

Expression of Interest [EOI]” for Upgrading of High Performance Computing System”

at CDAC, Knowledge Park

Queries raised by the bidders and the clarification are as follows:

S.N	Query	Clarification
1	<p>M/s. HP India</p> <p>Our benchmarking team has some concerns observed on the LAMMPS performance on GPGPU. Can we share your dataset with the authors of LAMMPS towards this? Kindly accord approval for the same.</p>	<p>LAMMPS application is open source and freely available. You can share with the authors.</p>
2	<p>M/s. IBM India Pvt. Ltd.</p> <p>1. Can the following be done: - porting to run on the target architecture - code modifications to improve the performance</p> <p>2. Can we submit 5TF, 10TF, 15TF, 20TF, 25TF (5 data points) results and do the projection for 40TF</p>	<p>1. Can be done</p> <p>2. Yes</p>

	<p>3. Considering the longer execution time of lammps (50006_mol_water input), can we reduce the run step (ie. 100000) for the 5TF and 10TF runs.</p> <p>4. Can we configure in a different way (as compared to the suggested one) and ensure the same result.</p> <p>5. How to confirm the correctness of the results? Is there a reference output available?</p> <p>6. Is there a reference execution time available?</p>	<p>3.Yes. You can use 10000_mol or reduce the run step</p> <p>4.OK. Scalability, performance and execution log to be submitted with EOI.</p> <p>5.Ref. the LAMMPS website</p> <p>6.No</p>
3	<p>M/s.Netweb Technologies,</p> <p>1. General</p> <p>A) The document mentions that the three benchmark codes -LINPACK, LAMPPS and MEME should be run at 20 TF(N),40TF(2N) and 10TF (N/2) . Please confirm whether the N value is the theoretical peak performance (Rpeak) of the system.</p> <p>B) For Hybrid cluster the EOI mentions "80% of the performances should be obtained from general purpose CPU with double precision".</p> <p>Please let us know whether it means that for a</p>	<p>1.Yes. This N value is the theoretical peak performance (Rpeak)</p> <p>1.B. Independent 16TF (Rpeak) performance from CPU and 4TF(Rpeak) performance from GPU of a given system acceptable</p>

<p>Hybrid cluster the benchmarks has to run in a cluster with 16TF (Rpeak) performance from CPU's and 4TF (Rpeak) from GPU's. Such a homogenous cluster- (all nodes having GPU's) is not possible as GPUs are much powerful than CPU's in FLOPS. In such a scenario please let us know if we need to run the GPU enabled applications (LINPACK,LAMMPS,MEME) in a homogenous cluster across 20TF,10TF,40TF (majority performance obtained from GPU's) or in 4TF,2TF and 8TF GPU enabled cluster only.</p> <p>C) As all the 3 applications mentioned (LINPACK, LAMMPS and MEME) are MPI and multi-GPU enabled, we would request CDAC to allow us to run all the apps in a 20TF homogenous cluster having GPU's in all nodes.</p> <p>2. LAMMPS</p> <p>A) LAMMPS is multi-GPU enabled. The GPU version of the same is available from http://code.google.com/p/gpulammips/.</p> <p>B) Please let us know whether we can run the GPU enabled LAMMPS instead of the LAMMPS mentioned in the CDAC website</p> <p>C) For running the input datasets in a GPU cluster, some changes are required in input files to give keywords that will enable it to run on GPUs. Few examples of the changes are given below:</p> <ol style="list-style-type: none"> 1. Change file "parm.wat_spcef" pair_style lj/cut/coul/long 9.0 to air_style lj/cut/coul/long/gpu 9.0 	<p>1.C) No. 16TF (Rpeak) performance from CPU and 4TF(Rpeak) performance from GPU of given system acceptable.</p> <p>2. B.Yes.</p> <p>2. C.Yes. You can change</p>
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	<p>2. Add following line in "in.lammps" fix 0 all gpu force 0 1 1.0 threads_per_atom 2</p> <p>Please let us know whether the same is acceptable by CDAC</p> <p>3. MEME A) MEME is also multi-GPU enabled .The GPU version of the same is available from (http://sites.google.com/site/yongchaosoftware/Home/cuda-meme) B) Please let us know whether we can run the GPU enabled MEME instead of the MEME mentioned in the CDAC website</p> <p>C) For running the MEME on clusters with multi-GPUs, it requires input data with multiple sequences. We have run the input file in a node with 2 GPU's .Since the input dataset has only one sequence it is unable to use the second GPU. CUDA –MEME requires input files multiple sequences to run in multi-GPU cluster. Request you please give us the same datasets in multiple sequences (2 or more). Alternative can we divide the given input dataset equally to match the number of GPU's in the system.</p>	<p>3.B.Yes</p> <p>3.C).Vendor has to port the codes on GPU.CDAC will provide codes for CPU alone.</p>

