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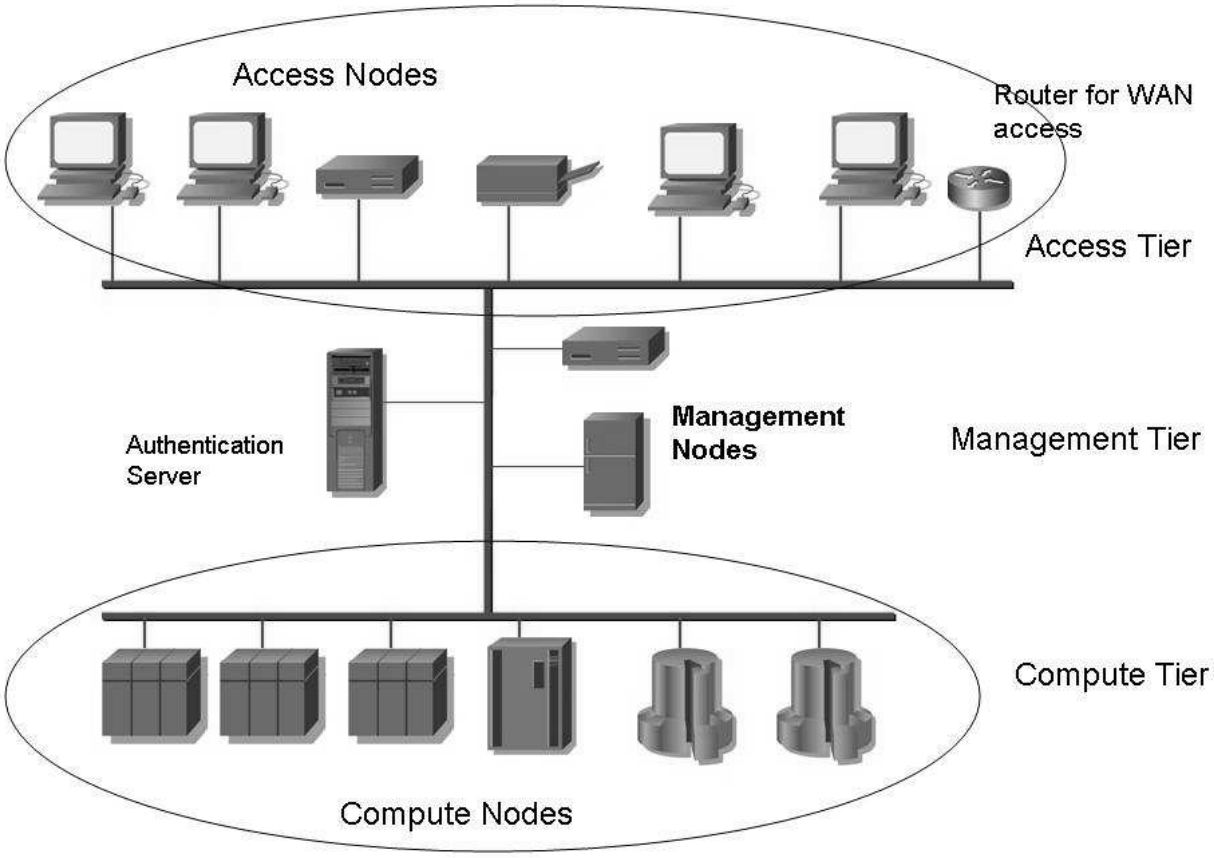
File No.PS/128/50/2007
(Tender No.PS/Tender/07/2007)

TECHNICAL SPECIFICATIONS

COMPUTER CLUSTER + STORAGE INFRASTRUCTURE

Specification for 16 processor / 32 Core Computer infrastructures for Climate Modelling

Architecture



Access Tier

The access tier provides access and authentication services to Grid Computing users. Conventional command-line access methods, such as Xclient, telnet, rlogin, or ssh along with Web based portal services provide either open or tightly-controlled access to the facility.

Management Tier

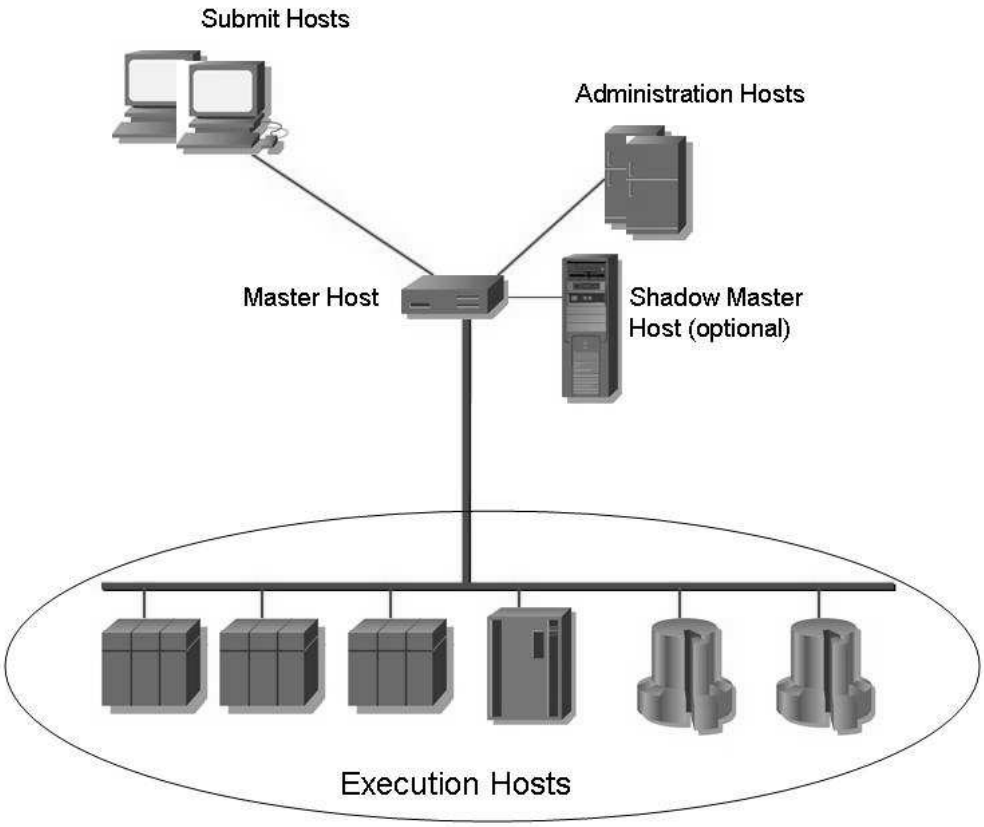
The management tier includes one or more servers which run the server elements of client-server software such as Distributed Resource Management (DRM), hardware diagnosis software, and system performance monitors. Additional duties of servers in

this tier may also include file servers, license key servers, or software provisioning servers.

