# INDIAN INSTITUTE OF TECHNOLOGY
# DEPARTMENT OF CIVIL ENGINEERING

## Enquiry letter for purchase of cluster

Sub**:** Quotation for supply of (1+3) node High Performance cluster with Gigabit backbone

**Reference: IITK/CE/2011_020** **Dated 20.12.2011**

**Sir / Madam,**

**With reference to the subject mentioned above, you are invited to submit the quotation in a sealed cover. Configuration/Specification and required quantity of items are given below:**

**(1+3) node Summary**

| Sl. No. | Requirement | Description | Qty |
|---|---|---|---|
| 1 | Blade Chassis | Blade Chassis with 10U Form factor with RPS , Ethernet Switch and 3 Year Warranty | 1 |
| 2 | Head Node | Blade Form Factor Server with 1*8 Core AMD Processor @ 2.3 Ghz / 32 GB RAM / 2* 1 TB RAM / Ethernet Port / 3 Year Warranty | 1 |
| 3 | Compute Node | Blade Form Factor Server with 4*16 Core AMD Processor @ 2.1 Ghz / 128 GB RAM / 2* 1 TB RAM / 2* 10G Ethernet Port / 3 Year Warranty | 3 |
| 4 | Operating System for Head Node | Rhel 2 Socket single Guest with 9*5 Support for 3 Year | 1 |
| 5 | Operating System for Compute Node | RHEL for HPC Compute Node, Self-support (4 sockets) (Up to 1 guest) 9*5 Support for 3 Year | 3 |
| 6 | Rack | 42U Rack with required accessories , PDU and Rack Mount TFT with KBD and Touch Pad | 1 |
| 7 | Services and Support | Cluster Installation , configuration and Cluster Support for 3 Years | 1 |
| 8 | Compilers and Libraries | Fortran and C / C++ compilers for AMD and required Libraries | 1 |

**Detailed specifications for the requirement**

**Head Node**

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| **Mounting type** | Blade Chassis |
| **Form factor** | Blade **Configuration Design** |
| **Processor** | 2 * AMD Opteron 6134 /8-core processor |
| **Chipset** | AMD SR5690 and SP5100 |
| **No. of CPU** | 2 CPU per Server. |
| | Clock Speed 2.3GHz or more |
| **Cache** | 12 MB L3 Cache |
| **RAM** | Memory 48 GB (3 x 16 GB) ECC DDR3 expandable to 512 GB. |
| **STORAGE (Internal)** | Storage controller 1GB memory module with flash backed write cache |
| | RAID 1 will be implemented by Vendor. |
| | Internal Disk Storage 2* 1TB SATA |
| **Network** | Integrated On-board 10Gb Network Adapters supporting stateless TCP/IP offload, TCP Offload Engine (TOE), Fibre Channel over Ethernet (FCoE) and iSCSI protocols |
| **Expansion Slots** | Minimum 3 Nos. of PCIe X8/ mezannine slots or more. Please mention total number of Free PCI slots available. |
| **Warranty** | 3 years OEM comprehensive on-site warranty( labor + parts) |
| **Bundled Software** | Vendor to give details of bundled software offered. |
| **Management Features** | Integrated remote management card for Out of Band alerting, status, inventory, and troubleshooting via Secure Web GUI / CLI (telnet/SSH),Remote Virtual Media (vMedia) and Virtual KVM (vKVM),IPMI 2.0 support, Chassis Management with redundant dedicated NICs; A microcontroller should be responsible for acting as an interface or gateway between the host system (i.e., server management software) and the periphery devices.; Should support web GUI,HW update, Firmware rollback, OS Deployment, Life Cycle Log, View hardware sensors (temperature, voltage, presence, error sensors),Error alerts (server reset, critical sensor values, etc.) using email traps, paging, etc.,IPv6,WS-MAN/SMASH-CLP |
| **System Management** | Server OEM browser based software for monitoring Managing and configuring servers. Should provide comprehensive fault / performance management. |
| **Remote Management** | Hardware based, OS independent Remote management solution. All software should be browser based interface. GUI based remote console should also be supported. Power monitoring should be provided. |
| **General** | The Server models offered should be certified for 64 bit Microsoft Windows 2008 Server OS. Documentary Proof to be submitted. |
| | The Server models offered should support for LINUX OS. Pl mention what are the LINUX OS supported by the server with version no. Documentary proof to be submitted. |

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| | All offered equipment to operate on 230 Volt +/- 10% , 50 +/- HZ power supply conditions. |
| | All the above terms & conditions are mandatory. Vendor should clearly mention if there is any deviation. |
| | International OEM Make only with at least 10% share in top 500.ORG |

## Compute Node

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| **Mounting type** | Blade Chassis |
| **Form factor** | Blade **Configuration Design** |
| **Processor** | 4 * AMD Opteron 6272 /16-core processor |
| **Chipset** | AMD SR5690 and SP5100 |
| **No. of CPU** | 4 CPU per Server. |
| | Clock Speed 2.1GHz or more |
| **Cache** | 16 MB L3 Cache |
| **RAM** | Memory 128 GB (8 x 16 GB) ECC DDR3 expandable to 1 TB. |
| **STORAGE (Internal)** | Storage controller 1GB memory module with flash backed write cache |
| | RAID 1 will be implemented by Vendor. |
| | Internal Disk Storage 2* 1TB SATA |
| **Network** | Integrated On-board 10Gb Network Adapters supporting stateless TCP/IP offload, TCP Offload Engine (TOE), Fibre Channel over Ethernet (FCoE) and iSCSI protocols |
| **Expansion Slots** | Minimum 3 Nos. of PCIe X8/mezannine slots or more. Please mention total number of Free PCI slots available. |
| **Warranty** | 3 years OEM comprehensive on-site warranty(labour + parts) |
| **Bundled Software** | Vendor to give details of bundled software offered. |
| **Management Features** | Integrated remote management card for Out of Band alerting, status, inventory, and troubleshooting via Secure Web GUI / CLI (telnet/SSH),Remote Virtual Media (vMedia) and Virtual KVM (vKVM),IPMI 2.0 support, Chassis Management with redundant dedicated NICs; A microcontroller should be responsible for acting as an interface or gateway between the host system (i.e., server management software) and the periphery devices.;Should support web GUI,HW update, Firmware rollback, OS Deployment, Life Cycle Log, View hardware sensors (temperature, voltage, presence, error sensors),Error alerts (server reset, critical sensor values, etc.) using email traps, paging, etc.,IPv6,WS-MAN/SMASH-CLP |
| **System Management** | Server OEM browser based software for monitoring Managing and configuring servers. Should provide comprehensive fault / performance management. |

