak) each or four HPC cluster capable of at least 150+ TeraFLOPs (CPU only RPeak) each in the last 5 years (in the last 5 consecutive financial years). Purchase order copies along with acceptance reports issued by the end user to the OEM have to be submitted. Also Reference to publicly available evidence like India super-computing site (<http://topSC.in>) must be provided for verification

Amended:

The OEM should have adequate documented experience in setting up three one HPC clusters capable of at least two 500+ TeraFLOPs (CPU only RMax RPeak) or three HPC clusters capable of at least 250+ TeraFLOPs (CPU only RMax RPeak) each or four HPC cluster capable of at least 150+ TeraFLOPs (CPU only RPeak) each in the last 10 years (in the last 10 consecutive financial years). Purchase order copies along with acceptance reports issued by the end user to the OEM have to be submitted. Also Reference to publicly available evidence like India super-computing site (<http://topSC.in>) must be provided for verification

12. Point No. IV. Bid Evaluation – OEM Profile - Row No. 5:

Original:

The server OEM or the storage OEM (in case server OEM and storage OEM are not same) must have supplied at least 1 number of PFS storage in the country of 1 PiB or 2 number of PFS storage of 500TB or more capacity as part of HPC solution (standalone storage installation will not be counted) in the last 5 years (in the last 5 consecutive financial years). Purchase order copies with bidder installations reports to be submitted along with contact nos. of the person.

Amended:

The server OEM or the storage OEM (in case server OEM and storage OEM are not same) must have supplied at least 1 number of PFS storage in the country of 1 PiB or 2 number of PFS storage of 500TB or more capacity as part of HPC solution (standalone storage installation will not be counted) in the last 10 years (in the last 10 consecutive financial years). Purchase order copies with bidder installations reports to be submitted along with contact numbers of the person.

13. Point No. I - Bidder's Eligibility Criteria – Point No. 1

Original:

The bidder has to be an Original Equipment Manufacturer (OEM) of the server hardware.

Amended:

The bidder has to be an Original Equipment Manufacturer (OEM) of the server hardware. However, if any OEM decides to bid through an agent, then OEM has to submit a declaration as per the proforma in annexure 5 and the Purchase order will be issued to the OEM through the agent. In such a scenario the experience and qualification of the OEM will be the criterion for evaluation.

Annexure - 5

Date:

Indian Institute of Technology, Bombay
Powai, Mumbai - 400076

Sub: Undertaking by Original Equipment Manufacturer against tender no. _____ dated _____ for Supply, Installation, Commissioning, benchmarking, acceptance criteria and product warranty services of HPC Cluster System at Indian Institute of Technology, Bombay.

Dear Sir,

We, M/s _____ (Name of the OEM) having registered office at _____ (address of the OEM) by virtue of being original equipment manufacturer for _____ (Name of the product/s), hereby authorize M/s _____ (Name of the bidder) having their office at _____ (Address of bidder) to submit quote on our behalf. We also confirm that they will be only responsible for the logistics of the bid.

M/s _____ (Name of the OEM) within the scope of requirement as per the tender mentioned above undertake to complete responsibility towards fulfilling the requirements of supply, installation, commissioning, benchmarking, acceptance criteria and product warranty services and of the HPC Cluster System to be supplied and installed at IIT Bombay and to adhere to and abide by the service level agreement.

We also undertake that we will be obligated to adhere to the terms of conditions and the service level agreement mentioned in the bid; and will provide support to the solutions hardware and software related issues, to provide technology and product updates and to offer extended comprehensive support for next eight years from the date of acceptance.

The undersigned is authorized to issue such authorisation on behalf of M/s _____ (Name of the OEM).

For M/s _____ (Name of the OEM)

Signature & company seal

Name

Designation

Email

Mobile No.

14. Bid Submission Due date Extension:

Sr.No.	Online RFx Clause	Previous Clause	Changed Clause
1	Bid Submission End Date/Date & Time of Submission (Online RFx Clause)	09.11.2022 at 13:00	09.01.2023 at 13:00
2	Bid Opening Date & Time (Online RFx Clause)	09.11.2022 at 16:00	09.01.2023 at 16:00


Assistant Registrar 05/12/22

Material Management Division