Compute Tier

The compute tier supplies the computational power for the grid. Jobs submitted through upper tiers in the architecture are scheduled to run on one or more nodes in the compute tier. Nodes in this tier run the client-side of the DRM software, the daemons associated with message passing environments, and any agents for system health monitoring. The compute tier communicates with the management tier, receiving jobs to run and reporting job completion status and accounting details.

Distributed resource management (DRM)



DRM monitors the host computers in the cluster for proper balancing and load conditions. Servers in a Grid / Cluster implementation are referred to as hosts. There are several types of hosts, as shown in Figure.

Master host — A single host is selected to be the master host. This host handles all requests from users, makes job scheduling decisions, and dispatches jobs to execution hosts.

Execution hosts—Systems in the cluster that are available to execute jobs are called execution hosts.

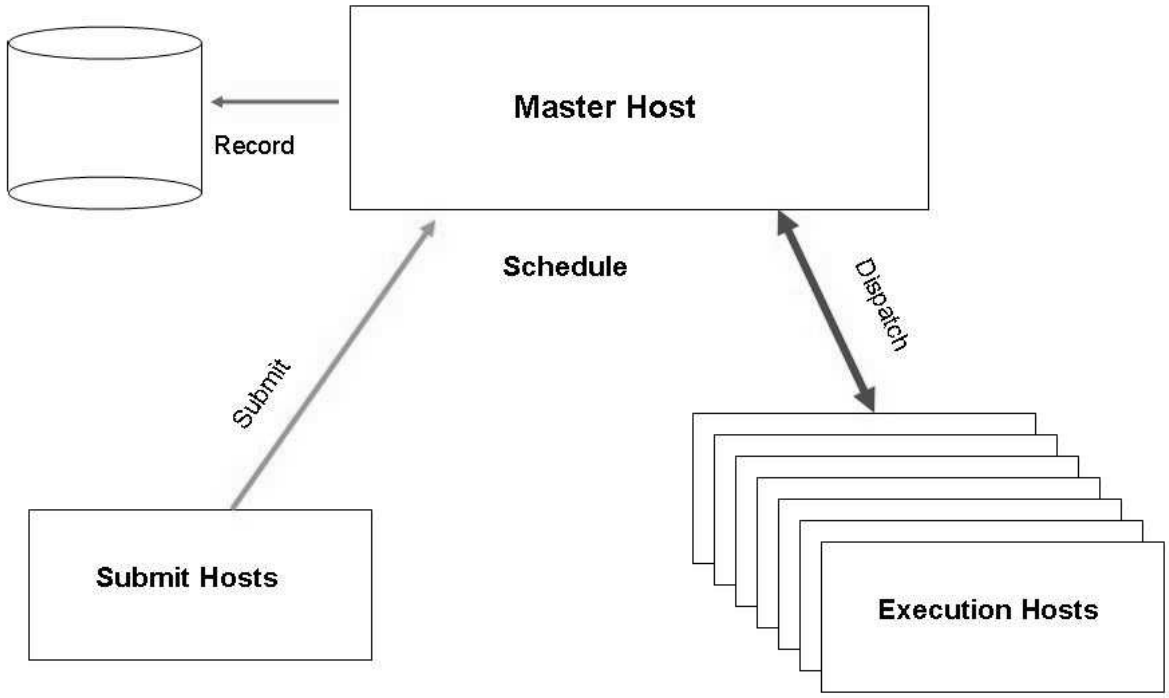
Submit hosts — Submit hosts are machines configured to submit, monitor, and administer jobs, and to manage the entire cluster.

Administration hosts — Cluster / Grid managers use administration hosts to make changes to the cluster configuration, such as changing DRM parameters, adding new compute nodes, or adding or changing users.

Shadow master host — While there is only one master host, other machines in the cluster is to be designated as shadow master hosts to provide high availability. A shadow master host continually monitors the master host, and

automatically and transparently assumes control in the event that the master host fails. Jobs already in the cluster should not be affected by a master host failure.

Software Job Flow



Job submission — When a user submits a job from a submit host, the job submission request is sent to the master host.

Job scheduling — The master host determines the execution host to where the job will be assigned. It assesses the load, checks for licenses, and evaluates any other job requirements.

Job execution — After obtaining scheduling information, the master host then sends the job to the selected execution host. The execution host saves the job in a job information database and initializes a shepherd process that starts the job and waits for completion.

Accounting information — When the job is complete, the shepherd process returns the job information, and the execution host then reports the job completion to the master host and removes the job from the job information database. The master host updates the job accounting database to reflect job completion.

Security

To control access to the cluster, the master host should maintains information about eligible submit and administration hosts. Only systems which have been explicitly listed as eligible submit hosts are able to submit jobs to the cluster. Similarly, only systems which have been added to the list of eligible administration hosts can be used to modify the cluster configuration. To provide increased security for the cluster, administration hosts should be limited to only those hosts in a physically-secured environment.

Specification for 16 processor / 32 Core Compute infrastructure For Climate modelling

Cluster Configuration

Access Tier

Function	Configuration
High Back Plane Switch for PC/Terminal access to Interconnect switch	24 port IEEE 802.3/ IEEE 802.3u with 2ports IEEE 802.3ab,Supporting IEEE 802.1q.
Detailed Specification in Annexure IV	16-Gbps switching fabric / 6.5Mpps
	Support 8K MAC Addresses
Quantity	1 Nos.

