केनरा बैंक Canara Bank

Corrigendum-5 to GeM Bid ref. no GEM/2024/B/5538001 dated 23/10/2024 for Supply, Installation, Configuration, Implementation and Maintenance of 40 nos. of servers and related IT infra components for Data Lakehouse and existing Analytical Setup in Canara Bank with three years comprehensive warranty and two years AMC.

It is decided to amend the following in respect of the above RFP:

a. GeM bid document (Bid End date/ Bid Opening Date, Page no. 1 of 7):

Description	Existing details	Amended details
Bid End Date/Time	10/12/2024, 15:00:00	17/12/2024, 15:00:00
Bid opening Date/Time	10/12/2024, 15:30:00	17/12/2024, 15:30:00

b.

Sl. No	Section/Annexure/Appendix of GeM Bid	Clause No.	Existing Clause	Amended Clause
1.	Annexure-9 Technical Specifications	Full Annexure	Existing Annexure	Amended Annexure-9 Technical Specifications attached to this Corrigendum.

All the other instructions and terms & conditions of the above RFP shall remain unchanged.

Please take note of the above amendments while submitting your response to the subject RFP

Date: 10/12/2024
Place: Bengaluru

Deputy General Manager

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Annexure-9

Technical Specifications

(Should be submitted on Company's letter head with company seal and signature of the authorized person)

SUB: Supply, Installation, Configuration, Implementation and Maintenance of 40 nos. of servers and related it infra components for Data Lakehouse and existing Analytical Setup in Canara Bank.

Ref: GEM/2024/B/5538001 dated 23/10/2024.

Note:	
(a)	If the bidder feels that certain features offered are superior to what has been specified by the Bank, it shall be highlighted separately. Information regarding any modification required in the proposed solution to meet the intent of the specifications and state-of-the-art technology shall be provided. However, the Bank reserves the right to adopt the modifications /superior features suggested/ offered.
(b)	The bidder shall provide all other required equipment's and/or services, whether or not explicitly mentioned in this RFP, to ensure the intent of specification, completeness, operability, maintainability and upgradability.
(c)	The selected bidder shall own the responsibility to demonstrate that the product offered are as per the specification/performance stipulated in this RFP and as committed by the bidder either at site or in bidder's work site without any extra cost to the Bank.

All points mentioned under are mandatory to comply and non-compliance to any of the point lead to disqualification of the bidder during evaluation.

Technical Specifications for 40 servers (20 DC and 20 DRC)

Table-A

Internal

Technical Specification - 12 servers (6 DC and 6 DRC)

Technical Details		Technical Specification - 12 Data Fabric (6 DC and 6 DR)	Bidder's Compliance (Yes/No)
Sl. No.	Technical Factor	Description	
1	Make	Bidder to specify	

2	Model	Bidder to specify	
3	Power Factor	Bidder to specify	
4	Form Factor	2U	
5	**Processor**		
	Processor Architecture	CISC	
	Processor Make	Latest generation x86_64 bit architecture-based CPU's	
	Processor	**2.8GHz (gigahertz) or above**	
	Socket	Minimum 2 populated sockets i.e., 16*2 =32 core	
	Cores per socket	16	
	Cache	**35 MB L3 Cache or higher per socket**	
	Cooling	Heat Sink	
	Platform Controller Hub & Main Board	Latest Chipset / System on Chip (SoC) design. Supporting x86_64 & Suitable server class Main Board or equivalent	
6	**Memory**		
	RAM Type	DDR5 DIMM or Higher	
	Ram Size	128GB x 4 = 512 GB or 64 GB x 8 = 512 GB	
	Slot Count	Minimum 24 or higher, Minimum 8 free memory slots should be available.	
	Speed	**Minimum 4800 MT/s (Megatransfer per second) or higher (memory speed should be compatible with process speed to provide better performance)**	

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	Features	Advanced ECC (Error Correcting Code) type or similar technology	
7	**SSD**		
	Types of interface for SSD	SAS/NVM e	
	Total Capacity for SSD	**2 x960 GB for OS; (to support RAID 1)** **12 x7.68 TB for data (Raw)**	
	Slot Count	**16 or higher, Minimum 2 free slots should be available for future upgrade**	
	Raw Space	Minimum 90+ TB approx. (Raw Disk Storage) 12 x7.68 TB for data 2 x960 GB for OS	
8	**RAID Controller**		
	RAID Controller	Should support RAID 1, 5, 6, 10 or higher	
	RAID Battery	RAID 1, 5, 6, 10 or higher with 4GB or higher battery backed write cache	
	Alarm Buzzer	Alarm Buzzer or error indication alerts or equivalent	
	Storage Health Inspector	Storage Health Inspector or tools to monitor Storage/disk health	
	Features	Automatic and configurable RAID Rebuilding / Single-RAID or Multi-RAID Arrays per Controller	

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9	**SAN & Network**		
	FC HBA CARD	**Two FC Card with 2 number of 32 Gbps FC ports in each card with Supported SFP+ transceivers (With NVME Capable)**	
	FC Cables	4 Nos of minimum 15 Meter OM3/OM4 FC cables or higher for SAN Connectivity (FC HBA & transceivers should Support 16 Gbps & 32Gbps Switch)	
	Network cards with port 1 Gbps	Two Network Cards, each equipped with at least Four 1-gigabit network ports (Four Port of 1Gbase-T On-Board or separate NIC with supported four number of minimum 5 meter of compatible Cat6/Cat7 UTP Cable)	
	Network cards with 25 Gbps ports	Two Network Cards, each equipped with at least two 25-gigabit Fiber network ports (Total Four 25Gbps ports with four number of minimum 5-meter FC Cable)	
	Network cards Management port	Dedicate One Port of 1GBps-management port chassis card with minimum 5-meter Cat6/Cat7 UTP Cable.	
10	**OS &Hypervisor Compatibility**		
	Virtualization compatibility	All latest version of Microsoft-HyperV, VMware, Red Hat virtualization, oracle virtualization, Open shift virtualization and other industry standard hypervisors, Open Shift, Kubernetis	

