

INDIAN INSTITUTE OF SCIENCE EDUCATION AND RESEARCH THIRUVANANTHAPURAM [IISERTVM]

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Date: 9th July 2015

ADDENDUM TO TENDER NO

No: IISER/PUR/5790/15

Dear Sirs,

Sub: HPC Cluster- Responses to Pre-bid Queries

This has reference to Pre-bid meeting held on 26th June 2015 the queries raised by the Bidders. The responses of IISERTVM are available in Annexure to this Addendum. Vendors are required to make note of these changes to our technical specifications and commercial terms of the tender notice No. IISER/PUR/5790/15 under advertisement No. IISER/PUR/PT/3/15 dated 2/6/2015.

Last date for submission of tender: 4th August 2015 [Upto 2 PM]

Date of opening of Technical bids: 4th August 2015 [at 3 PM]

Thanking You,

Yours Faithfully

Deputy Registrar [Purchase & Stores]

के. भास्कर राव/K. BHASKARA RAO उप कुलसचिव [क्रय एवं भंडार ] Deputy Registrar [Purchase & Stores] भारतीय विज्ञान शिक्षा एवं अनुसंघान संस्थान तिरुवनन्तपुरम Indian Institute of Science Education and Research Thiruvananthapuram सी.ई.टी कैम्पस, इंजीनीयरींग कोलेज पी.ओ

## ANNEXURE TO ADDENDUM DATED 9<sup>TH</sup> JULY 2015

## Answers to the queries received from vendors participated in the HPC tender

Tender No: IISER/PUR/PT/3/15

SL No	SPECIFICATION REFERENCE	QUERIES	IISERTVM's Response
1	Due date etc		
	Tender Due Date - 13th July 2015	(Lenovo/HCL): Requesting IISER to provide extra 2 weeks extension to the tender due date submission.	
		(Wipro): Our OEM systems are occupied with other Benchmarks We request IISER to extend the due date till 27th July.	
	The solution must be well designed so that the ratio Rmax/Rpeak is greater than 0.75, where Rmax is the sustained HPL performance defined above, obtained using exactly the same ground rules as given in http://www.top500.org/project/linp	Rmax/Rpeak of 0.75 is expected on CPU	We modify this requirement as follows. Rpeak is to be calculated by leaving out the performance of the GPU cards in the hybrid nodes. Similarly 'Rmax' should be the HPL performance obtained without utilizing the GPU cards in the hybrid nodes.
	ack/.	(HP): Please clarify, whether optimized HPL linpack can be used.	The ground rules for running the tests are clearly defined in the link given.
		(HP): On the Hybrid nodes, we have seen close to 73% Rmax efficiency for the 20TF hybrid cluster size requested. Requesting to allow 73% Rmax on Hybrid cluster	Rpeak is to be calculated by leaving out the performance of the GPU cards in the hybrid nodes. Similarly 'Rmax' should be
		(Wipro): For GPU nodes 0.75 Rmax/Rpeak is difficult to achieve, we request to relax the Rmax/Rpeak to 0.60.	the HPL performance obtained without utilizing the GPU cards in the hybrid nodes.
		(Wipro): As the switch asked is a chassis model, scaling up or scaling down of	

elegation

	requirement by up to 20%. However, all the bids will be evaluated for a system having the stated requirement of 100 TFLOPS of Rpeak. In the event the final size of the order is revised as mentioned above, the revised price will be arrived at by using the unit rates quoted for the necessary items as listed in the BOQ with proportionate changes in the price of lump-sum items.		occupied etc. So if we decide to scale up, then the need for a new chassis etc will
2	PART - A Master Node		
	Processor on Master/login node	(Lenovo/HCL): Request not to specify the CPU clock speed	We have only said 2.5 GHz or better. So better speed can be provided
3	PART - B CPU-only Compute Node		
	Processor on compute node	(Lenovo/HCL): Request not to specify the CPU clock speed	We have only said 2.5 GHz or better. So better speed can be provided
	If these are Diskless nodes, all compute nodes should boot within 5 minutes from the time of issue of one single command from any of the master nodes.		Not clear why such a request is made. Either configuration is acceptable. No change in specifications
4	PART - C Hybrid Note		
	Processor on Hybrid/GPU node	(Lenovo/HCL): Request not to specify the CPU clock speed	We have only said 2.5 GHz or better. So better speed can be provided
		(Locuz): Kindly amend the same with latest GPU card which is 12Gb memory and 1.3 TF in double precision	
	,		Page   2

5	PART - D Node Redundancy (CPU only, spare)		
	Processor on spare nodes	(Lenovo/HCL): Request not to specify the CPU clock speed	We have only said 2.5 GHz or better. So better speed can be provided
	Enterprise SATA @ 7200 rpm, minimum 500 GB capacity.	(Locuz): Requesting IISER to include minimum 1 TB HDD	Reason for request not clear. 500 Gb is the minimum in the compute nodes also. Again 1 Tb offer also satisfies the specification
	Node redundancy - chassis	(Wipro): We request IISER to clarify, in case Chassis model servers model, if there is sufficient "U" space available in main compute chassis, can we use those chassis, or additional chassis also need to be proposed.	those chassis can be used. However vendor is encouraged to design so that the nodes are indeed redundant in case
6	PART - E MDS and OSS Nodes		
	MDS and OSS Nodes	(Lenovo/HCL): Please make this optional if storage solution does not require proposing OSS and MDS nodes.	
7	PART - F Storage		
	Mount Protection) should be	(Lenovo/HCL): Requesting IISER to allow bidder quote alternate parallel file system like GPFS, iBrix, Nextstore only	
		(Locuz): Rephrase the statement (for clarity) as Hardware RAID for MDT also	Rephrased: MDT in RAID 10 (Hardware RAID) and OST in RAID 6 (Hardware RAID). (8 + 2) configuration
	enclosure/s, which is/are connected	(Locuz): Please clarify that do you need separate storage for OST and MDT or different disk enclosure for OST and MDT	
		(Wipro): We request IISER to clarify, if same	We believe that the specification is clear

		storage controller can be shared for OST and MDT storage using dedicated storage enclosure for MDT storage.	•
	PART - G Software		
8	Job Scheduler & Resource Manager - Can be Open Source.	(Altair): We request the committee to consider Licensed and Commercial Software for this requirement, the current RFP will ensure all the vendors to quote Open Source components only.	not insisting on commercial software for scheduler alone. If the bidder is including
		(Lenovo/HCL): Software's like Linux OS, Resource Manager, Job Scheduler and File	

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	system	system	software. If the bidder is including an open source Job Scheduler & Resource Manager in the bid, then the bidder MUST quote for a commercial Job Scheduler & Resource Manager as on OPTIONAL item. Details of the software must be included in the technical bid with the cost, including licensing charges etc for six years listed as an optional item in the commercial bid. If IISER TVM decides to exercise this option based on evaluation of the technical bid, then the price of the optional item will be included in the price comparison. The bidder is free to quote ONLY a commercial version as part of the main bid if such software is necessary according to the bidder to attain the listed performance benchmarks.
	all these softwares	(HP): In the table given in page 7, it is mentioned as "Can be open source". Open source software does not need license, please clarify this.	licensed software, perpetual license is not
		(CMS): Please remove the clause as Perpetual licenses are not available with Open source products(OS/ Job scheduler/ Resource Manager) as per RFP Requirement	warranty and AMC
9	PART - H Server rack details		
	Useful cooling output (in kW) 30 kW	(HP): In page 2, under "Specification and Technical Details:" it is mentioned maximum power consumption as 20KW per rack. Please clarify whether 20KW or 30KW to be considered	

10	PART - I Applications that will run		
11	PART - J Network/Interconnect		
	or-higher (in terms of bandwidth), Chassis switch with redundant	(Lenovo/HCL): Should we perceive this request as there should be dual QDR/FDR/XDR ports on proposed Servers in HPC solution proposed by bidder which also means dual physical connection from infiniband switch to each server. Please confirm	from this specification. That is, we modify this specification to - "FDR/EDR/equivalent-or-higher (in terms of bandwidth), Chassis switch with
		(Locuz): Please confirm, there is no infiniband standard defined as XDR. We believe it is a typo and the RFP means EDR (100 GBPS)	EDR
		(Locuz): As per the RFP is dual-Rail-QDR/FDR/EDR are being considered as equivalent offering then we would request to specify EDR as 1:2 blocking. This will ensure all solutions are on a level playing field, otherwise bidders will never propose any EDR option as it will be inherently more expensive.	as equivalent. If a vendor offers above the minimum then they score extra points in the solution superiority category. Also the design has to be such that the performance benchmarks that are set are
		(Locuz): Dual Rail QDR should be built with two single port QDR HCAs per server as then only they bandwidth from the ports can be clubbed. A dual port single card will be bottlenecked by the PCIe bandwidth limitation and having dual-rail on switching side will be redundant.	from this specification. That is, we modify this specification to - "FDR/EDR/equivalent-or-higher (in terms of bandwidth), Chassis switch with
		(HP): QDR, FDR are the technologies available in Infiniband. FDR delivers 560Gbps against QDR's 40Gbps bandwidth. Similarly commercially there is difference	as equivalent. If a vendor offers above the minimum then they score extra points in

		between QDR and FDR. Hence requesting to consider FDR as a technology for better performance. Also please clarify whether two ports per compute nodes to be used connected to the IB switch	performance benchmarks that are set are satisfied. Two single port QDR HCAs per
	Master/Head/Login node to have 10Gbps NIC for LAN connectivity	(Locuz): Please specify if you need 10BASE T ports or SFP+ ports and how far the LAN switch so that accordingly cable length can be estimated.	
12	Cluster Management		
13	Job Management		
15	Compilers Library and other software		
15	General terms and conditions		
	the date of purchase order. Once delivered to onsite, the installation, commissioning and acceptance testing period will be within 4 weeks	(Lenovo/HCL): Requesting IISER to change delivery time frame as 8 weeks from date of LC opening by IISER and 8 weeks instead of 4 weeks for installation, commissioning and acceptance testing	requested.
	from the date of delivery of equipment	(Wipro): We request IISER to change the term to delivery period 8 weeks from date of opening of LC	Agreed
		(Locuz): Requestion you to consider the delivery period from 8-10 weeks from the date of clear LC. Installation 4 more weeks and 2 more weeks for reproducing benchmarks	
	installation should be done by certified and trained engineers for	(HP): How many days of training to be provided and for how many users. We suggest IISER to include the training on Parallel programming and code optimization	around 5 to 10 users. Yes, training on parallel programming, code optimization



	Infiniband etc.) followed by comprehensive user training.	technics which helps better utilization of cluster by user community.	should be included.
16	Warranty/Checklist		
			Yes, AMC charges for the additional 3 years will also be considered in the bid comparison
	after 30 days without rebooting the cluster, in presence of the		regular use including addition of users, running of jobs etc will only be done.
17	Bidder eligibility criteria		
	presence in the TOP500 Supercomputer list (http://www.top500.org) continuously in all the lists of the years 2012, 2013 and 2014.	(Lenovo/HCL): Requesting IISER to remove this clause or please consider IBM entries in top 500 as Lenovo / IBM entries under the situation that IBM System X business got acquired by Lenovo starting October 2014 which completed globally only in Jan 2015.	the eligibility. Proper documentation in addition to a statement by Lenovo to be
		(CMS): "Request to include latest June 2015 List and amend this clause as following ""The OEM and SI should have had at least one entry in the Top Supercomputers-India list (http://topsupercomputers-	considered and the clause thus amended. Only OEM need to have an entry in the

	india.iisc.ernet.in) maintained by SERC, IISc, Bangalore between December 2012 (the ninth list) up to June 2015 (the fourteenth list). Justification: Since it is a big opportunity, SI has the important role to front end and the execute the HPC System, They should be experienced in the field .Also Including the latest 2015 June list would enable more OEMs to propose their product for this tender"	
	(Netweb): You have asked for one listing on the India Top 500 List with the same OEM, we would like to state that, we have couple of Installations with government reputed institutes, they prefer not to list on any such list for strategic reasons. We can provide proof of such successful installations which are of same or more capacity/performance of other entries on the list. We feel that this should be considered	-
installed at least one supercomputer of 7 TFLOPS (Rpeak) capability (contribution from CPU-only nodes in India. The same should have been successfully supported (post-installation) at least for a period of one year. Provide a certificate from the customer to this effect.	Justification: For such a high level Implementation the System Integrator has a major role to play both for installation as well as after installation support. So the Implementing system Integrator also needs to have this experience.	
	(CMS): "Request to amend this clause as ""Both OEM as well as bidder (system	

	equivalent or better) interconnect,	Integrator) comply to this clause. Justification: For such a high level Implementation the System Integrator has a major role to play both for installation as well as after installation support. So the Implementing system Integrator also needs to have this experience"	
18	Benchmark performance criteria		
	system which has higher performance than that mentioned above, then the bidder is expected to run the benchmarks on a subset of the system whose performance does not exceed the limits mentioned (10 TFLOPS for CPU cluster and 10 TFLOPS for GPU+CPU cluster). Also, the benchmark has to use a machine	benchmark results will be evaluated?	
	the routine 'PDGETRI.f' (http://www.netlib.org/scalapack/ex plore-html/d3/df3/pdgetri_8f_source.html)	(Lenovo/HCL): To have an uniformity across all the vendors, please share a common code which does the random number generation for matrix 10000 and calls	vendor should have in house expertise to do at least this much.
	generated general double precision square matrix of order n=100000.	used for the benchmark? Clarity required?	explicitly mentioned the routine to be used. We expect the vendor to have at least sufficient in house expertise to do this much.
		(HP): Can "n" be more than 10000. For example can we run Scalapack benchmark	

	with n > 50000	
the routine 'PDGETRI.f'		mentioned. The OEM/Vendor is expected to have the
Quantum Espresso and SCALAPACK	(Lenovo/HCL): Can we use any version of QE for this benchmark? Do we need to have turbo on/off for the SCALAPACK/QE benchmark?  (HP): Quantum espresso - can QE be run in Open MPI + MPI hybrid mode? Other technical queries on running QE	SCALAPACK/QE  Yes it can be run in OpenMP + MPI
a sustained Rmax of at least '0.75 x Rpeak' with 80% of the TFLOPS coming from CPU only nodes (with		The subsequent points in the section "Benchmark performance criteria" of the tender elaborate on the documentation required. In addition other standard or

		(Locuz): Please clarify "Calculation of	
	in the benchmark performance criteria section	Benchmark performance score", say with an example. Please explain "Aggregate normalized benchmark execution time factor"	is needed it will be orally discussed.
	Benchmark: Interconnect	(Locuz): In the whole document there is no clarity on interconnect which has to be proposed for the benchmark? We need clarity from IISER.	system to be procured is clearly defined.
19	Evaluation Methodology		
20	Commercial		
	Payment terms	(HCL): Incase the site is not ready then IISER is willing to release the money due to the vendor or allow for delivery only when the site is ready.	hardware is delivered

		Thiruvananthapuram, we suggest IISER to ask for a mandatory resident engineer at site.  (Wipro): Considering the size of cluster, remote location and complexity in initial phase of maintenance, we suggest IISER to consider adding an onsite support engineer at least for one year for smooth operation of the setup.	of posting one resident engineer with at least one year experience with HPC installations for one year at site. This will be an optional item and its cost will be included in the commercial bid comparison only if IISER decides to exercise this option.
agair 'Acce 'Perf Chec	nst delivery, installation and eptance Test Check'. 10% after formance Acceptance Test ck', after 30 days	(Locuz): In the RFP two payment terms are mentioned in the tender document (Page 23 and 36). Need clarity on correct payment terms for imported goods.	shipment, 10% after installation and Commission and on submission of BG for 10% of P.O value towards performance during warranty
be r date com	made within 30 days from the of supply, installation and missioning. For imported goods,	(Locuz): We are fine with the payment term of 100% irrevocable LC with 90% payable against submission of shipping document and balance 10% against installation and commissioning with submission of PBG of 10% of order value till warranty period	rebooting.
EMD	)	(Wipro): Kindly mention the details of EMD: Whether DD/BG, it should be in favour of whom and payable at?	
from	- 1	(Wipro): Wipro will be the System Integrator for this project offering products of other Original Equipment Manufacturers (OEMs). In case Wipro becomes L1, we would require IISER- Trivandrum to issue Excise Duty Exemption Certificate in the name of our suppliers/OEMs as they are the material manufacturers. However, PO	be issued on OEM/ Supplier. However, the integrator need to establish an evidence that the final destination of the items is IISERTVM,

	should be placed on Wipro Ltd only. In case IISER cannot issue this certificate in our supplier's names, we will be quoting prices inclusive of Excise Duty and same has to be paid by IISER. Kindly confirm.	
Integrity pact	(Locuz): Please confirm whether integrity pact to be submitted by bidder in letter head of technical bid	
Additional clauses to be added	(Wipro): Additional clauses suggested on limitation of liability, Site not ready, taxes and duties, deemed acceptance etc.	
-	-	Out of two copies of tender (Technical) one can be a soft copy in the form of CD/pen drive.
-	-	Refer Tender number in all correspondence

Deputy Registrar [Purchase & Stores]

के. भास्कर राव/K. BHASKARA RAO उप कुलसचिव [क्रय एवं भंडार ] Deputy Registrar [Purchase & Stores] भारतीय विज्ञान शिक्षा एंव अनुसंघान संस्थान तिस्वनन्तपुरम Indian Institute of Science Education and Research Thiruvananthapuram सी.ई.टी कैम्पस, इंजीनीयरींग कोलेज पी.ओ CET Campus, Engg. College P.O. तिस्वनन्तपुरम/Thiruvananthapuram-695 016