Management Tier

Function	Configuration
Head Node / Management Node	
Processor Type	**2** x 64 bit Opteron Processor latest generation 2000 Series &speed **or Equivalent Xeon or other equivalent/better processors**
Number of Processors	1
Processor slots	2
System Bus / FSB	1.3 Ghz or better
Core to Core Interconnect speed	8 GB/s or better
Processor upgradeability	The System Should be upgradable to next generation processor within the same box.
RAM	4GB ECC DDR2-667 upgradable up to 32GB or more
HDD capacity	500GB
IEEE 802.3ab	4 (minimum 2 if infiniband quoted)
Removable Media	DVD-ROM
USB ports	3 Nos or more
Compliers	Fortran90, Fortran77, C/C++, Portland Compliers
OS any of the following	Red Hat, SUSE, Windows 2003, VMWARE, BSDI, AIX, HP-UX, Solaris or any Unix
Detailed Specification in Annexure I	
Quantity	1 Nos.

NAS

Function	Configuration
Network Attached Storage	
Capacity	10TB usable
Capacity Upgradeability	45TB
Tape Library	Integrated Backup Software with Tape Library
	Cross-Platform Support (UNIX/LINUX/WINDOS/NOVELL)
IEEE 802.3ab	2 (Load Balancing)
Detailed Specification in Annexure II	
Quantity	1 Nos.

- **Cluster has to be Factory Integrated & Certified by OEM**
- **If required, standard technical benchmarks will be used for comparison**

Compute Tier

Function	Configuration
Compute Nodes	
Processor Type	**2 x** 64 bit Opteron Processor latest generation 2000 Series & speed **or Equivalent Xeon or other equivalent/better processors**
Number of Processors	2
Processor slots	2
System Bus / FSB	1.3 Ghz or better
Core to Core Interconnect speed	8 GB/s or better
Processor upgradeability	The System Should be upgradable to next generation processor within the same box.
RAM	8GB ECC DDR2-667 upgradable up to 32GB
HDD capacity	500GB
IEEE 802.3ab	4 (minimum 2 if infiniband quoted)
Removable Media	DVD-ROM
USB ports	3 or more nos
Compliers	Fortran90, Fortran77, C/C++, Portland Compliers
OS any of the following	Red Hat, SUSE, Windows 2003, VMWARE, BSDI, AIX, HP-UX, Solaris any Unix
Detailed Specification in Annexure I	
Quantity	8 Nos.

Function	Configuration
Grid / Cluster Interconnect Switch	24 port IEEE 802.3/ IEEE 802.3u with 2ports IEEE 802.3ab, Supporting IEEE 802.1q.
Detailed Specification in Annexure III	16-Gbps switching fabric / 6.5Mpps
	Support 8K MAC Addresses
Quantity	1 Nos.

Option : 24 port 4x dual data rate infiniband interconnect option should be quoted, alongwith the necessary cards.

Server Rack

- Suitable rack to properly mount the server and other equipment with rack mounting hardware

Annexure I

SERVER SPECIFICATIONS:

Processor Options:

Processor	**2 x** 64 bit Opteron Processor latest generation 2000 Series & speed **or Equivalent Xeon or other equivalent/better processors** The System should be upgradable to next generation processor within the same box.
System Architecture/CPU Interconnect	HyperTransport 8 GB/s X16 HyperTransport 8 GB/s (CPU-0 to CPU-1) or System peak bandwidth 21 GB/s & system bus bandwidth 64 bits **or equivalent architecture**
Cache	1 MB Level 2 cache per CPU core or better

Memory Options :

Supported Max Memory Configuration :	Overall at least 64 GB memory support with the necessary scalability.

Integrated Interfaces:

Network	Four 10/100/1000Base-T Ethernet ports (minimum 2 if infiniband quoted)
Management	Embedded Lights Out Management with IPMI v2 Support
Serial	One DB9 port
USB	3 ports , minimal one at front
Expansion Bus	At least two PCI Express Slot
Graphics	Onboard VGA Graphics port

Mass Storage & Media:

Hot-swappable SAS or SATA drives	500 GB Internal disk Up to two Hot-Plug Hard disks supporting RAID 0,1 Minimum Capacity 146 GB each on SATA as well as SAS
Internal DVD-ROM	One DVD-ROM

Software:

Operating environments	64 bit operating system - Red hat Linux or SUSE Linux or other unix
Languages	Portland Compliers, C/C++, FORTRAN90 &FORTRAN77, Java programming
Cluster Management	Cluster Management software for High Availability

Annexure II

Network Attached Storage

Specifications of the Network attached Storage would be as follows

- 10 TB of Total **Usable** storage capacity (RAID 6 preferable)
- Data Migration Utility **–**
- NAS Management with a simple GUI or through a command line interface
- NAS heads and with No Single Point of Failure (NSPoF) configuration
- Upgradable up to 45TB
- NAS supports native multi-protocol file system. i.e. File Sharing between UNIX and Windows
- Unified Block and File Support
- Hot-Swappable Disk Drives
- Native iSCSI support
- Active Directory service and Unix NIS preferable
- Integrated Backup Software with an Upgrade to a 500GB Virtual Tape Library
- Dual Controller with Cache Memory Preferable
- Client Backup Software
- Other necessary NAS Features: Restore and scheduling, Hard & Soft Quotas

Memory

- 2GB DDR 2 ECC RAM standard or Better

Drive Configuration- Combination any of following drives to make 10 TB usable

- 250GB 7200 RPM hot-swappable SATA drives
- 500GB 7200 RPM hot-swappable SATA drives
- 750GB 7200 RPM hot-swappable SATA drives

Network Interface

- Dual-Gigabit Ethernet Ports (autosensing 10/100/1000Base-T, dual RJ-45 network connections)

