केनरा बैंक Canara Bank

Corrigendum-5 to GeM Bid ref. no GEM/2024/B/4915191 dated 04/05/2024 for Selection of vendor for Supply, Installation, Configuration, Implementation and Maintenance of 500 Nos. of Servers and other IT Infra Components in Canara Bank.

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	21/06/2024, 15:00:00	28/06/2024, 15:00:00
Bid opening Date/Time	21/06/2024, 15:30:00	28/06/2024, 15:30:00

b.

Sl. No	Section/Annexure/Appendix of GeM Bid	Clause No.	Existing Clause	Amended Clause
1.	Section C - Deliverable and Service Level Agreements	6. Uptime	6.1. The selected bidder shall guarantee a 24x7x365 availability with monthly uptime of 99.90 % for block storage and 99.00% for all the other hardware and software as per Scope of Work (Annexure-8), during the contract period, which shall be calculated on monthly basis.	6.1. The selected bidder shall guarantee a 24x7x365 availability with monthly uptime of **99.99%** for block storage and 99.00% for all the other hardware and software as per Amended Scope of Work (Annexure-8), during the contract period, which shall be calculated on monthly basis.
2.	Section C - Deliverable and Service Level Agreements	8. Payment Terms	Clause 8.1. Table Sl. No: 8 Payment Stages: AMC as mentioned in Table-F. Condition/Remarks: Quarterly in arrears on submission of Quarterly Preventive Maintenance activity report and acceptance duly signed by Bank officials of the respective officials of the respective Branch/Office.	Clause 8.1. Table Sl. No: 8 Payment Stages: AMC /ATS Cost for Hardware/Software/Licenses for 2 Years on post warranty as mentioned in Table-E of the Amended Annexure-16 Bill of Material. Condition/Remarks: Quarterly in arrears on submission of Quarterly Preventive Maintenance activity report and acceptance duly signed by Bank officials of the respective officials of the respective Branch/Office. Or Yearly in advance on submission of BG equivalent to the total AMC/ATS cost per year. Payment for IBM WebSphere support will be made Yearly in advance on submission of

				BG equivalent to the total support cost per year.
3.	Section C - Deliverable and Service Level Agreements	13. Local Support	13.2. Response Time and Meantime to Restore [MTTR] 13.2.1. Response Time shall be 4 hours for DC, Bangalore and DRC, Mumbai. MTTR shall be within 24 hours.	13.2. Response Time and Meantime to Restore [MTTR] 13.2.1. Response Time shall be 6 hours for DC, Bangalore and DRC, Mumbai. MTTR shall be within 24 hours.
4.	Annexure-2 Pre-Qualification Criteria	Sl.no 8.	Pre-Qualification Criteria: The Bidder/OEM should have successfully supplied minimum cumulative 500 Nos. of Servers in India in the last three years out of which the bidder should have successfully supplied Hardware and software as a service model at least 100 servers deployed at Customer's DC and DR in Indian Market in any 1 Scheduled Commercial Bank/ NBFC/ Insurance Company/ PSU/ Central Government Organization in India in the last three years as on the date of submission of bid for this RFP.	Pre-Qualification Criteria: The Bidder/OEM should have successfully supplied minimum cumulative 500 Nos. of Servers in India in the last three years. Out of 500 servers the bidder should have successfully supplied Hardware cumulative of 100 servers deployed (irrespective of OEM) at Customer's DC/ DR in Indian Market in any of the Scheduled Commercial Bank/ NBFC/ Insurance Company/ PSU/ Central Government Organization in India in the last three years as on the date of submission of bid for this RFP.
5.	Annexure-2 Pre-Qualification Criteria	Sl.no 4.	Pre-Qualification Criteria: Bidder should be the Original Equipment Manufacturer (OEM)/ Original Software Owner (OSO)/ Original Software Developer (OSD) of Hardware. (OR) An authorized dealer/distributor of the proposed Hardware Documents to be submitted In compliance with Pre-Qualification Criteria. If the applicant is OSD/OSO, an Undertaking Letter has to submit in this effect. (OR) If the bidder is an authorized dealer/	Pre-Qualification Criteria: Bidder should be the Original Equipment Manufacturer (OEM)/ Original Software Owner (OSO)/ Original Software Developer (OSD) of Hardware/Software. (OR) A dealer/ distributor/ Company authorized by the OEM/OSD/OSO of the proposed Hardware/Software. Documents to be submitted In compliance with Pre-Qualification Criteria. If the applicant is OEM/OSD/OSO, an Undertaking Letter has to submit in this effect. (OR)

			distributor, an authorization letter from their OEM and OSO/ OSD to deal/market their product in India and it should be valid for entire contract period from the date of submission of the bid.	If the bidder is an authorized dealer/ distributor/Company, an authorization letter from their OEM/OSO/ OSD to deal/market their product in India and it should be valid for entire contract period from the date of submission of the bid.
6.	Annexure-2 Pre-Qualification Criteria	Sl.no 5.	The Bidder should have an active and premium partnership with Hardware OEM to offer their Hardware and Software as a service to Bank Documents to be submitted In compliance with Pre-Qualification Criteria Copy of partnership certificate from OEM.	The Bidder should have an active partnership with Hardware/Software OEM/OSO/OSD to provide timely support and services for the offered Hardware/Software Documents to be submitted In compliance with Pre-Qualification Criteria Copy of certificate from OEM/OSO/OSD should be submitted to this effect.
7.	Section C - Deliverable and Service Level Agreements	10. Scope involved during Contract period	10.9. Any server for middleware, database, OS and database licenses to be provided by the successful bidder without any additional cost to the Bank.	This Clause stands deleted
8.	Annexure-8 Scope of Work	Full Annexure	Existing Annexure	Amended Annexure-8 Scope of Work attached to this Corrigendum.
9.	Annexure-9 Technical Specifications	Full Annexure	Existing Annexure	Amended Annexure-9 Technical Specifications attached to this Corrigendum.
10.	Annexure-16 Bill of Material	Full Annexure	Existing Annexure	Amended Annexure-16 Bill of Material attached to this Corrigendum.
11.	Section C - Deliverable and Service Level Agreements	1. Project Timelines	Existing Clause	Amended Project Timelines 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: 20/06/2024
Place: Bengaluru

Deputy General Manager

केनरा बैंक CANARA BANK Tender Processing Section A.V.M. Wing, H.O., Bengaluru

SECTION C - DELIVERABLE AND SERVICE LEVEL AGREEMENTS

1. Project Timelines

1.1. The Bidder should accept the Purchase Order within seven (7) days from the date of issuance of Purchase Order. In case of non-receipt of acceptance by the due date, the Purchase Order shall deem to have been accepted by the vendor.

1.2. Bank shall provide the address and contact details for delivery of required Hardware/software & other items as mentioned in Technical Specifications (Details provided elsewhere in the document) while placing the order.

1.3. The timelines are mention in the below table. It will be the sole responsibility of the vendor to submit any form required for release of shipment from the check post.

Sl. No.	Activity	Timelines from date of Acceptance of PO
1	Delivery of all Hardware and software along with licenses	Within 12 weeks from date of Acceptance of PO
2	Installation of all Hardware	Within 6 weeks from the date of delivery of hardware
3	Configuration, implementation and completion of all scope of work	Within 12 weeks from the date of delivery of hardware/Software

1.4. The Bidder shall ensure that the Renewal of Licenses/ Subscriptions/ Fees /AMC/ATS/ Support contracts as applicable, during the period of Contract is completed before expiry date of respective components and the renewal process should be initiated at least 6 months prior to the date of expiry.

1.5. Bank reserves the right to change/modify locations for supply of the items. In the event of any change/modification in the locations where the hardware items are to be delivered, the bidder in such cases shall Supply, Installation, Configuration, Implementation and Maintenance at the modified locations at no extra cost to the Bank. However, if the hardware items are already delivered, and if the modifications in locations are made after delivery, the bidder shall carry out Installation, Configuration, Implementation and Maintenance at the modified locations and the Bank in such cases shall bear the shifting charges/arrange shifting as mutually agreed. The Warranty/ATS/AMC and all RFP terms should be applicable to the altered locations also as per the Bank's requirement without any extra cost to the Bank during the full contract period.

1.6. The Installation will be deemed as incomplete if any component of the hardware/Software is not delivered or is delivered but not installed and / or not operational or not acceptable to the Bank after acceptance testing/ examination. In such an event, the supply and installation will be termed as incomplete and system(s) will not be accepted and the warranty period will not commence. The installation will be accepted only after complete commissioning of hardware.

1.7. Commissioning of the hardware and software will be deemed as complete only when the same is accepted by the Bank in accordance with the Terms & Conditions of this Tender.

Tender Processing Section

1.8. If undue delay happens for delivery and / or installation of the ordered hardware/Software by the vendor, the same shall be treated as a breach of contract. In such case, the Bank may invoke the Performance Security/Forfeit the Security Deposit without any notice to the bidder.

1.9. The Bank will not arrange for any Road Permit / Sales Tax clearance for delivery of hardware to different locations and the selected bidder is required to make the arrangements for delivery of hardware to the locations as per the list of locations /items provided from time to time by the Bank. However, the Bank will provide letters / certificate / authority to the selected bidder, if required.

1.10. Partial or incomplete or damaged delivery of materials will not be considered as delivered of all the ordered materials. Date of delivery shall be treated as date of last material delivered to the ordered locations if materials are not damaged. In case materials are delivered with damage, Date of delivery shall be treated as date of replacement of damaged material with new one. Delivery payment shall be paid against completion of delivery of all the ordered materials without any damage and proof of delivery duly certified by Bank's Officials, along with delivery payment claim letter.

केनरा बैंक Canara Bank

Annexure-8
Scope of Work

(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 500 Nos. of Servers and other IT Infra Components in Canara Bank

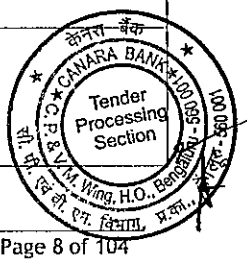
Ref: GEM/2024/B/4915191 dated 04/05/2024

Sl. No.	Evaluation for Scope of Work for this project	Compliance (Yes/No)
1.	The scope of the Services and Maintenance is to be provided for a period of Five years from the date of acceptance by the bank (i.e. 3 years warranty and 2 years ATS/AMC).	
2.	All necessary entitlements e.g. paper licenses/Key etc. for both hardware and software should be provided to the Bank.	
3.	The proposed bidder will need to ensure support of product & change of components @ zero cost in case of any part becoming obsolete/EOL & EOS during the warranty and AMC period	
4.	The bidder has to provide AMC/ATS for the all supplied Hardware and Software as per the Scope of Work post warranty period. During the warranty period and AMC period, the Bidder is bound to do all hardware spares replacement and update of proposed hardware to next or required version without extra cost to the Bank covering all parts & labour from the date of acceptance of the systems by the Bank at the respective locations i.e. on-site comprehensive warranty. The Bank, however, reserves the right to enter into Annual Maintenance Contract (AMC) agreement either location-wise or from a single centralized location.	
5.	All supplied Hardware should have redundant Power Supply and necessary cables and Rack mounting Kit.	
6.	The warranty for the proposed hardware will start on the date when the operating system and any other provided software are installed, as mentioned in the Scope of Work for the specific hardware.	
7.	Bidder has to coordinate with Bank System Integrator while implementing the solution and during any point of time when ever issue is raised by the Bank.	
8.	Bidder should keep the Bank explicitly informed about the end of support dates on related products/ hardware and should ensure support during warranty & AMC period.	
9.	The Bidder should note that servers and other items being procured shall be delivered at locations as per requirements of the Bank.	
10.	The Configuration as per the technical and other specifications offered of all equipment & other items must be functional and installed from the day one.	
11.	All necessary cables and other accessories required for successful installation of the hardware items as per the scope of work to be supplied by the Bidder and the cost of the same to be added along with the respective Hardware items while quoting.	
12.	Bidder should follow a standard development process to ensure that proposed servers meets functional, security performance and regulatory requirements of the bank.	
13.	Bidder should comply as per the IT related policies of the bank.	

14.	Bidder is responsible in installing the Hardware, Software and other items as per Technical Specifications and Scope of work in the bank environment. And as per the bank secure configuration documents	
15.	Bidder must generate and provide a complete holistic report before handover to ensure 100% serviceability of delivered hardware.	
16.	Bidder is responsible for collection of logs and submission of the logs for further analysis and providing the solution to resolve any hardware incidents.	
17.	Bidder must engage Bidder professional team/services onsite to implement/install Hardware, Software & other items.	
18.	Bidder is responsible to inform if any new stable version/update/Service pack/firmware/code upgrade/upgrade of proposed hardware is available by OEM, to the bank within seven days (7 days) of the release and provide the upgrade solution (software) within one month of such releases without any cost to the bank during the period of contract.	
19.	If any more additional licenses are procured by the bank through the successful bidder all such licenses are to be maintained by the bidder.	
20.	Bidder has to provide the escalation matrix to escalate any incident.	
21.	Bidder is responsible to provide the periodic reports of the proposed hardware health as per the bank requirement.	
22.	All installed hardware firmware must be of stable version and all recommended patches should be installed by the bidder and the same to be submitted to the bank on quarterly basis.	
23.	Bidder shall conduct preventive maintenance as may be necessary from time to time to ensure that equipment is in efficient running condition so as to ensure trouble free functioning.	
24.	All the connectivity for the hardware i.e. LAN and SAN switches need to be ensured by the bidder.	
25.	All proposed equipment's are required to connect existing SAN infrastructure.	
26.	The proposed hardware should be free from any kind of vulnerabilities.	
27.	Bidder should keep the bank explicitly informed the end of support dates on the related products/Hardware and should ensure a support during the warranty and AMC period.	
28.	Bidder must also provide the necessary power cables, LAN cables, FC cables from source to their provided rack as per the guideline of the Bank.	
29.	The Selected Bidder has to coordinate with existing vendor for the SAN cable lay, connectivity and Zoning of the SAN ports as required connecting the Proposed Hardware and Software.	
30.	Bidder support should include advice and help the bank in implementing controls for the risk advised by regulators/Govt. of India.	
31.	For delivery location, the Bidder has to provide items with the related hardware, all subsystems, operating systems, system software, software drivers and manuals etc.	
32.	The Bidder should note that Servers & Other Items being procured shall be delivered at locations as per requirements of bank and the Bidder will be required to support all such installations. The Bank reserves the right to change location by giving prior notice.	
33.	The Hardware and Software installation and configuration for the entire set up to be handled by the qualified/experienced personnel only.	

