INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

MATERIALS MANAGEMENT DIVISION

Powai, Mumbai 400076.

PR No. 1000053928 **RFx. No. 6100002762**

Item Description : Distributed Data Center Infrastructure and Setup for GPU Server For IIT Bombay, NIT Goa and IIIT Nagpur

Sr. No	Detailed Technical Specification & Turnkey Scope of Work	Technical Compliance (Yes / No)	Additional Information (if any)
1.	The bidder shall undertake complete turnkey execution including detailed engineering, supply, installation, integration, configuration, testing, commissioning, documentation and handover of AI GPU Data Center infrastructure at the respective institutes as defined in this document. The scope shall include compute hardware, storage systems, networking equipment, racks, UPS systems where applicable, safety systems, virtualization platform, IoT gateway and monitoring systems. The engagement shall not be limited to supply of equipment but shall also support structured technical collaboration for development of optimized small-size (modular approach) and distributed data center models.		
2	**GPU Compute Server – IIIT Nagpur (Qty: 1)** Supply, installation and commissioning of one high performance GPU compute server meeting the following minimum requirements: aggregate GPU memory of minimum 360GB GPU class, minimum 64-core CPU, minimum 1024GB DDR5 ECC RAM (4800 MHz or higher), enterprise grade SSD and NVMe storage, dual-10Gbps network interfaces and additional dual 1Gbps management network interfaces, redundant hot swappable power supplies (approximately 2200W class), and OEM warranty of minimum three years. The architecture shall support high bandwidth GPU interconnect and allow future GPU upgrade compatibility.		

3	**GPU Compute Server – NIT Goa (Qty: 1)** Supply, installation and commissioning of one high performance GPU compute server of similar class as IIIT Nagpur with aggregate GPU memory of minimum 360 GB class, minimum 64 core CPU, minimum 1024 GB DDR5 ECC RAM (4800 MHz or higher), enterprise SSD and NVMe storage, dual 10G network interfaces and additional dual 1G management network interfaces, redundant hot swappable power supplies (approximately 2200W) and minimum three year OEM warranty.		
4	**GPU Compute Server – IIT Bombay (Qty: 1)** Supply, installation and commissioning of one GPU compute server with aggregate GPU memory of minimum 180GB class, minimum 64 core CPU, minimum 512GB DDR5 ECC RAM (4800 MHz or higher), enterprise SSD and NVMe storage, dual 10Gbps network interfaces and additional dual 1G management network interfaces, redundant hot swappable power supplies (approximately 2200W) and minimum three year OEM warranty.		
5	**Edge AI Devices – IIT Bombay (Qty: 8)** Supply of eight embedded GPU based edge AI devices of minimum 16 GB GPU memory class suitable for edge inference, robotics and distributed experimentation workloads.		
6	**Storage Systems** IIT Bombay - NAS with hybrid storage - 30TB Usable, 2 * 10 Gbps, 2 * 1 Gbps, RPS, with 3 Year Warranty IIIT Nagpur - NAS with hybrid storage - 50TB Usable, 2 * 10 Gbps, 2 * 1 Gbps, RPS, with 3 Year Warranty NIT Goa - NAS with hybrid storage - 40TB Usable, 2 * 10 Gbps, 2 * 1 Gbps, RPS, with 3 Year Warranty The storage solution shall be hybrid NAS architecture with dual 10G connectivity, RAID protection, snapshot and backup capability, redundant power supply and minimum three year OEM warranty.		