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	Open Source compatibility	Open Source Linux KVM	
	Windows Compatibility	2019/2022	
	RHEL Compatibility	8.x & 9.x & Higher versions	
	Other Latest Linux Flavors	**Latest server operating versions of SUSE Linux, Oracle Linux, Ubuntu ,RHCOS**	
11	**Power Supply**	Redundant hot swappable power supply, with required power cables	
12	**BIOS**	UEFI (Unified Extensible Firmware Interface) based system and firmware that supports secure boot)	
13	**Warranty And Support**	**3 Years onsite warranty+ 2 years AMC, On-Site Support Warranty including part replacement/repairs within 6 hours of reporting,** and Software support for updates, upgrades, patches, and bug fixes for supplied s/w from OEM 24 x 7 x 365 days. SSD drives should be covered for irrespective of read/writes on them. In case of Disk failure, the faulty disk will be maintained /destroyed / Degauss by Canara Bank. support from OEM should be enabled. The proposed bidder will need to ensure support of product & change of components @ zero cost in case of any part becoming obsolete/EOL & EOS. Faulty Disks would not be retuned back to OEM/Vendor or faulty disks will be destroyed before returning.	

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14	Port	1 USB 3.0 port or higher, 2 USB 2.0 port or higher and 1 VGA Port or higher	
15	Serviceability	Light path diagnostic LED or equivalent visual alerts	
16	Security	Silicon root of trust, authenticated BIOS, Signed firmware updates and BIOS Live scanning for malicious firmware, secure boot, TPM2.0 (Trusted Platform Module 2.0), Hardware root of trust, malicious code free design.	
17	PCI Slots	Minimum 8 PCIe Gen4 or higher slots(Peripheral Component Interconnect Express)	
18	Remote Management	1) Management of hardware and software components, Power on/off, boot process, Management log, dedicated Management ports. Should able to integrate with industry wide KVM (Kernel-based Virtual Machine) solution. Monitoring fan, power supply, memory, CPU, RAID, NIC for failures. Telemetry Streaming, Idle Server Detection.	
		2)Management software should provide Role Based Security through LDAP or Local and able to provide pre-failure alarms for CPU, Memory & HDD by SMTP.	

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19	System Management Solution	1. The system management solution is required. The system management solution should collect system information (including impending component failure) from the device that generated the alert and sends the information securely to OEM to Support to troubleshoot the issue and provide an appropriate solution. 2. The system management solution should support browser based graphical remote console along with Virtual Power button, remote boot using USB/CD/DVD Drive. It should be capable of offering upgrade of software and patches from a remote client using Media/image/folder; It should support server power capping and historical reporting and should have support for multifactor authentication. 3. The system management solution should be provided: a. Firmware and configuration baselines for compliance monitoring and enable automated updates on schedule. b. Scope based access control to limit Users to specific group of devices	

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		c. Bare-metal server deployment d. Power and thermal Monitoring, alarm, and automatically execute rules-based remediation. e. Manage remote devices and control power	

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20	Monitoring and Analytics	1.Offered servers shall have monitoring an analytics engine for proactive management. All required licenses for same shall be included in the offer. 2.Monitoring and analytics engine shall have the capability to provide the following: i.Health and system security monitoring and notification emails ii.Performance monitoring and anomaly detection iii.REST API for integrating data with automation, ticketing, and other tools iv.Visualize server telemetry including key performance, environmental, and power metrics v.Displays heath, inventory, alerts, performance, and warranty status	
21	Drivers & Accessories	Drivers for the compatible OS, Add on cards and other accessories to be Provided.	
22	FAN	Server should have redundant fully populated Hot swappable fans	

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Table-B

Technical Specification - 8 servers (4 DC and 4 DRC)

Technical Details		Technical Specification 8-ML OPS MASTER and Runtime (4 DC and 4 DR)	Bidder's Compliance (Yes/No)
Sl. No.	Technical Factor	Description	
1	Make	Bidder to specify	
2	Model	Bidder to specify	
3	Power Factor	Bidder to specify	
4	Form Factor	2U	
5	**Processor**		
	Processor Architecture	CISC	
	Processor Make	Latest generation x86_64-bit architecture-based CPU's	
	Processor	**2.8GHz(gigahertz) or above**	
	Socket	Minimum 2 populated sockets i.e., 24*2 =48 core	
	Cores per socket	24	
	Cache	60 MB L3 Cache or higher	
	Cooling	Heat Sink	
	Platform Controller Hub & Main Board	Latest Chipset / System on Chip (SoC) design. Supporting x86_64 & Suitable server class Main Board or equivalent	
6	**Memory**		
	RAM Type	DDR5 DIMM or Higher	
	Ram Size	128GB*4(64GB*8) = 512 GB	

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	Slot Count	Minimum 24 or higher, Minimum 8 free memory slots should be available.	
	Speed	**Minimum 4800 MT/s (Megatransfer per second) or higher (memory speed should be compatible with process speed to provide better performance)**	
	Features	Advanced ECC (Error Correcting Code) type or similar technology	
7	**SSD**		
	Types of interface for SSD	SAS/NVM e	
	Total Capacity for SSD	**2 x 1.92 TB for OS; (to support RAID 1)** 6 x 1.92 TB for data (Raw)	
	Slot Count	**16 or higher, Minimum 2 free slots should be available for future upgrade**	
	Raw Space	Minimum 10+ TB approx. (Raw Disk Storage) 6 x 1.92 TB for data 2 x 1.92 TB for OS	
8	**RAID Controller**		
	RAID Controller	Should support RAID 1, 5, 6, 10 or higher	
	RAID Battery	RAID 1, 5, 6, 10 or higher with 4GB or higher battery backed write cache	

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	Alarm Buzzer	Alarm Buzzer or error indication alerts or equivalent	
	Storage Health Inspector	Storage Health Inspector or tools to monitor Storage/disk health	
	Features	Automatic and configurable RAID Rebuilding / Single-RAID or Multi-RAID Arrays per Controller	
9	**SAN & Network**		
	FC HBA CARD	**Two FC Card with 2 number of 32 Gbps FC ports in each card with Supported SFP+ transceivers (With NVME Capable)**	
	FC Cables	4 Nos of minimum 15 Meter OM3/OM4 FC cables or higher for SAN Connectivity (FC HBA & transceivers should Support 16 Gbps & 32Gbps Switch)	
	Network cards with port 1 Gbps	Two Network Cards, each equipped with at least Four 1-gigabit network ports (Four Port of 1Gbase-T On-Board or separate NIC with supported four number of minimum 5 meter of compatible Cat6/Cat7 UTP Cable)	Internal
	Network cards with 25 Gbps ports	Two Network Cards, each equipped with at least two 25-gigabit Fiber network ports (Total Four 25Gbps ports with four number of minimum 5 meter FC Cable)	
	Network cards Management port	Dedicate One Port of 1GBps-management port chassis card with minimum 5 meter Cat6/Cat7 UTP Cable.	

