Corringendum of High Performance Computing Cluster (HPCC) of the earlier Specifications

Sl No	Item	Clause quoted from tender (if any)	Change Requested/ Query	Remarks/Justification	Decision
1					
a	Master Node, Compute Node, GPU Node	Cryptographically verified trusted booting standards meeting NIST SP 800-1478, NIST SP800-155, protection standards meeting NIST SP 800-88	Please revise as: Cryptographycally verified trusted booting standards meeting NIST SP 800 series, protection standards meeting NIST SP 800 series and secure media sanitization standards meeting NIST SP 800 series	NIST SP-800 series standards are continiously getting ratified and as such, a particular version compliance is not common across OEMs. To generalize and allow wider OEM participation, kindly relax the clause	Accepted
b	Master Node, Compute Node, GPU Node	Should have LCD based display panel on server chassis which displays system ID, status information and system error code followed by descriptive text. LCD backgrounds should light up in different colors during normal system operation and error conditions	Please revise as Should have sutaible LCD based display panel on server chasis which displays system ID, status information, and system error code during normal system operations and error conditions	Descriptive text based LCD based display system are very specific and not widely available across leading server OEMs. Such systems are best used when server is accessed in person. With technology enhancements, remote server management has become de-facto standard and moreuseful. In view of the above, kindly revise the clause to allow wider OEM participation.	Accepted
c	PFS Storage	Parallel file systems EFS on lusture or IBM GPFS or BEEGFS with 1 petabyte (PB) of usable storage space in hardware RAID 6 (8+2)	Please revise as parallel file system(PFS) on lusture or IBM GPFS or BEEGFS with 1 petabyte (PB) of usable storage space.	Kindly allow software RAID as this is common open architecture across industry leading PFS storage designs. Pleae revise to allow either software or hardware RAID.	Not accepted
d	PFS Storage	Minimun 1 Petabyte (PB) useable capacity with RAID 6 (8+2) dual party data protection on 7200 RPM NL-SAS/SAS	Please revise as: Minimum 180 usable capacity using 7200 RPM NL -SAS/SAS	Kindly allow software RAIDAs this is common open architecture across industry leading PFS storage designs please revise to allow either software or hardware RAID	Not accepted
e	PFS Storage	The storage houl support distributed erasure coding so that during disk failure the rebuild time reduces	Please revise as: the storage houl support distributed erasure coding or equivalent disc failure to the rebuild time reduces	Kindly allow software RAID as this is common architecture across industry leading PFS storage designs please revise to allow either software or hardware RAID	Not accepted
f	PFS Storage	Controllers cache batteries or any other consumables required for the smooth functioning of the storage appliance with hardware and software (BOTH) support need to be included in the tender response	Please revise as accessories or any other consumables required for the smooth functioning of the storage appliance with hardware and software (BOTH) support need to be included in tender response	Kindly allow software RAID as this is common open architecture across industry leading PSS storage designs cache batteries are only needed in hardware RAID enhance this is OEM restrictive	Not accepted
g	PFS Storage	Minimum 5% of disc drives of PFS should be configured as hot online spare drives or capacity	Please revise as minimum 2% or higher of disc drives of PFS should be configured as hot online spare drives or capacity	Kindly revise as per prevailing industry practice 5% is too high and specific to certain OEM architecture	Not accepted
h	PFS Storage	Benchmarking with genomics benchmark data set human NIST	Kindly delete this clause	Kindly remove this clause	Accepted
2					
a	Master Node, Compute Node, GPU Node	Cryptographically verified trusted booking standards meeting NIST SP 800-1478, NIST SP-155, protection standards meeting NIST SP 800-193 standards & secure media sanitization standards meeting NIST SP 800-88	Please revise as: Cryptographically verified trusted booting standards meeting NIST SP800 series, protection standards metting NIST SP 800 series & secure media sanitization standards meeting NIST SP 800 series.	NIST SP-800 series standards are continuously getting ratified and as such, a particular version compliance is not common across OEMs. To generalise and allow wider OEM participation,kindly relax the clause	Accepted
b	Master Node, Compute Node, GPU Node	Shoruld have LCD based display panel on server chassis which displays system ID, status information and system error code followed by descriptive text. LCD backgrounds should light up in different colours during normal system operation and error conditions.	Please revise as: "Should have sutaible LCD based display panel on server chassis which displays system ID, status information and system error code during normal system operation and error conditions."	Descriptive text based LCD based display system are very specific and not widely available across leading server OEMs. Such systems are best used when server is accessed in-person. With technology enhancements, remote server management has become de-facto standard and more useful. In view of the above kindly revise the clause to allow wider OEM participation	Accepted