Network Transport Protocols

- TCP/IP
- UDP/IP

Network File Protocols

- Microsoft Networks (CIFS/SMB)
- Linux/UNIX (NFS v2/3 over TCP & UDP)
- Web (HTTP 1.1/HTTPS)
- File Transport Protocol (FTP)

Network Block Protocols

- Standard support for SCSI & SAS

Network Client Types

- Windows: 98, Me, NT 4.0, 2000, 2003, XP
- Macintosh: OS 8.x, 9.x, 10.x
- UNIX: Solaris 7, 8, 9; HP-UX 11; AIX 4.3.3, 5.x
- Linux: Red Hat Linux 7.x, 8.x, 9.x

Server Emulation

- Windows 2000/2003
- Windows NT 4.0
- NFS v2/3
- FTP

Automatic IP Address Assignment

- Support for DHCP Client for automatic assignment of IP address

Network Security

- Microsoft Active Directory Service (ADS Member Server)
- Networking Support (Link aggregation, Failsafe Networking, Ethernet Trunking, Virtual LAN)
- Industry Standard Authentication Support (Windows 2003 Kerberos, NT Primary Domain Controller (PDC), UNIX NIS, Secure FS
- NAS supports File-level Retention Capability.
- UNIX Network Information Service (NIS) Support preferable
- UID/GID mapping between NFS & CIFS
- Secure Sockets Layer (SSL) v2/v3
- Transport Layer Security (TLS) v1

System Management

- Browser-based User Interface for Remote Administration
- Snap Server Manager Client-Based Setup Utility (platform-independent)
- SNMP (MIB II and Host Resource MIB)
- User Disk Space Quotas for Windows, Macintosh, and UNIX/Linux
- Group Disk Space Quotas for NIS Groups
- Email Notification Alerts
- Network Time Protocol Support

RAID Options

- Standard support of RAID 0,1,5, 6

Tape Library / Autoloader

- minimum 10 TB of compressed storage capacity
- 8 Cartridge slots, 8 DATA Media & One Cleaning Media,
- Removable magazines with single mail slot; Integrated barcode reader
- 1U Rack Mountable form Factor
- Web-based remote management capability; Single Server Backup Software for Linux from OEM of Device drive Management: Status information on the drive and system
- System configuration operations and reporting
- System error and status logs
- Library and drive firmware upload capabilities
- Diagnostic tests and information
- Cartridge movement for maintenance and management purposes
- Cleaning cartridge support
- Security and access control
- SNMP support for IP communications

Annexure III

Grid / Cluster System Interconnect Switch

1. Layer 2 Intelligent Ethernet Access Switches

- These shall be 24 X 10/100/1000 baseTx fixed configuration switches with 4 Small form Factor ports

2. Performance

1. The switch shall have at least 16-Gbps switching fabric / 6.5Mpps
2. The switch shall support minimum 5-Mpps wire-speed forwarding rate for 64-byte packets
3. The switch shall have8-MB shared memory architecture shared by all ports
4. The switch shall support 16-MB DRAM and 8-MB Flash memory
5. The switch shall support up to 8,000 MAC addresses
6. It shall be possible to configure a maximum transmission unit (MTU) of up to 1,530 bytes

3. Ease of Use and Deployment

1. It shall be possible to automatically configure multiple switches across a network via a boot server.
2. Each non-GBIC port shall support Auto-sensing, whereby it shall detect the speed of the attached device and automatically configures the port for 10-, 100-, or 1000-Mbps operation.
3. All ports shall support auto-negotiation to automatically select half- or full-duplex transmission mode to optimize bandwidth.
4. The switch shall support dynamic VLANs and dynamic trunk configuration across all switches.
5. The switch shall support dynamic VLAN assignment to provide flexibility in assigning ports to VLANs.
6. There shall be a mechanism whereby automatic creation of aggregated ports is supported wherever multiple links of the same bandwidth between two switches.
7. The switch shall support IEEE 802.3z-compliant 1000BaseSX, 1000BaseLX/LH, 1000BaseZX, and 1000BaseT physical interface through a field-replaceable module.
8. The default configuration of the switch shall be stored in Flash memory.
9. The switch shall support non-standard Ethernet frame sizes (mini-giants) up to 1,542 bytes.

4. Quality of Service

1. The switch shall support the aggregate QoS model by enabling classification, policing/metering, and marking functions on a per-port basis at ingress and queuing/scheduling function at egress.
2. The switch shall support configuring QoS ACPs on all ports to ensure proper policing and marking on a per-packet basis using ACPs. Up to four ACPs per switch are supported in configuring either QoS ACPs or security filters.

5. QoS Classification Support at Ingress

1. The switch shall support QoS classification of incoming packets for QoS flows based on Layer 2, Layer 3, and Layer 4 fields.
2. It shall be possible to use the following Layer 2 fields or a combination of them for classifying incoming packets to define QoS flows:
    a. source MAC address
    b. destination MAC address
    c. 16-bit Ethertype

6. It shall be possible to use the following Layer 3 and 4 fields or a combination to classify incoming packets to define QoS flows:

1. source IP address
2. destination IP address
3. TCP source or destination port number
4. UDP source or destination port number.

7. QoS Metering/Policing at Ingress

1. The switch shall support metering/policing of incoming packets to restrict incoming traffic flows to a certain rate.
2. The switch shall support up to 6 policers per Fast Ethernet port, and 60 policers on a Gigabit Ethernet port.
3. The switch shall offer granularity of traffic flows at 1 Mbps on Fast Ethernet ports, and 8 Mbps on Gigabit Ethernet ports.

8. QoS Marking at Ingress

1. The switch shall support marking/re-marking packets based on state of policers/meters.
2. The switch shall support marking/re-marking based on the following mappings: from DiffServ Code Point (DSCP) to 802.1p, and 802.1p to DSCP.
3. The switch shall support at least 14 DSCP values.
4. The switch shall support classifying or reclassifying packets based on default DSCP per port.
5. The switch shall support classifying or reclassifying frames based on default 802.1p value per port.
6. The switch shall support 802.1p override at ingress.

