Tender Enquiry No IITD/SCFBio/GPU/01

# Indian Institute of Technology Delhi

**Hauz Khas, New Delhi - 110 016**

**(Ph. No. 011-26596786; FAX No. 011-26582037)**

**Due Date: 01-03-2013**

**Subject: Procurement of a GPU based Cluster at Supercomputing Facility for Bioinformatics & Computational Biology, IIT Delhi**

## 1. Background:

**Supercomputing Facility for Bioinformatics & Computational Biology (SCFBio) IIT Delhi** intends to procure a GPU (NVIDIA) based Cluster for running the Bioinformatics applications (Amber, Gromacs, NAMD, etc).

Sealed tenders (technical & commercial are to be provided separately) are, therefore invited from reputed vendors for the aforesaid purpose as per the details given in the technical specifications. These details are available on the IIT Delhi website www.iitd.ac.in and SCFBio's web site: www.scfbio-iitd.res.in

## 2. Eligibility Criteria of Bidders:

i) Bidder should preferably be either an **Original Equipment Manufacturer (OEM)** or should be **Authorized System Integrator Partner** having Direct Purchase and Support Agreement with the OEM. In case the tenderer is a System Integration Partner of the Principal Manufacturer, a Certificate from the Principal Manufacturer clearly stating the relationship with the Partner and authorization to the Partner to quote for this Specific tender Enquiry is to be furnished.

ii) All **Components** offered in the Bill of Material should be covered under OEM support enabling program so that to get back end support / benefits from Principles / OEM in terms of Free Software Update Support / Maintenance releases, if any, to particular Software Version, Access to 24 x 7 x 365 online support from Technical Assistance Center of OEM for resolution of problems with the help of Online tools and technical database for on-line resolution, advance defective part replacement during warranty period (3 years) within a period of two working days and OEM Login Access. The undertaking from the OEM for the same should be enclosed with the technical bid.

iii) Bidder Turnover should be minimum Rs.50 Crores (INR) and should have a presence in the market from the past 4-5 Years with experience in offering such solutions. A Confirmation regarding this subject along with the copy of audited balance sheets should be submitted along with supporting supplementary documents.

iv) Copies of work orders for implementation of GPU based installation for running parallel applications (MPI) successfully executed during last three years, out of which at least one order should be of value not less than 80% of estimated cost

## 3. Obtaining Bid Documents:

i) The bid documents can be downloaded from IIT Delhi website www.iitd.ac.in or SCFBio website www.scfbio-iitd.res.in.

## 4. Submission of Proposals:

i) The bidder shall go through the entire document and must comply with all the terms and conditions. **Please note that any deviation from the laid down requirements/specifications shall be duly signed and stamped by the bidder.** Failing to comply with this requirement may result in the bid being rejected.

ii) The proposals shall be submitted in two parts and should be super-scribed as **"PART-I: COVER FOR TECHNICAL BIDS"** and **"PART-II: COVER FOR COMMERCIAL BIDS".**

iii) **Part-I** shall be a Technical Offer with full details including description of Hardware / equipments so as to enable technical assessment of the proposal. This shall also include Earnest Deposit Money as per **Para 5.** Also provide the following solutions details

iv) **The Technical bid** must be submitted in an organized and structured manner. No brochures/leaflets etc. should be submitted in loose form. The Technical Offer should consist of the following:

a. A letter of authority duly signed by an authorized signatory.
b. Complete Technical Specification along with Make, Model, Manufacturer and Part Number.
c. Technical Documentation [Product brochures, leaflets, manuals etc.]
d. Delivery and implementation schedule.
e. Compliance of terms with any deviation clearly indicated in remarks.
f. Warranty and AMC (Comprehensive Annual Maintenance) details.
g. **Do not fill any column related to commercials.**

v) **Part – II** should contain **The Commercial Bids** for the entire proposal. The rates should be quoted in Indian Rupees/USD. All prices shall be fixed and shall not be subject to escalation of any description. Also following details should be provided:

a. A letter of authority duly signed by an authorized signatory.
b. All costs should be given in Figures and Words.
c. Govt. Levies like Sales Tax, Octroi, Excise Duty, Work Contact Tax (WCT) and Education cess etc., if any, shall be paid at actual rates applicable on the date of delivery. Rates should be quoted accordingly giving the basic price, duties and taxes etc., if any.
d. Bidder should provide the itemized costs for all the components(like server, GPU cards, Infinibamd /Gigabit Switch, Racks, etc) mentioned in the technical specifications

vi) **Both the covers should be first sealed separately** and then both the cover should be kept **in a single sealed bigger cover.** This envelope should be duly signed by an authorized signatory and should bear the inscription as given in tender notice.