c	Bidders eligibility	The bidder should have executed at least three HPC projectseach with atleaset 1.5 crore/one HPC project with at leassl 3 crore using architecture and technologies simillar to those being proposed in their quotation against this tender in India. These projects should be excecuted within the last 5 financial years. Purchase order and final comissioning report copies of the same must be submitted with the techinical bid. least the 3 years), details of salary) the should engineer also be (qualification, furnished along experience with in the bid HPC document. Comissioning	The bidder should have executed atleast one HPC projects with at least 1 crore. These projects should beexecuted within the last 5 financial years. Purchase order and completion Certificate of the same must be submitted with the technical bid.		Not accepted
d	Bidders eligibility	The bidder should have executed at least three HPC projects each with atleaset 1.5 crore/one HPC project with at leassl 3 crore using architecture and technologies simillar to those being proposed in their quotation against this tender in India. These projects should be excecuted within the last 5 financial years. Purchase order and final comissioning report copies of the same must be submitted with the techinical bid. least the 3 years), details of salary) the should engineer also be (qualification, furnished along experience with in the bid HPC document. Comissioning	We have developed Heavy End Servers at Mission Critical Projects at **Emmergency Response Center- Dial 108, Police Training Academies of MP and SRDF.** Request you to please accept these projects also as similar kind of projects.		Not accepted
e	Bidders eligibility	The bidder should preferably have a service centre at Bhubaneswar or nearby equipped with spare stock and certified manpower. This is to ensure immidiate delivery of spare parts from OEM to its channel partner/system integrator. Please attach the necessary documents.	Please accept the self declaration/Undertaking from bidder that after awarding the L1, Bidder will open branch office/service center at Bhubaneshwar within 30 days of receiving LOI		Accepted
	Storage				
f	Storage main body	Hardware RAID 6(8+2)	Please allow software RAID		Not accepted
		Cache batteries	Request to please remove Cache Batteries, OEM Specific		Not accepted
g	Performance	Distributed Erasure coding	Please allow "or equivalent"		Accepted
i	Essential feature	Cache batteries	Request to please remove "Cache Batteries", OEM Specific		Not accepted
j	High Availability & Redundancy	Battery Backed and mirrored cache with ability to de-stage cached data to persistent storage in case of power faliure	Request to deleted since E1000 does not use batteries		Not accepted
		Minimum 5%	Request to change it to 2%		Not accepted
k		Storage enclosures are needed to be attached to each of the 10 servers (if required) with redundant cable connections, to protect against individual component level faliures such as a broken cable or host bus adapter (HBA)	Request to please explain the point		It is IO server (not 10). Please read it as IO (Input/Output)
l	Benchmarking	Benchmarking with Genomics benchmark dataset (Human) NIST	Request you to please delete the clause		Not accepted
3					
a	Memory	512GB (16X32GB) RDIMMS scalable to atleast 1TB using min 4800MT/s in fully balanced mode, advanced ECC with multi build error protection	768 GB (24x32GB) DDR5 RDIMM scalable to 1TB using min 4800MT/s in fully balanced mode.	present specifications limit vendors to quotes system with AMD EPYC processor. 16X32GB RDUMM configuration. Moving 16 to 24 qualifies both AMD EPYC 9004 and Intel Xeon 6.	Accepted. rephrased as "768 GB (12 x 64 GB) RDIMMS scalable to at least 1TB in fully balanced mode, Advanced ECC with multi-bit error protection."
4			The technical specifications are OEM-specific, asking for generalising the		Our specifications are very generic
5		EAL certification: System's integrated remote management hardware & tool	The clause related to EAL2+ security to be removed		Accepted
6		Processor	64 cores DDR5 memory support, clock speed (base) 2.4 GHz or higher, 12 memory		To be modified
		OS-Disk	2 x 480GB SSD in RAID 1		To be modified
		Terms and Conditions	Common Genomics Pipelines as detailed in "GenomicsBench: A Benchmark Suite for Genomics" (https://genomicsbench.eecs.umich.edu/assets/ispass21_genomicsbench_camera_ready.pdf) to be included		To be modified

Final Specifications for High Performance Computing Cluster (HPCC):

Master Node: Quantity 1, IO Node 2

SI. No.	Short description	Minimum specification/compliance required
1	Form Factor	Maximum 2 U rack mount server with front locking bezel, cable manager, sliding rails & accessories
2	Processor	64 cores DDR5 memory support, clock speed (base) 2.4 GHz or higher, 12 memory channel, min. cache 90 MB
3	Memory	768 GB (12 x 64 GB) RDIMMS scalable to at least 1TB in fully balanced mode, Advanced ECC with multi-bit error protection.
4	Storage controller	1 x 12Gbps PCle 5.0 controller, 8GB non-volatile cache supporting RAID 1, 5, 6, 10
5	OS Disk	2 x 480GB SSD in RAID 1
6	I/O Slots	PCle 5.0
7	Network Port	Minimum 2 x 1GbE (RJ-45), 1X lnfiniband 200 Gbps port
8	OS Certification	Certified for latest version of Red Hat Enterprise Linux, SUSE Linux Enterprise Server, Ubuntu, VMWare
9	Power supply	Hot Plug Redundant (N+1) power supplies with requisite cables and 80 Plus Platinum certified.
10	Fans	Fully populated redundant hot-swap fans system
11	Other Interfaces	Minimum 1 x 1Gbps system management port (RJ-45), 1 x video port, 3 x USB ports
12	Security	Publicly available links, verifiable evidence must be submitted against each of the feature below
		Silicon-based Hardware Root of Trust
		Automatic BIOS recovery
		Firmware drift detection & alerting
		Cryptographically signed firmware updates
		Cryptographycally verified trusted booting standards meeting NIST SP 800 series, protection standards meeting NIST SP 800 series and secure media sanitization standards meeting NIST SP 800 series
		System lockdown support to lock down configuration and firmware, protecting the server from inadvertent or malicious changes
		Secure default passwords during transit
		Persistent event logging including user activity
		Drive security, including secure system erase for HDD, SSD & NVMe
		Dynamically enabled / disable USB ports to protect from USB-based attacks
		Protection against compromised firmware execution

		UEFI secure boot with custom certificates
		Intrusion alert in case chassis being opened
13	Visual monitoring	Should have sutaible LCD based display panel on server chasis which displays system ID, status information, and system error code during normal system operations and error conditions
14	Certifications & benchmarks	Relevant product datasheets, certification, benchmark or reference documents verifiable from publicly available data sources must be submitted along with bill of material for detailed bid evaluation. Links for certifications to be submitted.