9. QoS Scheduling Support at Egress

1. The switch shall support four queues per egress port in hardware.
2. The switch shall support the Weighted Round Robin (WRR) queuing algorithm.
3. The switch shall also support a strict-priority queue configuration for time-sensitive applications such as voice.

10. Traffic Management

1. The switch shall offer the ability to limit data flows based on MAC source/destination address, IP source/destination address,TCP/UDP port numbers, or any combination of these fields.
2. The switch shall offer the ability to manage data flows asynchronously upstream and downstream from the end station or on the uplink.

11. Manageability

1. The switch shall support Simple Network Management Protocol (SNMP) and Telnet interface for in-band management.
2. The switch shall support a command-line interface (CLI)-based management console for out-of-band management.
3. The switch shall also be Manageable through a network management software on a per-port and per-switch basis.
4. The switch shall support an embedded Remote Monitoring (RMON) software agent for four RMON groups (history, statistics, alarms, and events).
5. The switch shall support Domain Name System (DNS) for IP address resolution with user-defined device names.
6. The switch shall support Trivial FileTransfer Protocol (TFTP) for administering software upgrades by downloading from a centralized location.
7. The switch shall support Network Timing Protocol (NTP).
8. The switch shall support Multifunction LEDs per port for port status, half-duplex/full-duplex, 10BaseT/100BaseTX/1000BaseT indication.
9. The switch shall also support switch-level status LEDs for system, redundant power supply, and bandwidth utilization.

12. Stacking Technology & Cluster Management

1. The stacking mechanism shall be a hardware-based, independent stacking bus with up to 2-Gbps forwarding rate in a point-to-point configuration, or 1-Gbps forwarding bandwidth when daisy chained with up to nine switches.
2. It shall be possible to manage up to 16 inter-connected switches in a “cluster” without the limitation of being physically located in the same wiring closet.
3. It shall be possible to use a single IP address for the entire cluster of 16 switches.
4. The cluster shall allow the user to automatically upgrade the system software on a group of switches.
5. The cluster management software shall include multilayer feature configurations such as access control parameters (ACPs) and QoS parameters.
6. The cluster management shall support “wizards” which use just a few user inputs to automatically configure the switch to optimally handle different types of traffic: voice, video, or high-priority data.

7. It shall also include a wizard for security to restrict unauthorized access to servers with sensitive data.
8. The cluster management software shall support a “help mode” to assist users in the configuration of advanced features by providing step-by-step instructions.
9. It shall provide enhanced online help for context-sensitive assistance, and an easy-to-use graphical interface providing both a topology map and front panel view of the cluster.

13. Network-Wide Security Features

1. The switch shall support filtering of incoming traffic flows based on Layer 2, Layer 3 or Layer 4 ACPs.
2. Up to four ACPs shall be supported in configuring either QoS or security filters.
3. It shall be possible to use the following Layer 2 ACPs or a combination thereof for security classification of incoming packets:
    a. source Media Access Control (MAC) address
    b. destination MAC address
    c. 16-bit Ethertype
4. It shall be possible to use the following Layer 3 and Layer 4 fields or a combination thereof for security classification of incoming packets:
    a. source IP address
    b. destination IP address
    c. TCP source or destination port number
    d. User Datagram Protocol (UDP) source, or destination port number.
5. The switch shall support a Layer 2 mechanism other than subnet-based VLANs which provides security and isolation between ports on a switch.
6. The switch shall support the 802.1x standard for user authentication.
7. The switch shall support “secure ports” that prevents unauthorized stations from accessing the switch by restricting the number of MAC addresses allowed to access the port.
8. It shall be possible to configure up to 132 addresses per port.
9. The switch shall support a mechanism whereby edge devices not in the network administrator's control are prevented from becoming Spanning-Tree Protocol root nodes.
10. It shall be possible to disable access ports with the above feature enabled upon reception of a BPDU.
11. The switch shall support multilevel security on console access.
12. The switch shall support RADIUS/TACACS+ authentication.

14. Availability & Redundancy

1. The switch shall support the IEEE 802.1D Spanning-Tree Protocol for redundant backbone connections.
2. The switch shall support STP fast calculation enhancements for quick fail-over recovery.
3. The switch shall support a redundant AC power system.
4. This RPS shall be able to provide a backup power source for up to four units.
5. The switch shall support redundant stacking connections to provide support for a redundant loopback connection for top and bottom switches in an independent stack backplane cascaded configuration.
6. The switch shall support Command switch redundancy enabled in a cluster.
7. The switch shall support for detecting and disabling unidirectional links on fiber-optic interfaces caused by incorrect fiber-optic wiring or port faults.
8. The switch should also support STP std like 802.1w & 802.1s

15. Bandwidth Optimization Features

1. The switch shall support port bandwidth aggregation for higher throughput.
2. The switch shall support per-port broadcast, multicast, and unicast storm control.
3. The switch shall support Spanning Tree instance on each VLAN for Layer 2 load sharing on redundant links.
4. The switch shall support Internet Group Management Protocol (IGMP) snooping for fast client joins and leaves of multicast streams.
5. The switch shall also support Multicast VLAN registration (MVR).
6. IEEE Standards Supported
7. IEEE 802.1x support
8. IEEE 802.3x full duplex on 10BaseT, 100BaseTX, and 1000BaseT ports

9. IEEE 802.1D Spanning-Tree Protocol
10. IEEE 802.1p class-of-service (CoS) prioritization
11. IEEE 802.1Q VLAN
12. IEEE 802.3 10BaseT specification
13. IEEE 802.3u 100BaseTX specification
14. IEEE 802.3ab 1000BaseT specification
15. IEEE 802.3z 1000BaseX specification
16. 1000BaseX (GBIC)
17. 1000BaseSX
18. 1000BaseLX/LH
19. 1000BaseZX
20. RMON I and II standards

Annexure IV

High Back Plane LAN switch for Terminal / PC access to Interconnect switch

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14. Availability & Redundancy

