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G. Chitrapavai
Deputy Registrar

Date: 18.1.19

CORRIGENDUM

Tender No. IITM/SPS/CC/HPCE Cluster/008/2018-19

Tender ID: 2018_IITM_19977_1

"Supply and Installation of HPCE Cluster"

In the tender document,

a) In Page No. 12 (Annexure A) and in Page No. 20 (Annexure B) – Point No. 1 to 3 may be read as

1. **OEM must have presence in Top 500 supercomputers listed at top500.org. within last two years (2017 & 2018). (Necessary proof of document to be enclosed with tender).** **2. OEM must have presence for at least 10 years in this business. (Proof of selling high performance computing facilities for past 10 years should be attached).** **3. OEM must have installed at least 1 X 200 TF system (CPU only) in India with at least 100 TB of parallel file system. (Order copy and work completion certificate from the client should be attached).**
Instead of
1. **OEM** must have at least 5 different entries in latest Top 500 supercomputers listed at top500.org (necessary proof of document to be enclosed with tender). 2. **OEM** must have presence for at least 10 years in this business. (Proof of selling high performance computing facilities for past 10 years should be attached). 3. **OEM** must have installed at least 1 X 100 TF system (CPU only) in India with at least 100 TB of parallel file system. Order copy and work completion certificate from the client should be attached.

b) In Page No.12, the point below the Table1 may be read as

The application performance $\mathbf{P_{app}}$ (in TFlops or ns/day) is as specified in Table 1. Performance comparison formula: $\mathbf{P_{CPU} = 0.7*P_{linpack} + 0.3*P_{gromacs}}$. **Performance metrics should be Rmax(sustained) value.** **As an example, we design for 300 node cluster for linpack(pl), suppose all 300 gave 600TF and for gromacs(pg), suppose all 300 gave 180TF, so effective P for this system of 300 nodes will be 600*0.7+180*0.3=474TF(ie.,**compute Pl*0.7+Pg*0.3 as the performance number P of the system. That number is what needs to exceed specified in Table2. Teraflops).
Instead of
The application performance $\mathbf{P_{app}}$ (in TFlops or ns/day) is as specified in Table 1. Performance comparison formula: $\mathbf{P_{CPU} = 0.7*P_{linpack} + 0.3*P_{gromacs}}$**.**

c) In Page No.13, the point. d may be read as

200 TF**(Rpeak)** of GPU nodes as specified in Table 3 (vendor should quote for PCI-e and optionally can quote for NVLink)
Instead of
200 TF of GPU nodes as specified in Table 3 (vendor should quote for PCI-e and optionally can quote for NVLink)

d) In Page Nos. 14, 21, 23, 25 &27 – Point No. 1 may be read as

S.No.	Item	Technical Specification
1	CPU-only compute nodes	- 500/600/700/800 TFlops of compute power in double precision. - clock at least 32 instructions per core per cycle. - at least 16 cores per socket with 2.4GHz or more. - At least 192 GB DDR4 RAM for main memory in a balanced configuration per node with 2666 MHz. - At least two processors per node. - At least 2 TB 7.2K RPM SATA Hard disk per node**.** - Rack mountable with suitable mounting kit. - Redundant power supplies **with no single point of failure**. - Service level: Next business day.

Instead of

S.No.	Item	Technical Specification
	CPU-only compute nodes	- 500/600/700/800 TFlops of compute power in double precision. - clock at least 32 instructions per core per cycle. - at least 16 cores per socket with 2.4GHz or more. - At least 192 GB DDR4 RAM for main memory in a balanced configuration per node with 2666 MHz. - At least two processors per node. - At least 2 TB 7.2K RPM SATA Hard disk per node**.** - Rack mountable with suitable mounting kit. - Redundant power supplies for all nodes. - Service level: Next business day.

e) In Page No. 15,22,24,26 & 28 – Point Nos.5 may be read as

Storage	- Total at least 1 PB (licensed storage) of usable file system - At least RAID 6 across 1 PB - It would be split as 60% of scratch area using parallel file system and 40% of home storage using parallel file system, both available in all nodes with an I/O bandwidth of 25 GBPS for both scratch and home. - The PFS throughput must be demonstrated with the help of IOR tool at the time **of testing after installation**, with 1 MB I/O block size - Backup up of 40% of home with a NAS Storage of 200TB; with Necessary auto backup/restore control - PFS Proposed should be completely supported software by the vendor, with upgrades and training whenever needed.
	Instead of
Storage	- Total at least 1 PB (licensed storage) of usable file system - At least RAID 6 across 1 PB - It would be split as 60% of scratch area using parallel file system and 40% of home storage using parallel file system, both available in all nodes with an I/O bandwidth of 25