केनरा बैंक CANARA BANK Tender Processing Section CP & V.M. Wing, H.O., Bengaluru

34.	During installation if the bank requires any new Software/OS/Utility, Bidder has to install without any cost where the licenses of the software are with the Bank.	
35.	The Bidder shall conform the integrity of the software supplied i.e. the software is free from bugs, malware, covert channels in code etc.	
36.	Bank will not provide any remote session like Team Viewer, WebEx etc. for any kind of installation, bug fixing, update and upgrade in entire project tenure.	
37.	The bidder should provide email, telephonic and onsite support.	
38.	The proposed server network interfaces ports should be compatible with the network switches provided in this part of rfp	
39.	The proposed server FC HBA interface ports should be compatible with the SAN switches provided in this part of rfp.	
40.	All hardware delivered to be rack mounted, powered on and configured properly including tape drive, tape library , server rack with PDU,TOR Switch etc., supplied as part of this RFP	
41.	The proposed file sync software should be compatible with windows, Linux , oracle Linux and AIX for syncing the files between the servers through manual and auto scheduler	
42.	Bidder to carry out Internal structured cabling both Copper(CAT 6/CAT 7 and Fibre(OM4) for devices supplied by successfull bidder, with sufficient redundancy where ever applicable/required within server racks, network racks .	
43.	Bidder to carry out the internal cabling/laying only through a certified vendor and to share the test report to Bank for acceptance.All the cables to be properly labelled, tagged and color coded as per industry standards. Cable laying, labeling and dressing will be done by bidder without any additional cost to Bank.	
44.	Structured Cabling to be used from OEM's like Amp/CommScope SYSTIMAX/ Panduit.	
45.	The Bidder will responsible for the following:	
A	Delivery of proposed hardware to Bank locations specified in BID.	
B	Safely Unpacking of shipped boxes at staging area.	
C	Physical movement of supplied hardware from staging area to Server Farm.	
D	Identification and labelling of hardware assets as per delivery invoices.	
E	Rack assembling, installation and power connectivity from industrial sockets and testing of required power rating.	
F	Mounting of servers, storages and network switches to server rack as per industry best practices.	
G	Server power on and cable dressing.	
H	Server Management connectivity.	
I	LAN and SAN Cable lay with proper labelling, tagging and cable dressing.	
J	Configuration of RAID as per requirement of bank in supplied Servers and storages	
K	LAN connectivity to bank existing network switch	
L	All activities related to Storage Administration assigned during the implementation period and till the project tenure (Warranty and AMC/ATS, if contracted) without any extra cost.	



Sl. No.	Evaluation for Scope of Work for Servers	Compliance Yes/No
1	Bidder has to install / re-install the operating system (if required), other software in the serves and support the same during warranty and AMC period without any extra cost to the Bank.	
2	Deployment of servers requires co-ordination with different project application vendors. The bidder should co-ordinate with the software vendors while installing and ensure installation and commissioning for running the applications for which these servers are procured.	
3	The Bidder should setup the partition as required by the Bank. The details of the setup will be provided during the setup to the successful bidder.	
4	The proposed hardware should be compatible with red hat Linux 8/9 or later and Windows 2016/2019/2022 and VMware hypervisor 7.X/8.x or later and Microsoft Hypervisor 2019 or later	
5	Hardening of the servers as per the bank secure configuration document based on the OS, Hypervisor and hardware flavours	
Sl. No.	Evaluation for Scope of Work for Storages	Compliance Yes/No
1	The proposed bidder needs to configure/implement the Storage as per the BANK policy. Need to provide the SOP with step by step procedure to BANK technical personnel. Need to provide document for each feature how to use/configure/admin it.	
2	Install & configure storage hardware and software components	
3	Integrate storage systems with existing infrastructure including servers, networks, and backup solutions	
4	Showcase the Monitor storage performance metrics including throughput, latency, and IOPS.	
5	Identify performance bottlenecks and implement optimization strategies such as load balancing, caching, or tiering.	
6	Tune storage configurations and parameters to maximize efficiency and responsiveness.	
7	Design and implement data protection strategies including backup, replication, and snapshotting.	
8	Implement security controls to protect sensitive data and prevent unauthorized access.	
9	Configure access controls, encryption, and authentication mechanisms according to industry best practices and regulatory requirements.	
10	Showcase Generate regular reports on storage capacity, utilization trends, and performance metrics as per bank requirement	
11	documentation on storage configurations, procedures, and troubleshooting guidelines.	
12	performing code upgrade on quarterly basis.	
Sl. No.	Evaluation for Scope of Work for MSSQL - Microsoft SQL	Compliance (Yes/No)
1	Installation and Configuration: Set up SQL Server databases and configure settings to ensure optimal performance and security.	
2	Security Management: Implement and maintain robust security measures to protect sensitive data from unauthorized access during the initial setup	

CANARA BANK Tender Processing Section C.P. & V.M. Wing, H.O., Bengaluru

3	Disaster Recovery: DR Setup creation and replication to be configured	
4	Install and configure the Database as per banks security configuration document	
5	Setting up Microsoft SQL Server High Availability: Failover Cluster Instances as per requirement at DC and DRC sites	
6	Documentation: Maintain detailed documentation of database configurations, architectures, and best practices.	
7	Vendor Liaison: Work with vendors to resolve issues related to database products and services during the initial setup creation	
8	Documentation & Handover: Preparing the implementation and configuration handover documentation and providing handholding to our onsite team	
Sl. No.	**Evaluation for Scope of Work for Hyper-V - Microsoft**	Compliance (Yes/No)
1	Implementing a Hyper-V environment with clustering or load balancing for deploying applications	
2	Installation of Windows Server operating system	
3	Enabling Hyper-V role on the server.	
4	Configuring Hyper-V settings such as memory, networking, and storage.	
5	Setting up virtual switches and network adapters.	
6	Configuration of Hyper-V Clustering (Active/Active and Active/Passive) or Load Balancing	
7	Configuration of failover clustering or network load balancing features.	
8	Setting up shared storage (SAN or SMB) for clustered virtual machines.	
9	Configuring Cluster Shared Volumes (CSV) for improved storage management.	
10	Validation of cluster setup and resolving any issues.	
11	Creation of virtual machines as per bank Requirements	
12	Installation and configuration of operating systems within virtual machines.	
13	Installation of necessary software	
14	Configuration of network settings within virtual machines.	
15	Install and configure as per bank secure configuration document	
16	Implementation of security best practices for Hyper-V environments.	
17	Configuration of alerts for critical events or performance thresholds.	
18	Creation of documentation for installation, configuration, and maintenance procedures.	
19	Comprehensive testing of all components, including failover and load balancing scenarios.	
Sl. No.	**Evaluation for Scope of Work For Open shift**	Compliance (Yes/No)
1	Discover & Implementation Activities for - OCP|Quay|ACM|ACS|CICD|Application On boarding - OnPrem	
	- Network - IP Segment, DNS	
	- integration of endpoints (LDAP,SMTP etc.)	
	- Storage Mapping and segregation	
	CICD Components and Flow	

2	Prepare prerequisite document(Ex.: Firewall/Port requirements, Traffic direction, etc.) document for deployment.	
3	Design Walkthrough & sign-off (LLD)	
4	ConfigureVM based Bastion/utility node.	
5	Create and configure Mirror image registry - OCP Repo registry for Disconnected Installation	
6	Deployment of OCP Hub Cluster Install & RHACM :	
	Create base image availability, host definition, high availability configuration	
	For Storage - Integration with Storage (RWO/RWX)	
	Configuring monitoring operators: Prometheus, Grafana and Alert Manager - Configure Integral monitoring parameters and alerting mechanism	
	Deploy metrics capabilities for collecting resource information for OCP Cluster as per bank requirements	
	Install RHACM hub operator in the respective Clusters :	
	Add 1x OCP Cluster to the HUB Cluster	
	Showcase Grafana Integration with RHACM to get cluster visibility	
	Showcase Red Hat's sample governance policies creation multi cluster	
7	install Quay	
	Configure Container Security Operator and Quay Bridge Operator	
	Integration with Storage	
	Configure Replication	
8	Installation & Configuration of RHACS OCP clusters	
	Showcase Red Hat sample Use/Create/Modify Policies	
	Showcase compliance scans and reports	
	Alerts/Notification Integration	
9	Deployment of OCP :	
	Creation of Quota objects, persistent volume provisioning, base image availability, host definition, high availability	
	For Storage - Integration with Storage (RWO/RWX)	
	Configuring Out Of Box monitoring operators: Prometheus, Grafana and Alert Manager	
	Deploy metrics capabilities for collecting resource information. Out of the Box metrics will be configured.	
	Configuration of egress IP for integration with external services	
	Configure ingress/egress routers	
	LDAP Integration with OCP GUI.	
	Configure namespaces.	
	Configure OCP Native Logging - EFK logging stack. (or) forward to External Logging system as per requirement of bank	
	Configure internal registry	
	Deploy Continuous Delivery components (ArgoCD) and CI Pipelines (Components)	
	Prepare and demonstrate pods, services, routes, SSL with known Red Hat working samples.	

केनरा बैंक CANARA BANK Tender Processing Section CP & VM Wing, H.O., Bengaluru

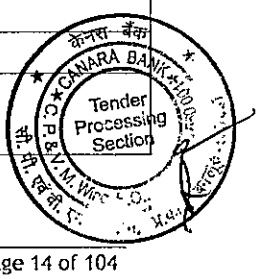
10	Collaborate with various teams for Info Security fixes (OCP Platform specific)	
11	Configuration of worker nodes	
12	Create CI/CD pipeline for 1x Micro service Service endpoint	
13	Configure, EFK components, SSL certificates, secrets, config maps from Application perspective.	
14	Post deployment validation and sanity checks for Red Hat OCP	
15	Documentation for OCP Cluster implementation	
16	Knowledge transfer for OCP Cluster & Clarify queries pertaining to Implementation/Configuration.	
17	Open Shift virtualization installation, configuration, and deployment of applications in a cluster or load balancer configuration	
18	Configure the Open Shift cluster with appropriate settings for networking, storage, and authentication	
19	Set up monitoring and logging solutions for tracking the performance and health of the cluster.	
20	Enable the Open Shift virtualization feature, allowing the cluster to run virtual machines (VMs) alongside containers	
21	Configure networking for virtual machines, including defining networks, subnets, and VLANs.	
22	Set up storage for VMs, utilizing storage classes and persistent volumes within Open Shift.	
23	Define resource quotas and limits for VMs to ensure fair resource allocation across the cluster.	
24	Implement load balancing for distributing traffic across multiple instances of the application using Open Shift's built-in capabilities or external load balancers	
25	Test the deployment to ensure that applications are running correctly within the cluster	
26	Set up monitoring tools such as Prometheus and Grafana to monitor the performance and health of the cluster and applications	
27	Implement automated backups and disaster recovery procedures to ensure data integrity and availability.	
Sl. No.	**Evaluation for Scope of Work for Apache Tomcat**	**Compliance (Yes/No)**
1	Apache Tomcat web & application server installation, configuration, and deployment in a cluster or load balancer configuration.	
2	Providing step-by-step documentation for installing Apache HTTP server	
3	modify basic settings such as server name, port, and document root.	
4	Configuring the apache server as per bank secure configuration document	
5	Configuring cluster for scalability, reliability, and fault tolerance	
6	configuring Apache as a load balancer using modules like mod_proxy_balancer or mod_jk or through external load balancer as per the requirement	
7	configuring virtual hosts to host multiple applications.	
8	deploying web applications on the Apache cluster/load balancer setup	

केनरा बैंक CANARA BANK Tender Processing Section CP & VM Wing, H.O., Bengaluru

9	testing procedures to ensure the cluster and load balancer configurations are functioning correctly	
10	Domain configuration: Customize domain settings such as ports, SSL certificates, and resource limits	
Sl. No.	**Evaluation for Scope of Work for Managed File Transfer**	Compliance (Yes/No)
1	The Bidder has to provide Managed File Transfer Solution covering software & services to ensure availability, scalability, redundancy and performance and to meet technical and functional requirements as per the terms of the RFP.	
2	Solution should provide unlimited users access / privilege to have multiple files transfer using this solution.	
3	The successful bidder will be expected to provide all necessary tools, software licenses (required software for the solution) implement, train and handover the solution to the IT Team.	
4	The bidder should configure encryption and MFA as per the requirement.	
5	The solution provider should provide a detailed Plan of action (POA) for implementation of Managed File Transfer Solution. It should include the approach, risk, benefits and downtime	
6	Full documentation of the project is to be included in the deliverables by the successful bidder	
7	Standard Operating Procedures and Industry Best Practice Use cases and customization to be shared	
8	Proposed solution should be in three tier architecture	
Sl. No.	**Evaluation for Scope of Work for Backup Solution**	Compliance (Yes/No)
1	proposed backup solution installation, configuration, and deployment of an application in a cluster or load balancer configuration	
2	Ensuring data integrity, minimizing downtime, and optimizing performance through load balancing	
3	prerequisites or dependencies required for the installation to be shared	
4	Installing backup solution on the designated servers or systems	
5	Configure the backup solution to perform regular backups	
6	Configuring backup policies, including backup frequency, retention periods, and storage locations	
7	Implement encryption and authentication mechanisms to ensure the security of backup data	
8	Design the architecture for deploying the application in a clustered or load-balanced configuration.	
9	Install and configure the necessary infrastructure components, such as servers, databases, and networking resources	
10	Configure the cluster or load balancer to distribute incoming traffic evenly across the backup application servers	
11	Implement health checks and failover mechanisms to ensure high availability and fault tolerance	
12	Fine-tune the configuration to optimize performance and scalability	
13	Develop test cases to validate the backup solution and the clustered/load-balanced application deployment.	
14	Prepare comprehensive documentation, including installation guides, configuration manuals, and troubleshooting procedures.	

केनरा बैंक CANARA BANK Tender Processing Section C.P. & V.M. Wing, H.O., Bengaluru

15	Coordinate with stakeholders to schedule deployment activities and minimize disruption to ongoing operations	
16	Identify potential risks and mitigation strategies associated with the backup solution installation and application deployment.	
Sl. No.	Evaluation for Scope of Work for Jboss solution	Compliance (Yes/No)
1	Install, configure, and deploy applications in a clustered or load-balanced configuration using JBoss Application Server	
2	Set up the infrastructure for the JBoss cluster or load balancer configuration, including servers, networking, and storage.	
3	Install JBoss Application Server on each node in the cluster. Ensure that the versions are compatible and all necessary dependencies are met.	
4	Configure JBoss to work in a clustered environment. This involves setting up cluster nodes, configuring cluster communication, and enabling session replication if needed.	
5	Set up a load balancer to distribute incoming traffic across the JBoss cluster nodes. Configure load balancing algorithms, health checks, and session persistence as required.	
6	Package the application for deployment on JBoss. Deploy the application to each node in the cluster using the appropriate deployment methods (e.g., CLI, management console, or automation scripts)	
7	Perform thorough testing to ensure that the cluster configuration and load balancing setup are working as expected. Test failover scenarios, scalability, and performance under load.	
8	Set up monitoring and management tools to monitor the health and performance of the JBoss cluster and individual nodes. Configure alerts and dashboards for proactive management.	
9	Document the installation, configuration, and deployment processes for future reference. Knowledge transfer sessions to the operations team for maintaining the JBoss environment.	
Sl. No.	Evaluation for Scope of Work for TOR Switches	Compliance (Yes/No)
1	Bidder has to supply, install, commission, integrate, implement, manage and maintain the Switches along with required license for a period of 5 years (warranty and AMC included) at Bank DC and DRC.	
2	Bidder has to take Back-to-Back OEM support for all Hardware/Appliance, software, licenses etc.	
3	Bidder should ensure planning and designing for proposed solution.	
4	Bidder should ensure that proposed solution should work for Data, Voice and Video	
5	Bidder should adopt best practices to implement the solution and should ensure that there should not be any degradation in performance of any application due to implementation of proposed solution. If there is any degradation of performance, Bidder should replace/Upgrade the required hardware without any additional cost to Bank.	
6	Bidder should carry out all the configuration changes as per the proposal with minimum downtime.	
7	Bidder should carry out required switching in the proposed solution	
8	Bidder should deliver all equipment with latest IOS/Patches etc.	
9	Bidder should ensure use the IP address provided by Bank for any of the host without network architectural changes at DC and DRC	



10	Bidder should ensure that solution is interoperable with different OEMs for Open standard technology Deployment	
11	Bidder should ensure that proposed solution work for alternate service provider in Load balancing/Load sharing/Auto fall back in the LAN	
12	Bidder has to act as a single point of contact for the execution of the project. Initiate project kick-off meeting between their Solution Architect and Bank Project Manager. Develop project plan and track the progress against the project plan. Manage project resources, risks and issues as per project plan. Conduct regular progress meeting with Customers Project Manager	
13	Bidder has to Plan, Design considering various failovers scenarios, Integrate with existing and future infrastructure, Implement day to day changes, maintain and coordinate with OEM at Bank Data Centre and at Data Recovery Centre.	
14	Design includes low & high level diagrams, planning of the implementation and should be aimed at ensuring that a new network or service meets the needs of the Bank.	
15	Bidder should ensure and demonstrate failover scenarios at DC and to ensure Disaster recovery Plan for Business Continuity.	
16	Bidder should ensure high resilience, scalability, high security, and high availability without any single point of failure.	
17	The above mentioned HA should take care of Hardware/Software/Device/Power/Interface failure.	
18	Bidder to submit Migration plan, implementation document, solution architecture, traffic flow, cabling diagram etc.	
19	Bidder should advise and help Bank in optimizing network security, implementing security control for the risk advised by regulators, Govt. of India etc. for Provided Hardware and Software.	
20	Bidder should ensure there should be 24x7x365 TAC Support from direct OEM for any technical issue with Committed Response time to Severity-1 issues should be less then equal to 30 minutes from OEM.	
21	The Bidder should ensure RMA Shipment should be within four hours after confirmation from OEM TAC.	
22	Bidder to assign IP address and host name to all the proposed switches.	
23	Bidder to set modes of port (Duplex, Half Duplex, Auto) and assign them to the VLANs as per the implementation plan document.	
24	Bidder to Configure the Security hardening like ACL, AAA, NTP, SNMP, Net flow & Logging etc.	
25	Bidder to configure the device to integrate with SIEM, NBA etc.	
26	Bidder to configure uplink from Spine switch to Firewall with redundant 10/25/40/100Gbps links.	
27	Bidder to ensure all the Leaf/Access switches must be connected to Distribution Switch and further Spine/Core Switch with redundant 40/100 Gbps Uplink.	
28	Bidder to Create the L2 VLAN on the switch wherever required.	
29	Bidder to configure high availability features such as power supply redundancy, fabric engine redundancy etc.	
30	Bidder to Install the proposed transceivers in to router and switches and connect the uplink cables. (1/10/40G fiber)	
31	Bidder to assign the VLAN/Trunk on the respective interface connecting to Server form switch.	