vii) **Bids Acceptance:** The bid must reach

**Supercomputing Facility for Bioinformatics & Computational Biology, 3rd Floor (above Sip n Bite), Synergy Building, IIT Delhi, Hauz Khas, New Delhi -110016, Phone +91-11-26596786**

on or before **01-03-2013 at 5 pm**. Bids received after the due date and time are shall be rejected. In the event of due date being a closed holiday or declared holiday for Central Government offices, the due date for submission of the bid will be the following working day at the appointed time and venue.

viii) **Validity of bids:** Bids should be valid for a minimum period of 90 days after the due date.

**Earnest Money Deposit:**

**i)** Each bid for this installation must be accompanied by Earnest Money Deposit of Rs.75,000/- (Rupees Seventy five thousand only) in the form of Demand Draft/Pay Order/Bank Guarantee of any Indian Nationalized Bank taken in the name of **'IRD Accounts, IIT Delhi'**. Bank Guarantee should be valid for a minimum period of 90 days from due date of the quotation. **Quotations received without Earnest Money Deposit shall be rejected. It should be a part of Technical Bid.**

ii) Earnest Money shall be forfeited and bid is liable to be rejected, if the bidder withdraws or amends or impairs or derogates from the tender in any respect within the period of validity of the tender.

iii) The Earnest Money of unsuccessful bidder shall be returned within one week of finalization of purchases.

iv) The earnest money shall be liable to be forfeited upon non supply of order.

v) No interest will be payable by IIT Delhi on the Earnest Money Deposit returned to the unsuccessful bidder.

**5. Rejection of Bids:**

i) IIT Delhi reserves the right to accept or reject any bid or cancel the tender proceedings without assigning any reason whatsoever.

ii) If a bidder gives wrong information in their bid, IIT Delhi reserves the right to reject such bid at any stage and forfeit the Earnest Money Deposit / Performance Guarantee / Security Deposit and cancel the contract, if awarded.

iii) Incomplete quotations are liable to be rejected.

iv) **If the technical offer contains any price information the offer will be summarily rejected.**

v) Canvassing in any form in connection with the tenders is strictly prohibited and the bids submitted by the bidders who resort to canvassing are liable for rejection.

vi) IIT Delhi may not pay any costs incurred towards preparation and submission of the bid of any other expenditure in this regard.

vii) Unsigned tenders, unattested corrections and over writing by bidders are also liable for rejection.

**6. Payment Terms:**

Payment for this procurement shall be made in INR/USD with all taxes and levies except custom duty and excise duty since the Institute is exempt from CD & ED. Vendor must indicate their preferred mode of payments in the price bid.

**7. Clarifications:**

In case the bidder requires any clarification regarding the tender documents, they are advised to submit their question in writing to **SCFBio, 3rd Floor, Synergy Building, IIT Delhi.**

**8. Quantity Variations:**

The proposed solution is subject to change depending on requirement.

**9. Inspection:**

IIT Delhi shall have the right to inspect or to test the items after delivery to confirm their conformity to the required specifications. The supplier shall provide all reasonable facilities and assistance to the inspector at no charge to IIT Delhi. In case any inspection of tested service fail to conform the specifications, IIT Delhi may reject them and supplier shall make all alterations necessary to meet specification required free of cost to IIT Delhi.

**10. Installation & Warranty:**

a) Installation and integration of all supplied hardware and software shall be done by the bidder

b) The bidder shall install and configure all required hardware and software suites, including but not limited to: racking & stacking, cluster networking, configuring cluster master and grid master on master node and execution/ submission hosts on all nodes, benchmarking of compute nodes, license utilities configuration, configuring environment variables, Infiniband MPI implementation for low latency, install compilers, install applications and make them available on all compute nodes, etc.

c) The bidder shall conduct acceptance test of the supplied solution at the installation site and demonstrate the functionalities as per specifications including benchmark results.

d) The warranty starts from the date of acceptance/installation.