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10	OS &Hypervisor Compatibility		
	Virtualization compatibility	All latest version of Microsoft-HyperV, VMware, Red Hat virtualization, oracle virtualization, Open shift virtualization and other industry standard hypervisors, Open Shift, Kubernetis.	
	Open Source compatibility	Open Source Linux KVM	
	Windows Compatibility	2019/2022	
	RHEL Compatibility	8.x & 9.x & Higher versions	
	Other Latest Linux Flavors	**Latest server operating versions of SUSE Linux, Oracle Linux, Ubuntu ,RHCOS**	
11	**Power Supply**	Redundant hot swappable power supply, with required power cables	
12	**BIOS**	UEFI (Unified Extensible Firmware Interface) based system and firmware that supports secure boot)	
13	**Warranty And Support**	**3 Years onsite warranty+ 2 years AMC, On-Site Support Warranty including part replacement/repairs within 6 hours of reporting,** and Software support for updates, upgrades, patches, and bug fixes for supplied s/w from OEM 24 x 7 x 365 days. SSD drives should be covered for irrespective of read/writes on them. In case of Disk failure, the faulty disk will be maintained /destroyed /	Internal

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		Degauss by Canara Bank. Support from OEM should be enabled. The proposed bidder will need to ensure support of product & change of components @ zero cost in case of any part becoming obsolete/EOL & EOS. Faulty Disks would not be retuned back to OEM/Vendor or faulty disks will be destroyed before returning.	
14	Port	**1 USB 3.0 port or higher, 2 USB 2.0 port or higher and 1 VGA Port or higher**	
15	Serviceability	Light path diagnostic LED or equivalent visual alerts	
16	Security	Silicon root of trust, authenticated BIOS, Signed firmware updates and BIOS Live scanning for malicious firmware, secure boot, TPM2.0 (Trusted Platform Module 2.0), Hardware root of trust, malicious code free design.	
17	PCI Slots	**Minimum 8 PCIe Gen4 or higher slots(Peripheral Component Interconnect Express)**	
18	Remote Management	**1) Management of hardware and software components, Power on/off, boot process, Management log, dedicated Management ports. Should able to integrate with industry wide KVM (Kernel-based Virtual Machine) solution.**	

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		Monitoring fan, power supply, memory, CPU, RAID, NIC for failures. Telemetry Streaming, Idle Server Detection.	
		2)Management software should provide Role Based Security through LDAP or Local and able to provide pre-failure alarms for CPU, Memory & HDD by SMTP.	
19	System Management Solution	1. The system management solution is required. The system management solution should collect system information (including impending component failure) from the device that generated the alert and sends the information securely to OEM to Support to troubleshoot the issue and provide an appropriate solution. 2. The system management solution should support browser based graphical remote console along with Virtual Power button, remote boot using USB/CD/DVD Drive. It should be capable of offering upgrade of software and patches from a remote client using Media/image/folder; It should support server power capping and historical reporting and should have support for multifactor authentication.	

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		3. The system management solution should be provided: a. Firmware and configuration baselines for compliance monitoring and enable automated updates on schedule. b. Scope based access control to limit Users to specific group of devices c. Bare-metal server deployment d. Power and thermal Monitoring, alarm, and automatically execute rules-based remediation. e. Manage remote devices and control power	
20	Monitoring and Analytics	1.Offered servers shall have monitoring an analytics engine for proactive management. All required licenses for same shall be included in the offer. 2.Monitoring and analytics engine shall have the capability to provide the following: i.Health and system security monitoring and notification emails ii.Performance monitoring and anomaly detection iii.REST API for integrating data with automation, ticketing, and other tools	Internal

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		iv.Visualize server telemetry including key performance, environmental, and power metrics v.Displays heath, inventory, alerts, performance, and warranty status	
21	Drivers & Accessories	Drivers for the compatible OS, Add on cards and other accessories to be Provided.	
22	FAN	Server should have redundant fully populated Hot swappable fans	

Table-C

Technical Specification - 2 servers (1 DC and 1 DRC)

Technical Details		Technical Specification 2-MLWorker Nodes- with one GPU per server(1 DC and 1 DR)	Bidder's Compliance (Yes/No)
Sl. No.	Technical Factor	Description	
1	Make	Bidder to specify	
2	Model	Bidder to specify	
3	Power Factor	Bidder to specify (consider GPU power factor as well)	
4	Form Factor	2U	
5	Processor		
	Processor Architecture	CISC	
	Processor Make	Latest generation x86_64 bit architecture-based CPU's	

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	Processor	2.8GHz (gigahertz) or above	
	Socket	Minimum 2 populated sockets i.e., 24*2 =48 core	
	Cores per socket	24	
	Cache	60 MB L3 Cache or higher	
	Cooling	Heat Sink	
	Platform Controller Hub & Main Board	Latest Chipset / System on Chip (SoC) design. Supporting x86_64 & Suitable server class Main Board or equivalent	
	GPU	One GPU per Server Memory - 94 GB Bandwidth - min 3 TB/s to 4 TB/s or higher L2 Cache - min 50 MB to 100 MB or higher FP64 Performance: min 30 to 40 TFLOPS or higher FP32 Performance: min 60 to 100 TFLOPS or higher	
6	Memory		
	RAM Type	DDR5 DIMM or Higher	
	Ram Size	128GB*4(64GB*8) = 512 GB	
	Slot Count	Minimum 24 or higher, Minimum 8 free memory slots should be available.	
	Speed	Minimum 4800 MT/s (Megatransfer per second) or higher (memory speed	