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32	Bidder to configure the required user/Server/Switch interface with respective VLANs.	
33	The equipment provided by Bidder should not reach End of Life or End of Support date by the OEM within the contract period. In the event of the supplied equipment reaching as EOL or EOS within the period of 5 years from the date of commissioning of the equipment, Bidder has to replace the equipment with equipment having equivalent or higher configurations. Bidder should keep the Bank explicitly informed about the end of support dates on related products/License/hardware/Software and should ensure support during contract period.	
34	Bidder to design & plan IP/network schema with the Bank team for the proposed architecture.	
35	Install the proposed switches in the Rack and do the Power on Self-Test.	
36	Bidder should ensure Mounting, Installation, commissioning should be done without impacting Bank exiting Network setup	
37	Bidder to take the configuration backup for all Switches.	
38	All the equipment must support on dual stack IPv4 plus IPv6.	
39	Bidder to Perform and document ping or connectivity tests to demonstrate the correct installation of the Router and Switches, validate the configuration and share the report of ping test and port configuration, high availability features etc.	
40	Bidder should deliver Final Connectivity Document, Configuration Document, Inventory documents, Acceptance test documents, Training attendance sheets and feedback forms.	
41	Bidder has to ensure proposed switches support with 802.1X proxies, NAC solutions, and any other source of user identity information.	
42	Bidder should ensure that during various phases of implementation, the performance, security, etc. of the existing network/Security setup is not compromised.	
43	Bidder has to provide equipment & peripherals with rack mounting kit to accommodate all components in the rack space provided in the Bank's Data centres.	
44	All necessary entitlements e.g. paper licenses/Key etc. for both hardware and software should be provided to the Bank.	
45	Bidder shall arrange to provide certified training from OEM to the Bank's nominated persons. Training plan, scope and duration of the same to be shared with the Bank and has to be mutually agreed before finalizing the training course.	
46	Bidder should Upgrade/Provide/inform Bank about all release /version change of patches/ upgrades/updates of Hardware/software/OS/signatures product development path, etc. of the proposed solution as and when released by the OEM. Wherever required, Bank may seek help/support from the System Integrator.	
47	Bidder has to own the responsibility of making the solution run as desired by the Bank.	
48	Bidder must provide detailed SOP, troubleshooting steps of the provided solution along with the Installation and Administration guide for reference, which must include High level Design (HLD) and Low Level Design (LLD) documents at no extra cost to the Bank.	
49	Bidder should ensure all devices should have redundant power supply and network connectivity is dual homed.	

केनरा बैंक CANARA BANK Tender Processing Section C.P. & V.M. Wing, H.O.

50	Bidder should support and integrate Switches as per Bank's network architecture requirements.	
Sl. No.	Technical Specification & Evaluation for Scope of Work for File Sync Software	Compliance (Yes/No)
1.	Bandwidth Efficiency: Implementing intelligent algorithms to optimize data transfer and minimize bandwidth usage ensures efficient synchronization, particularly for large files or frequent updates.	
2.	Multi-OS Support: Compatibility with AIX, Windows, and Linux operating systems all version and editions to ensures versatility and meets the diverse infrastructure requirements of businesses.	
3.	Centralized Dashboard: A centralized dashboard provides administrators with real-time insights into sync status, allowing for proactive monitoring, troubleshooting, and reporting across all connected devices and platforms.	
4.	Sync Options: Offering both one-to-one and one-to-many synchronization options provides flexibility for different use cases, whether it's syncing files between individual devices or distributing updates across multiple endpoints simultaneously.	
5.	Scheduled File Sync: Allowing admin to schedule file synchronization at specific times or intervals ensures consistency and minimizes manual intervention. This feature is particularly syncing files during off-peak hours or custom timing as per the user requirements	
6.	Real-Time Sync: Real-time sync ensures that changes made to files are immediately propagated across all connected devices, guaranteeing up-to-date data sync	
7.	Secure Protocols: Implementing industry-standard encryption protocols such as SSL/TLS or SSH ensures that data transferred between devices is encrypted, preventing unauthorized access or interception by malicious actors.	
8.	Bidder should install and configure the file sync software and provide necessary supporting documents.	

We comply with the above Scope of Work, Non-compliance to any of the scope of work will lead to disqualification of the bidder in Technical proposal.

Date:

Signature with seal
Name:
Designation :

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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 500 Nos. of Servers and other IT Infra Components in Canara Bank.

Ref: GEM/2024/B/4915191 dated 04/05/2024.

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 equipments 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 500 servers (287 DC and 213 DRC)

Table-A

Technical Specification - 80 servers (41 DC and 39 DRC)

Technical Details		Technical Specification - 80 servers (41 DC and 39 DRC)	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	1U / 2U	
5	**Processor**		
	Processor Architecture	CISC	
	Processor Make	Latest generation x86_64 bit architecture-based CPU's	
	Processor	2.7 GHz (gigahertz) or above	
	Socket	Minimum 2 populated sockets i.e., 32*2 =64 core	
	Cores per socket	32	

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	Cache	32 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	64G*32/96GB*22/128G*16= approx 2TB	
	Slot Count	Minimum 24 or higher.	
	Speed	Minimum 2933 MHz 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	SSD/NVM e	
	Total Capacity for SATA SSD	960GB * 2 SSD or Higher with RAID 1 1.92TB * 4 SSD or Higher (to support RAID 1,5,6,10)	
	Slot Count	12 or higher, Minimum 6 free slots should be available for future upgrade	
	Usable Space	Minimum 850 GB approximately with 960GB*2SSD After RAID 1. Minimum 3.5 TB approximately with 1.92TB * 4SSD after RAID 10.	
8	**RAID Controller**		
	RAID Controller	Should support RAID 1, 5, 6, 10 or higher	
	RAID Battery	RAID 1, 5, 6, 10 or higher with 2GB or higher battery backed write cache	
	Cooling	Heat Sink	
	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 minimum 1 number of 32 Gbps FC ports in each card with Supported SFP+ transceivers (With NVME Capable)	
	FC Cables	2 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 1 Gbps	2*1Gbps - Two Network Cards, each equipped with at least two 1-gigabit network ports (Four Port of 1Gbase-T On-Board or separate NIC)	
	Network cards 10 Gbps	2*10Gbps -Two Network Cards, each equipped with at least two 10-gigabit network ports (Four Port BaseT NIC LOM or separate NIC).	
	Network cards Management port	Dedicate One Port of 1GBps-management port chassis card.	
10	OS &Hypervisor Compatibility		
	Virtualization compatibility	All latest version of Microsoft-HyperV,VMware, Red Hat virtualization, Open shift virtualization and other industry standard hypervisors, Open Shift, Kubernetics	
	Windows Compatibility	2019/2022	
	RHEL Compatibility	8.x & 9.x & Higher versions	
	Other Latest Linux Flavours	Latest server operating versions of SUSE Linux, Ubuntu ,RHCOS/Redhat Open Shift Container Platform	
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 Firmware support for updates, upgrades, patches, and bug fixes for supplied h/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. Proactive storage monitoring & 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	3 USB3.0 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, Disk encryption, TPM 2.0 (Trusted Platform Module), Hardware root of trust, malicious code free design.	
17	PCI Slots	Minimum 6 -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 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. 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	

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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-B
Technical Specification - 28 servers (17 DC and 11 DRC)

Technical Details		Technical Specification - 28 servers (17 DC and 11 DRC)	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	1U / 2U	
5	Processor		
	Processor Architecture	CISC	
	Processor Make	Latest generation x86_64 bit architecture-based CPU's	
	Processor	2.7 GHz (gigahertz) or above	
	Socket	Minimum 2 populated sockets i.e., 32*2 =64 core	
	Cores per socket	32	
	Cache	32 MB L3 Cache or higher	
	Cooling	Heat Sink	
	Platform Controller Hub & Main Board	Latest chipset/system on clip(SoC)design supporting x 86_64& suitable server class main board or equivalent.	

6	**Memory**		
	RAM Type	DDR5 DIMM or Higher	
	Ram Size	64GB*8 = 512 GB	
	Slot Count	Minimum 24 or higher, Minimum 16 free memory slots should be available.	
	Speed	Minimum 2933 MHz 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	SSD/NVM e	
	Total Capacity for SATA SSD	960GB * 2 SSD or Higher with RAID 1 1.92TB * 4 SSD or Higher (to support RAID 1,5,6,10)	
	Slot Count	12 or higher, Minimum 6 free slots should be available for future upgrade	
	Usable Space	Minimum 850 GB approximately with 960GB*2SSD After RAID 1. Minimum 3.5 TB approximately with 1.92TB * 4SSD after RAID 10.	
8	**RAID Controller**		
	RAID Controller	Should support RAID 1, 5, 6, 10 or higher	
	RAID Battery	RAID 1, 5, 6, 10 or higher with 2GB or higher battery backed write cache	
	Cooling	Heat Sink	
	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**		

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	FC HBA CARD	Two FC Card with minimum 1 number of 32 Gbps FC ports in each card with Supported SFP+ transceivers (With NVME Capable)	
	FC Cables	2 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 1 Gbps	2*1Gbps - Two Network cards, each equipped with at least two 1-gigabit network ports (Four Port of 1Gbase-T On-Board or separate NIC)	
	Network cards 10 Gbps	2*10Gbps -Two Network Cards, each equipped with at least two 10-gigabit network ports (Four Port BaseT NIC LOM or separate NIC .	
	Network cards Management port	Dedicate One Port of 1GBps-management port chassis card.	
10	**OS &Hypervisor Compatibility**		
	Virtualization compatibility	All latest version of Microsoft-HyperV,VMware, Red Hat virtualization, Open shift virtualization and other industry standard hypervisors, Open Shift, Kubernetics	
	Windows Compatibility	2019/2022	
	RHEL Compatibility	8.x & 9.x & Higher versions	
	Other Latest Linux Flavours	Latest server operating versions of SUSE Linux, Ubuntu ,RHCOS/Redhat Open Shift Container Platform	
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)	

केनरा बैंक CANARA BANK Tender Processing Section C.P. & V.M. Wing

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 Firmware support for updates, upgrades, patches, and bug fixes for supplied h/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. Proactive storage monitoring & 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	3 USB3.0 port or higher and 1 VGA Port or higher	
15	Serviceability	Light path diagnostic LED or equivalent visual alerts	
16	Security	Secure Boot, Disk encryption, TPM 2.0 (Trusted Platform Module), Hardware root of trust, malicious code free design.	
17	PCI Slots	Minimum 6 -—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 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. 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	

		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 - 100 servers (60 DC and 40 DRC)

Technical Details		Technical Specification - 100 servers (60 DC and 40 DRC)	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	1U / 2U	
5	Processor		
	Processor Architecture	CISC	
	Processor Make	Latest generation x86_64 bit architecture-based CPU's	
	Processor	2.7 GHz (gigahertz) or above	
	Socket	Minimum 2 sockets i.e., 16*2=32 core	
	Cores per socket	16	
	Cache	32 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 classmain board or equivalent.	
6	Memory		
	RAM Type	DDR5 DIMM or Higher	
	Ram Size	64GB*16 = 1024 GB	
	Slot Count	Minimum 24 or higher, Minimum 8 free memory slots should be available.	
	Speed	Minimum 2933 MHz 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	SSD/NVM e	
	Total Capacity for sata SSD	960GB * 2 SSD or Higher with RAID 1 1.92TB * 4 SSD or Higher (to support RAID 1,5,6,10)	
	Slot Count	12 or higher, Minimum 6 free slots should be available for future upgrade	
	Usable Space	Minimum 850 GB approximately with 960GB*2SSD After RAID 1. Minimum 3.5 TB approximately with 1.92TB * 4SSD after RAID 10.	
8	**RAID Controller**		
	RAID Controller	Should support RAID 1, 5, 6, 10 or higher	
	RAID Battery	RAID 1, 5, 6, 10 or higher with 2GB or higher battery backed write cache	
	Cooling	Heat Sink	
	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 minimum 1 number of 32 Gbps FC ports in each card with Supported SFP+ transceivers (With NVME Capable)	
	FC Cables	2 Nos of minimum 15 Meter OM3/OM4 FC cables or higher for SAN Connectivity (FC HBA & transceivers should Support 16 Gbps & 32Gbps Switch)	

केनरा बैंक CANARA BANK Tender Processing Section V.M. Wing, H.O., Bengaluru

	Network cards 1 Gbps	2*1Gbps - Two Network cards, each equipped with at least two 1-gigabit network ports (Four Port of 1Gbase-T On-Board or separate NIC)	
	Network cards 10 Gbps	2*10Gbps -Two Network Cards, each equipped with at least two 10-gigabit network ports (Four Port BaseT NIC LOM or separate NIC.	
	Network cards Management port	Dedicate One Port of 1GBps-management port chassis card.	
10	**OS &Hypervisor Compatibility**		
	Virtualization compatibility	All latest version of Microsoft-HyperV,VMware, Red Hat virtualization, Open shift virtualization and other industry standard hypervisors, Open Shift, Kubernetics	
	Windows Compatibility	2019/2022	
	RHEL Compatibility	8.x & 9.x & Higher versions	
	Other Latest Linux Flavours	Latest server operating versions of SUSE Linux, Ubuntu ,RHCOS/Redhat Open Shift Container Platform	
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 Firmware support for updates, upgrades, patches, and bug fixes for supplied h/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. Proactive storage monitoring & 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	3 USB3.0 port or higher and 1 VGA Port or higher	
15	Serviceability	Light path diagnostic LED or equivalent visual alerts	
16	Security	Secure Boot, Disk encryption, TPM 2.0 (Trusted Platform Module), Hardware root of trust, malicious code free design.	
17	PCI Slots	Minimum 6 - 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 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. 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 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-D
Technical Specification - 54 servers (28 DC and 26 DRC)