Compute Nodes: Quantity 6

SI. No.	Short description	Minimum specification / compliance required
1	Form Factor	Maximum 1 U rack mount server with front locking bezel, cable manager, sliding rails & accessories
2	Processor	64 cores DDR5 memory support, clock speed (base) 2.4 GHz or higher, 12 memory channel, min. cache 90 MB
3	Memory	768 GB (12 x 64 GB) RDIMMS scalable to at least 1TB in fully balanced mode, Advanced ECC with multi-bit error protection.
4	Storage controller	1 x 12Gbps PCle 5.0 controller, 8GB non-volatile cache supporting RAID 1, 5, 6, 10
5	OS Disk	2 x 480GB SSD in RAID 1
6	I/O Slots	PCle 5.0
7	Network	Minimum 2 x 1GbE (RJ-45), 1X lnfiniband 200 Gbps port
8	OS certification	Certified for latest version of Red Hat Enterprise Linux, SUSE Linux Enterprise Server, Ubuntu, VMWare
9	RPS	Hot Plug Redundant (N+1) power supplies with requisite cables and 80Plus Platinum certified (certification evidence from 80Plus portal to be submitted}
10	Fans	Fully populated redundant hot-swap fans system
11	Other Interfaces	Minimum 1 x 1Gbps system management port (RJ-45), 1 x video port, 3 x USB ports
12	Security	Publicly available links, verifiable evidence must be submitted against each of the feature below
		Silicon-based Hardware Root of Trust
		Automatic BIOS recovery
		Firmware drift detection & alerting
		Cryptographically signed firmware updates
		Cryptographycally verified trusted booting standards meeting NIST SP 800 series, protection standards meeting NIST SP 800

		series and secure media sanitization standards meeting NIST SP 800 series
		System lockdown support to lock down configuration and firmware, protecting the server from inadvertent or malicious changes
		Secure default passwords during transit
		Persistent event logging including user activity
		Drive security, including secure system erase for HDD, SSD & NVMe
		Dynamically enabled / disable USB ports to protect from USB-based attacks
		Protection against compromised firmware execution
		UEFI secure boot with custom certificates
		Intrusion alert in case chassis being opened
13	Visual monitoring	Should have sutaible LCD based display panel on server chasis which displays system ID, status information, and system error code during normal system operations and error conditions
14	Certifications & benchmarks .	Relevant product datasheets, certification, benchmark or reference documents verifiable from publicly available data sources must be submitted along with bill of material for detailed bid evaluation. Links for certifications to be submitted.

GPU Nodes: Quantity 1

SI. No.	ITEM	SPECIFICATION
SI. No.	Short description	Minimum specification/compliance required
1	Form Factor	Maximum 2 U rack mount server with front locking bezel, cable manager, sliding rails & accessories
2	Processor	64 cores DDR5 memory support, clock speed (base) 2.4 GHz or higher, 12 memory channel, min. cache 90 MB
3	Memory	768 GB (12 x 64 GB) RDIMMS scalable to at least 1TB in fully balanced mode, Advanced ECC with multi-bit error protection.
4	Storage controller	1 x 12Gbps PCle 5.0 controller, 8GB non-volatile cache supporting RAID 1, 5, 6, 10
5	OS Disk	2 x 480GB SSD in RAID 1
6	I/O Slots	PCle 5.0
7	Network Port	Minimum 2 x 1GbE (RJ-45), 1X Infiniband 200 Gbps port
8	OS Certification	Certified for latest version of Red Hat Enterprise Linux, SUSE Linux Enterprise Server, Ubuntu, VMWare
9	Power supply	Hot Plug Redundant (N+1) power supplies with requisite cables and 80 Plus Platinum certified.

10	Fans	Fully populated redundant hot-swap fans system
11	Other Interfaces	Minimum 1 x 1Gbps system management port (RJ-45), 1 x video port, 3 x USB ports
12		Publicly available links, verifiable evidence must be submitted against each of the feature below
		Silicon-based Hardware Root of Trust
		Automatic BIOS recovery
		Firmware drift detection & alerting
		Cryptographically signed firmware updates
		Cryptographycally verified trusted booting standards meeting NIST SP 800 series, protection standards meeting NIST SP 800 series and secure media sanitization standards meeting NIST SP 800 series
	Security	System lockdown support to lock down configuration and firmware, protecting the server from inadvertent or malicious changes
		Secure default passwords during transit
		Persistent event logging including user activity
		Drive security, including secure system erase for HDD, SSD & NVMe
		Dynamically enabled / disable USB ports to protect from USB-based attacks
		Protection against compromised firmware execution
		UEFI secure boot with custom certificates
		Intrusion alert in case chassis being opened
13	Visual monitoring	Should have sutaible LCD based display panel on server chasis which displays system ID, status information, and system error code during normal system operations and error conditions
14	Certifications & benchmarks	Relevant product datasheets, certification, benchmark or reference documents verifiable from publicly available data sources must be submitted along with bill of material for detailed bid evaluation. Links for certifications to be submitted.
15	GPU	2x NVIDIA H100 NVL 94 GB cards

PFS Storage: Quantity 1

Parallel file system (PFS) on Lustre or IBM GPFS or **BEEGFS** with 1 Petabyte (PB) of usable storage space in Hardware RAID 6(8+2).

Storage controllers cache batteries or any other consumables required for the smooth functioning of the storage compliance with hardware and software (BOTH) support need to be included in warranty.

Time to time upgradation of parallel file systems (Both server side and client side) should be done whenever there is a patch or new version released.

Bidders will be responsible for protecting data during any upgrades of firmware/OS/IO servers/PFS.