1. The switch shall support the IEEE 802.1D Spanning-Tree Protocol for redundant backbone connections.
2. The switch shall support STP fast calculation enhancements for quick fail-over recovery.
3. The switch shall support a redundant AC power system.
4. This RPS shall be able to provide a backup power source for up to four units.
5. The switch shall support redundant stacking connections to provide support for a redundant loopback connection for top and bottom switches in an independent stack backplane cascaded configuration.
6. The switch shall support Command switch redundancy enabled in a cluster.
7. The switch shall support for detecting and disabling unidirectional links on fiber-optic interfaces caused by incorrect fiber-optic wiring or port faults.
8. The switch should also support STP std like 802.1w & 802.1s

15. Bandwidth Optimization Features

1. The switch shall support port bandwidth aggregation for higher throughput.
2. The switch shall support per-port broadcast, multicast, and unicast storm control.
3. The switch shall support Spanning Tree instance on each VLAN for Layer 2 load sharing on redundant links.
4. The switch shall support Internet Group Management Protocol (IGMP) snooping for fast client joins and leaves of multicast streams.
5. The switch shall also support Multicast VLAN registration (MVR).
6. IEEE Standards Supported
7. IEEE 802.1x support

8. IEEE 802.3x full duplex on 10BaseT, 100BaseTX, and 1000BaseT ports
9. IEEE 802.1D Spanning-Tree Protocol
10. IEEE 802.1p class-of-service (CoS) prioritization
11. IEEE 802.1Q VLAN
12. IEEE 802.3 10BaseT specification
13. IEEE 802.3u 100BaseTX specification
14. IEEE 802.3ab 1000BaseT specification
15. IEEE 802.3z 1000BaseX specification
16. 1000BaseX (GBIC)
17. 1000BaseSX
18. 1000BaseLX/LH
19. 1000BaseZX

RMON I and II standards

INDIAN INSTITUTE OF TROPICAL METEOROLOGY PUNE 411 008

TERMS & CONDITIONS

ENQUIRY NO: **PS/128/50/2007/**
(Tender No.PS/Tender/07/2007)

1) The Tenderers are requested to give detailed sealed tender in their own forms in two Bids i.e.
   Part – I Technical Bid.
   Part - II Commercial Bid, both the bids addressed to the Director, Indian Institute of Tropical Meteorology, Dr. Homi Bhabha Road, NCL Post, Pashan, Pune – 411 008, INDIA.

2) This tender is not transferable.

3) a) The Equipments are required to be installed at **IITM**, **Pune** and subsequently Training is to be provided to the concerned scientists.

   b) Packing, Forwarding, Freight & Insurance and Commissioning Charges, if any extra may be quoted separately in Commercial Bid.

   c) In case if your quote is F.O.R./F.O.B. basis, estimated Insurance coverage charges may please be indicated.

   d) CIF, Mumbai value both by Airfreight.

   e) Octroi Payment if an, the same may please be shown separately.

5) Cost of the items should be mentioned clearly in the Commercial Offer (Part-II) only. The optional and any other essential items / accessories required for the maintenance of the equipment for the next three years should also be specified in the offer separately.

6) In case of foreign quote, the Principal supplier should clearly indicate the address of the Indian Agent and percentage (%) of Agency Commission payable if any, to be paid to the Indian Agent in Indian Currency.

7) Percentage & amount of Indian Agency commission payable in Indian currency after the receipt of consignment in good condition at our Stores & satisfactory installation and commissioning of the ordered equipment on submission of copy of DGS&D registration wherever it is applicable.
8) Indicate the names of the Indian reputed Organizations where you have supplied the similar equipment and may attach the satisfactory performance report of the equipment from user Organization.

9) a) If you have supplied identical or similar equipment to other Institutes under Ministry of Earth Sciences and Ministry of Science & Technology, the details of such supplies for the preceding three years should be given together with the prices eventually or finally paid.

b) Based on the above information IITM will have its option to obtain details of the equipment, their performance, after sales services etc. for evaluation of the tender, directly from the concerned Labs. /Scientists etc.

10) Fax / E-mail / Telegraphic / Telex tenders will not be considered.

11) All the Bank Charges inside and outside India, including opening of LC, communication, confirmation, amendments etc., if any to Beneficiary's Account only. This may please be noted.

12) Details of services rendered by you as well as after-sales services offered by you are to be made clear in the tender.

13) The Tenderer's conditions printed on the tender or otherwise sent along with the tender shall not be binding on IITM.

14) The vendor should have appropriate facilities and trained personnel for supply, installation, commissioning and warranty-maintenance of the equipment to be supplied. Detailed information in this regard may be furnished.

15) Delivery Period: As time is the essence of the contract, Delivery period mentioned in the Purchase Order should be strictly adhered to.

16) Details regarding terms of payment including period of warranty. However we prefer to release the payment on BILL Basis (excluding Indian Agency Commission) after receipt of consignment in good condition and satisfactory installation, and commissioning thereof. Alternatively, depending upon the value and foreign exchange regulations the payment can also be considered through Sight Draft / Letter of Credit through the State Bank of India for the order value excluding the Indian Agency Commission. However, the detailed payment for Sight Draft / Letter of Credit is mentioned at clause No. **26 (B) & (C)** of this tender terms and conditions.

17) Supply means "Supply, Installation, Commissioning and satisfactory demonstration of the whole system and training". If any charges extra for Installation, Commissioning and training, the same should be specified in the commercial offer.

18) Kindly attach a of copy of your latest DGS&D, New Delhi registration Certificate under the compulsory Scheme of Ministry of Finance regarding the registration of Indian Agent of foreign supplier wherever it is applicable.

19) a) The Tenderer is required to furnish the Permanent Account Number (PAN) Allotted by the Income Tax Department. If registered with the National Small Industries Corporation, the registration number, purpose of registration and the validity period of registration' etc. should also be provided in Technical Bid for Indian Agents.

b) A copy of latest Income Tax Clearance Certificate from Income Tax Department (INDIA) for Indian Agents.