Technical Details		Technical Specification - 54 servers (28 DC and 26 DRC)	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	1U / 2U	
5	**Processor**		
	Processor Architecture	CISC	
	Processor Make	Latest generation x86_64 bit architecture-based CPU's	
	Processor	2.7 GHz (gigahertz) or above	
	Socket	Minimum 2 sockets i.e., 16*2 =32 core	
	Cores per socket	16	
	Cache	32 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	DDR4 DIMM or Higher	
	Ram Size	32G*8=256GB	
	Slot Count	Minimum 24 or higher, Minimum 16 free memory slots should be available.	
	Speed	Minimum 2933 MHz 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	SSD/NVM e	
	Total Capacity for SATA SSD	960GB * 2 SSD or Higher with RAID 1 1.92TB * 4 SSD or Higher (to support RAID 1,5,6,10)	
	Slot Count	12 or higher, Minimum 6 free slots should be available for future upgrade	
	Usable Space	Minimum 850 GB approximately with 960GB*2SSD After RAID 1. Minimum 3.5 TB approximately with 1.92TB * 4SSD after RAID 10.	
8	**RAID Controller**		
	RAID Controller	Should support RAID 1, 5, 6, 10 or higher	
	RAID Battery	RAID 1, 5, 6, 10 or higher with 2GB or higher battery backed write cache	
	Cooling	Heat Sink	
	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 minimum 1 number of 32 Gbps FC ports in each card with Supported SFP+ transceivers (With NVME Capable)	
	FC Cables	2 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 1 Gbps	2*1Gbps -Two Network cards, each equipped with at least two 1-gigabit network ports (Four Port of 1Gbase-T On-Board or separate NIC)	

	Network cards 10 Gbps	2*10Gbps -Two Network Cards, each equipped with at least two 10-gigabit network ports (Four Port BaseT NIC LOM or separate NIC.	
	Network cards Management port	Dedicate One Port of 1GBps-management port chassis card.	
10	**OS &Hypervisor Compatibility**		
	Virtualization compatibility	All latest version of Microsoft-HyperV,VMware, Red Hat virtualization, Open shift virtualization and other industry standard hypervisors, Open Shift, Kubernetics	
	Windows Compatibility	2019/2022	
	RHEL Compatibility	8.x & 9.x & Higher versions	
	Other Latest Linux Flavours	Latest server operating versions of SUSE Linux, Ubuntu ,RHCOS/RedhatOpen Shift Container Platform	
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 Firmware support for updates, upgrades, patches, and bug fixes for supplied h/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. Proactive storage monitoring & 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	3 USB3.0 port or higher and 1 VGA Port or higher	
15	Serviceability	Light path diagnostic LED or equivalent visual alerts	
16	Security	Secure Boot, Disk encryption, TPM 2.0 (Trusted Platform Module), Hardware root of trust, malicious code free design.	
17	PCI Slots	Minimum 6 - 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	

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		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 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 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-E

Technical Specification - 226 servers (135 DC and 91 DRC)

Technical Details		Technical Specification - 226 servers (135 DC and 91 DRC)	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	1U / 2U	
5	Processor		
	Processor Architecture	CISC	
	Processor Make	Latest generation x86_64 bit architecture-based CPU's	
	Processor	2.7 GHz (gigahertz) or above	
	Socket	Minimum 2 sockets i.e., 16*1 =16 core (1 Populated & 1 For future upgrade) or 8*2 = 16 core	
	Cores per socket	Refer above socket details	
	Cache	32 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	64GB*8 = 512 GB	
	Slot Count	Minimum 12 or higher, Minimum 4 free memory slots should be available.	
	Speed	Minimum 2933 MHz 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	SSD/NVM e	
	Total Capacity for sata SSD	960GB * 2 SSD or Higher after RAID 1 1.92TB * 4 SSD or Higher after RAID 1 (other raid configuration preferable)	
	Slot Count	12 or higher, Minimum 6 free slots should be available for future upgrade	
	Usable Space	Minimum 850 GB approximately after 960GB*2SSD After RAID 1. Minimum 3.5 TB approximately after 1.92TB * 4SSD after RAID 1.	
8	RAID Controller		
	RAID Controller	Should support RAID 1 other raid configuration preferable	
	Cooling	Heat Sink	
	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	
9	SAN & Network		
	FC HBA CARD	One FC Card with minimum 2 number of 32 Gbps FC ports in each card with Supported SFP+ transceivers (With NVME Capable)	
	FC Cables	2 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 10 Gbps	One Network Cards equipped with at least two number of 10-gigabit network ports (two Port BaseT NIC LOM or separate NIC.	
	Network cards Management port	Dedicate One Port of 1GBps-management port chassis card.	
10	OS &Hypervisor Compatibility		

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	Virtualization compatibility	All latest version of Microsoft-HyperV,VMware, Red Hat virtualization, Open shift virtualization and other industry standard hypervisors, Open Shift, Kubernetics	
	Windows Compatibility	2019/2022	
	RHEL Compatibility	8.x & 9.x & Higher versions	
	Other Latest Linux Flavours	Latest server operating versions of SUSE Linux, Ubuntu ,RHCOS/RedhatOpen Shift Container Platform	
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 Firmware support for updates, upgrades, patches, and bug fixes for supplied h/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. Proactive storage monitoring & 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	3 USB3.0 port or higher and 1 VGA Port or higher	
15	Serviceability	Light path diagnostic LED or equivalent visual alerts	
16	Security	Secure Boot, Disk encryption, TPM 2.0	

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		(Trusted Platform Module), Hardware root of trust, malicious code free design.	
17	PCI Slots	Minimum 2 - 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 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. 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	

Table-F
Custom Technical Specification - 12 servers

Technical Details		Custom Technical Specification - 12 servers (6 DC and 6 DRC) (Type 1 - 2 DC, 2 DRC; Type 2 - 2 DC, 2 DRC; Type 3 - 2 DC, 2 DRC)	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	1U / 2U / 4U	
5	Processor		
	Processor Architecture	CISC	
	Processor Make	Latest generation x86_64 bit architecture-based CPU's	

	Processor	2.7 GHz (gigahertz) or above	
	Socket	Minimum 2 sockets i.e., 16*1 =16 core (1 Populated & 1 For future upgrade) or 8*2=16 core - Type 1 Minimum 2 sockets i.e., 16*2 = 32 core- Type 2 Minimum 2 sockets i.e., 16*2 = 32 core- Type 3	
	Cores per socket	Refer above socket details	
	Cache	32 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	64GB*4 = 256 GB - Type 1 64GB*16 = 1024 GB - Type 2 64GB*16 = 1024 GB - Type 3	
	Slot Count	Minimum 12 or higher, Minimum 8 free memory slots should be available. - Type Minimum 24 or higher, Minimum 8 free memory slots should be available. - Type 2 Minimum 24 or higher, Minimum 8 free memory slots should be available. - Type 3	
	Speed	Minimum 2933 MHz 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	**NVMe**	

	Total Capacity for SATA SSD	960GB * 2 SSD or Higher to support RAID 1- For all types 1.92TB * 4 SSD or Higher to support RAID 1 (Other RAID Configuration Preferable)- Type 1 1.92TB * 6 SSD or Higher (to support RAID 1,5,6,10)- Type 2 3.84TB * 18 SSD or Higher (to support RAID 1,5,6,10)- Type 3	
	Slot Count	12 or higher, Minimum 6 free slots should be available for future upgrade - Type1 12 or higher, Minimum 4 free slots should be available for future upgrade - Type2 24 or higher, Minimum 4 free slots should be available for future upgrade - Type3	
	Usable Space	Minimum 3.5TB approx. after RAID 1 - Type 1 Minimum 7.5 TB approx. After RAID 10 - Type 2 Minimum 34 TB approx. After RAID 10 - Type 3	
8	**RAID Controller**		
	RAID Controller	Should support RAID 1 or other RAID configuration preferable - Type 1 Should support RAID 1, 5, 6, 10 or higher - Type 2 & Type3	
	RAID Battery	RAID 1, 5, 6, 10 or higher with 2GB or higher battery backed write cache - Type 2 & Type 3	

	Cooling	Heat Sink	
	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	One FC Card with minimum 2 number of 32 Gbps FC ports in each card with Supported SFP+ transceivers (With NVME Capable) - Type 1 Two FC Card with minimum 1 number of 32 Gbps FC ports in each card with Supported SFP+ transceivers (With NVME Capable) - Type 2 & Type 3	
	FC Cables	2 Nos of minimum 15 Meter OM3/OM4 FC cables or higher for SAN Connectivity (FC HBA & transceivers should Support 16 Gbps & 32Gbps Switch) -Type1& Type 2 & Type 3	
	Network cards 1 Gbps	Two Network Cards, each equipped with at least two 1-gigabit network ports (Four Port of 1Gbase-T On-Board or separate NIC)- Type 2 & Type3	
	Network cards 10 Gbps	One Network Cards equipped with at least two number of 10-gigabit network ports (two Port BaseT NIC LOM or separate NIC. - Type 1 Two Network Cards, each equipped with at least two 10-gigabit network ports (Four Port BaseT NIC LOM or separate NIC.- Type 2 & Type3	
	Network cards Management port	Dedicate One Port of 1GBps-management port chassis card.	
10	**OS &Hypervisor Compatibility**		

	Virtualization compatibility	All latest version of Microsoft-HyperV,VMware, Red Hat virtualization, -Open shift virtualization and other industry standard hypervisors, Open Shift, Kubernetes	
	Windows Compatibility	2019/2022	
	RHEL Compatibility	8.x & 9.x & Higher versions	
	Other Latest Linux Flavours	Latest server operating versions of SUSE Linux, Ubuntu ,RHCOS/RedhatOpen Shift Container Platform	
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 Firmware support for updates, upgrades, patches, and bug fixes for supplied h/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. Proactive storage monitoring & 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**	3 USB3.0 port or higher and 1 VGA Port or higher	
15	**Serviceability**	Light path diagnostic LED or equivalent visual alerts	

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16	Security	Secure Boot, Disk encryption, TPM 2.0 (Trusted Platform Module), Hardware root of trust, malicious code free design.	
17	PCI Slots	Minimum 2 - PCIe Gen4 or higher slots(Peripheral Component Interconnect Express) - Type 1 Minimum 6 - PCIe Gen4 or higher slots(Peripheral Component Interconnect Express) - Type2 & Type3	
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 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. 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 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	

Below table to be consider for the above 500 servers minimum cabling requirement

Ethernet CAT6/7			
Length	DRC Qty	DC Qty	Cable Color
3M	84		RED/GREEN
5M	114	280	RED/GREEN
7M	162		RED/GREEN
10M	168	250	RED/GREEN
3M	42		orange color
5M	42		orange color
7M	42		orange color
10M	84		orange color

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15M	42	250	orange color

Table-G

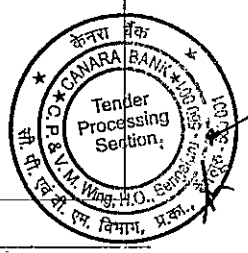
Storage Technical Specifications: (Object Storage 2.0PB Usable Space: DC -1, DRC -1)

Sl. No.	Particulars	Detailed Configuration	Bidder's Compliance (Yes/No)
1.	Make	Bidders to specify	
2.	Model	Bidders to specify	
3.	Form Factor	Bidders to specify	
4.	Power Factor	Bidder to specify	

5.	Architecture	Controllers shall be active-active so that all volumes are automatically load balanced without needing administrative intervention for manual balancing of workloads/volumes. Connectivity -Object interface would be scalable S3. its architecture shall include the following: o S3-Server: S3 API Server for Buckets/Objects and more o Scale-Out "any-to-any" access o Security model S3-Bucket: Security service for Accounts a. Multi-tenant, Support for S3 IAM - Identity and Access Management. b. Bucket & Object ACLs o S3-Metadata: Distributed Metadata Engine o S3 Object Lock o Transparent Bucket-Level At-REST Encryption o S3 Console: GUI Web interface to manage accounts, users, policy and monitor usage. o S3 Browser: GUI Web interface to create buckets and upload objects. o Quota for S3. Connectivity -File Interface o Capability to write simultaneously to the same folder from different file connectors (folder scale out). o Seamless load balancing and failover among the file connectors. o Federated Access "Single Sign On" to S3 Connector. o Compatible with LDAP, Active Directory and Kerberos. o Volume protection feature (can't modify/delete files once written to the volume). o Quota for file. o Supports mixed environment Windows & Linux. o Built in load balancing	
6.	Type	Near Line Drives & SSD Disk for meta handling	
7.	Memory & Cache	Minimum 64 GB per controller/node	
8.	Capacity	Minimum usable storage 2 PB after erasure coding/industry standard applicable disk redundancy	
9.	Drives	2.5" to 3.5" drives	

10.	Hard Disk Capacity	Each hard disk Capacity should not be less than 15 TB	
11.	Scalability	Up to 10PB with scale out architecture. The cluster scales by adding additional nodes without sacrificing performance, which allows a more cost-effective linear storage expansion than fork-lift upgrades. New Nodes & Failed nodes and disks can be swapped out without downtime.	
12.	Performance	object stores can provide high sequential throughput performance, which makes them great for streaming large files. Also, object storage services help eliminate networking limitations. Files can be streamed in parallel over multiple pipes, boosting usable bandwidth	
13.	Disk and Node Redundancy	The proposed storage should support erasure coding to protect against atleast 3 or more drive /Node failures concurrently. The Proposed storage should be able to add disks/Nodes and automatically balance the data across all the nodes.	
14.	Encryption	should have native encryption capabilities as per PCI DSS standards and encryption should not add any performance overheads	
15.	Backup	During power failure, Data in the cache should be safely written to the disks prior to performing a graceful shutdown. Data loss in storage should be zero due to any issues noticed in the Datacenter or any natural calamities.	
16.	Services	Proposed storage array should include storage based compression, storage to storage replication for the entire supported capacity of the storage array from day one. All the required or necessary licenses must be perpetual and provided for the Full capacity of each storage from Day one. This should include licenses for Management and monitoring module and all the storage features such as Replication etc. Upgrade in capacity should not incur any additional license cost. Offered storage system have online and historical performance reporting capability. Offered storage system have online and historical performance reporting capability. At least 1 year of historical performance information should be available online for capacity and performance	

		forecasting, trend analysis etc. In case this capability is not available natively, then necessary software subscription shall be provided for the entire duration of the contract.	
17.	Protocol Support	HTTPS, ,RESTAPIs,FTP, S3 Protocol & all kinds of rest full APIs. Vendor shall configure the licenses all interfaces All above protocol shall be native to cluster and shall not require any additional gateway. Vendor can provision additional gateway if required from performance perspective but capability shall be native to main nodes only.	
18.	Operating System Support	Support for multiple Operating Systems versions connecting to it, including but not restricted to Windows 2019,2022 or later, UNIX (AIX & Solaris & HP Unix), Linux (Red hat, SUSE & OEL), Red Hat OpenShift Container Platform Plus, Hypervisor (vSphere, Hyper V, red hat virtualization, Oracle virtualization) Support for multiple hardware environment but not limited to X86 machines and IBM power machines	
19.	Ports	Minimum 4 Number of 10/25 Gigabit for IP Traffic per node and Minimum 2 Number of 10/25 Gbps for Replication (Network). Minimum Two Management Ports of 1Gbps	
20.	Warranty and Support	3 Years, Comprehensive, On-Site Support Warranty with 2 years AMC 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. In case of Disk failure, the faulty disk will be destroyed/ degaussed on replacement. Proactive storage monitoring & 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 during the warranty period.	
21.	Other Features	The proposed storage system should support SNMP, Address resolution protocol, Network Time Protocol, LDAP. The Storage array should be licensed with Performance monitoring tools should be offered with the storage array.	