The total solution must be built on Open Source or free software without inviting any commercial implication due to software licensing for PFS software or system software.

SI. No.	ITEM	SPECIFICATION
1.	Capacity	1. Minimum 1PB usable capacity with RAID 6 (8+2) dual parity data protection on 7200 RPM NL-SAS/SAS. 2. Min. 3% of usable capacity needs to be factored for MDT storage in SSD. Provision should be there for expansion in the future.
2.	Performance	1. PFS should deliver at least 10 GBps scalable to 20 GBps read and write throughput. 2. Bidders to include signed benchmarking report on OEM letterhead with the tender response showing performance achieved using tools and configurations mentioned in "Benchmarking Tools" section below. Bidders would have to demonstrate performance requirements during acceptance testing. 3. The storage should support Distributed erasure coding so that during disk failure the rebuild time reduces
3.	Scalability	System should be scalable to 2PB usable capacity on NL-SAS/SAS just by adding disk and enclosures under the same file system without adding any controllers and licenses. Storage System should have 32 GB System Memory/Cache (16GB per controller, mirrored)
4	Connectivity	1. Storage solution must have a minimum 100Gbps HDR and should be connected to the HDR200 interconnect InfiniBand ports. 2. Storage solutions must have management and monitoring via 1 Gbps Ethernet network
5.	Essential Features	1, Any additional licenses required for hardware and software (BOTH) for all of above features must be supplied with appropriate bill of material in the tender response. 2. Storage controllers cache batteries or any other consumables required for the smooth functioning of the storage appliance with hardware and software (BOTH) support need to be included in the tender response. 2. No single point of failure in the solution. Necessary architecture drawing needs to be provided.
6.	High Availability & Redundancy	Entire storage solution must not have any single point of failure with high availability and redundancy offered with: 1. Active-Active controllers with transparent failover capability 2. Redundant power supplies, fans, host networking ports 3. Battery backed and mirrored cache with ability to de-stage cached data to persistent storage in case of power failure. 4. Minimum 5% of disk drives of PFS should be configured as hot online spare drives or capacity.

		5. High Availability, Multipath and Multi-Rail need to be configured for IO nodes. One group for the MGS and MDS, usually referred to as the metadata cluster (or individually as metadata servers), and one or more HA groups for the object storage servers. 6. Multipathing - Storage enclosures are needed to be attached to each of the IO servers (if required) with redundant cable connections, to protect against individual component-level failures, such as a broken cable or host bus adapter (HBA).
7.	Bench-markIng	1. Open-source IOR/IO Zone or FIO benchmarks running on compute nodes with 1 MB block size and file size double than total storage cache and I/O node memory. 2. Storage performance should be measured from the client (compute node) using IOR benchmark for 10 GB/s write throughput. 3. Open-source MDTEST tool to be used for metadata benchmarks with 4KB block size and minimum 50,000 files. NIST
		2. Response must include detailed information on power consumption, cooling required, heat generated, number of racks used, rack dimension, rack clearance, number of PDUs per rack with ampere & voltage rating, no of electrical sockets and type of sockets required to connect PDUs, weight per rack, number of InfiniBand & Ethernet ports required per rack and any other relevant information to complete the deployment.
9.	Warranty Support	Entire storage solution must be quoted with 5 years of 24x7 support with Next Business Day parts delivery. All software & firmware upgrades and updates for storage array, filesystem and monitoring & management components must be freely available to customers without any additional cost during warranty period.

INFINIBAND SWITCH

Sl. No.	ITEM	SPECIFICATION
1	1	Mellanox Quantum HDR InfiniBand Switch, 200Gbps, 40 QSFP56 ports, 2 Power Supplies (AC), unmanaged, standard depth, P2C airflow, Rail Kit with all required cables and accessories

Smart Row

S. No		SPECIFICATION

1		Scope of Work
		Requirements
	a.	Integrated Smart Rack Infrastructure Solution of 03 no. Prefabricated rack frame, with integrated Cold and Hot aisle containment of minimum 300 mm each, should cater IT load upto 20kW and the system must be upgradable to 40 KW in N+ 1 with redundancy.
	b	Critical Component's for Integrated Smart Racks Data Centre Solution (Rack, Cooling, rack PDU and monitoring system along with temperature & humidity sensor) should be from same & single OEM for Seamless Integration & better Service Supports.
	c	The Smart rack OEM should have at least 05 years of experience in executing similar works (Similar works means – "SITC of Integrated Smart Rack Infrastructure") in Central/State/PSU Organizations. Completion Certificate, as a proof of experience, signed by the concerned authorities to be submitted along with the bid.
	d	Smart Rack OEM or Manufacturer should have its own service center in Odisha. Documentary evidence must be submitted along with the bid.
2		**Solution shall have following components: -**
2.1		**In-Row closed loop Air-Conditioning**
		Precision Air Conditioner should have following Features:
	a.	Cooling System should be DX (Variable capacity) type
	b.	The unit incorporates a high efficiency DC brushless compressor with a crankcase heater, filter dryer, moisture indicating sight glass, and an electronic expansion valve 01 nos Precision Air Cooling solution in day-1 should be of >20kW capacity @45C ambient temperature with return air temperature of 35C & supply air temperature of 22C ± 1C . OEM Software selection sheet to be submitted along with the bid .
	c.	The compressor is equipped with an environment-friendly refrigerant (R410A), and a DC brushless type arrangement with variable capacity operation of 30% to 100%.
	d.	The unit is equipped with 06 EC fans. The fan speed is variable and can be automatically regulated by the highly intelligent controller through all modes of operation. The fans pull air through the coil and is located on the front side of the unit. The EC fan has the characteristics of high efficiency, energy saving, space saving and hot swappable. The unit should be capable of handling up to 5500 CMH with a horizontal airflow pattern and is rated at 5200 CMH
	e.	Inbuilt Heater and Humidifier in each unit
	f.	The unit is equipped with two G4 rated air filters following with EU4, located within the cabinet, and accessible from the rear side of the unit. A filter clog alarm is also available as an option to alert clogging of the filter.
	g.	The unit is equipped with a factory installed electrode humidifier. The conductive rate of water required for electrode humidifying should be within the range of 125 us/cm to 1250 us/cm.