20) In case of Foreign quote, the address of Principal's / Manufacturer's and their Banker's details should be furnished,

21) The item should be supplied with manuals and the manuals including technical / Electronic drawings / circuit diagrams should be complete in all respects to operate the system without any problem.

22) The import license is covered under OGL policy of 2004 - 2009.

23) a) In case of Indigenous Items the offer should. contain the Basic Price and percentage of Excise Duty should be shown separately, since IITM, Pune is exempted from payment of Excise duty vide Govt. Notification No.10/97-Central Excise dated 15t March, 1997.

b) IITM is exempted from payment of Custom Duty vide Govt. Notification No.51/96-Customs dated 23rd July, 1996. However as per the Govt. of India further notification No.24/2002-Customs dated 15t March, 2002 and notification No.19/2006-Customs' dt. 01.03.2006 Custom Duty is levied on all imports meant for IITM. Since the suppliers are requested to quote only on FOB basis freight, insurance and custom duty as applicable to R&D Institutions will be paid by IITM.

24) Tender must clearly indicate the features offered unit price, VAT tax, transport, transit insurance, installation charges. Institute cannot furnish any concessional certificate for exemption or reduction in VAT tax or any other duty / tax. The vendor should mention the price of the equipment and the duties / taxes to be paid such as customs duty / excise duty / VAT taxes etc. separately.

25) a) No advance can be paid.

b) **PAYMENT:** 90%' payment shall be made by Sight Draft / an Irrevocable Letter of Credit established in favour of' the supplier through the State Bank of India, Main Branch, Camp, Pune 411 001 (India) for the order value, excluding the Agency Commission due to the Indian Agents, against the presentation of original Shipping documents. Balance 10% will be released after completion of satisfactory installation, commissioning, demonstration of the whole system, after imparting training and upon receipt of Bank Guarantee from nationalized bank for 10% of total Order value towards performance security to be valid for one year from the date of installation. However Letter of Credit/Sight Draft arrangement will be made for 100% order value.

The Agency Commission to the Indian Agent will be paid only after successful installation, commissioning and satisfactory demonstration and acceptance of the items ordered for by the end user.

c) For Indigenous items, 90% payment shall be made against delivery, installation, commissioning and on acceptance as per Purchase Order at site and balance 10% shall be made after receipt of performance Bank Guarantee from nationalized bank for 10% of the total order value, to be valid for entire period of warranty including extension if any. If no Bank Guarantee is given, the balance 10% will be paid after assessing, after sales service during warranty period i.e. payment after warranty period.

26) The prices quoted should be firm and irrevocable and not subject to any change whatsoever, even due to increase in cost of raw material components and fluctuation in the foreign exchange rates and excise duty.

27) The Tenderer has to state in detail the Electrical Power/UPS requirements, floor Space, head room, foundation needed and also to state whether Air-conditioned environment is needed to house the system and to run the tests. i.e. pre-installation facilities required for installation may please be intimated in the technical bid.

28) **INSTALLATION**: Bidder shall be responsible for installation / demonstration wherever applicable and for after sales service during the warranty and thereafter.

29) Acceptance tests to be prescribed later will be carried out after installation and the items will be taken over only after successful completion of the acceptance tests.

30) Tenders addressed to the Director, Indian Institute of Tropical Meteorology, Pune 411008 are to be submitted for each item in duplicate in double cover, under two bids system. Superscribed with Tender No. **PS/128/50/2007** for purchase of **"Computer Cluster + Storage Infrastructure" – Qty 1 Set** due on **5th February 2008.**

31) The tenders must be clearly written or typed without any cancellations / corrections or overwriting.

32) The tenders will be received in the Institute till **5th February 2008** up to **17:00 hrs.** and shall be opened on **6th February 2008** at **15:00 hrs.** in presence of the tenderers or their authorized agents who wish to be present.

33) IITM will not be responsible:
   a) For delayed / late quotations submitted / sent by Post / Courier etc.
   b) For submission / delivery of quotations at wrong places other than the Office of Director, IITM, Pune.

34) In case of Foreign Quote, the mode of dispatch should be by Air Post Parcel/Ocean Freight/Air Freight (By Air India Freight) and on Freight to-pay basis only. The approximate dimensions of the packages and weight of consignment are to be indicated.

35) The makes / brand and name and address of the manufacturer, Country of Origin, Country of Shipment and currency in which rates are quoted are to be mentioned.

36) The Technical Bid should accompany with complete specification, Manufacturer's name, address and relevant Technical Literature/Brochures with Warranty Terms.

37) The payment of local currency portion shall be payable in equivalent Indian Rupees, within 30 days after the receipt of the equipment in good condition and after satisfactory installation and commissioning and demonstration.

38) The tender / quotation / offer submitted by you should be valid for a minimum period of **One Hundred Eighty (180) days** from the date of opening the tender.

39) The quotation should be only in Indian Rupees for indigenous items. In case of foreign quote, the vendors may quote their rates in, Indian Rupees as well as in Foreign Currency.

40) The bidder who submits the tender on behalf of their principals should produce documentary evidence in support of their authority to quote or submit proforma invoice of their principals.

41) Installation demonstration to be arranged by the supplier free of cost and the same is to be done within 15 days of the arrival of the equipment at site after site readyness.

42) IITM will not provide any accommodation/transportation for the Engineers/ Representatives for attending Installation, Commissioning and Demonstration Work. It is the absolute responsibility of the Principal Supplier/Indian Agent to make their own arrangements.

43) **WARRANTY/GUARANTEE**: The equipment is to be guaranteed for trouble free performance for a minimum period of one year after installation. Supplier shall finally warrant that all the stores, equipment and components supplied under the ORDER shall be new and of the first quality according to the specifications and shall be free from the defects (even concealed fault, deficiency in the design material and workmanship). The defects, if any, during the guarantee period are to be rectified free of charge by arranging free replacement wherever necessary. Further, the technical specifications and requirements may also be verified and quoted accordingly.

44) Details of onsite warranty, agency who shall maintain during warranty and undertake Annual Maintenance Contract/Comprehensive Service Maintenance Contract beyond warranty shall be given in the offer. In case of foreign quote, the Indian Agent who shall maintain during warranty and AMC beyond warranty shall be given in the Technical Offer.