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		should be compatible with process speed to provide better performance)	
	Features	Advanced ECC (Error Correcting Code) type or similar technology	
7	SSD		
	Types of interface for SSD	SAS/NVM e	
	Total Capacity for SSD	2 x960 GB for OS; (to support RAID 1) 4 x 1.92 TB for data (Raw)	
	Slot Count	16 or higher, Minimum 2 free slots should be available for future upgrade	
	Raw Space	Minimum 5+ TB approx. (Raw Disk Storage) 4 x 1.92 TB for data 2 x 960 GB for OS	
8	RAID Controller		
	RAID Controller	Should support RAID 1, 5, 6, 10 or higher	
	RAID Battery	RAID 1, 5, 6, 10 or higher with 4GB or higher battery backed write cache	
	Alarm Buzzer	Alarm Buzzer or error indication alerts or equivalent	
	Storage Health Inspector	Storage Health Inspector or tools to monitor Storage/disk health	
	Features	Automatic and configurable RAID Rebuilding / Single-	

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		RAID or Multi-RAID Arrays per Controller	
9	**SAN & Network**		
	FC HBA CARD	**Two FC Card with 2 number of 32 Gbps FC ports in each card with Supported SFP+ transceivers (With NVME Capable)**	
	FC Cables	4 Nos of minimum 15 Meter OM3/OM4 FC cables or higher for SAN Connectivity (FC HBA & transceivers should Support 16 Gbps & 32Gbps Switch)	
	Network cards with port 1 Gbps	Two Network Cards, each equipped with at least Four 1-gigabit network ports (Four Port of 1Gbase-T On-Board or separate NIC with supported four number of minimum 5 meter of compatible Cat6/Cat7 UTP Cable)	
	Network cards with 25 Gbps ports	Two Network Cards, each equipped with at least two 25-gigabit Fiber network ports (Total Four 25Gbps ports with four number of minimum 5 meter FC Cable)	
	Network cards Management port	Dedicate One Port of 1GBps-management port chassis card with minimum 5 meter Cat6/Cat7 UTP Cable.	
10	**OS &Hypervisor Compatibility**		
	Virtualization compatibility	All latest version of Microsoft-HyperV, VMware, Red Hat virtualization, oracle virtualization, Open shift virtualization and other industry standard	

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		hypervisors, Open Shift, Kubernetis.	
	Open Source compatibility	Open Source Linux KVM	
	Windows Compatibility	2019/2022	
	RHEL Compatibility	8.x & 9.x & Higher versions	
	Other Latest Linux Flavors	**Latest server operating versions of SUSE Linux, Oracle Linux, Ubuntu ,RHCOS**	
11	**Power Supply**	Redundant hot swappable power supply, with required power cables	
12	**BIOS**	UEFI (Unified Extensible Firmware Interface) based system and firmware that supports secure boot)	
13	**Warranty And Support**	**3 Years onsite warranty+ 2 years AMC, On-Site Support Warranty including part replacement/repairs within 6 hours of reporting,** and Software support for updates, upgrades, patches, and bug fixes for supplied s/w from OEM 24 x 7 x 365 days. SSD drives should be covered for irrespective of read/writes on them. In case of Disk failure, the faulty disk will be maintained /destroyed / Degauss by Canara Bank. Support from OEM should be enabled. The proposed bidder will need to ensure support of product & change of components @ zero cost in case of any part becoming obsolete/EOL & EOS. Faulty Disks would not be retuned back to OEM/Vendor or	Internal

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		faulty disks will be destroyed before returning.	
14	Port	1 USB 3.0 port or higher, 2 USB 2.0 port or higher and 1 VGA Port or higher	
15	Serviceability	Light path diagnostic LED or equivalent visual alerts	
16	Security	Silicon root of trust, authenticated BIOS, Signed firmware updates and BIOS Live scanning for malicious firmware, secure boot, TPM2.0 (Trusted Platform Module 2.0), Hardware root of trust, malicious code free design.	
17	PCI Slots	Minimum 8 PCIe Gen4 or higher slots (Peripheral Component Interconnect Express)	
18	Remote Management	1) Management of hardware and software components, Power on/off, boot process, Management log, dedicated Management ports. Should able to integrate with industry wide KVM (Kernel-based Virtual Machine) solution. Monitoring fan, power supply, memory, CPU, RAID, NIC for failures. Telemetry Streaming, Idle Server Detection.	

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		2)Management software should provide Role Based Security through LDAP or Local and able to provide pre-failure alarms for CPU, Memory & HDD by SMTP.	
19	System Management Solution	1. The system management solution is required. The system management solution should collect system information (including impending component failure) from the device that generated the alert and sends the information securely to OEM to Support to troubleshoot the issue and provide an appropriate solution. 2. The system management solution should support browser based graphical remote console along with Virtual Power button, remote boot using USB/CD/DVD Drive. It should be capable of offering upgrade of software and patches from a remote client using Media/image/folder; It should support server power capping and historical reporting and should have support for multifactor authentication. 3. The system management solution should be provided: a. Firmware and configuration baselines for compliance monitoring and enable automated updates on schedule.	

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		b. Scope based access control to limit Users to specific group of devices c. Bare-metal server deployment d. Power and thermal Monitoring, alarm, and automatically execute rules-based remediation. e. Manage remote devices and control power	
20	Monitoring and Analytics	1.Offered servers shall have monitoring an analytics engine for proactive management. All required licenses for same shall be included in the offer. 2.Monitoring and analytics engine shall have the capability to provide the following: i.Health and system security monitoring and notification emails ii.Performance monitoring and anomaly detection iii.REST API for integrating data with automation, ticketing, and other tools iv.Visualize server telemetry including key performance, environmental, and power metrics v.Displays heath, inventory, alerts,	

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		performance, and warranty status	
21	Drivers & Accessories	Drivers for the compatible OS, Add on cards and other accessories to be Provided.	
22	FAN	Server should have redundant fully populated Hot swappable fans	

Table-D

Technical Specification - 8 servers (4 DC and 4 DRC)

Technical Details		Technical Specification - 8 ML Worker Nodes (4 DC and 4 DR)	Bidder's Compliance (Yes/No)
Sl. No.	Technical Factor	Description	
1	Make	Bidder to specify	
2	Model	Bidder to specify	
3	Power Factor	Bidder to specify	
4	Form Factor	2U	
5	Processor		
	Processor Architecture	CISC	
	Processor Make	Latest generation x86_64 bit architecture-based CPU's	
	Processor	2.8GHz (gigahertz) or above	
	Socket	Minimum 2 populated sockets i.e., 24*2 =48 core	

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	Cores per socket	24	
	Cache	60 MB L3 Cache or higher	
	Cooling	Heat Sink	
	Platform Controller Hub & Main Board	Latest Chipset / System on Chip (SoC) design. Supporting x86_64 & Suitable server class Main Board or equivalent	
6	**Memory**		
	RAM Type	DDR5 DIMM or Higher	
	Ram Size	128GB*4 = 512 GB or 64 GB x 8 = 512 GB	
	Slot Count	Minimum 24 or higher, Minimum 8 free memory slots should be available.	
	Speed	**Minimum 4800 MT/s (Megatransfer per second) or higher (memory speed should be compatible with process speed to provide better performance)**	
	Features	**Advanced ECC (Error Correcting Code) type or similar technology**	
7	**SSD**		
	Types of interface for SSD	SAS/NVM e	
	Total Capacity for SSD	2 x960 GB for OS; (to support RAID 1) 2 x 1.92 TB for data (Raw)	
	Slot Count	**16 or higher, Minimum 2 free slots should be available for future upgrade**	

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	Raw Space	Minimum 3.5+TB approx. (Raw Disk Storage) - for data 2 x 960 GB for OS in RAID (960GB usable)	
8	**RAID Controller**		
	RAID Controller	Should support RAID 1, 5, 6, 10 or higher	
	RAID Battery	RAID 1, 5, 6, 10 or higher with 4GB or higher battery backed write cache	
	Alarm Buzzer	Alarm Buzzer or error indication alerts or equivalent	
	Storage Health Inspector	Storage Health Inspector or tools to monitor Storage/disk health	
	Features	Automatic and configurable RAID Rebuilding / Single-RAID or Multi-RAID Arrays per Controller	
9	**SAN & Network**		
	FC HBA CARD	**Two FC Card with 2 number of 32 Gbps FC ports in each card with Supported SFP+ transceivers (With NVME Capable)**	
	FC Cables	4 Nos of minimum 15 Meter OM3/OM4 FC cables or higher for SAN Connectivity (FC HBA & transceivers should Support 16 Gbps & 32Gbps Switch)	
	Network cards with port 1 Gbps	Two Network Cards, each equipped with at least Four 1-gigabit network ports (Four Port of 1Gbase-T On-Board or separate NIC with supported four number of minimum 5 meter of	

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		compatible Cat6/Cat7 UTP Cable)	
	Network cards with 25 Gbps ports	Two Network Cards, each equipped with at least two 25-gigabit Fiber network ports (Total Four 25Gbps ports with four number of minimum 5 meter FC Cable)	
	Network cards Management port	Dedicate One Port of 1GBps-management port chassis card with minimum 5 meter Cat6/Cat7 UTP Cable.	
10	**OS &Hypervisor Compatibility**		
	Virtualization compatibility	All latest version of Microsoft-HyperV, VMware, Red Hat virtualization, oracle virtualization, Open shift virtualization and other industry standard hypervisors, Open Shift, Kubernetis.	
	Open Source compatibility	Open Source Linux KVM	
	Windows Compatibility	2019/2022	
	RHEL Compatibility	8.x & 9.x & Higher versions	
	Other Latest Linux Flavours	**Latest server operating versions of SUSE Linux, Oracle Linux, Ubuntu ,RHCOS**	
11	**Power Supply**	Redundant hot swappable power supply, with required power cables	
12	**BIOS**	UEFI (Unified Extensible Firmware Interface) based system and firmware that supports secure boot)	

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13	Warranty And Support	3 Years onsite warranty+ 2 years AMC, On-Site Support Warranty including part replacement/repairs within 6 hours of reporting, and Software support for updates, upgrades, patches, and bug fixes for supplied s/w from OEM 24 x 7 x 365 days. SSD drives should be covered for irrespective of read/writes on them. In case of Disk failure, the faulty disk will be maintained /destroyed / Degauss by Canara Bank. Support from OEM should be enabled. The proposed bidder will need to ensure support of product & change of components @ zero cost in case of any part becoming obsolete/EOL & EOS. Faulty Disks would not be retuned back to OEM/Vendor or faulty disks will be destroyed before returning.	
14	Port	1 USB 3.0 port or higher, 2 USB 2.0 port or higher and 1 VGA Port or higher	
15	Serviceability	Light path diagnostic LED/ external equivalent visual alerts	
16	Security	Silicon root of trust, authenticated BIOS, Signed firmware updates and BIOS Live scanning for malicious firmware, secure boot, TPM2.0 (Trusted Platform Module 2.0), Hardware root of trust, malicious code free design.	

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17	PCI Slots	Minimum 8 PCIe Gen4 or higher slots(Peripheral Component Interconnect Express)	
18	Remote Management	1) Management of hardware and software components, Power on/off, boot process, Management log, dedicated Management ports. Should able to integrate with industry wide KVM (Kernel-based Virtual Machine) solution. Monitoring fan, power supply, memory, CPU, RAID, NIC for failures. Telemetry Streaming, Idle Server Detection.	
		2)Management software should provide Role Based Security through LDAP or Local and able to provide pre-failure alarms for CPU, Memory & HDD by SMTP.	
19	System Management Solution	1. The system management solution is required. The system management solution should collect system information (including impending component failure) from the device that generated the alert and sends the information securely to OEM to Support to troubleshoot the issue and provide an appropriate solution. 2. The system management solution should support browser	

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		based graphical remote console along with Virtual Power button, remote boot using USB/CD/DVD Drive. It should be capable of offering upgrade of software and patches from a remote client using Media/image/folder; It should support server power capping and historical reporting and should have support for multifactor authentication. 3. The system management solution should be provided: a. Firmware and configuration baselines for compliance monitoring and enable automated updates on schedule. b. Scope based access control to limit Users to specific group of devices c. Bare-metal server deployment d. Power and thermal Monitoring, alarm, and automatically execute rules-based remediation. e. Manage remote devices and control power	
20	Monitoring and Analytics	1.Offered servers shall have monitoring an analytics engine for proactive management. All required licenses for same shall be included in the offer.	

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		2.Monitoring and analytics engine shall have the capability to provide the following: i.Health and system security monitoring and notification emails ii.Performance monitoring and anomaly detection iii.REST API for integrating data with automation, ticketing, and other tools iv.Visualize server telemetry including key performance, environmental, and power metrics v.Displays heath, inventory, alerts, performance, and warranty status	
21	Drivers & Accessories	Drivers for the compatible OS, Add on cards and other accessories to be Provided.	
22	FAN	Server should have redundant fully populated Hot swappable fans	

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Table-E

Technical Specification - 10 servers (5 DC and 5 DRC)

Technical Details		Technical Specification 10-Analytical Projects Server (5 DC and 5 DR)	Bidder's Compliance (Yes/No)
Sl. No.	Technical Factor	Description	
1	Make	Bidder to specify	
2	Model	Bidder to specify	
3	Power Factor	Bidder to specify	
4	Form Factor	2U	
5	**Processor**		
	Processor Architecture	CISC	
	Processor Make	Latest generation x86_64 bit architecture-based CPU's	
	Processor	**2.8GHz (gigahertz) or above**	
	Socket	Minimum 2 populated sockets i.e., 24*2 =48 core	
	Cores per socket	24	
	Cache	60 MB L3 Cache or higher	
	Cooling	Heat Sink	
	Platform Controller Hub & Main Board	Latest Chipset / System on Chip (SoC) design. Supporting x86_64 & Suitable server class	

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		Main Board or equivalent	
6	**Memory**		
	RAM Type	DDR5 DIMM or Higher	
	Ram Size	128GB*4(64GB*8) = 512 GB	
	Slot Count	Minimum 24 or higher, Minimum 8 free memory slots should be available.	
	Speed	**Minimum 4800 MT/s (Megatransfer per second) or higher (memory speed should be compatible with process speed to provide better performance)**	
	Features	Advanced ECC (Error Correcting Code) type or similar technology	
7	**SSD**		
	Types of interface for SSD	SAS/NVM e	
	Total Capacity for SSD	**2 x 960 GB for OS; (to support RAID 1)** **6 x 1.92 TB for data (Raw)**	
	Slot Count	**16 or higher, Minimum 2 free slots should be available for future upgrade**	
	Raw Space	Minimum 7 +TB approx. (Raw Disk Storage for data)	

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		2 x 960 GB for OS (RAID) 6 x 1.92 TB for data	
8	**RAID Controller**		
	RAID Controller	Should support RAID 1, 5, 6, 10 or higher	
	RAID Battery	RAID 1, 5, 6, 10 or higher with 4GB or higher battery backed write cache	
	Alarm Buzzer	Alarm Buzzer or error indication alerts or equivalent	
	Storage Health Inspector	Storage Health Inspector or tools to monitor Storage/disk health	
	Features	Automatic and configurable RAID Rebuilding / Single-RAID or Multi-RAID Arrays per Controller	
9	**SAN & Network**		
	FC HBA CARD	**Two FC Card with 2 number of 32 Gbps FC ports in each card with Supported SFP+ transceivers (With NVME Capable)**	
	FC Cables	4 Nos of minimum 15 Meter OM3/OM4 FC cables or higher for SAN Connectivity (FC HBA & transceivers should Support 16 Gbps & 32Gbps Switch)	

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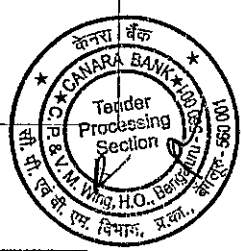

	Network cards with port 1 Gbps	Two Network Cards, each equipped with at least Four 1-gigabit network ports (Four Port of 1Gbase-T On-Board or separate NIC with supported four number of minimum 5 meter of compatible Cat6/Cat7 UTP Cable)	
	Network cards with 25 Gbps ports	Two Network Cards, each equipped with at least two 25-gigabit Fiber network ports (Total Four 25Gbps ports with four number of minimum 5 meter FC Cable)	
	Network cards Management port	Dedicate One Port of 1GBps-management port chassis card with minimum 5 meter Cat6/Cat7 UTP Cable.	
10	**OS &Hypervisor Compatibility**		
	Virtualization compatibility	All latest version of Microsoft-HyperV, VMware, Red Hat virtualization, oracle virtualization, Open shift virtualization and other industry standard hypervisors, Open Shift, Kubernetis.	
	Open Source compatibility	Open Source Linux KVM	
	Windows Compatibility	2019/2022	
	RHEL Compatibility	8.x & 9.x & Higher versions	
	Other Latest Linux Flavours	**Latest server operating versions of SUSE Linux,**	

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		Oracle Linux, Ubuntu ,RHCOS	
11	Power Supply	Redundant hot swappable power supply, with required power cables	
12	BIOS	UEFI (Unified Extensible Firmware Interface) based system and firmware that supports secure boot)	
13	Warranty And Support	3 Years onsite warranty+ 2 years AMC, On-Site Support Warranty including part replacement/repairs within 6 hours of reporting, and Software support for updates, upgrades, patches, and bug fixes for supplied s/w from OEM 24 x 7 x 365 days. SSD drives should be covered for irrespective of read/writes on them. In case of Disk failure, the faulty disk will be maintained /destroyed / Degauss by Canara Bank. Support from OEM should be enabled. The proposed bidder will need to ensure support of product & change of components @ zero cost in case of any part becoming obsolete/EOL & EOS. Faulty Disks would not be retuned back to OEM/Vendor or faulty disks will be destroyed before returning.	

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14	Port	1 USB 3.0 port or higher, 2 USB 2.0 port or higher and 1 VGA Port or higher	
15	Serviceability	Light path diagnostic LED or equivalent visual alerts	
16	Security	Silicon root of trust, authenticated BIOS, Signed firmware updates and BIOS Live scanning for malicious firmware, secure boot, TPM2.0 (Trusted Platform Module 2.0), Hardware root of trust, malicious code free design.	
17	PCI Slots	Minimum 8 PCIe Gen4 or higher slots(Peripheral Component Interconnect Express)	
18	Remote Management	1) Management of hardware and software components, Power on/off, boot process, Management log, dedicated Management ports. Should able to integrate with industry wide KVM (Kernel-based Virtual Machine) solution. Monitoring fan, power supply, memory, CPU, RAID, NIC for failures. Telemetry Streaming, Idle Server Detection.	

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		2)Management software should provide Role Based Security through LDAP or Local and able to provide pre-failure alarms for CPU, Memory & HDD by SMTP.	
19	System Management Solution	1. The system management solution is required. The system management solution should collect system information (including impending component failure) from the device that generated the alert and sends the information securely to OEM to Support to troubleshoot the issue and provide an appropriate solution. 2. The system management solution should support browser based graphical remote console along with Virtual Power button, remote boot using USB/CD/DVD Drive. It should be capable of offering upgrade of software and patches from a remote client using Media/image/folder; It should support server power capping and historical reporting and should have support for multifactor authentication.	

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		3. The system management solution should be provided: a. Firmware and configuration baselines for compliance monitoring and enable automated updates on schedule. b. Scope based access control to limit Users to specific group of devices c. Bare-metal server deployment d. Power and thermal Monitoring, alarm, and automatically execute rules-based remediation. e. Manage remote devices and control power	
20	Monitoring and Analytics	1.Offered servers shall have monitoring an analytics engine for proactive management. All required licenses for same shall be included in the offer. 2.Monitoring and analytics engine shall have the capability to provide the following: i.Health and system security monitoring and notification emails	

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		ii.Performance monitoring and anomaly detection iii.REST API for integrating data with automation, ticketing, and other tools iv.Visualize server telemetry including key performance, environmental, and power metrics v.Displays heath, inventory, alerts, performance, and warranty status	
21	Drivers & Accessories	Drivers for the compatible OS, Add on cards and other accessories to be Provided.	
22	FAN	Server should have redundant fully populated Hot swappable fans	

Table-K

Technical Specification of Network TOR Switches

Sl. No.	DC and DRC Switch Technical Specification:	Internal Compliance(Y/N)
A	2 numbers (01 numbers in DC and 01 numbers in DRC) - Mgmt.	
1.	Switch must have minimum 24 Gig Ethernet ports and 4 x 10G SFP for uplink on single switch/chassis. Bidder should provide compatible SFPs & QSFP 40G to SFP-10G adaptors/Connectors for connecting uplinks at core/distribution switch with QSFP 40/100G slots	

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2.	Switching capacity should be equal to greater than 100 Gbps.	
3.	Mac address table size should be equal to greater than 16000.	
4.	Switch must be supplied with compatible Trans receiver for Fiber ports and should be from same OEM.	
5.	Switch must have redundant Power Supply.	
6.	Switch should have USB/Ethernet management interfaces.	
7.	Switch should have minimum Flash memory 128 Mb.	
8.	Switch should have minimum DRAM 512 Mb.	
9.	Switch should be managed in an IPv6 network(IPv6 Device IP)	
10.	Switch should support Dual stack (IPv4 and IPv6) transitions from IPv4 to IPv6, support connectivity for both protocols	
11.	Switches should support Spanning Tree Protocol (STP)	
12.	Switch should support link aggregation control protocol (LACP) and port trunking.	
13.	Switch should support VLAN support and tagging support IEEE 802.1Q.	
14.	Switch should support Simple Network Management Protocol (SNMPv2 and SNMPv3).	
15.	Implement Access Lists on the switch to ensure SNMP access only to the SNMP manager or the NMS workstation.	
16.	Switch should support duplicates port traffic (ingress and egress) to a local or remote monitoring port.	
17.	Implementation of multiple Privilege Levels should be supported.	
18.	Switch should Support for authentication, authorization, and accounting (AAA) using RADIUS and TACACS+.	
19.	Switch should support FTP, TFTP, and SFTP.	
20.	Switch should support Extensive debugging capabilities to assist in hardware/Configuration problem resolution,	

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	should supports ping and traceroute for both IPv4 and IPv6.	
21.	Switch should support integration for Network Time Protocol (NTP), SIEM.	
22.	The Switch must be able to generate Syslog Messages with timestamp, which can be exported to a Syslog Server.	
23.	The Switch shall integrate with centralized network management software.	
24.	The Switches must be supplied with Compatible Power cables for the PDU supplied with the rack.	
25.	The switch shall have management security features like SSHv2 / Secure copy, encrypted user passwords, and authentication via AAA and RADIUS / TACACS+ to prevent unauthorized management access"	
26.	Switch should have Custom banner display.	
27.	High Mean Time Between Failure values (>2 Lakh hours)should be available to ensure long life of switch hardware.	
28.	**Proposed Switches must integrate seamlessly with active - active ports for redundancy and high availability from two core/distributed switches from day one with our existing infrastructure of Cisco/Juniper Datacenter router/switches with all network open standard protocols.**	
29.	24*7*365 days Technical support with response time of 30 minutes.	
30.	Four hours RMA support in case of any hardware failure.	
B.	**4 numbers (2 DC+ 2 DRC) - Ethernet/LAN**	**Compliance(Y/N)**
1.	Switch must be Data Center grade switch. Switch should be configurable/deployable with other switches to utilize all available links through multi-path forwarding.	
2.	Switch must have 24 x 25-Gbps fiber downlink ports and 4 x 100-Gbps Quad Small Form-Factor Pluggable 28 (QSFP28) uplink ports with fully populated trans receivers on single switch/chassis.	
3.	24 downlink ports should be configured to work as 25 Gbps.	

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4.	Switch should support EVPN and Virtual Extensible LAN (VXLAN) to create Fabric. Fabric should be capable to integrate with SDDC like Open stack, VMWare etc. Switch should support In Service Software Upgrade.	
5.	Switch throughput should be more than equal to 2 bpps.	
6.	Latency should be less than 1 microsecond. **(1ms Latency refers to that a switch contributes to process a packet.)**	
7.	Mac address table size should be equal to greater than 2 lakhs.	
8.	Switch should support more than 4000 Vlans.	
9.	Switch must be supplied with compatible Trans receiver for all Fiber ports and should be from same OEM.	
10.	Switch must have redundant Fan and Power Supply.	
11.	Switch should provide flexibility for 25GbE top-of-rack deployment.	
12.	Switch should have USB/Ethernet management interfaces.	
13.	Switch should be managed in an IPv6 network(IPv6 Device IP)	
14.	Switch should support Dual stack (IPv4 and IPv6) transitions from IPv4 to IPv6, support connectivity for both protocols	
15.	Switches should support creation of one virtual resilient switch from up to two switches by using standard LACP for automatic load balancing and high availability or by other equivalent method.	
16.	Switches should support Spanning Tree Protocol (STP)	
17.	Switch should support link aggregation control protocol (LACP) and port trunking IEEE 802.1AX-2008.	
18.	Switch should support VLAN support and tagging support IEEE 802.1Q.	
19.	Switch should support Simple Network Management Protocol (SNMPv2 and SNMPv3).	

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20.	Implement Access Lists on the switch to ensure SNMP access only to the SNMP manager or the NMS workstation.	
21.	Switch should support duplicates port traffic (ingress and egress) to a local or remote monitoring port.	
22.	Implementation of multiple Privilege Levels should be supported.	
23.	Switch should Support for authentication, authorization, and accounting (AAA) using RADIUS and TACACS+.	
24.	Switch should support FTP, TFTP, and SFTP.	
25.	Switch should support Extensive debugging capabilities to assist in hardware/Configuration problem resolution, should supports ping and traceroute for both IPv4 and IPv6.	
26.	Switch should support integrate Network Time Protocol (NTP), SIEM	
27.	The Switch must be able to generate Syslog Messages with timestamp, which can be exported to a Syslog Server.	
28.	The Switch shall integrate with centralized network management software.	
29.	The Switches must be supplied with Compatible Power cables for the PDU supplied with the rack.	
30.	The switch shall have management security features like SSHv2 / Secure copy, encrypted user passwords, and authentication via AAA and RADIUS / TACACS+ to prevent unauthorized management access"	
31.	**Proposed Switches must integrate seamlessly with active - active ports for redundancy and high availability from two core/distributed switches from day one with our existing infrastructure of Cisco/Juniper Datacenter router/switches with all network open standard protocols.**	
32.	Switch should have Custom banner display.	
33.	High Mean Time Between Failure values (>2 Lakh hours)should be available to ensure long life of switch hardware.	
34.	24*7*365 days Technical support with response time of 30 minutes.	

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35.	Four hours RMA support in case of any hardware failure.	

Below table to be consider to provide uplink for above access switches as minimum cabling requirement.

Fiber(OM4)		
Length	DRC Qty	DC Qty
30M	10	10
20M	10	
15M.		10
10M	10	10

Table-I

Technical Specification of server racks (2 Nos with three Phase 32 A at DC)

Sl. No.	Particulars	Detailed Configuration(DC)	Bidder's Compliance Yes/No
1.	Make	Bidders to specify	
2.	Model	Bidders to specify	
3.	Power Factor	PDU Three Phase with 32A Server rack mount power distribution unit 1Ph,230V,63A 50/60Hz with redundancy.	
4.	Form Factor	42 U Rack Frame with all necessary side panels	
5.	Colour	Black Colour	
6.	Rack Size	600 mm*1200mm *2100mm (600mm - Width , 1200mm Depth , 2100mm Height)	
7.	Lock Mechanism	Mechanical lock with key for both front and back door	
8.	PDU Socket details	Zero U standard with minimum 20 x C13 (20 power sockets with C13 type) and minimum 4 x C19 (4 power socket with C19 type) Per PDU	

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		Dual PDU should be made available for each rack	
9.	Over load protection MCB	16A MCB X 2 circuits - PDU rating approximate 22KVA	
10.	Bottom feed	Minimum 3 Meters IEC 309 input plug top	
11.	Others	Levelers Required Ganging kits and necessary tool for mounting PDU with side doors and necessary Cable organizer. Adjustable screw legs - 4 No. Rack filler to be provided upto full rack size.	
12.	Fan	fans on the top side of rack (desirable)	
13.	Compatibility	Rack should be compatible to mount all the hardware's supplied in this RFP and Each rack approximate 12KVA devices can be mounted.	
14.	Cable Loops	Wide Length Cable organizer (Cable Loop) to be provided for accommodating Network cable, FC Cables and Power cables for cable dressing.	
15.	Certification	UL certified	
16.	Mounting	The bidder shall have to mount new as well as existing servers and other devices in the rack and will have to provide the rack mounting kit accordingly	
17.	Grounding	Copper based Electrical Grounding / Earthing Strip	

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Note: ALL the servers supplied in this project all to be accommodated in to these racks accordingly compatible power cable for servers and network to be provided

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Table-J

Technical Specification of server racks (2 Nos with three phase 32A at DR)

Sl. No.	Particulars	Detailed Configuration(DR)	Bidder's Compliance Yes/No
1.	Make	Bidders to specify	
2.	Model	Bidders to specify	
3.	Power Factor	PDU Three Phase with 32A Server rack mount power distribution unit 3Ph,230V,32A 50/60Hz with redundancy.	
4.	Form Factor	45 U Rack Frame with all necessary side panels	
5.	Colour	Black Colour	
6.	Wheels	Rack wheels for rack movement	
7.	Rack Size	600 mm*1200mm (600mm - Width , 1200mm Depth)	
8.	Lock Mechanism	Mechanical lock with key for both front and back door	
9.	PDU Socket details	Zero U standard with minimum 20 x C13 (20 power sockets with C13 type) and minimum 4 x C19 (4 power socket with C19 type) Per PDU. Dual PDU should be available for each rack.	
10.	Over load protection MCB	16A MCB X 2 circuits - PDU rating approximate 22KVA	
11.	Bottom feed	Minimum 3 Meters IEC 309 input plug top	
12.	Others	Levelers Required Ganging kits and necessary tool for mounting PDU with side doors and necessary Cable organizer. Rack filler to be provided upto full rack size.	
13.	Fan	fans on the top side of rack (desirable)	
14.	Compatibility	Rack should be compatible to mount all the hardware's supplied in this RFP	
15.	Cable Loops	Wide Length Cable organizer (Cable Loop) to be provided for accommodating Network cable, FC Cables and Power cables for cable dressing.	

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16.	Certification	UL certified	
17.	Mounting	The bidder shall have to mount new as well as existing servers and other devices in the rack and will have to provide the rack mounting kit accordingly	
18.	Grounding	Copper based Electrical Grounding / Earthing Strip	

Note : ALL the servers supplied in this project all to be accommodated in to these racks accordingly compatible power cable for servers and network to be provided

We comply with the above Technical and Functional requirements, Non-compliance to any of the above requirement will lead to disqualification of the bidder in Technical proposal.

Date:

Signature with Seal

Name:

Designation:

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