	h.	Micro Processor should have capacity to store up to 1000 historical event records
	i.	The condenser must be designed with a fan speed controller and for R410A refrigerant usages, operates at 0 °C to 45°C ambient temperature. The condenser frame is made up of sturdy GI /MS structure and the electrical control box has IP54 protection
2.2	**UPS System**	
	3.2.1	30 KVA UPS with 15 min battery backup @ 30 KVA load. Bidder must submit the battery calculation sheet along with the bid. UPS must be rack/tower convertible with 4U or less hight, IGBT based with Unity power factor. Input voltage range must be 176 ~ 288, at full load, 100Vac ~ 176Vac, linear derating, 100Vac, at half load. UPS must have variable DC bus of 384V to 480 V. Inverter overload capacity - Up to 105% continuous, 105%-125% for 10 min, 125%-150% for 1 min > 150%, 200 ms. 96 % or higher efficiency
2.3	**Rack Power Distribution (02 no. per rack)**	
	a.	0U, Vertical Rack PDU, 32A, 400V, 18 no. IEC C13, 06 no. IEC C19, 3m power cord with 3P+E . Coat. The IT rack should have minimum 02 PDU .
2.4	**Electrical Power Distribution**	
	a.	DB panel should have essential MCB/MCCB to power the Integrated Smart rack solution. The DB panel should be mounted in a separate cabinet.
2.5	**Safety, Security & Access Control**	
	a.	Rack based Biometric Access Control System shall be provided to serve the objective of allowing access to authorized personnel only. The front & rear rack doors will be provided with magnetic locks. Front door will operate on fail-safe principle through one common Biometric access control system.
	b.	The Integrated Smart Rack Data Center Infrastructure should be covered with Rodent repellant system
2.6	**Environmental Controls**	
	a.	Intelligent Integrated rack should include basic environmental controls: Smoke Detector, Water Leak Detection system, Temperature & Humidity Sensor with display with 6 Temp. sampling point per rack, Door Sensor, Alarm beacon. It should monitor UPS, PAC unit status. Detailed Monitoring & Diagnostics thru Rack Data Unit ,1U rack mountable, with redundant power supplies & capable of single window monitoring of all the environmental parameters along with air conditioning through a single window dashboard over ethernet & Capable for sending Email Alerts Monitoring unit should integrate & monitor environmental parameters like temperature, humidity, door access, smoke etc. with cooling unit in a single dashboard along with other environmental parameters like temperature, humidity, smoke etc. The monitoring unit should support basic protocols like Telnet, SSH, FTP, SFTP, HTTP, HTTPS, NTP, DHCP, DNS Server, smtp, TCP/IP4. It should

		support network interface of 10/100M self-adaptable Ethernet ports. The monitoring unit should support IPMI protocol to enable feature to Access server Service Processor. Air conditioning should be integrated with the monitoring unit to monitor all critical parameters (Cooling unit: Unit status, supply & return air temperature, humidity in a single dashboard. Monitoring unit should be integrated with energy meter of the Smart rack DB Panel & should be able to monitor the Main Input power Voltage, Current, power consumption.
2.7	**Rack frame and U Space**	
	a.	3 Nos. of 42 U rack of dimension 800 mm x 1200 mm (Server Rack) with integrated hot & cold aisle containment of minimum 300 mm each. With Status based LED light to be provided on each rack.
	b	Warranty 5 yr Onsite. Battery warranty will be 3yr.

Software:

Software		
	Sl. No.	• Open source cluster management tool. • Web-based real-time monitoring of the cluster with xdmod, telegraf, or prometheus + grafana
	1	Rocky Linux or a suitable alternatlve as preferred by the OEM/bidder
	2	Open PBS/Slurm. The solution should include professional services for installation and application integration.
	3	Open source compilers (gcc, g++, gfortran, python), Intel/equivalent compilers for C++ and Fortran Software. Package managers e.g., Spack (shared with child nodes, Installation of all Software using spack only)
	4	Open source (latest version) or provided by ILS: EMacs, MPI, OpenMP, Gnuplot, NAMD, VMD, GROMACS, Autodock, Autodock-vina, Bioconda, Burrows-Wheeler Aligner (BWA}, BoMie2, ClRCexplorer2, Deeptools2, Picard Tools, Samtools, BEDTools, BCFtoola, Sambamba, GATK, Varscan, MuTect, snpEff, snpsift, Ensemble VEP with Human & Bacterial annotations, VCF-kit, Meerkat, CNVnator, Trinlty, Velvet, SOAPdenovo, sGA assembler, ' Allpaths-LG, BayesTyper, ADMIXTURE by UCLA, AMBER, Nextflow, Docker, bcl2fastq, STAR, Salmon, IGV (Integrative Genomics Viewer), GATK (Genome Analysis Toolkit), HISAT2, HTSeq, Subreads, featureCounts, Cell Ranger, Space Ranger, R (R-base), JDK (Java Development Kit), JRE (Java Runtime Environment), Python 2.7-3.12, PyTorch, TensorFlow, QIIME 2, VCFtools, SAMtools, Kraken, Krona, Guppy, Dorado, KRAKEN, Bashtop, Minimap2, GROMACS, FastQC, Fastp, Trimmomatic, NAMD, SeqIT, SnpEff, SGA, VMD (Visual Molecular Dynamics), Prodigal, MaxQuant, BWA (Burrows-Wheeler Aligner), SHAPEIT5, ADMIXTURE, KING, FIndSTructure, RFMATE, AdmixTools, Admix, EigenSoft Package, velocyto, pySCENIC, Alder, Max2, DELLY2