7	**Networking Infrastructure** IIIT Nagpur: Two managed L2 switches, one managed L3 switch and two enterprise firewalls. NIT Goa: Two managed L2 switches, one managed L3 switch and two enterprise firewalls. IIT Bombay: One managed L2 switch and one managed L3 switch. Firewall excluded from scope. All networking equipment shall support VLAN configuration, IPv4 and IPv6, SNMPv3 monitoring and shall carry minimum three year OEM warranty. Firewalls, where applicable, shall support IPS, IDS, malware detection, DDoS protection, URL filtering, advanced threat protection and VPN functionality.		
8	**Rack Infrastructure** IIT Bombay – One 42U rack with PDU IIIT Nagpur – Two 42U racks with PDU NIT Goa – Two 42U racks with PDU Each rack shall be 600 mm x 1200 mm enclosure with intelligent three phase PDU, structured cable management and proper earthing compliance.		
9	**UPS and Power Infrastructure** IIIT Nagpur – One 10 KVA three phase UPS with minimum 30 minute to one hour backup, complete cabling and panel integration. NIT Goa – One 10 KVA three phase UPS with minimum 30 minute to one hour backup, complete cabling and integration. IIT Bombay – UPS excluded from scope and shall be provided by the institute. UPS systems shall carry minimum three year warranty for IIIT Nagpur & NIT Goa.Supply and replacement of UPS batteries are not part of the scope.		
10	**Cooling Systems – Conditional Provision** All designated rooms are currently equipped with inbuilt air conditioning systems. The bidder shall conduct thermal load analysis based on installed compute density and validate adequacy of existing cooling. Provision shall be made for optional augmentation through additional cooling solutions such as split AC or equivalent		

	precision cooling units, if required. The exact cooling approach and capacity shall be determined based on detailed thermal assessment, research outcome and investigations. Any augmentation shall be implemented only upon written approval of the institute and without deviation unless formally revised.		
11	**Fire and Safety Systems** IIIT Nagpur – Supply and installation of one clean agent fire extinguisher and two ABC type fire extinguishers. NIT Goa – Supply and installation of one clean agent fire extinguisher and two ABC type fire extinguishers. IIT Bombay – Supply and installation of one clean agent fire extinguisher and two ABC type fire extinguishers. All installations shall comply with applicable safety norms for data center environments.		
12	**Access Control and CCTV** IIIT Nagpur – Supply and installation of one RFID based access control system with multi factor authentication and network connectivity, and one CCTV surveillance system with recording and storage capability. NIT Goa – Supply and installation of one RFID based access control system with multi factor authentication and network connectivity, and one CCTV surveillance system with recording and storage capability. IIT Bombay – Access control and CCTV systems are excluded from scope.		
13	**IoT Gateway and Sensor Based Monitoring** **a) Hardware** Processor – Quad-Core CPU (≥ 1.0 GHz, ARM class) RAM – Minimum 4 GB Storage – Minimum 64 GB RTC – Real-Time Clock with battery backup Form Factor – Compact Fanless Industrial Gateway / Edge Appliance Mounting – DIN Rail / Rack Mount / Wall Mount (suitable for server room deployment) Cooling – Passive / Low-noise cooling		

	Continuous Operation – 24x7 industrial operation capability Operating Temperature – 0°C to 50°C Power Supply – 5–24V DC or 230V AC adapter with surge protection **b) Connectivity** Ethernet – 1 × Gigabit Ethernet Port Wireless – Integrated Wi-Fi (IEEE 802.11 b/g/n/ac) GPIO – Minimum 40-pin GPIO header for sensor interfacing Serial Communication – RS-485 / RS-232 support via converter for Modbus RTU devices **c) Software & Management** Built-in Management Console – Mandatory web-based secure management console (HTTPS) Configuration – Device onboarding, protocol mapping, and polling configuration Logging – Local system and data logs with timestamping Remote Access – Secure remote access (SSH/Web UI) Updates – Remote firmware/software upgrade capability **d) Protocol Support (Southbound)** Field & BMS Integration – Modbus TCP, Modbus RTU (via RS-485), SNMP v1/v2/v3, IPMI, HTTP/HTTPS polling, BACnet (Preferred) **e) Protocol Support (Northbound)** Platform & Research Integration – REST APIs (Mandatory), HTTP/HTTPS, MQTT (Preferred), Webhooks/API Push, Secure data export APIs (JSON/CSV) **f) Data & Integration** Data Logging – Local timestamped data logging with configurable retention Store & Forward – Mandatory offline buffering and sync capability Sampling Interval – Configurable polling and data acquisition intervals Central Integration – Integration with centralized DCIM/BMS/Cloud dashboard platform Alerting – Threshold-based alert generation and notifications		

	g) Security Encryption – TLS 1.2 / TLS 1.3 secured communication Authentication – Secure authentication with role-based access control Monitoring Security – SNMPv3 secure monitoring support **h) Functional Compliance** Monitoring Scope – Rack temperature, humidity, per-rack power, UPS status, and system utilization monitoring **i) Expandability** Sensor Provisioning – Modular and expandable sensor integration via GPIO, USB, or network devices without hardware replacement **j) Interoperability** Architecture – Open, vendor-neutral, multi-protocol integration compatible with BMS and DCIM platforms.		
14	**Virtualization and Cloud Management Platform** **a. Centralized Cloud Management** I. The proposed solution shall provide a unified console for managing compute, storage, networking, and user access. II. The platform shall support multi-tenant architecture with strict tenant isolation. III. The system shall enable centralized visibility and control of infrastructure resources. IV. The solution must support both enterprise and service provider deployment models. **b. User Access & Role-Based Access Control (RBAC)** I. The solution shall implement Role-Based Access Control (RBAC) with configurable roles and permissions. II. The platform shall provide secure authentication and session management mechanisms. III. The system shall support user lifecycle management including creation, modification, and deactivation. IV. The solution shall maintain comprehensive audit logs of all user activities.		

	V. The system must allow configurable access control policies and session timeout settings. **c. Project & Resource Governance** I. The platform shall enable logical grouping of resources into projects or tenants. II. The system shall support allocation and enforcement of quotas for CPU, RAM, and storage at project level. III. The solution shall provide quota request and approval workflows. IV. The system shall include governance-based approval mechanisms for critical operations. V. The platform must provide real-time visibility into resource utilization. **d. Virtual Machine Provisioning & Lifecycle Management** I. The solution shall provide self-service provisioning of Virtual Machines (VMs). II. The platform shall support provisioning using predefined Linux and Windows templates. III. The system shall allow customization of compute, storage, and networking configurations during provisioning. IV. The solution shall support full VM lifecycle operations including start, stop, restart, and delete. V. The platform shall provide automated workload placement for optimal performance. VI. The solution shall include a golden image repository for standardized deployments. VII. The system must provide secure browser-based VM console access (VNC/SSH/RDP). **e. High Availability & Business Continuity** I. The solution shall provide host-level high availability. II. The system shall support live migration of virtual machines without service interruption. III. The platform shall ensure automatic failover of workloads in case of host failure. IV. The solution shall support replicated storage architecture for data protection.		

	V. The system must provide backup and restore capabilities. **f. Storage & Disk Management** I. The solution shall provide centralized storage pool management. II. The system shall support online disk expansion without requiring downtime. III. The platform shall allow attachment and detachment of data disks to running VMs. IV. The solution shall provide storage usage and performance visibility. V. The system must support high-availability backend storage mechanisms. **g. Networking & Connectivity** I. The solution shall provide automated IP address allocation. II. The platform shall support virtual network and subnet management. III. The system shall ensure project-level network isolation. IV. The solution shall support controlled inter-subnet connectivity. V. The platform shall include workflow-based public IP allocation. VI. The system must provide visibility into networking details for each virtual machine. **h. Monitoring & Alerting** I. The solution shall provide real-time and historical performance monitoring. II. The platform shall monitor CPU, memory, disk, and network utilization. III. The system shall support threshold-based alerting mechanisms. IV. The solution shall provide alert notifications via email and dashboard. V. The platform must enable proactive infrastructure health monitoring. **i. Database as a Service (DBaaS)**		

	I. The solution shall provide high-availability database cluster provisioning. II. The platform shall support automatic failover for database services. III. The system shall enable vertical scaling of database resources. IV. The solution shall provide secure web-based database administration access. V. The platform must support secure connectivity mechanisms for database access. **j. Reporting, Audit & Compliance** I. The solution shall provide detailed infrastructure usage reports. II. The platform shall maintain VM activity and audit logs. III. The system shall record login and access logs for compliance. IV. The solution shall provide capacity planning and trend analysis reports. V. The platform must support enterprise security and compliance requirements. **k. Licensing & Support Requirement** Each institute should be provided with virtualization and infrastructure management platform with minimum three-year license (minimum 192 core capacity for each location, includes license for all 3 locations compute servers) enabling deployment, monitoring and centralized management of virtual machines, storage, networking and data center resources. OEM remote support shall be included.		
15	**Installation, Integration, Training and Commissioning Services** The scope shall include end-to-end setup and commissioning of the complete infrastructure, including server installation, storage configuration, network setup, firewall configuration where applicable, UPS integration where applicable, virtualization platform deployment, IoT configuration, system testing, benchmarking, and final		

	commissioning. The bidder shall also provide comprehensive documentation, training, and knowledge transfer to the designated personnel for operation and management of the deployed infrastructure, along with operational support for the duration of the OEM warranty period.		
16	**Technical Collaboration and Joint Exploration** In addition to supply and support obligations, the selected bidder shall extend technical cooperation with the institutes for structured exploration of efficient, scalable and optimal micro data center architectures. The deployed infrastructure shall serve as a reference platform for developing blueprint models for small data centers emphasizing compact footprint, high compute density, energy efficiency, thermal optimization and intelligent monitoring. The bidder shall support knowledge exchange sessions, architecture reviews and performance benchmarking exercises aimed at evolving standardized design frameworks suitable for distributed academic and research environments. This collaboration is intended to position the deployment not merely as equipment procurement but as a foundation for developing next generation small form factor data center design methodologies.		
17	**Execution Model and Technical Collaboration Framework** **a) Research and standardization alignment** This initiative is not merely infrastructure creation; it is a research-driven national reference model. Bidder's technical depth is required to collaborate on documentation, validation studies, performance benchmarking, and structured inputs for standardization. **b) Architectural consistency across institutions** A distributed data center must function as a unified system, not as independently assembled units. Bidder to ensure uniform		

	specifications, interoperability, benchmarking standards, cybersecurity protocols, and lifecycle management across IITB, NIT Goa, and IIIT Nagpur. Multiple independent routes increase the risk of architectural fragmentation and incompatibility, which would undermine the blueprint objective.		
18	**Scalability** The deployed architecture shall support future compute and storage expansion within existing rack and network backbone framework without major redesign, subject to power and cooling envelope at each institute.		

Evaluation Methodology

The bid shall be evaluated using the Quality and Cost Based Selection (QCBS) method, under a Combined Technical and Commercial Evaluation approach, with a weightage ratio of 30:70 (Technical: Financial).

Technical Evaluation

Technical evaluation shall be carried out of a total of 100 marks subject to meeting of Technical Specifications. Technical scoring shall be based on evidence of past work, and the bidder presentation. The technical score will be determined through evaluation of the submitted technical documents and the 40 minutes presentation delivered by the bidder before the Technical Evaluation Committee. The presentation shall include:

Evaluation Criteria:

Sl. No.	Particulars	Maximum Score	Scoring Criteria
1.	**Past Experience**		
	a) Virtualization and Cloud Management Platform	7	Bidders must provide evidence of delivering similar Virtualization and Cloud Management Platform services, including supporting documents such as purchase orders and sample deliverables. They should provide full design specifications and the components of their proposed design approach while meeting the specified requirements. 7 marks will be awarded for at least two completed deliveries involving the virtualization setup of data centers of the same or larger size. 3 marks will be awarded for one such completed setup. 0 marks will be awarded if none have been completed.
	b) Installation, Integration, Training and Commissioning Services	15	Bidders must provide evidence of successfully delivering similar Installation, Integration, and Commissioning services, including supporting documents such as purchase orders and invoices. They must demonstrate experience in installing at least one data center of similar specifications and present their proposed

			implementation plan, methodology, and approach to meet the specified scope. Bidders must also provide brief evidence of their training and knowledge transfer capability. 15 marks will be awarded for at least two completed deliveries involving the installation, integration, and commissioning of data centers of the same or larger size. 7 marks will be awarded for one completed delivery involving the installation, integration, and commissioning of a data center of the same or larger size. 0 marks will be awarded if none have been completed.
	c) Technical Collaboration and Joint Exploration	8	Bidders must provide evidence of prior technical collaboration or joint exploration initiatives related to data center architecture, optimization, or similar research-driven deployments, supported by documents such as project references/engagement letters/ whitepapers/sample outputs. They must also present their proposed collaboration plan, including knowledge exchange sessions, architecture reviews, and benchmarking approach aligned with the stated objectives. 8 marks will be awarded for a total of three engagements or whitepapers. 5 marks will be awarded for a total of two engagements or whitepapers. 0 marks will be awarded for fewer than two.
2.	**Bidders are required to deliver an in-person technical presentation of 40 minutes, comprising 30 minutes for the presentation and 10 minutes for a Q&A session. The presentation will take place two days after the tender submission deadline.**		

	a) Research capability and experience relevant to AI infrastructure and data center deployments	18	• Relevance and depth of research and technical expertise • Clarity and feasibility of the proposed architecture and implementation methodology • Strength of demonstrated experience in similar deployments • Quality and practicality of the collaboration and benchmarking approach • Robustness of the execution plan and post-deployment support model • Overall clarity, completeness, and ability to address committee queries
	b) Proposed solution architecture and implementation methodology for the distributed GPU data center setup	9	
	c) Demonstration of similar style deployments and turnkey execution experience	18	
	d) Approach towards joint technical collaboration, benchmarking, and knowledge exchange	18	
	e) Project execution plan and post-deployment support model	7	
	Total Score (Sl. No. 1 + 2)	100	

Technical Score will be for a maximum of 100 marks, calculated as below:

Past Experience (Maximum of 30 marks): Score based on compliance with required specifications and the strength of submitted evidence demonstrating relevant past work and capabilities across all listed components.

Technical Presentation (Maximum of 70 marks): Score based on the bidder's 40-minute presentation covering architecture, experience, collaboration approach, execution plan, and ability to address committee queries.

NOTE:

The offered solution should meet or exceed the minimum technical specifications defined in this tender document. Any deviation from the minimum required specifications may render the bid liable for rejection.

Financial Evaluation Criteria:

Only bidders who achieve a minimum score of 70% in each category, namely Past Experience and Technical Presentation, shall qualify for further evaluation. The financial bids of technically qualified bidders shall then be opened and evaluated. Among those bidders, the one submitting the lowest financial bid shall be designated as L1.

Final Combined Score:

The final score shall be computed using the following formula:

Final Score = 100 × ((0.3 × Ti / T*) + (0.7 × (L* / Li)))

Where:
Ti = Technical score of the bidder (out of 100)
T* = Highest technical score obtained among all bidders
Li = Financial quote of the bidder
L* = Lowest financial quote (L1)

The bidder obtaining the highest Final Combined Score shall be recommended for award of contract.

Bidder Turnover Criteria:

1. The minimum average annual financial turnover of the bidder during the last three years, ending on 31st March of the previous financial year, should be ₹2 Crore. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be submitted with the bid. In case the date of constitution / incorporation of the bidder is less than 3-year-old, the average turnover in respect of the completed financial years after the date of constitution shall be considered for these criteria.
2. Net worth of the bidder should be positive as per last audited financial statement.

Payment Milestone:

Sl. No.	Milestone	% of payment	Timeline
1	Upon submission and approval of the overall design and implementation approach, along with formal sign off by the Indentor.	**25**	Max 4 weeks after receipt of order
2	Upon delivery of the goods and Installation at the designated site.	**65**	Max of 12 weeks after approval of overall design and implementation sign off.
3	Upon successful project completion and final acceptance.	**10**	Max of 75 weeks after goods are delivered and installed at each site

Note: The standard Liquidated Damages (LD) clause shall apply in the event of a delay in the completion of any milestone.