	GBPS. - The PFS throughput must be demonstrated with the help of IOR tool at the time of technical evaluation, with 1 MB I/O block size - Backup up of 40% of home with a NAS Storage of 200TB; with Necessary auto backup/restore control - PFS Proposed should be completely supported software by the vendor, with upgrades and training whenever needed.

f) In Page Nos.16 – Point No.2 Price (iii), may be read as

iii.) The power consumed at full load **(Power consumption will be measured during Testing after installation)** must agree with the number quoted in the Table 2 mentioned in the technical bid. If the power exceeds the quoted value, the excess power for five years will be a penalty imposed on the tenderer.
Instead of
iii.) The power consumed at full load must agree with the number quoted in the Table 2 mentioned in the technical bid. If the power exceeds the quoted value, the excess power for five years will be a penalty imposed on the tenderer.

g) In Page No.17 - Point No. 5 (v & vi), may be read as

v) All the existing software **and data** in Virgo cluster should be successfully migrated to the new cluster. vi) After deployment, the same codes must be run on the new cluster in the presence of IIT Madras representatives and the benchmark **applications in Table 1** must meet or exceed the expectations as projected in the technical bid. If the performance is not met, the vendor must add more compute nodes to achieve the specified performance without any extra cost to IIT Madras. After installation and the above tests, end users from IIT Madras will check the software which they use, within a period of 14 working days. The power consumed at full load must agree with the quoted in Table 2 mentioned in the technical specification. If the power exceeds the quoted value, the excess power for five years will be an imposed as penalty on the Tenderer.
Instead of
v) All the existing software in Virgo cluster should be successfully migrated to the new cluster. vi) After deployment, the same codes must be run on the new cluster in the presence of IIT Madras representatives and the benchmark data must meet or exceed the expectations as projected in the technical bid. If the performance is not met, the vendor must add more compute nodes to achieve the specified performance without any extra cost to IIT Madras. After installation and the above tests, end users from IIT Madras will check the software which they use, within a period of 14 working days. The power consumed at full load must agree with the quoted in Table 2 mentioned in the technical specification. If the power exceeds the quoted value, the excess power for five years will be an imposed as penalty on the Tenderer.

h) In Page No.21 (Annexure - B) Option1, the following table may be added before the existing table

Option 1: 700 TFlops

Bidding Summary

^{P}linpack	^{P}gromacs	^{P}CPU	^{P}GPU	**#CPUnodes**	**# Racks**	**Power consumed at 100% load**
		500TF	**200TF**	**….**	**…**	**…**

i) In Page No. 23 (Annexure – B) Option 2, the following table may be added before the existing table

Option 2: 800 TFlops

Bidding Summary

^{P}linpack	^{P}gromacs	^{P}CPU	^{P}GPU	**#CPUnodes**	**# Racks**	**Power consumed at 100% load**
		600TF	**200TF**	**….**	**…**	**…**

j) In Page No. 25 (Annexure – B) Option 3, the following table may be added before the existing table

Option 3: 900 TFlops

Bidding Summary

^{P}linpack	^{P}gromacs	^{P}CPU	^{P}GPU	**#CPUnodes**	**# Racks**	**Power consumed at 100% load**
		700TF	**200TF**	**….**	**…**	**…**

k) In Page No. 27 (Annexure – B) Option 4, the following table may be added before the existing table

Option 4: 1000 TFlops

Bidding Summary

^{P}linpack	^{P}gromacs	^{P}CPU	^{P}GPU	**#CPUnodes**	**# Racks**	**Power consumed at 100% load**
		800TF	**200TF**	**….**	**…**	**…**

l) In Page No. 30 (Annexure – C) BOQ – Price Bid Format Sl.No. 15 may please be read as

15. The total power consumption cost for 5 years of running Cluster at 100% load

Instead of

15. Power Consumption at 100% load

All other conditions remains the same.

Sd/-
Deputy Registrar (Stores & Purchase)