	5	Fully Configured to support NVIDIA Clara™ (PARABRICKS) for Genomics software suite.

Management:

	1	Management-Should provide virtual media, virtual folders, remote file share, virtual console support Monitoring & alerting-Monitoring fan, power supply, memory, CPU, RAID, NIC for impending failure Remote power On/ Shutdown of server, Remote Management of Server over LAN & WAN with SSL encryption through gigabit management port, Should have virtual Media support with all required licenses. Remote KVM, Server Health Logging, Out of Band Management.

Terms and conditions.

1. Bidder should be either an Original Equipment Manufacturer (OEM) or an OEM authorized System Integrator Partner having back-to-back support agreement with the OEM. Manufacturer's Authorization Form (MAF) for participating in this tender is mandatory for bidders and should be attached along with the bid.

2. The bidder should have executed at least three HPC projects each with at least 1.5 crore/one HPC project with at least 3 crore using architecture and technologies similar to those being proposed in their quotation against this tender in India. These projects should be executed within the last 5 financial years. Purchase order and final commissioning report copies of the same must be submitted with the technical bid. The details of the engineer (qualification, experience in HPC commissioning (at least 3 years), salary) should also be furnished along with the bid document.

3. All warranty and support must be serviced directly by the OEM or should be provided by an Authorized System Integrator Partner who must have back-to-back support from the OEM.

4. ILS requires that there be a Single Point of Contact (SPOC) from the vendor who is responsible for all issues between ILS and the OEM. The OEM/Bidder should have required critical spares at the local service centre.

5. The bidder should preferably have a service centre at Bhubaneswar or nearby equipped with spare stock and certified manpower. This is to ensure immediate delivery of spare parts from OEM to its channel partner/system integrator. Please attach the necessary documents.

6. The Bidder/OEM should have valid ISO certifications which include ISO 9001, ISO 14001, and ISO 20000-1. Copies of certificates are to be attached.

7. Products offered should have official OEM support for five years from the date of acceptance of installation.

8. The entire HPC solution should be proposed by the bidder/OEM with details of power consumption and power efficiency.

9. Benchmarking with Genomics Benchmark Dataset : Common Genomics Pipelines as detailed in "GenomicsBench: A Benchmark Suite for Genomics" (https://genomicsbench.eecs.umich.edu/assets/ispass21_genomicsbench_camera_ready.pdf)

10. The bidder should not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Government of India or any State Government in the country of India. Self-declaration under the seal of the head/authorized employee of the organization is to be submitted.

11. No Criminal Proceedings in any Court of Law should be pending against the bidding Firm or its Board of Directors. Self-declaration under the seal of the head/authorized employee of the organization is to be submitted.

12. One-week admin and user training on the cluster usage and administration must be provided.

13. The bidder should provide a rough estimate of the project plan in the form of a GANTT chart.

14. The OEM should provide 5 years onsite support for hardware.

15. The bidder should provide 5 years onsite NBD support for the proposed open-source cluster software and day-to-day troubleshooting for system errors arising from the OS/cluster software/job schedular whether proprietary or open source.

16. Completeness Responsibility: Notwithstanding the scope of work, engineering, supply, and services stated in bid document, any equipment or material, engineering or technical services which might not be even specifically mentioned under the scope of supply of the bidder and which are not expressly excluded therefrom but which – in view of the bidder - are necessary for the performance of the equipment in accordance with the specifications are treated to be included in the bid and has to be performed by bidder.

BID LETTER FORMAT
(To be given on Bidder Letter Head)

Ref. No……………………………..   dated ………………

To,
The Director
Institute of Life Sciences,
Nalco Square, Bhubaneswar- 751 023

GeM Bid Reference No: _____

Name / Subject Title of Tender _____

Dear Sir,

      We, the undersigned agency, having read and examined in detail the specifications and all the bidding documents do propose to supply and deliver the above equipment/ goods in conformity and to provide the Services as specified in this bidding document. Our offices are equipped with adequate facilities for Supply, Installation, Commissioning and Satisfactory Demonstration of the above item/ scientific equipment/goods required by you. All prices mentioned in the PRICE/FINANCIAL BID is in accordance with the terms and condition specified in the bidding document and extant statutes/rules etc. All the prices and other terms and conditions of this proposal are valid up to minimum of 90 days otherwise specified in the bid documents   from the closing date of this bid. We have carefully read and understood the terms and conditions of the contract applicable to the tender and we do hereby undertake to provide the services as per the terms and conditions mentioned in the above tender.

      We enclose herewith all documents as required by you. However, our Price/Financial bid may only be opened as per the scheduled date & time mentioned in this tender if our Technical bid is found to be successful.We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

Compliance of Restrictions under Rule 144 (xi) of GFR 2017 and as such GeM GTC clause 26 regarding - Restrictions on procurement from a bidder of a country which shares a land border with India:

 "I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India; I certify that this bidder is not from such a country. I hereby certify that this bidder fulfils all requirements in this regard and is eligible to be considered and I ensure that in case of any false declaration or non-compliance of any criteria fixed by GeM can be a ground of termination of the contract and will accept any legal action/ penalty accordance with law. I also understand that in respect of critical categories, GeM would be constrained to cancel any bid created by the Buyer using Custom / BoQ bid method, irrespective of the stage at which the bid has progressed. In case of any such cancellation by GeM, I shall be responsible for any inconvenience caused at a later stage and ILS is not liable to pay any amount for this order.