e) The supplied hardware should have minimum 3 years on-site comprehensive warranty including upgrades of BIOS, firmware, patches, etc.

f) The 3-year warranty support is also for all supplied software including OS, compilers, system software, application software, HPC stack, etc. The support includes all patches, bug-fixes and upgrades

g) If unresolved issues are pending, warranty duration would be extended till satisfactory resolution of issues without any extra cost to Customer.

h) Post-warranty maintenance support for at least 3 years in respect of entire configuration (comprehensive hardware maintenance, software support & upgrades, etc.) is expected from the bidder. The bidder must submit this post-warranty maintenance support cost (annual basis) as a percentage of procured cost.

i) This is a time bound and high priority project. It must be understood that the bidder has made the proposal after fully considering all such factors, which may have any bearing on the time schedule. The bidder will be required to supply, install and enable services at all the locations **within 8 weeks** from the date of placement of work order in the order of priority as will be decided by IIT Delhi.

j) The bidder will have to arrange for all the testing equipment & tools required for installation, testing & maintenance etc. at his own cost.

k) IIT Delhi will have the right to reject the component /equipments supplied, if it does not comply with the specifications at any point of installation/inspection.

**11. Liquidated Damages:**

If the supplier fails to deliver any or all of the goods or complete the installation within the period specified in the purchase order, IIT Delhi shall without prejudice to its other remedies, deduct as liquidated damage **0.5 percent** of the price of the delayed goods for every week or part thereof while making the initial payment itself.

**12. Force Majeure:**

If there is a delay in performance of schedules of contract due to event of Force Majeure, IIT Delhi may deal with the case differently.

**13. Arbitration and Laws:**

Except where otherwise provided for in the contract, all questions and disputes relating to interpretation and application of the provisions of the contract shall be settled mutually within thirty (30 only) days (or such longer period as may be mutually agreed upon) for the date that either party notifies in writing that such dispute or disagreement exists, under the Rules of India Arbitration and Conciliation Act, 1996. The venue of Arbitration shall be New Delhi, India. The arbitration resolution shall be final and binding upon the parties and judgment may be entered thereon, upon the application of either party, by any court having jurisdiction. The Indian laws shall govern this contract.

# Technical Specification for the Proposed Augmentation of GPU based cluster for SCFBio, IITD

# Technical Specification for the Proposed Augmentation

## ***GPU based Compute Cluster***
## ***Requirement at IIT Delhi***

### 1) Specifications for Master Node Qty- 01

| | |
|---|---|
| ***Form factor/height*** | *2U Rack* |
| ***Processor*** | *2x 8-core Intel Xeon® E5-2670 series processors @ 2.6GHz* |
| ***Cache*** | *20 MB per processor* |
| ***Memory*** | *64GB RAM DDR3, 1333 or higher MHz scalable Up to 768 GB* |
| ***Media bays*** | *DVD Drive* |
| ***Disk*** | *16 x 900 GB SAS2.5" HDD, 10K RPM* |
| ***RAID support*** | *RAID on motherboard, integrated 6 Gbps hardware RAID-0, -1,-10* |
| ***Network interface*** | *4 × 1 GbE ports, Single QDR Infiniband port, 2x SAS/FC Ports for Storage connections with 2 cables* |
| ***PCIe 3.0 Expansion slots*** | *4 - 6 PCIe Gen 3 slots compatible with GPU cards.* |
| ***Power Supply*** | *Redundant and Hotswap with 80 PLUS Platinum compliance* |
| ***Fans*** | *Redundant and Hotswap* |
| ***Systems management*** | *IMM2, Predictive Failure Analysis, Diagnostic LEDs, light path diagnostics panel, Automatic Server Restart* |
| ***Operating systems supported*** | *Microsoft Windows Server, Red Hat Linux, SUSE Linux* |
| ***Warranty*** | *3-year onsite* |