		The proposed storage system shall support a browser based GUI built in management. All objects stored in Object Storage have a URL. All objects have their own metadata. Developers interact with the object storage system through a RESTful HTTP API. Object data can be located anywhere in the cluster. Backup & Recovery: Data backup and recovery rely on accessible and reliable storage. Object-based storage provides the infrastructure for secure data backup and efficient recovery procedures. There shall be no separate and dedicated control node or metadata node in the cluster. In case, nodes are separate then vendor shall over Metadata / control nodes in HA using active / active approach. Offered solution shall be completely redundant and there shall be no single point of failure. Offered solution shall have file integrity checking when reading the file and automatic rebuilt if an error is detected.	
22.	Uptime	The storage should be able to provide availability parameter of 99.99% from the date of acceptance of the Storage by Bank	
23.	Power Supply	Storage should be provided with Redundant hot swappable Power supplies. The Power supplies should be FCC class A certified.	
24.	No Single point of Failure	Offered Storage Array should be based on a No Single Point of Failure (NSPOF) architecture with complete redundancy of controllers, power, cooling, etc.	
25.	Global Hot Spare	Offered Storage Array shall support distributed Global hot Spare capacity for offered Disk drives.	
26.	Software	Management software must include both GUI and CLI tools. Management of the storage system should be through single management tool. The GUI must be able to configure all features, monitor the status and health of the storage system. If licensed, separately, the vendor needs to provide necessary licenses for full capacity. Vendor should provide storage array management software for configuration, administration and monitoring. Vendor shall offer the enterprise version of the	

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		software if there are multiple versions of the software. Software shall be able to manage all arrays of the same family. The performance monitoring should be real-time and historical providing IOPS response time and utilization of individual components within the storage array. Log Maintenance facility should be available. Storage should be compatible to integrate with Bank monitoring tool	
27.	Remote Replication	2-way replication with zero data loss	
28.	End of Sale & End of Support	The proposed Hardware and Software generation should be latest from the date of RFP submission and the proposed Hardware and Software should not become End of Sales for Three years from the date of delivery of hardware & End of support for 6 years from the date of delivery of hardware	
29.	Controller & Availability	Minimum four controllers are required to provide 2.0PB usable space, hot swappable controllers for high availability, load balancing and redundant modes. Minimum 20 core should be available per controller Offered Storage array should be an enterprise class storage system with 100% Data Availability guarantee.	
30.	Data Management Features	1. it shall be possible to tag and search S3 Metadata. 2. Lifecycle Management - It shall be possible to automatically transition and expiration of data based on criteria. 3. it shall be possible to asynchronously replicate/copy bucket to several Cloud targets 4. Offered storage shall support multi-tenancy and data isolation	
31.	Ease of USE	1. Offered storage shall have full management and control with Supervisor and CLI • Powerful graphing capabilities & dashboards and Graphical Usage Monitoring • Auditing capabilities. • REST APIs For monitoring & management 2. Offered storage shall support role Based Access Control (RBAC)	

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32.	Compliance	1. Offered storage shall ensure that Data must be tamper-proof. 2. Data must be kept for a specified period which means offered storage shall provide retention mechanism. 3. Offered storage shall have capability to migrate the data to an alternative media like tapes or any another cloud/on premises object storage.	
33.	Simplifying operations and management	The proposed Hardware and Software generation should be latest from the date of RFP submission and the proposed Hardware and Software should not become End of Sales for Three years from the date of delivery of hardware & End of support for 6 years from the date of delivery of hardware Offered storage shall be have Simplified Operations & Management and shall provide: • Software Upgrades, Server replacements, or Capacity Extensions don't stop the system • Automated disk failure detection • Automatically rebuild for failed drive • Automated storage rebalancing • Disk replacement utility • Easily add servers or hard drives in the server • The system shall automatically rebuild the missing data in case of a hardware component failure.	
34.	Multi-cloud	1. Offered storage shall provide the following features: • Shall Support writing data to any Cloud (Amazon S3, Google Cloud Storage, Microsoft Azure, Wasabi) via a single S3 API. • Shall have Open-Source interface allows developers to quickly test compatibility. • Shall Preserves native format of the data on any Cloud for providing the ability to read data directly on the public Clouds. • Shall support Replicating one to many so that a given bucket can be replicated/copied to several private and public Cloud targets. • Shall support Lifecycle data to any Cloud for automatic transition and expiration of data based on criteria. • Shall support Out of band updates especially when data is directly updated on the public cloud, related metadata information is synchronized to the multi-cloud controller. • Shall have GUI Web interface to manage multi-	

		cloud environment. 2. In case vendor doesn't support above features natively then vendor shall provision the complete cloud automation suite in their bid and shall provide the complete documentation in the bid.	
35.	Node failures	Object storage should withstand minimum two node or 25% percent of total node (whichever is higher) failures without data loss.	
36.	Disk Failures	Object storage should withstand minimum four disk failures without data loss.	
37.	Cables	Necessary compatible power, network, fiber cables with required length to be supplied along with storage.	
38.	Core technology - Object	1. Offered Object storage core technology shall be able to abstract the underlying servers, to create a uniformly scalable storage pool 2. There shall be No size limit for object or files which can be stored in the cluster. 3. Offered storage shall do automatic Rebalancing when adding a new server in the cluster 4. Offered storage shall allow capacity extensions done by adding disks to existing servers (scale-up) or adding additional servers to the system (scale-out).	
39.	Peer to peer connectivity	1. Any change in the connecting topology, like adding the nodes, shall broadcast the change to few/all nodes in the cluster. 2. Overall cluster shall provide the self-healing processes to monitor and automatically resolve component failures using re-build, proxy and rebalance aspects.	

Table-H

Storage Technical Specifications: (Enterprise Block Storage 2.0PB Usable Space: DC -2, DRC - 2)

Sl. No.	Particulars	Detailed Configuration	Bidder's Compliance (Yes/No)
1.	Make	Bidders to specify	
2.	Model	Bidders to specify	
3.	Form Factor	Bidders to specify	

4.	Power Factor	Bidder to specify	
5.	Architecture	Controllers shall be active-active so that all volumes are automatically load balanced without needing administrative intervention for manual balancing of workloads/volumes.	
6.	Type	NVMe based SSD	
7.	Memory & Cache	Minimum 512 GB Cache per controller , Cache should be dynamically allocated for reads and writes without any fixed allocation.	
8.	Capacity	Minimum usable storage 2 PB after RAID6 or Dual RAID6 Configuration. (Without considering any data reduction features such as compression, deduplication etc .)	
9.	Drives	2.5" to 3.5" drives	
10.	Hard Disk Capacity	Each hard disk Capacity should not be less than 15 TB and not more than 20 TB	
11.	Scalability	Each storage up to 4PB(Scale UP) and 4 Controllers (Scale Out) DIP(data in-place) upgrade capability	
12.	Performance	Capable of delivering sustained minimum 10GB/s throughput and 5,00,000 IOPS in (read: write) (70:30) ratio with microsecond response time. Taking the 16kb block size into consideration for above throughput.	
13.	RAID Support	RAID array supporting raid6/Dual raid / better levels. It should support a mix and match of RAID levels behind a pair of controllers. The storage array should allow online expansion of existing RAID Groups / Storage Disk Pools.	
14.	Encryption	should have native encryption capabilities as per PCI DSS standards and encryption should not add any performance overheads	
15.	Backup	During power failure, Data in the cache should be safely written to the disks prior to performing a graceful shutdown. Data loss in storage should be zero due to any issues noticed in the Datacenter or any natural calamities.	
16.	Services	Proposed storage array should include storage based Thin Provisioning, compression, inline Deduplication Synchronous-Asynchronous Replication, Snapshot, and Volume cloning features for the entire supported capacity of the storage array from day one. All the required or necessary licenses must be perpetual and provided for the Full capacity of each storage from Day one. This should include licenses for Management and monitoring module and all the storage features such as Snapshot, Cloning, Sync and Async Replication etc. Upgrade in capacity should not	

		incur any additional license cost Offered Storage management console shall be able to manage multiple arrays from a single console is preferred. Management console shall provide following functionalities: Offered storage system have online and historical performance reporting capability. At least 1 year of historical performance information should be available online for capacity and performance forecasting, trend analysis etc. In case this capability is not available natively, then necessary	
		software subscription shall be provided for the entire duration of the contract.	
17.	Protocol Support	Fiber Channel & iSCSI	
18.	Operating System Support	Support for multiple Operating Systems versions connecting to it, including but not restricted to Windows 2019,2022 or later, UNIX (AIX & Solaris & HP Unix), Linux (Red hat, SUSE & OEL), Red Hat OpenShift Container Platform Plus, Hypervisor (vSphere, Hyper V, Red hat Virtualization, Oracle virtualization) Support for multiple hardware environment but not limited to X86 machines and IBM power machines	
19.	Ports	Minimum 16 number of FC Ports of 32/64 Gbps each (SAN), Minimum 4 Number of 10/25 Gbps for IP Traffic (iSCSI) and 2 Number of 10/25 Gbps for Replication (Network).Minimum two management Ports of 1Gbps. Storage should support FC-NVMe: 32Gb/s	
20.	Warranty and Support	3 Years, Comprehensive, On-Site Support Warranty and 2 years AMC 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. In case of Disk failure, the faulty disk will be destroyed/ degaussed on replacement. Proactive storage monitoring & 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 during the warranty and AMC period.	
21.	Other Features	The proposed storage system should support SNMP, Address resolution protocol, Network Time	

		Protocol, LDAP. The Storage array should be licensed and Performance monitoring tools should be offered with the storage array. The proposed storage system shall support a browser-based GUI built in management. The proposed storage should able to create multiple array pools so that same storage can be used for server virtualization and for database pools.	
22.	Uptime	The storage should be able to provide availability parameter of 99.99% from the date of acceptance of the Storage by Bank	
23.	Power Supply	Storage should be provided with Redundant hot swappable Power supplies. The Power supplies should be FCC class A certified.	
24.	No Single point of Failure	Offered Storage Array should be based on a No Single Point of Failure (NSPOF) architecture with complete redundancy of controllers, power, cooling, etc.	
25.	Global Hot Spare	Offered Storage Array shall support distributed Global hot Spare capacity for offered Disk drives.	
26.	Software	Management software must include both GUI and CLI tools. Management of the storage system should be through single management tool. The GUI must be able to configure all features, monitor the status and health of the storage system. If licensed, separately, the vendor needs to provide necessary licenses for full capacity. Vendor should provide storage array management software for configuration, administration and monitoring. Vendor shall offer the enterprise version of the software if there are multiple versions of the software. Software shall be able to manage all arrays of the same family. The performance monitoring should be real-time and historical providing IOPS response time and utilization of individual components within the storage array. Log Maintenance facility should be available. Storage should be compatible to integrate with Bank monitoring tool	
27.	Remote Replication	Offered Storage array should provide both Synchronous and Asynchronous replication across 2 storage arrays natively. Offered Storage array shall support 2 Data Center solution natively where Primary site shall be able to replicate synchronously to near-by / Bunker	

		location and at the same time shall be able to replicate to Far location asynchronously. Necessary replication licenses/Infrastructure required for replication should be provided with the array	
28.	End of Sale & End of Support	The proposed Hardware and Software generation should be latest from the date of RFP submission and the proposed Hardware and Software should not become End of Sales for Three years from the date of delivery of hardware & End of support for 6 years from the date of delivery of hardware	
29.	Controller & Availability	Storage should have minimum two active controllers, hot swappable controllers for high availability, load balancing and redundant modes. Offered Storage array should be an enterprise class storage system with 100 % Data Availability guarantee. The offered array should be an end-to-end NVMe storage system and capable of supporting NVMeoF over Fibre Channel for Hosts. Controllers shall be active-active so that all volumes are automatically load balanced without needing administrative intervention for manual balancing of workloads/volumes.	
30.	Quality of service	Offered storage array shall support quality of service for critical applications so that response time requirements can be defined for specific applications / LUNS. Quality of service feature should allow definition of minimum and maximum cap for required IOPS / bandwidth for a given volume or set of volumes.	
31.	Capacity Efficiency features	Offered storage array should support thin provisioning It should also support inline data reduction (deduplication & compression) for maximizing flash storage capacity The array should offer the flexibility to enable / disable the data reduction on a per-volume basis	

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32.	Snapshots / Point in time copies	The storage array should have support for controller-based snapshots (At-least 128 copies for a given volume). The snapshots should be capable of being designated either as Read Only or Read/Write as required	
33.	Multipathing	Multipathing across two controllers. Data path should work consistently on active-active and NOT in hot standby. All LUNs should have visibility through all controllers and data flow should happened through them.	

Table-I

Technical Specification of 27 server racks (19 Nos at DC - Single Phase, 8 Three Phase)

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 Single Phase with 63A Server rack mount power distribution unit 1Ph,230V,63A 50/60Hz with redundancy. PDU Three Phase with 32A Server rack mount power distribution unit 3Ph,440V,63A 50/60Hz with redundancy.	
4.	Form Factor	42 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 *2100mm (600mm - Width , 1200mm Depth , 2100mm Height)	
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 made available for each rack	
10.	Over load protection MCB	PDU rating approximate 14KVA per PDU for single phase with 63A (4 MCB) PDU rating approximate 22KVA per PDU for Three phase with 32A (6 MCB)	
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. Adjustable screw legs - 4 No.	

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		Rack filler to be provided upto half 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	Minimum Eight cable loops to be provided per rack for cable dressing	
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	

Table-J

Technical Specification of server racks (23 Nos with three phase 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 8KVA	
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 half 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	Minimum Eight cable loops to be provided per rack for cable dressing	
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	

Table-K

Technical Specification of Network TOR Switches

Sl. No.	DC and DRC Switch Technical Specification:	Compliance(Y/N)
A	Type 1 Switch - 14 numbers (07 numbers in DC and 07 numbers in DRC) - Mgmt.	
1.	Switch must have 48 Gig Ethernet ports and 2 x 10G SFP+ for uplink on single chassis.	
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, 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.	

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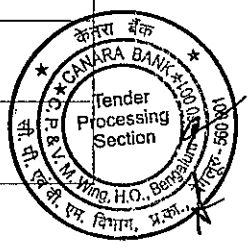
24.	The Switches must be supplied with Compatible Power cables for the PDU supplied with the rack.	
25.	The switch shall have management security features like SSHv2 / Secure copy, encrypted user passwords, and authentication via AAA and RADIUS / TACACS+ to prevent unauthorized management access"	
26.	Switch should have Custom banner display.	
27.	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.	
28.	24*7*365 days Technical support with response time of 30 minutes.	
29.	Four hours RMA support in case of any hardware failure.	
B.	**Type 2 Switch - 24 numbers (12 DC+ 12 DRC) for Data**	**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 48 fixed 10-G BASE-T ports	
3.	6 fixed 40/100-Gbps QSFP+ ports for uplink connectivity with fully populated trans receivers on single chassis.	
4.	48 downlink ports should be configured to work as 1 & 10Gbps.	
5.	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.	
6.	Switch throughput should be more than equal to 1 bpps.	
7.	Latency should be less than 2 microsecond.	
8.	Mac address table size should be equal to greater than 2 lakhs.	
9.	Switch should support more than 4000 Vlans.	
10.	Switch must be supplied with compatible Trans receiver for all Optical/Fiber ports and should be from same OEM.	
11.	Switch must have redundant Fan and Power Supply.	
12.	Switch should provide flexibility for 10GbE top-of-rack deployment.	
13.	Switch should have USB/Ethernet management interfaces.	
14.	Switch should be managed in an IPv6 network(IPv6 Device IP)	
15.	Switch should support Dual stack (IPv4 and IPv6) transitions from IPv4 to IPv6, support connectivity for both protocols	
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.	Router should support Simple Network Management Protocol (SNMPv2 and SNMPv3).	