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|---|---|
| **Remote Management** | Hardware based, OS independent Remote management solution. All software should be browser based interface. GUI based remote console should also be supported. Power monitoring should be provided. |
| **General** | The Server models offered should be certified for 64 bit Microsoft Windows 2008 Server OS. Documentary Proof to be submitted. |
| | The Server models offered should support for LINUX OS. Pl mention what are the LINUX OS supported by the server with version no. Documentary proof to be submitted. |
| | All offered equipment to operate on 230 Volt +/- 10% , 50 +/- HZ power supply conditions. |
| | All the above terms & conditions are mandatory. Vendor should clearly mention if there is any deviation. |
| | International OEM Make only with at least 10% share in top 500.ORG |

**Blade Chassis**

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| **Chassis Description** | To house the Nos of Blade Servers as mentioned in Annexure-I |
| | Vendor to supply OEM Chassis only of the same manufacturer as of Servers. |
| | Resources for the Blade Servers like power, System Management, Cabling, Ethernet Management and Network Switches should be redundant |
| **Blade Bays and I/O bays** | Chassis should have redundant bays to accommodate min 16 hot pluggable half height blades servers with SAS hard disks / 8 (Eight) hot pluggable full height servers with hot plug SAS hard disks. Redundant I/O bays to be available with minimum two number of redundant free bays for future expandability towards connectivity of Blades with LAN and SAN. Vendor to mention total number I/O bays alongwith redundant bays. |
| **Mid-Plane** | High-Availability Dual Path Midplane or passive midplane for providing 2-way communication paths for Ethernet, Fiber Channel, KVM Switches, Power Supply and Management Signals. |
| **LAN Connectivity** | Vendor to provide redundant switch which will be connected with minimum 16 Nos of blade servers on redundant mode separately for internal communication. Each switch module should have adequate uplink ports to support minimum 40 Gbps LAN connectivity. Vendor to mention number of switches with configuration & type of connectivity. |

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| **Management Modules** | Dual redundant management modules to communicate with the system management processors on the blade server. Capablity of providing KVM Connectivity for the Blade servers housed inside the chassis, Real time, actual power cons. Status/Inventory/Alerting for Blades, Chassis Infrastructure, & IOMs; Centralized Configuration; GUI & CLI; SSL/SSH; Power/Thermal Monitoring; Dynamic power engagement; Temperature monitoring; Option to lock a MAC address into a specific blade slot. IP address per remote management card; Virtual Media & vKVM; Security - Local & AD |
| **Cooling** | Fully Loaded, Dual hot swappable variable speed blowers/fans for Cooling the chassis fully redundant. |
| **Power Module** | Hot swappable and adequate numbers so as to ensure n+n redundant power supply for completely populated chassis where n is greater than 2 with 16 numbers of half height servers with SAS hard disks / 8 (Eight) numbers of full height server. |
| **Form Factor** | Up to 10U - 19inch "Rack Mountable" |
| **System Management** | System Management Software and configuration utilities for server setup, changes in configuration, update of drivers should all be included with the offer. The System management software must be able to capture the real time power consumption of a pool of servers and to cap the same as per the requirement. The server performance monitoring software should be able to detect, analyze and explain hardware bottlenecks and should be able to log the data over time and allow it to replay the same in a short time frame for performance analysis. The cost of server setup, configuration, installation of operating system for all the servers should be included in the offer. All the servers should support Standard baseboard management controller. Ability to move, add, or change server network connections on the fly. |
| **System Panel** | Interactive color rotatable LCD/LED panel for local trouble shooting & wizard based set up. Control panel to show health of the systems including power-on, over temperature, other information and system error conditions. |
| **Ports** | VGA & USB ports for KVM. Vendor to mention total number of USB port available in Chassis. |
| **Rack & IP-KVM** | Vendor should provide OEM rack with KVM, Mouse Keyboard and 1U foldable TFT screen |
| **Optical Disk** | Chassis or USB 2.0 based DVD RW Drive to be supplied and configured which can be shared among all blade servers. |
| **Warranty** | 3-Years OEM comprehensive on-site warranty(labor +parts). |

**Installation:-**

**Software:** - Rhel Linux OS for All nodes, Compilers (Fortran, C++), MPI, System Management Software.

**Cluster**: - Cluster set up, Loading software and full cluster commissioning so that it is ready for running application at our LAB. Open Source Scheduler shall be installed and configured along with CMU from the OEM of The Servers.

**Terms and condition:-**

1. **Sealed Quotation must reach to us till 31.12.2011 before 5.00PM**
2. **Prices should be in USD and CIF Delhi.**

**Best regards,**

**Sincerely,**

**Dr. S.N. Tripathi, Associate Professor**