45) The supply of spare parts is to be guaranteed at least for a period of 10 years after the supply of the equipment.

46) Please mention that during warranty period who will maintain system/ equipment / instrument. Indicate the name of firm, address, contact person, phone no. and fax no. etc in your technical bid.

47) After successful installation what will be the minimum down time of equipment/instrument in case of breakdown. If the identified firm or person fails to put the system into working condition what is the further alternative course of action suggested by you to adhere to minimum down time.

48) Warranty period will stand extended for a period of total downtime of the equipment.

49) After warranty period (post warranty) who will maintain equipment / instrument. Indicate the name of Firm, address, contact person, phone no. And fax no. etc in your technical bid.

50) Kindly mention the charges for comprehensive maintenance contract separately in **commercial bid** (for post warranty period).

51) No sub-contracting will be allowed for installation or maintaining system/ equipment / instrument during or after warranty period.

52) You have to quote rates for AMC, if any, only in commercial bid.

53) Any upgrade in Operating System (OS) and associated other software during the warranty period should be supplied free of charge.

54) Discount offered should be mentioned clearly in the commercial bid only.

55) The Tenderers are requested to quote for Educational Institutional Price for Equipment and Software, since we are eligible for the same.

56) This Institute is an autonomous scientific research organization under the Ministry of Earth Sciences and is a recognized centre for studies leading to M.Sc. and Ph.D. of the University of Pune and various other Universities. As such, all possible concessions / discounts / rebates applicable for educational Institutions may be given.

57) You have to submit two separate bids in two separate envelopes and you may keep both the bid envelopes in an envelope for sending to us.

One envelope will contain only the TECHNICAL SPECIFICATIONS of the indented equipment.

Another envelope will contain only the financial bid in which price, maintenance, AMC etc. and any other information, which has financial implications, will only be given.

The main envelope, which will contain both the bids, should be super scribed with our tender enquiry No.**PS/128/50/2007** due on **5th February 2008.**

59) The technical bids will be opened on the specified due date in the presence of tenderers who wish to be present & the financial bids of only those bidders will be opened whose technical bid is found suitable by us.

60) The Date and Time of opening for Part-II (Commercial Bid) will be intimated only to pre-qualified and technically acceptable Tenderers for the item at a later date.

61) a) The Earnest Money Deposit of **Rs.80,000.00 (Rs. Eighty Thousand Only)** must be paid / sent along with your technical bid in the form of a Demand Draft, Banker cheque or Bank Guarantee (from a Nationalized Bank only) drawn in favour of The Director, Indian Institute of Tropical Meteorology, Pune payable at Pune, otherwise your technical & financial bids will not be considered at all. The Earnest Money of successful bidder will be returned only after installation, commissioning, satisfactory demonstration and on acceptance of the equipment by the user Scientist / HOD as per the terms of our purchase order. If the successful bidder fails to fulfill the contractual obligations before the due date, he will forfeit the EMD.

The Earnest Money of the unsuccessful bidder whose technical bid has not been found suitable will be returned within 15 days after receipt of Technical Committee recommendations.

b) Those who are registered with Central Purchase Organization (e.g. DGS&D), National Small Industries Corporation or the concerned Ministry / Department need not to furnish EMD along with their bids.

c) Though EMD has to be submitted by Demand Draft, Banker's Cheque or Bank Guarantee, we prefer to have Bank Guarantee for easy return to the bidders once a decision is taken by IITM. (Specimen of Bank Guarantee is enclosed at Annexure 'A').

d) Tenders not accompanied with Demand Draft I Bank Guarantee towards "Earnest Money Deposit" will summarily be rejected.

62) a) Tenders, which are submitted without following the Two-Bid Offer System, will summarily be rejected.
b) Unsigned Tenders will also be rejected.
c) Part and incomplete tenders are liable to be rejected.

63) If the supplier fails to Supply, Install and Commission the system as per specifications mentioned in the order within the due date, the Supplier is liable to pay liquidated damages of one percent value of the Purchase Order awarded, per every week delay subject to a maximum of 10% for every week beyond the due date and such money will be deducted from any money due or which may become due to the supplier.

64) Goods should not be dispatched until the Vendor receives a firm order.

65) Please indicate page nos. on your quotation ex. If the quotation is containing 25 Pages, please indicate as 1/25, 2/25, 3/25 ----------25/25.

66) The purpose of certain specific conditions is to get or procure best Equipment / service etc. for IITM. The opinion of Technical Committee shall be guiding factor for Technical short listing.

67) Firms which have already supplied similar equipment to IITM and have not completed required installation / commissioning / after sales service / warranty replacements etc. such firms' offers will not be considered for further evaluation and no enquiries thereafter will be entertained.

68) In the event the Manufacturer / Supplier proposes for amalgamation, acquisition or sale of its business to any firm during the contract period, the Buyer/Successor of the Principal Company are liable for execution of the contract and also fulfillment of contractual obligations i.e. supply, installation, commissioning, warranty, maintenance/replacement of spares accessories etc. with the same cost / ordered value while submitting your bid, you may confirm this condition.

69) Conditional Offers will not be considered.

70) All disputes are subject to exclusive jurisdiction of Competent Court and Forum in Pune, India only.

71) The Director, Indian Institute of Tropical Meteorology, Pune 411 008, India reserves the right to accept any tender in full or in part or to reject the lowest or any or all tenders without assigning any reason.

72) In case of any dispute regarding part-shipment, non-compliance of any feature etc., The Director, Indian Institute of Tropical Meteorology, Pune will be the final authority to decide the appropriate action and it will be binding on the Vendor.

73) Last Date and Time for receipt of Tenders: **Upto 17:00 hrs. on 5th February 2008.**

74) Date and Time of opening of Tenders: **At 15:00 hrs. on 6th February 2008.**
(Part - I Technical Bid only)

(S. R. Nirgude)
Senior Technical Officer-II
For Director
Email: pstend@tropmet.res.in