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 integration for 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.	
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.	
35.	Four hours RMA support in case of any hardware failure.	
C.	**Type 4 Switch - 4 numbers (2 DC+ 2 DRC) - Storage**	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 48 x 25-Gbps fiber downlink ports and 6 x 100-Gbps Quad Small Form-Factor Pluggable 28 (QSFP28) uplink ports with fully populated trans receivers on single chassis.	
3.	48 downlink ports should be configured to work as 25 Gbps.	
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.	

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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).	
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	

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	core/distributed switches from day one with our existing infrastructure of Cisco/Juniper Datacenter router/switches.	
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.	
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	40	25
20M	15	
15M		25
10M	20	25

In addition to the above access switches Bidder to supply Distribution Switches in High availability with required capacity to connect all supplied access switches with dual uplink of 10/40/100 Gbps in active-active mode for redundancy and load sharing (DC - (MZ-2,DMZ-2, DRC - (MZ-2,DMZ-2)) , Also Distributed Switch must be supplied with compatible Transceiver for Fiber ports and should be from same OEM with redundant power supply

Table-L

Backup Software for 500 Servers at DC and DRC

Sl. No.	Detailed Configuration-Backup Software	Bidder's Compliance (Yes/No)
1.	Make - Bidders to specify	
2.	Backup Software version - Bidders to specify	
3.	Backup Management Solution should support backup of Physical, Virtual and Micro services (container) environments	
4.	Backup software should support agent/agentless backups of applications residing in VMs like SQL, Exchange, SharePoint, Oracle, etc. with non-staged granular recovery of all these applications. It should support crash consistent VM level backup for all other workloads	
5.	Backup software should be a Hardware Agnostic software and it should support snapshot integration with hypervisors like VMware and Hyper-V and support de-duplication on any storage target. It should be able to backup data to tapes (like LTO) as well for long term retention..	

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6.	The proposed Backup software must offer instance based licenses with no restrictions on type of arrays (protecting heterogeneous storage technologies), front end production capacity or backup to disk target capacity restrictions. Licenses and associated software should be supplied for both primary and DR site.	
7.	Required License should be supplied to protect virtual machines, physical servers, NAS workload, Endpoints and multi cloud workload including all database applications running on these platforms	
8.	Backup software should have Capability to do trend analysis for capacity planning of backup environment, extensive alerting and reporting with pre-configured and customizable formats. Any specialized reporting modules needed must be quoted along with associated hardware to achieve this functionality. All necessary hardware resources required to run this module should be supplied.	
9.	Proposed solution should support 24x7 real-time monitoring, with at-a-glance and drill-down views of backup items to check the backup status like backup size, backup files count, backup servers count, backup timings , number of times backed up etc.,	
10.	Backup software should provide Backup and Replication capabilities in one console only and also allow users to integrate with RBAC capabilities of the hypervisor, so that users can initiate backup and restore only those VMs to which they have access, without administrator intervention, thereby delivering self-serve capabilities.	
11.	Proposed solution should support automated action for popular alarms (automated or semi-automated), with at-a-glance and drill-down view (e.g., Backup failed alerts with details of its failure)	
12.	The proposed backup software should be capable to take backups on object storage.	
13.	The Proposed solution should not have any limitation on the number of incremental backups that could be taken post a Full backup.	
14.	Backup software should support instant file share recovery in NAS storages to allow users to access files fast after disaster. Backup software should support instant VM and NAS recoveries.	
15.	Proposed backup software should have the ability to perform staged restores to enable admins to comply to regulations by selectively deleting files / records which should not be restored from the backup copies. This will help in complying to "right to be forgotten "regulations like GDPR, where user data is deleted from restored backup copies in an auditable manner. Backup software should secure the system from eavesdropping of staged data as well as by prohibiting any deletions/modifications to backup copies.	

16.	Backup Software should be able to extend the backup repository to a public cloud service provider by moving older files to any S3 Compatible Object storage or Azure BLOB repositories. The Backup Software should support copying of data directly into all industrial standard object storages like ECS,HCP,SCALITY etc.,	
17.	The software must has the functionality to back up on-prem data directly into cloud repositories such as AWS S3 or Microsoft Blob.	
18.	The proposed backup software should have approval flow for any backup deletion.	
19.	The Proposed backup Software should support Syslog and Service Now integration.	
20.	Recovery verification should include bare metal restore of server from backup and should have capability to verify and validate the integrity of the data. Also publish automated reports to be used in backup / recovery audits.	
21.	Backup software should support Multi factor authentication for accessing Backup console and console auto log-off functionality.	
22.	The proposed backup software should have a native solution to protect Kubernetes/Container workloads; without the need of a 3rd party solution.	
23.	The proposed backup software should provide Instant recoveries for any backup to VMware or Hyper-V Virtual machine	
24.	Backup software must have a feature of data validation, whereby a workload (VM with OS and application) is powered-on in a sandbox environment and tested for its recoverability	
25.	Backup software should support file level recovery from any backup of any VM.	
26.	**Container Environment**	
	Offered backup solution should support/ open integration multiple kubernetes distributions including RHOS, VMware Tanzu, SUSE Rancher, Ezmeral Runtime etc.	
27.	Proposed backup software should be scalable to any number of worker nodes	
28.	Backup software should have the ability to take application consistent backup at granular level for micro-services	
29.	It should support integration with relational and no-sql databases.	
30.	Proposed software should have cloud storage integration	
31.	Proposed solution have role base access control on the backup server	
32.	The offered solution should support policy based backup architecture with calendar/frequency based scheduling.	
33.	Should preferably support auto-discovery of applications needing protection and provide alerting capability	
34.	Should support CSI integration and leverage underlying storage capabilities such as snapshots and replication of leading storage	

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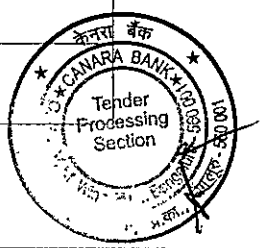
	vendors including Dell EMC, HPE, Hitachi etc. Compatibility list to be provided	
35.	The proposed Backup software should protect from ransomeware attacks	
36.	Should provide both GUI (dashboard) access as well as CLI using kubectl APIs.	
37.	Should support multiple independent k8s clusters	
38.	Backup software should support immutable backups for protecting backups from ransomware and malicious attacks. The immutability should be controllable from the backup management specification itself.	
39.	The backup software should have native storage integrations with all leading Storage platforms from Dell EMC, HPE, IBM, Hitachi, Netapp etc.	
40.	The backup software should support multiple types of backup repositories including Purpose built backup alliances, S3 Object Storage, Hardened NFS repositories etc. Compatibility list to be provided.	
41.	Backup software should be compatible with backup target types - VTL & NAS (NFS & CIFS).	
42.	Backup software shall have the ability to configure multiple Tape Libraries & NAS targets.	
43.	The proposed Software generation should be latest version the date of RFP submission and the proposed Software should not become End of Sales for three years from the date of the submission of the RFP and End of Life for 6 years from the date of the submission of the RFP	

Table-M

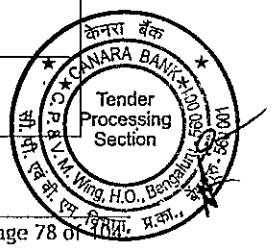
Technical Specification of Managed file transfer Solution:

Sl. No.	Detailed Specification	Compliance(Y/N)
1.	The proposed solution should be On-Premise deployment in three tier architecture DMZ secure gateway that allows files to be shared without being stored in the DMZ. The Gateway should be coordinate with the MFT to exchange secure data with the external SFTP Client	
2.	The proposed solution must centrally manage all file transfers in a secure manner.	
3.	The MFT solution should support FTP, FTP/S, SSH/SFTP, SSH/SCP, HTPPS and should have capability to support, AS1,AS2,AS3 etc. for future requirements.	
4.	The proposed solution should provide strong file encryption mechanism to encrypt data at rest and in transit	
5.	The solution should also provide a Web browser-based interface that enables users to upload/download files.	

6.	Users should view recent activity and status for file transfers they participated in, Generate reports for activity they participated in, Change their password, Subscribe to notifications.	
7.	The proposed solution should be able to support multiple file transfer job simultaneously	
8.	The proposed solution should provide a mechanism to allow external and internal entities to participate in file transfers within the same centralized server system.	
9.	The proposed solution should support automated file transfer job.	
10.	The proposed solution should be capable of sending alerts for failed task job to respective job owner	
11.	The software should support predefining the business processes for common behaviors in file-transfer scenarios, reducing the need for customization	
12.	The proposed solution should allow downloading a file multiple times.	
13.	The proposed solution should be able to restrict the file transfer based on file extension, IP, file size, header body parameter validation.	
14.	The proposed solution should support manual intervention of file retention timelines, business process retentions.	
15.	The proposed solution should provide inbuilt authentication options, including IP address, user ID and password, digital certificates, SSH keys.	
16.	The proposed solution should have mechanism to configure different password policies for external entities within the same solution	
17.	All SFTP users passwords should have option to change their password on their own as and when needed or when password expires as per policy	
18.	The proposed solution should have time based access control for external entities	
19.	The proposed solution should be able to provide successful access audit, failed access, configuration change logs, end to end transaction monitoring and troubleshooting.	
20.	The proposed solution should be able to allow blacklisting of IP's basis region, Set of IP's	
21.	The proposed solution should have capability to keep transaction/log data separate from the file system data. It should have also capability to store file system, transaction DB on the cloud.	
22.	The proposed solution should be able to terminate the session while the user is inactive for predefined time.	



23.	The proposed solution should prevent direct communications between external and internal sessions by establishing secure session breaks in the DMZ using SSL or TLS encryption	
24.	The proposed solution should support configuring data retention policy for at least 6 months.	
25.	The software should allow to automate purge or archive files.	
26.	The proposed solution should have support of Peer to Peer (Point to Point) deployments	
27.	The proposed solution should support all major industry operating systems (Windows, Linux, AIX, Solaris) and hardware (X-86 & Power, IBM Z, HP-UX)	
28.	The proposed solutions should allow addition of infrastructure/hardware to support higher usage for future requirement.	
29.	The proposed solution should provide embedded database and should also support and option to deploy it on oracle DB.	
30.	The proposed solution should have a separate dashboard to monitor real time file transfer jobs, alerts, warnings.	
31.	The proposed solution should provide proactive notification for at-risk business processes in the form of emails, SNMP traps, and alerts	
32.	The proposed solution should allow to configure email to send schedule compliance reports.	
33.	The proposed solution should be support MFA (Multi Factor Authentication) solution.	
34.	The Proposed solution should have inbuilt mechanism to validate external entities in the DMZ using multiple authentication mechanism before they enter the green zone	
35.	The proposed solution should support high available architecture/deployments link Active-Active, Active-Passive.	
36.	The proposed solution should not restrict adding user as and when required.	
37.	The solution should support oracle DB or equivalent for transactional/ logs as well as file system database.	
38.	The solution should support deploying HA at DR and DC-DR architecture	
39.	The proposed solution should support sending file in encryption form and should have an option receive it encrypted or decrypted at the destination.	
40.	The proposed solution should allow user to send a file to multiple users in different protocols at a same time.	
41.	The solution should provide option to integrate with existing antivirus to scan file before it enters internal/ green zone.	
42.	Application should have a capability to transfer file at multiple locations at the same time.	
43.	Required license to run in active- active setup and for entire solution of total 16 coreto be supplied.	



44.	The solution should possess the capability to seamlessly integrate with Active Directory	
45.	The solution should support sharing of files with all file extensions and sizes, ensuring versatility and flexibility for users' needs.	
46.	The solution should possess the capability to create shared folders for each group, department, or team, with customizable access levels and storage size restrictions.	
47.	Users should have the ability to securely send files to recipients by generating a link and then emailing the link to the intended receiver.	
48.	The solution should be capable of supporting both on-premises and cloud storage repositories, offering flexibility and compatibility with various storage environments. The solution should support any brand and models of storage and hardware.	
49.	The solution should support automated data cleanup based on specified criteria such as number of days.	
50.	The solution should include comprehensive audit logging capabilities, capturing all activities such as data upload, share, download, cut, copy, paste, and rename. These logs must be stored in a non-tamperable format to ensure the integrity and reliability of the recorded information for compliance and security purposes.	
51.	The solution should allow for customizable validity periods for shared links based on specific dates and times. This feature enables administrators or users to set expiration dates and times for shared links, ensuring that access is limited to the desired timeframe.	
52.	The solution should offer command-line support, enabling seamless integration with external workflows and automation processes.	

Table-N

Technical Specifications of 4 SAN Director (2 Nos at DC and 2 Nos at DR)

Sl. No.	Detailed Configuration	Specification	Bidder's compliance (Yes/No)
1.	Bidder to specify make		
2.	Bidder to specify model		
3.	Bidder to specify form factor		
4.	Bidder to specify the power factor		
5.	SAN Director should be configured with minimum 3Blades*48 ports= 144 FC SAN ports with populated 32Gbps SFP Transceiver Modules and should be negotiable speed		

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	with 16/32 Gbps. SAN Director should support 64GBps trans receiver compatibility for future upgrade		
6.	Scalable further with 48 port 5 blades =240 FC SAN ports.		
7.	SAN director should have Dual Controllers		
8.	The switch should have 3Tbps BW per port blade providing line rate performance with 64G Line card in every Slot.		
9.	The switch should support 512 Gbps BW for ISL Trunking Necessary Licenses to be provided by the bidder.		
10.	The switch should auto-negotiate with 64/32/16 Gbps FC speed		
11.	Switch should support multiprotocol architecture such as FC, FICON, FCIP and FCR		
	Support for multiple Operating Systems versions connecting to it, including but not restricted to Windows 2016 or later, UNIX (AIX & Solaris & HP Unix), Linux (Red hat, SUSE & OEL), Hypervisor (vSphere, Hyper V , Red hat Virtualization, Oracle virtualization & Nutanix),RHCOS. Support for multiple hardware environment but not limited to X86 machines and IBM power machines		
12.	Maintenance:		
13.	Warranty and Support	3 Years, Comprehensive, On-Site Support Warranty and 2 Year AMC 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. The proposed bidder will need to ensure support of product & change of components @ zero cost in case of any part becoming obsolete/EOL &	