4	<p>M/s.CMC Ltd</p> <ol style="list-style-type: none"> 1. Whether CDE (Custom duty exemption Certificate) will be provided? 2. What will be the CPU GPU ratio of the proposed system? 3. What is the requirement of Memory (per core)of the compute Nodes 4. What is the internal storage requirement of Compute Nodes? 5. Wheather Any external storage required? If yes then Size and File System to run in the HPC Storage. 6. Wheather you will accept open source cluster management software/ Job Sceduler? 7. Please give details of the interconnect. whether it is Gigabit/10 Gig Ethernet or DDR(20 Gbps)/QDR(40 Gbps)/ Infiniband Interconnect ? 	<p>1.Yes</p> <p>2.Cpu: 80 % GPU 20 %</p> <p>Clarification for 3-7: It will be mentioned in the technical section of RFP.</p>
5	<p>M/s .HP India</p>	

<p>A) MEME is also multi-GPU enabled .The GPU version of the same is available from http://sites.google.com/site/yongchaosoftware/Home/cuda-meme)</p> <p>B) Please let us know whether we can run the GPU enabled MEME as mentioned above instead of the MEME mentioned in the CDAC website</p> <p>C) For running the MEME on clusters with multi-GPUs, it requires input data with multiple sequences. We have run the input file in a node with 2 GPU's. Since the input dataset has only one sequence it is unable to use the second GPU. CUDA –MEME requires input files multiple sequences to run in multi-GPU cluster. Request you please give us the same datasets in multiple sequences (2 or more). Alternatively can we divide the given input dataset equally to match the number of GPU's in the system.</p> <p>D) Alternatively, we can use GPU enabled MEME from the website https://sites.google.com/site/yongchaosoftwar e/Home/cuda-meme to run using GPUs. However, as on today this package does not support TCM(Two components Mixture) option recommended by CDAC for the CPU benchmark. We need to use either ZOOPS or OOPS model to run MEME on GPUs. Can you please confirm what is the your choice on the GPU enabled MEME benchmark?</p>	<p>B. Yes,</p> <p>C. Vendor has to port the codes on GPU.CDAC will provide codes for CPU alone.</p>
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	<p>Benchmark code:</p> <p>HP strongly recommends that CDAC specifies the GPU-enabled software version source for HPL, MEME and LAMMPS. This will ensure an uniformity amongst the vendors in terms of code-base so that the multi-vendor comparison remain meaningful.</p> <p>Power consumption:</p> <p>Since such large (20TF) clusters are in the vendor's benchmarking centers abroad which are non-dedicated (central resource-pool), it is not possible to get the power measurements while the job gets executed. Hence, we recommend that CDAC allows vendors to be able to "ESTIMATE" the power consumption while the jobs are being executed, apart from the "PEAK" power ratings derived based on verifiable methods.</p>	<p>Benchmark: Vendor has to port the codes on GPU.CDAC will provide codes for CPU alone.</p> <p>OK.</p>
6	<p>M/s. WIPRO</p> <p>Can we do the bench marking on the scale down HPC(i.e., lesser number of nodes) and extrapolate the results for 40, 20 and 10 teraflops respectively</p>	<p>No.At least benchmark to be performed at the three different configurations close to 10-20TF</p>
7	<p>M/s. Cray Supercomputers (India) Pvt Ltd</p> <p>--</p>	

	<p>1. The model we follow for service support is to have service cell after we have first Customer in the city. Following that model the moment we have our first customer (CDAC or anyone else). Cray has been servicing the systems in India to the satisfaction of the customers for the past over 22 years.</p> <p>2. Cray Inc. has PAN. We have been doing business in India directly for last several years and PAN proved to meet all necessary statutory requirements to conduct business in the Country. We shall provide proof of PAN.</p> <p>3. We shall include 'Cray 2010 Annual Report' as a proof for our annual sales turnover.</p> <p>4. As Cray Inc., USA does not have bank account in India it won't be possible to get Solvency certificate. Please consider the the 2010 Annual Report as proof of financial health of the company.</p>	<p>1. Acceptable</p> <p>2. Apart from PAN , you have to furnish the statutory requirements as applicable as per State/Central Government regulations upon your establishment of Service cell at Bangalore</p> <p>3. Acceptable</p> <p>4. Solvency certificate issued by the bank with which Cray Inc.USA holds the account is acceptable.</p>
8	<p>M/s. Locuz Enterprise solutions Ltd.,</p> <p>Can we provide the solvency certificate from IDBI Bank?</p>	<p>Solvency Certificate from Scheduled/Nationalized Bank with which the bidder holds the current account is acceptable.</p>