I / We hereby unconditionally accept the tender conditions of above-mentioned tender document(s) / corrigendum(s) in its totality / entirety. The corrigendum(s) if any issued from time to time by your department/ organisation too have also been taken into consideration by us, while submitting this acceptance letter.   I / We do hereby declare that our Firm has not been blacklisted/ debarred/ terminated/ banned by any Govt. Department/Public sector undertaking. I / We certify that all information furnished by our Firm is true & correct and in the event that the information is found to be incorrect/untrue or found violated, then your department/ organisation shall without giving any notice or reason therefore or summarily reject the bid or terminate the contract, without prejudice to any other rights or remedy including the forfeiture of the full said earnest money deposit absolutely. I/We the undersigned, hereby acknowledge that I have read, understand and agree to be bound by all the rules ,regulations ,terms and conditions mentioned in the above GeM bid of the Institute of Life Sciences, Nalco Square, Bhubaneswar-751 023, Odisha, India. I/We also undertake to follow the final decision taken by the Director, ILS in case of any dispute in future.

Date:

                                                (Full Signature of the bidder with seal)

             Name of the Vendor/Bidder: Name of the Manufacturer/ Principal if other than the bidder
Full Address:
Telephone No(s):
Mobile:
Fax No(s).:
E-mail:
Website: Seal of the Firm

Note: Delete whatever is not applicable. All corrections/deletions should invariably be duly attested by the person authorized to sign the tender document.
(No alterations of this/ any format shall be permitted and no substitutions shall be accepted)

MANUFACTURERS' AUTHORIZATION FORM

Note: This letter of authority should be on the letterhead of the manufacturer and should be signed by a person competent and having the power of attorney to bind the manufacturer.

No. _____

Dated _____

To,
THE DIRECTOR
INSTITUTE OF LIFE SCEINCES
Nalco Square, Bhubaneswar – 751 023.

Ref: GeM Bid Reference No: _____

Name / Subject Title of Tender _____

Dear Sir:

We _____ who are established and reputable manufacturers of _____ having factories at _____ (*address of factory*) do hereby authorize M/s *(Name and address with contact details like Tel. No(s)/ Fax/ E-mail etc. of Agent/Sub-Agent)* to submit a bid, negotiate and receive the order from you against your above GeM bid.

No company or firm or individual other than M/s_____ is/are authorized to bid, and conclude the contract in regard to this business.

We hereby extend our full guarantee and warranty as per the condition of the above tender/PO (issued if any) for the goods and services offered by the above firm(s).
Thank you.

Yours faithfully,

Authorized Signatory
(Having the power of Attorney on
behalf of the Manufacturer)

<div align="center">

SERVICE SUPPORT DETAILS FORM

(*To be submitted in Manufacturer's/Bidder's Letter Head*)

</div>

Ref: GeM Bid Reference No: _____

Name / Subject Title of Tender _____

Sl. No.	Nature of training imparted	List of similar type equipment/goods serviced in the past 3 years	Local Address, Telephone Nos. Fax No(s). and e-mail address of the firm located at Bhubaneswar or its adjoining areas	Average value of minimum stock of consumable/spares held at all times.
1				
2				
3				
4				

Signature and Seal of the Manufacturer/Bidder………………………….

Place:
Date:

<div align="center">**FALL CLAUSE UNDERTAKING**</div>

<div align="center">(*To be submitted in Manufacturer's/Bidder's Letter Head*)</div>

To   Date:

THE DIRECTOR
INSTITUTE OF LIFE SCEINCES
Nalco Square, Bhubaneswar – 751 023.

Ref: GeM Bid Reference No: _____

Name / Subject Title of Tender _____

Dear Sir,

This is to certify that we have offered the maximum possible discounted price to your institute for the Item(s) required as per the above GeM bid for total Currency / as per quotation submitted .It is also certify that the prices charged for the stores supplied under this tender are the minimum at which the party sells the item(s) of identical description to any other Govt. Organization/PSU's/Autonomous bodies/Pvt. Organizations during the period of contract till validity of our offer or execution of the purchase order contract whichever is later, failing which the "FALL CLAUSE" will be applicable. In case, if the price charged by our firm is more, ILS, Bhubaneswar will have the right to recover the excess charged amount from us from the subsequent/unpaid bill.

Place :
Date :

<div align="right">*Signature with Seal of the Manufacturer/Bidder*</div>

Warranty Compliance Undertaking
(*To be submitted in Manufacturer's/Bidder's Letter Head*)

Ref: GeM Bid Reference No: _____

Name / Subject Title of Tender _____

To   Date:
THE DIRECTOR
INSTITUTE OF LIFE SCEINCES
Nalco Square, Bhubaneswar – 751 023.

Dear Sir,

Subject: Supply & installation of the equipment/goods/ Item – Quantity:_____no(s) vide your above tender notice if we get the contract order from you.

This bears reference to our quote no. _____dated_____

1) We warrant that everything to be supplied by us shall be brand new, free from all defects and faults in material, workmanship and manufacture and shall be of the highest grade and quality and consistent with the established standards for materials specification, drawings or samples if any, and shall operate properly. We shall be fully responsible for its efficient operation.

2) Alternative equipment/goods shall be provided free of cost to the Institute within two weeks in case of major defects arising in the existing equipment/goods/machine in the comprehensive warranty period of ___ year(s), Extended Warranty period of _____year(s) and CMC period of _____year(s) from the date of installation of the equipment/goods.

3) We also accept free up-gradation of software (all update & upgrades) up to 5 years from the date of satisfactory installation if supplied with the equipment/goods/ article.

Yours faithfully

Signature with Seal of the Manufacturer/ Bidder

Place:
Date:

Manufacturers (OEM) Undertaking to Provide Spares & Service for at least 5(five) years from the date of supply & Installation

(To be submitted in Manufacturer's letter head)

Letter Ref. No.: ……………………………../Date:

To
The Director,
Institute of Life Sciences,
Nalco Square, Bhubaneswar-751 023, India.

   Ref: GeM Bid Reference No: _____

   Name / Subject Title of Tender _____

Sub: Sale of (…………………………put name of the equipment/goods with model no(s)) which is/ are manufactured by us through our authorized sales & service agent in India

M/s………………………….……………………………..………………………………………....………….
………………………………………………………………..…………………………….…………………
Tel.: …………………………………….…….. Fax No.: …………………………………………….. e-mail:
…………….……………………………..… to your organization vide your above GeM bid..

Undertaking: Being the Original Equipment/goods Manufacturer (OEM) of the above product , the company hereby agrees to provide spares & after sales service as & when required through the above authorized agent for at least 5(five) years from the date of successful installation of the above equipment/goods at ILS. We hereby confirm and accept not to withdraw the authorization or dealership for the sales & service of the above equipment/goods up to at least 5(five) years from the date of the successful installation at your organization. In case, it happens for the reason whatsoever the company also agrees to take the responsibility for providing the service with spares itself or through its other dealer or agent in India at the same terms & conditions and price submitted by our above current agent or dealer. In case of defaulting, we will be penalized under the Laws of Union of India.

         Authorized Signatory
        (Having the power of Attorney on
         behalf of the Manufacturer)
          Name:
         Designation:
       Name of the Company/ Firm:
       Complete Postal Address:

         Telephone no(s):
           Fax:
          E-mail:
          Website:

DECLARATION OF LOCAL CONTENT

Format for Self-Certification under Preference to "MAKE IN INDIA" Policy (Refer Clause No. 2.8 & 3.4.4 of ITT)

(Please submit the same in printed form on your company letter head (not handwritten and no overwriting) with seal and signature who has the power of attorney of the bidder/ OEM / Dealer in India, who has added the local content as per MII policy of the Government)

Date:

To,
The Director,
Institute of Life Sciences,
An Autonomous Institute of the Department of Biotechnology, Govt. of India
Nalco Square, Bhubaneswar -751 023, India

Sub: **Declaration of Local content**

Ref:- **GeM Bid No:**--------------------------

Name of Tender:------------------------

(A) (To be given on company letter head-For tender value below Rs.10crores)

(To be given by Statutory Auditor / Cost Auditor / Cost Accountant / CA for tender value above Rs.10 crores)

1. Country of Origin of Goods being offered:

2. In line with Government Public Procurement Order No. P-45021/2/2017-BE-II , dt. 15.06.2017, as amended from time to time and as applicable on the date of submission of tender, I hereby certify that that items offered by us against above bid has ------------% local content and the same is specified as percentage calculated in accordance with the definition provided at clause 2 of revised Public Procurement (preference to Make in India) Order 2017.

"Local Content" means the amount of value added in India which shall, be the total value of the item being offered (excluding net domestic indirect taxes) minus the value of the imported content in the item (including all customs duties) as a proportion of the total value, in percent.

I also hereby undertake that no transportation, insurance, installation, commissioning, training and after sales service support like AMC/CMC etc has been added as local value addition.

3. The local content calculated using the definition given above are as under:

Item Name	Local content calculated as above % (out of 100%)	Details of location at which local value addition will be made is as follows: (Location shall be the specified as name of city or district, etc. Location as name of country will be considered as ambiguous and such bids shall be rejected)
Indian Component		
Overseas Component		

(B) Exemption of small purchases: (to be filled for items with procurement cost less than Rs. 5 lakhs)

"Certified that the item/items quoted have less than 20% value addition in India at the location (s) mentioned below:

- Details of the location(s) at which local value addition made: ------------------------(Site/facility address where local value addition is made)
- is/ are fully imported with no value addition in India.
  (Select one of the above and strike off the other)

I, the undersigned, Mr. _____do hereby declare, in my capacity as _____ the following:

(a) The facts contained herein are within my own personal knowledge.

(b) I have read and understood the requirement of local content (LC)

(c)Any false declaration will be in breach of Code of Integrity under Rule175(1)(i)(h)of the General Financial Rules for which a bidder or its successors can be debarred for up to two years as per Rule151 (iii) of the General Financial Rules along with such other actions as may be permissible under law.

Yours faithfully,

(Signature of the Bidder/ OEM/Manufacturer, with Official Seal)

Signature:

(Statutory Auditor / Cost Auditor / Cost Accountant / CA for tender value above Rs.10 crores)

Preference to Make in India including counter offering will be as per the Public Procurement (Preference to Make in India), Order 2017 available in the following links https://dipp.gov.in/public-procurements

http://dipp.nic.in/sites/default/files/publicProcurement_MakeinIndia_15June2017.pdf
http://dipp.nic.in/sites/default/files/Revised-PPP-MII-Order-2017_28052018.pdf
https://dipp.gov.in/sites/default/files/PPP-MII%20Order%20dt%2029th%20May%2019_0.pdf
https://dipp.gov.in/sites/default/files/PPP%20MII%20Order%20dated%204th%20June%202020.pdf