		EOS during the warranty and AMC period.	
14.	Uptime	The SAN Switch should be able to provide availability parameter of 99.90 % from the date of acceptance of the Storage by Bank	
15.	Power Supply	SAN Switch should be provided with Redundant hot swappable Power supplies. The Power supplies should be FCC class A certified	
16.	Cables	Necessary compatible power, network, Fiber cables with required length to be supplied along with storage.	
17.	Throughput	The aggregate backplane bandwidth of switch should be scalable more than 24Tbps of Fiber channel throughput for fully populated director	
18.	No Single point of Failure	The switch should have No Single Point of Failure (SPOF) and all the components should be hot swappable without even scheduled down time.	
19.	Monitoring	The switch should have Real time performance monitoring reporting tool	
20.	Diagnostics	The switch should have support for POST & online diagnostics	
21.	Other Features		
		The switch should have capability to interface with host based adapters (HBA) of multiple OEM, supporting multiple Operating Systems	
		The switch should have support of all leading SAN / NAS disk arrays and tape libraries	
		The switch should have Inter Switch linking feature to connect two or more FC switches	
		The switch should have trunking capability. The required software license	

		should be supplied with switch	
		The switch should Provide Adaptive Networking services such as Quality of Service (QoS)	
		The switch should have high availability feature with no performance degradation of switching operation even when one of the processor card fails	
		The Switch should have Analytics and telemetry capabilities within the Switch	
		The Information generated by SAN Analytics should include at least counters and indicators related to latency, completion time, Outstanding I/Os, I/O block size etc.	
		The solution should be used to monitor storage traffic patterns for extended durations. This information should be used to profile the applications for their storage needs. Recommendation based on storage traffic patterns of the same application to other virtual machines or hosts should be provided for future expansion	
		The Analytics solution should provide performance metrics of the available LUNs to enhance the storage provisioning	
		The solution should have auditability It should be able to generate multiple performance and error metrics for the complete storage fabric using a holistic approach to perform audits in the storage infrastructure.	
		The Information generated by SAN Analytics should include	

		at least counters and indicators related to latency, completion time, Outstanding I/O's, I/O block size etc.	
		FCIP interface should have compression feature	
		SAN Switches should support NVME/ NVME-oF	
		All the ports shall be activated on day one and all necessary licenses and SFP shall be provided	
		The Switches should be IPv4/IPv6 Compliant	
		Any SAN Switch level configuration required for integration of the storage with any new applications in future to be carried out by the bidder during implementation and warranty and AMC period with no extra cost (as many times as may be required)	
		The switch should have following security features	
		Must have hardware & Software zoning	
		Centralized fabric management	
		Authentication protocol	
		RADIUS, SSH, SNMP	
		Port binding	
		The switch should support offline diagnostics, including electrical/optical loopback, link traffic/latency/distance including environmental monitoring, FCping and Pathinfo (FC traceroute), 256 bit encryption, compression, frame viewer, non-disruptive daemon restart, port mirroring	
		Switch should provide advanced zoning capabilities and allow health and performance monitoring	

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		capabilities. Support for web based management and should also support CLI	
		The director class switch should provide Inter Switch Link (ISL) for connecting multiple SAN Switches.	
		The director class switch should support non-disruptive Microcode/ firmware Upgrades and hot code activation.	
		It should be possible to isolate the high bandwidth data flows traffic to specific ISLs/trunks by simply using Zoning.	
		Switch should support Virtual Fabrics feature that enables partitioning of a physical SAN, into logical fabrics and isolation by application, business group, customer, or traffic type.	
		Switch should provide advanced zoning capabilities and allow health and performance monitoring capabilities. Support for web based management and should also support CLI.	
		Should support features such as Quality of Service (QoS) to help optimize application performance in consolidated, virtual environments. It should be possible to define high, medium and low priority QOS zones to expedite high-priority traffic.	
		It shall be possible to configure the switches with alerts based on threshold values for temperature, fan status, Power supply status, port status.	

		Switch shall support diagnostics features such as port mirroring, Syslog, Online system health, Port-level statistics etc.	
22.	Port Types	The switch shall support different port types such as U_Port, , F_Port, E_Port, SIM port, EX_Port, D_Port (Diagnostic Port) & M_Port (Mirror Port)	
23.	Firmware Upgrades	The director class switch should support non-disruptive Microcode/ firmware Upgrades and hot code activation.	

Table-O

Technical Specifications of 10 SAN Switch (6 Nos at DC and 4 Nos at DR)

Sl. No.	Detailed Configuration	Specification	Bidder's compliance (yes/No)
1.	Bidder to specify make		
2.	Bidder to specify model		
3.	Bidder to specify form factor		
4.	Bidder to specify the power factor		
5.	SAN Switch should be configured with minimum 96 FC SAN ports with populated 32Gbps SFP Transceiver Modules and should be negotiable speed with 16/32 Gbps- (DC -4, DR -4). SAN Switch should be configured with minimum 48 FC SAN ports with populated 32Gbps SFP Transceiver Modules out of which it should contain 8 longwave sfps in each switch and it should be negotiable speed with 16/32 Gbps - (DC - 2) ISL Trunking connectivity and Cut Thru/Store Forward Switching. Necessary Licenses to be provided by the bidder. SAN Switch should support 64GBps trans receiver compatibility for future upgrade		

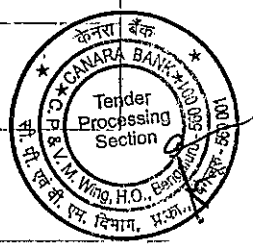
6.	Operating System Support	Support for multiple Operating Systems versions connecting to it, including but not restricted to Windows 2016 or later, UNIX (AIX & Solaris & HP Unix), Linux (Redhat, SUSE & OEL), Hypervisor (vSphere, Hyper V, Redhat Virtualization, Oracle virtualization & Nutanix), RHCOS. Support for multiple hardware environment but not limited to X86 machines and IBM power machines	
7.	Maintenance	Should Support online upgrade of firmware and other components.	
8.	Warranty and Support	3 Years, Comprehensive, On-Site Support Warranty and 2 Year AMC 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. The proposed bidder will need to ensure support of product & change of components @ zero cost in case of any part becoming obsolete/EOL & EOS during the warranty and AMC period.	
9.	Uptime	The SAN Switch should be able to provide availability parameter of 99.90 % from the date of acceptance of the Storage by Bank	
10.	Power Supply	SAN Switch should be provided with Redundant hot swappable Power supplies. The Power supplies should be FCC class A certified.	
11.	Cables	Necessary compatible power, network, Fiber cables with required length to be supplied along with storage.	
12.	No Single point of Failure	The switch should have No Single Point of Failure (SPOF) and all the components should be hot swappable without even scheduled down time.	

Table-P

Technical Specifications of 2 LTO9 Tape Library (1 Nos at DC and 1Nos at DR) and 200 LTO7 & 3800 LTO8 & 800 LTO9 Tapes & 200 No. of LTO9 Cleaning Cartridge

Sl. No.	Detailed Configuration	Specification	Bidder's Compliance (Yes/No)
1.	Bidder to specify make		

2.	Bidder to specify model		
3.	Bidder to specify form factor		
4.	Bidder to specify power factor		
5.	Tape Drive	Minimum 40 LTO-9 Drive with FC Connectivity to support 8Gbps or more.	
6.	Free Slots	Minimum 250 Free tape slots should be available in library to accommodate the tapes.	
7.	Cables	Necessary OM3/OM4 FC cables of length 15 meters	
8.	LTO7 & LTO 8 & LTO 9 Tapes Up to LTO 9 Cleaning cartridges	3800 quantities (1900 DC & 1900 DRC) of LTO-8 standard tapes with custom Bar Codes compatible with the proposed Tape Library. 800 quantities (400 DC & 400 DRC) of LTO-9 standard tapes with custom Bar Codes compatible with the proposed Tape Library. 200 quantities (100 DC & 100 DRC) of LTO-7 standard tapes with custom Bar Codes.	
		200 quantities (100 DC & 100 DRC) up to LTO9 Cleaning Cartridge with custom Bar Codes. Tapes replacement warranty for defects in manufacturing and material defects for the full life of the product, or until end of support of the product	
9.	Warranty and Support	3 Years, Comprehensive, On-Site Support Warranty and 2 Years AMC 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. The proposed bidder will need to ensure support of product & change of components @ zero cost in case of any part becoming obsolete/EOL & EOS during the warranty and AMC period.	
10.	Uptime	The storage should be able to provide availability parameter of 99.0 % from the date of acceptance of the Storage by Bank	
11.	Power Supply	Storage should be provided with Redundant hot swappable Power supplies. The Power supplies should be FCC class A certified.	



12.	Cables	Necessary compatible power, network, fiber cables with required length to be supplied along with storage.	

Table-Q

Technical Specifications of 2 LTO9 standalone Tape Drive (1 DC and 1 DRC)

Sl. No.	Detailed Configuration	Specification	Bidder's Compliance
1.	Bidder to specify make		
2.	Bidder to specify model		
3.	Bidder to specify form factor		
4.	Bidder to specify power factor		
5.	Tape Drive	Minimum 8 Slots Autoloader with LTO9 FC drive to support 8Gbps or more	
6.	Cables	Necessary OM3/OM4 FC cables of length 15 meters	
7.	Warranty and Support	3 Years, Comprehensive, On-Site Support Warranty and 2 Years AMC 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. The proposed bidder will need to ensure support of product & change of components @ zero cost in case of any part becoming obsolete/EOL & EOS during the warranty and AMC period.	
8.	Cables	Necessary compatible power, network, fiber cables with required length to be supplied along with storage.	

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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Annexure-16
Bill of Material

SUB: Supply, Installation, Configuration, Implementation and Maintenance of 500 Nos. of Servers and other IT Infra Components in Canara Bank

Ref: GEM/2024/B/4915191 dated 04/05/2024.

Notes

1. These details should be on the letter head of Bidder and each & every page should be signed by an Authorized Signatory with Name and Seal of the Company.
2. Please be guided by RFP terms, subsequent amendments and replies to pre-bid queries (if any) while quoting.
3. Do not change the structure of the format nor add any extra items.
4. No counter condition/assumption in response to commercial bid will be accepted. Bank has a right to reject such bid.

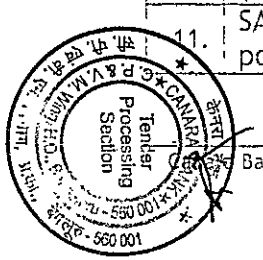
Table - A
Price details of Hardware Items

[Amount in Indian Rupees]

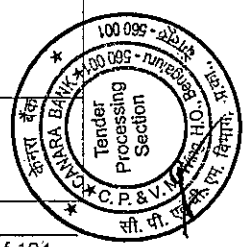
Sl. No.	Item Details	Unit Price with Three years Comprehensive onsite warranty and support (Excl. of Taxes)	Qty.	Total Cost Price with Three years Comprehensive onsite warranty and support (Excl. of Taxes)	Tax for Column c		Total Cost Price with Three years Comprehensive onsite warranty and support (Incl. of Taxes)
					% of Tax	Tax Amt.	
		a	b	c=a*b	d	e	f=c+e
1.	Servers With 64 core and 2 TB Memory and Minimum 3.5 TB SSD usable space Local Disk with RAID 10 and minimum 900GB SSD usable space local Disk with RAID1 as mentioned in Tech Spec (Amended Annexure-9)		80				
2.	Servers With 64 core and 512 GB Memory and 3.5 TB SSD usable space Local Disk with RAID 10 as		28				

Sl. No.	Item Details	Unit Price with Three years Comprehensive onsite warranty and support (Excl. of Taxes)	Qty.	Total Cost Price with Three years Comprehensive onsite warranty and support (Excl. of Taxes)	Tax for Column c		Total Cost Price with Three years Comprehensive onsite warranty and support (Incl. of Taxes)
					% of Tax	Tax Amt.	
		a	b	c=a*b	d	e	f=c+e
	and minimum 900GB SSD usable space local Disk with RAID1 as mentioned in Tech Spec (Amended Annexure-9)						
3.	Servers With 32 core and 1 TB Memory and 3.5 TB SSD usable space Local Disk with RAID 10 and minimum 900GB SSD usable sace local Disk with RAID1 as mentioned in Tech Spec (Annexure-9)		100				
4.	Servers With 32 core and 256GB Memory and 3.5 TB SSD Local Disk with RAID 10 and minimum 900GB SSD usable space local Disk with RAID1 as mentioned in Tech Spec (Annexure-9)		54				
5.	Servers with 16 core and 512GB Memory and 3.5 TB SSD usable space Local Disk with RAID 1 and minimum 900GB SSD usable space local Disk with RAID1 as mentioned in Tech Spec (Annexure-9)		226				
6.	Servers With 16 core and 256GB Memory and 3.5 TB SSD usable space Local Disk with RAID 1 and minimum 900GB SSD usable space		4				

Sl. No.	Item Details	Unit Price with Three years Comprehensive onsite warranty and support (Excl. of Taxes)	Qty.	Total Cost Price with Three years Comprehensive onsite warranty and support (Excl. of Taxes)	Tax for Column c		Total Cost Price with Three years Comprehensive onsite warranty and support (Incl. of Taxes)
					% of Tax	Tax Amt.	
		a	b	c=a*b	d	e	f=c+e
	local Disk with RAID1 as mentioned in Tech Spec (Annexure-9)						
7.	Servers With 32 core and 1 TB Memory and 7.5 TB NVME SSD usable Local Disk with RAID 10 and minimum 900GB SSD usable space local Disk with RAID1 as mentioned in Tech Spec (Annexure-9)		4				
8.	Servers With 32 core and 1 TB Memory and 34 TB NVME SSD usable Local Disk with RAID 10 and minimum 900GB SSD usable space local Disk with RAID1 as mentioned in Tech Spec (Annexure-9)		4				
9.	Server Rack for placing Servers, storage, Library and SAN and Network switches and as per Technical Specification (Annexure-9)		50				
10.	PDU for the supplied RACKS and as per Technical Specification (Annexure-9)		100				
11.	SAN Director (48*3=144 FC SAN ports with 16&32Gbps SFP) and as		4				



Sl. No.	Item Details	Unit Price with Three years Comprehensive onsite warranty and support (Excl. of Taxes)	Qty.	Total Cost Price with Three years Comprehensive onsite warranty and support (Excl. of Taxes)	Tax for Column c		Total Cost Price with Three years Comprehensive onsite warranty and support (Incl. of Taxes)
					% of Tax	Tax Amt.	
		a	b	c=a*b	d	e	f=c+e
	per Technical Specification (Annexure-9)						
12.	SAN Switches (32G SAN with 96 port) Switch and as per Technical Specification (Annexure-9)		8				
13.	SAN Switches (32G SAN with 48 port) Switch and as per Technical Specification (Annexure-9)		2				
14.	Object Storage of 2.0PB Usable Space and as per Technical Specification (Annexure-9)		2				
15.	Enterprise Block Storage of 2.0PB Usable Space and as per Technical Specification (Annexure-9)		4				
16.	Tape Library with 40 Tape Drives and 250 Free slots and as per Technical Specification (Annexure-9)		2				
17.	LTO-9 Stand Alone Tape Drive and as per Technical Specification (Annexure-9)		2				
18.	48 Gig Ethernet ports and 2 x 10G SFP+ for uplink on single chassis TOR Switch as per Technical Specification (Annexure-9)		14				
19.	48 fixed 10-G BASE-T ports and 6 fixed 40/100-Gbps QSFP+ ports for uplink with fully populated		24				



Sl. No.	Item Details	Unit Price with Three years Comprehensive onsite warranty and support (Excl. of Taxes)	Qty.	Total Cost Price with Three years Comprehensive onsite warranty and support (Excl. of Taxes)	Tax for Column c		Total Cost Price with Three years Comprehensive onsite warranty and support (Incl. of Taxes)
					% of Tax	Tax Amt.	
		a	b	c=a*b	d	e	f=c+e
	transceivers connectivity on single chassis TOR switch as per Technical Specification (Annexure-9)						
20.	48 x 25-Gbps fiber downlink ports and 6 x 100-Gbps Quad Small Form-Factor Pluggable 28 (QSFP28) uplink ports with fully populated transceivers on single chassis TOR Switch as per Technical Specification (Annexure-9)		4				
21.	Distribution Switches in High availability with required capacity to connect all supplied access switches with dual uplink of 10/40/100 Gbps in active-active mode for redundancy and load sharing as per Technical Specification (Annexure-9)		8				
22.	Total Cost for Hardware (Sum of Sl. No. 1 to 21)						