### 2) Specifications for Compute Nodes Qty- 04

| | |
|---|---|
| ***CPU/Processor*** | *2x 8-core Intel Xeon® E5-2670 with 20MB Cache @ 2.6Ghz* |
| ***RAM*** | *64GB ECC DDR 3,1600MHz equal distribution of memory on DIMMs* |
| ***GPU*** | *NVIDIA K20* |
| ***CPU:GPU Ratio*** | *2:2 only on Compute nodes with GPU Cards* |
| ***GPU Memory*** | *6GB per GPU* |
| ***Connectivity between CPU and GPU*** | *Dedicated 16xPCI Express bus (Gen 3.0)* |
| ***Cluster Interconnect Infiniband*** | *Minimum of 40Gbps bandwidth in a non – blocking modes between the nodes* |
| ***Ethernet Network Ports*** | *At least 2x 1G ports with PXE boot capability* |
| ***Disk*** | *500GB SATA, 7200 RPM* |
| ***Expansion Slots (I/O)*** | *Dedicated 2-16x, PCIe –Gen 3 for 2 GPU and dedicated 1-8x/16x, PCIe – Gen 3 for Infiniband adaptor. One PCIe x8 Gen 3 Slots free must be present on Compute nodes with or without GPU cards* |
| ***Remote Management*** | *Remote Management with IPMI 2.0* |
| ***Power Supply*** | *Redundant energy efficient (85%) Power Supply* |

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|---|---|
| ***Node Serviceability*** | *Compute nodes should be individually serviceable without affecting functioning of rest of cluster* |
| ***Operating systems supported*** | *Microsoft Windows Server, Red Hat Linux, SUSE Linux* |
| ***Warranty*** | *3-year onsite* |

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| **3. Interconnect Network Qty-01** |
| a) 18-Port Infiniband 4X QDR speed interconnect fabric. Fully 100% non-blocking and standard fat-tree topology based. |
| b) Required Infiniband QDR speed cables to be proposed |
| |
| **4. Cluster Admin Network Qty-01 (optional)** |
| a) 1 Gbps Ethernet based cluster administration network |
| c) Gigabit Switch (24 port unmanageable) and suitable cables as required for the proposed HPC systems must be provided |
| **5. Racks and Factory- Integration (optional)** |
| a) 42U Racks with adequate rack accessories and PDU |
| b) Neatly structured cabling for all the powered and networked connectivity. |
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| **6. Software Component (Open Source)** |
| a) HPC software stack must be comprehensive with ease-of-use features to efficiently carry out all the cluster monitoring. The administration, resource & workload management, compiling & debugging, management & monitoring, performance analysis and reporting. |
| a) Software and tools to deploy, manage, upgrade and scale the cluster and its hardware components. |
| b) Tools to facilitate easy deployment and configuration of customized cluster software stacks on large number of computers/ nodes. |
| c) Scalable distributed monitoring system for HPC clusters and grids with robust data representation, data transport, data storage and visualization. |
| d) The cluster stack must include Open MPI, MPICH2, Ganglia monitoring tool, GNU C, C++, Fortran compilers. |
| e) Distributed resource management and job scheduler software with functionalities like: job submission/ deletion, job check pointing, status check, policy based cluster queues, allocation of jobs to queues, reorder/ reprioritize jobs, advanced scheduling algorithms, dynamic resource management & balancing, policy based resource allocation & hierarchical dependencies, manage concurrent computing & scheduling of parallel jobs, easy integration with MPI/PVM/OpenMP/MPICH2, resource reservation, advance reservation, enhanced remote execution, open-SSL based security framework, support for any third party software that is compliant with Grid Engine Open source**.** |
| f) 3-years comprehensive support for all software components. |
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| **7. Training** |
| a) The bidder shall provide User and Admin training to Customer at Customer site. |
| b) The period of training shall be 02 days or as per the bidder's proposal whichever is more. |

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| c) The training shall include system familiarization, system operation, system administration (installation, configuration, troubleshooting, etc.), HPC software & cluster/ workload management software and system maintenance |
| d) Bidder to also give GPU code conversion training by OEM directly or through OEM certified partner for 4 days. |
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| **8. Miscellaneous/other points** |
| a) The bidder shall provide total power and cooling requirements (KVA, current rating, socket type, BTU rating, AC tonnage, etc.) for the offered solution at the time of quote. The various subsystem wise and rack-wise power and heat dissipation requirements must also be given |
| b) The proposed set up should be scalable without disturbing/changing the existing configuration. In case of expansion (addition of servers, GPUS, etc in future) the bidder should clearly mention the requirements in the bid for the desired expansion. |
| |
| **9. Terms and conditions** |
| a) Bidder must quote for all the requirements together viz. HPC cluster, Infiniband, GigE switch any other special Power and Cooling arrangements required for the proposed solution. Partial response to this tender will be summarily rejected. |
| b) All hardware components must be 19” standard compatible. Additional items necessary for integration into 19” standard cabinets including the necessary PDU, must be supplied. If any special cooling requirements for the rack cabinets must be specified |
| c) The systems offered must be latest products from the manufacturers. Obsolete/ retired/ on the verge of obsolescence systems/ subsystems must not be offered. Products going end-of-life in 12 months from last date of tender must not be quoted |
| d) The proposal must include a detailed datasheet for every single IT component included in your proposal and the necessary technical whitepapers discussing the features, performance and optimization techniques. |
| e) Training for the persons deputed by Customer should be provided on entire solutions implemented (including OS/ Cluster/ Scheduler/ NFS/ user management/ Server management and troubleshooting etc.) |
| f) The OEM must have 10 HPC installations in the current list of TOP500.org. |
| g) Bidder should have 3 years of proven experience in installation and managing HPC setups. Bidder to have at-least 3 HPC cluster installation with 3TFlops each. |
| h) The bidder should also have 2 years experience of annual maintenance for HPC infrastructure projects |

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|---|---|
| i) | The bidder should have experience of minimum three GPU Installation in India in past one year. PO and signoff copy to be attached. One of the installation should be at-least 3TFlops |
| j) | The firm/company should be ISO 9001 certified (Maintenance & System Integration). Please attach a copy of the certificate. |
| k) | Bidder will be responsible for installation and configuring whole setup asked above, if require should be able to support as well. |
| l) | The price details of each hardware & software item (optional or otherwise) must be provided separately. |
| m) | The software licensing must be clearly and unambiguously stated and accordingly quoted separately with per unit license cost information |
| n) | Software and optional hardware items which will be supplied free and which will be charged for should be indicated separately. Restrictions on software usage, if any, should also be indicated |
| o) | The project/ activity must be completed on turnkey basis, integrating both hardware, system software and application software by a single bidder/ system integrator |
| p) | Complete technical information of the HPC solution (hardware, software, network, etc) must be provided for each item separately to ensure that the equipment offered is in conformity with the specifications |
| q) | The bidder must submit technical compliance report for all the specifications. It should contain for each specification the compliance status, remarks, supporting document reference stating the compliance clearly |
| r) | At the time of installation, if it is found that some additional hardware or software items are required to meet the operational requirement of the configuration, but not included in the bidder's original list of deliverables, the bidder shall supply such items to ensure the completeness of the configuration at no extra cost to Customer. |
| s) | Incomplete and ambiguous tenders are liable to be rejected. Amendments and additions to tender after opening of bids are liable to be ignored |

## Other Terms & Conditions

1. IIT Delhi is exempted from paying custom duty under notification No.51/96 (partially or fully) and necessary “Custom Duty Exemption Certificate” can be issued after providing following information.

    a. Shipping details i.e. Master Airway Bill No. and House Airway No. (if exists)
    b. Forwarder details i.e. Name, Contact No., etc.

Custom Duty Exemption Certificate will be issued to the shipment in the name of the Institute and Bills of Entry should be submitted to IIT Delhi later on.

2. Either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender. If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.

3. If the bidder is an authorized dealer of any manufacturer, the authorized Indian dealership certificate from the principles should be enclosed. Similarly, proprietary certificate for proprietary items should be provided.

4. IIT Delhi is exempted from paying Excise Duty and necessary Excise Duty Exemption Certificate will be provided for which following information are required.
    a. Quotation with details of Basic Price, Rate & Amount on which ED is applicable.

5. Please quote prices of imported items at FOB (Freight on Board) IIT Delhi inclusive of all taxes, freight, delivery, installation and onsite training charges. The quotation should provide the total price of the system including all taxes and transportation charges. In case of CIF any demurrage charges (if any) imposed by the customs will be solely borne by the bidder.

6. Three years comprehensive warranty to be provided and AMC price beyond 3 years should be mentioned separately.

Payment Options

Letter of Credit: 90% payment against shipping documents & balance 10% after satisfactory installation.

7. Delivery period: within 8 weeks from the issue of supply order.

8. Warranty: at least 3 years onsite warranty should be provided.

9. The quotations must have validity of at least three months.

10. The products will be used for educational purposes. Any applicable academic institution discounts should be offered and stated clearly.

11. Authority of IIT Delhi reserves the right to reject any or all quotations without assigning any reasons.