Table - B

Price details of Software/License Items (Perpetual)

[Amount in Indian Rupees]

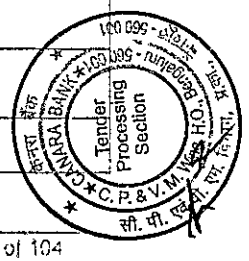
Sl. No.	Item Details	Unit Price with Comprehensive warranty and support (Excl. of Tax)	Qty.	Total Cost with Comprehensive warranty and support (Excl. of Tax)	Tax for Column c		Total Cost with Comprehensive warranty and support (Incl. of Tax)
					% of Tax	Tax Amt.	
		a	b	c=a*b	d	e	f=c+e
1.	Windows 2022 Data Centre Edition 16 Corepack with standard support		160				
2.	Windows 2022 Standard Centre Edition 16 Core pack with standard support		187				
3.	Microsoft SQL 2022 standard edition two core pack with standard support		156				
4.	IBM WebSphere ND 9.5 PVU.		17920				
5.	Total Cost for Software/Licenses (Sum of Sl. No. 1 to 4)						

Table - C

Price details of Software/License Items (Subscription based Licenses)

[Amount in Indian Rupees]

Sl. No.	Item Details	Unit Price with Comprehensive warranty and support for 5 Years (Excl. of Tax)	Qty.	Total Cost with Comprehensive warranty and support for 5 Years (Excl. of Tax)	Tax for Column c		Total Cost with Comprehensive warranty and support for 5 Years (Incl. of Tax)
					% of Tax	Tax Amt.	
		a	B	c=a*b	d	e	f=c+e
1.	RHEL 9 Virtual DataCentre with premium support		20				
2.	RHEL 9 with premium support		150				



3.	RHEL 9 High Availability with premium support - X86 machines		30				
4.	RedHat OpenShift Container Platform Plus- RHCOS latest version subscription with premium support		3				
5.	RedHat OpenShift Container Platform Plus- RHCOS latest version subscription with standard support		3				
6.	Apache Tomcat Enterprise Edition with support - instance base		5				
7.	Managed File Transfer Solution core based		16				
8.	File Sync Software instance base with support		50				
9.	Backup Software instance based with support		500				
10.	Jboss Enterprise Application Platform (16 core Pack) with premium support		2				
11.	Jboss Enterprise Application Platform (16 core Pack) with standard support		1				
12.	Jboss web server (16 core Pack) with premium support		2				
13.	Jboss web server (16 core Pack) with standard support		1				
14.	Total Cost (Sum of Sl. No. 1 to 13)						

Table - D

Price details of Linear Tape Open Cartridges (5000 nos.)

[Amount in Indian Rupees]

Sl. No.	Requirement Details	Unit Price (Excl. of Tax)	Quantity	Total Cost Price (Excl. of Tax)	Tax for Column C		Total Price (Incl. of Tax)
					% of Tax	Tax Amt.	
		a	b	c=a*b	d	e	f=c+e

1.	LTO-7 standard tapes with customized barcodes		200				
2.	LTO-8 standard tapes with customized barcodes		3800				
3.	LTO-9 standard tapes with customized barcodes		800				
4.	LTO-9 Cleaning Cartridges with customized barcodes		200				
5.	Total cost for 5000 Linear Tape Open Cartridges (Sum of Sl. No. 1 to 4)						

Table - E

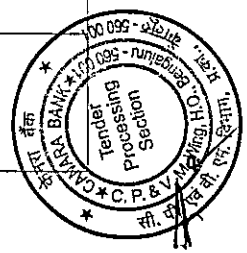
AMC /ATS Cost for Hardware/Software/Licenses for 2 Years on post warranty

[Amount in Indian Rupees]

Sl. No.	Item Details	Cost for AMC for 2 years (Excl. of Tax)		Qty.	Total AMC Cost (Excl. of Tax)	Tax for Column d		Total AMC Cost (Incl. of Tax)
		4th Year	5th Year			% of Tax	Tax Amt.	
		a	b	c	d=(a+b)*c	e	f	g=(d+f)
A.	Hardware							
1.	Servers With 64 core and 2 TB Memory and 3 TB SSD usable space Local Disk with RAID 10 as per Technical Specification (Annexure-9)			80				
2.	Servers With 64 core and 512 GB Memory and 3 TB SSD usable space Local Disk with RAID 10 as mentioned as per Technical Specification (Annexure-9)			28				
3.	Servers With 32 core and 1 TB Memory and 3 TB SSD usable space Local Disk with RAID 10 as			100				

Sl. No.	Item Details	Cost for AMC for 2 years (Excl. of Tax)		Qty.	Total AMC Cost (Excl. of Tax)	Tax for Column d		Total AMC Cost (Incl. of Tax)
		4th Year	5th Year			% of Tax	Tax Amt.	
		a	b	c	d=(a+b)*c	e	f	g=(d+f)
	per Technical Specification (Annexure-9)							
4.	Servers With 16 core and 512GB Memory and 3 TB SSD usable space Local Disk with RAID 10 as per Technical Specification (Annexure-9)			226				
5.	Servers With 24 core and 256GB Memory and 1.5 TB SSD Local Disk as per Technical Specification (Annexure-9)			54				
6.	Servers With 16 core and 256GB Memory and 4 TB SSD usable space Local Disk with RAID 10 as per Technical Specification (Annexure-9)			4				
7.	Servers With 32 core and 1 TB Memory and 8 TB NVME SSD usable Local Disk with RAID 10 as per Technical Specification (Annexure-9)			4				
8.	Servers With 32 core and 1 TB Memory and 32 TB NVME SSD usable Local Disk with RAID 10 as per Technical Specification (Annexure-9)			4				
	Server Rack for placing Servers, storage, Library and SAN and Network switches and as per			50				

Sl. No.	Item Details	Cost for AMC for 2 years (Excl. of Tax)		Qty.	Total AMC Cost (Excl. of Tax)	Tax for Column d		Total AMC Cost (Incl. of Tax)
		4th Year	5th Year			% of Tax	Tax Amt.	
		a	b	c	d=(a+b)*c	e	f	g=(d+f)
	Technical Specification (Annexure-9)							
10.	PDU for the supplied RACKS and as per Technical Specification (Annexure-9)			100				
11.	SAN Director (48*3=144 FC SAN ports with 16&32Gbps SFP) and as per Technical Specification (Annexure-9)			4				
12.	SAN Switches (32G SAN with 96 port) Switch and as per Technical Specification (Annexure-9)			8				
13.	SAN Switches (32G SAN with 48 port) Switch and as per Technical Specification (Annexure-9)			2				
14.	Object Storage of 2.0PB Usable Space and as per Technical Specification (Annexure-9)			2				
15.	Enterprise Block Storage of 2.0PB Usable Space and as per Technical Specification (Annexure-9)			4				
16.	Tape Library with 40 Tape Drives and 250 Free slots and as per Technical Specification (Annexure-9)			2				



Sl. No.	Item Details	Cost for AMC for 2 years (Excl. of Tax)		Qty.	Total AMC Cost (Excl. of Tax)	Tax for Column d		Total AMC Cost (Incl. of Tax)
		4th Year	5th Year			% of Tax	Tax Amt.	
		a	b	c	d=(a+b)*c	e	f	g=(d+f)
17.	LTO-9 Stand Alone Tape Drive and as per Technical Specification (Annexure-9)			2				
18.	48 Gig Ethernet ports and 2 x 10G SFP+ for uplink on single chassis TOR Switch as per Technical Specification (Annexure-9)			14				
19.	48 fixed 10-G BASE-T ports and 6 fixed 40/100-Gbps QSFP+ ports for uplink with fully populated transceivers connectivity on single chassis TOR switch as per Technical Specification (Annexure-9) .			24				
20.	48 x 25-Gbps fiber downlink ports and 6 x 100-Gbps Quad Small Form-Factor Pluggable 28 (QSFP28) uplink ports with fully populated transceivers on single chassis TOR Switch as per Technical Specification (Annexure-9)			4				
21.	Distribution Switches in High availability with required capacity to connect all supplied access switches with dual uplink of 10/40/100 Gbps in active-active mode for redundancy and			8				

Sl. No.	Item Details	Cost for AMC for 2 years (Excl. of Tax)		Qty.	Total AMC Cost (Excl. of Tax)	Tax for Column d		Total AMC Cost (Incl. of Tax)
		4th Year	5th Year			% of Tax	Tax Amt.	
		a	b	c	d=(a+b)*c	e	f	g=(d+f)
	load sharing as per Technical Specification (Annexure-9)							
B.	Software							
Sl. No.	Item Details	ATS cost for 5 years (Excl. of Tax)		Qty.	Total AMC Cost (Excl. of Tax)	Tax for Column c		Total AMC Cost (Incl. of Tax)
						% of Tax	Tax Amt.	
		a		b	c= (a*b)	d	e	f=c+e
22.	Support charge for IBM WebSphere ND 9.5 PVU			17920				
23.	Total Cost for AMC for Hardware/Software/Licenses (Sum of Sl. No. 1 to 22)							

Table - F
One-time Implementation charges

[Amount in Indian Rupees]

Sl. No.	Item Details		Unit Price (Excl. of Tax)	No. of Units	Total Price (Excl. of Tax)	Tax for Column c		Total Price (Incl. of Tax)
						% of Tax	Tax Amt.	
			a	b	c=a*b	d	e	f=c+e
1.	Servers-Installation and Configurations with OS	Per Server		500				
2.	Managed file transfer solution Implementation	Per Site		2				
3.	Backup Solution implementation	Per server		500				
4.	Jboss server implementation	Per Server		3				

Sl. No.	Item Details		Unit Price (Excl. of Tax)	No. of Units	Total Price (Excl. of Tax)	Tax for Column c		Total Price (Incl. of Tax)
						% of Tax	Tax Amt.	
			a	b	c=a*b	d	e	f=c+e
5.	Apache Tomcate server implementation	Per Server		5				
6.	MSSQL Setup installation per server with cluster configuration (for 24 Servers - in 2 node cluster)	Per server		24				
7.	RHCOS Setup installation and configuration for three cluster (Three nodes in one Cluster)	Per Cluster		3				
8.	Installation of TOR switches	Per Switch		42				
9.	Installation of Distribution Switches	Per Switch		8				
10.	Implementation charges for SAN Director with ISL	Per Director		4				
11.	Implementation charges for SAN switch with ISL	Per Switch		10				
12.	Object Storage implementation Cost	Per storage		2				
13.	Block Storage Implementation Cost	Per storage		4				
14.	Rack and PDU implementation	Per Rack		50				
15.	Tape Library implementation cost	Per Library		2				
16.	Total Cost for Optional Items (Sum of Sl. No. 1 to 15)							

Table - G (Optional)
Price details of Optional Items for 5 Years

[Amount in Indian Rupees]

Sl. No.	Item Details	Unit Price (Excl. of Tax)	Tax for Column a		Total Price (Incl. of Tax)
			% of Tax	Tax Amt.	
		a	b	C	d=a+c
1.	1.92 TB SSD with 3 year warranty (Compatible with the proposed server)				
2.	One CPU of 16 core				
3.	One CPU of 24 core				
4.	One CPU of 32 core				
5.	One CPU of 64 core				
6.	One Memory Stick of 64 GB				
7.	One Memory Stick of 128 GB				
8.	Object Storage per TB Cost				
9.	Block Storage per TB Cost				
10.	Block Storage per controller cost				
11.	Object Storage per controller cost				
12.	One FC Card with minimum 1 number of 32 Gbps FC ports in each card				
13.	One Network Cards, each equipped with at least one 10-gigabit network ports				
14.	One Network Cards, each equipped with at least two 1-gigabit network ports				
15.	San Director 32G SFP Module				
16.	San Director 64G SFP Module				
17.	San Switch 32G SFTP Module				
18.	San Switch 64G SFP Module				
19.	San Switch Long Wave 32G SFP Module				
20.	San Switch Long Wave 64G SFP Module				
21.	SAN Director per Blade Cost				

Sl. No.	Item Details	Unit Price (Excl. of Tax)	Tax for Column a		Total Price (Incl. of Tax)
			% of Tax	Tax Amt.	
		a	b	C	d=a+c
22.	SAN Director Blade Cost with fully populate SFTP				
23.	CAT 6 UTP Copper Cable length of 3 mtrs				
24.	CAT 6 UTP Copper Cable length of 5 mtrs				
25.	CAT 6 UTP Copper Cable length of 7 mtrs				
26.	CAT 6 UTP Copper Cable length of 10 mtrs				
27.	CAT 6 UTP Copper Cable length of 15 mtrs				
28.	CAT 7 UTP Copper Cable length of 3 mtrs				
29.	CAT 7 UTP Copper Cable length of 5 mtrs				
30.	CAT 7 UTP Copper Cable length of 7 mtrs				
31.	CAT 7 UTP Copper Cable length of 10 mtrs				
32.	CAT 7 UTP Copper Cable length of 15 mtrs				
33.	CAT 7 UTP Copper Cable length of 25 mtrs				
34.	Fiber cables Cable length OM4 of 5 mtrs				
35.	Fiber cables Cable length OM4 of 10 mtrs				
36.	Fiber cables Cable length OM4 of 15 mtrs				
37.	Fiber cables Cable length OM4 of 20 mtrs				
38.	Fiber cables Cable length OM4 of 25 mtrs				
39.	Fiber cables Cable length OM4 of 30 mtrs				
40.	Total Cost for Optional Items (Sum of Sl. No. 1 to 39)				

The cost mentioned in column "a" of Table-F will be the fixed price for 5 years (i.e., Unit Price mentioned will be fixed for the entire contract period). Bank may procure the above items mentioned in Table-F with the same cost for the entire contract period.

The items brought during the contract period should be co-terminus with the base hardware.

Bank may issue Purchase order(s) to procure items mention in Table-G as per the necessary quantities as and when required by the Bank during the initial purchase or during the entire Contract Period. However, the bidder has to provide the optional items at the same cost mentioned in the Table-G.

Table - H

Total Cost of the Hardware, Software and optional items for 5 Years

[Amount in Indian Rupees]

Sl. No.	Requirement Details	Total Cost of the Hardware, Software and optional items for 5 Years (Incl. of Taxes)
1.	Total cost of Table-A (Price details of Hardware Items for three year warranty period)	
2.	Total cost of Table-B (Price details of Software/License Items (Perpetual))	
3.	Total cost of Table-C (Price details of Software/License Items (Subscription based))	
5.	Total cost of Table-D (Price details of Linear Tape Open Cartridges)	
6.	Total cost of Table-E (Two year contract for AMC /ATS Cost for Hardware/Software/Licenses)	
7.	Total cost of Table-F (One-time Implementation charges)	
8.	Total cost of Table-G (Price details of Optional Items for 5 Years)	
9.	Total Cost of Ownership for 5 Years (Sum of Sl. No. 1 to 8)	

Declaration:

a. Bill of material is submitted on the letter head and is signed by an Authorized Signatory with Name and Seal of the Company.
b. We confirm that we have gone through RFP clauses, subsequent amendments and replies to pre-bid queries (if any) and abide by the same.
c. We have not changed the structure of the format nor added any extra items. We note that any such alternation will lead to rejection of Bid.
d. We agree that no counter condition/assumption in response to commercial bid will be accepted by the Bank. Bank has a right to reject such bid.
e. We are agreeable to the payment schedule as per "Payment Terms" of the RFP.

Date:
Place:

Authorized signatory
Name:
Designation:
Company seal: