<div align="right">Date: 08.08.2025</div>

Broadcast Engineering Consultants India Limited
(Under Ministry Of Information and Broadcasting)
C-56A/17, Sector-62, Noida-201307

Ref. No. BECIL/EMMC/Logging & Monitoring/2025-26/01 Dated: 07.06.2025

<div align="center"><u>Corrigendum No. 9</u></div>

Subject: Corrigendum to RFP for 'Revamp of AV Logging and Monitoring Setup installed at Electronic Media Monitoring Centre (EMMC), Soochna Bhawan, New Delhi' Vide RFP ref. no. BECIL/EMMC/Logging & Monitoring/2025-26/01 Dated: 07.06.2025 & Tender ID: 2025_BECIL_237788_1 (GeM-CPPP Portal: https://etenders.gov.in/eprocure/app).

RFP clauses are amended as follows:

S. No.	RFP Clause Reference	Clause	Amendment Clause
1.	-	**Last date for submission of Proposals/bids:** 11.08.2025 at 02:00 PM	**Last date for submission of Proposals/bids:** 18.08.2025 at 02:00 PM
2.	-	**Bid Opening Date:** 12.08.2025 at 02:00 PM	**Bid Opening Date:** 19.08.2025 at 02:00 PM
3.	**i) Clause No. 5.1.1 at Page No. 84.** **ii) Clause No. 5.1.2 at Page No. 94.** **iii) Clause No. 5.6.3 at Page No. 131.** **iv) Clause No. 5.7 at Page No. 135.**	i) Clause No. 5.1.1: Server ii) Clause No. 5.1.2: Storage iii) Clause No. 5.6.3: SIEM (Security Information and Event Management) system for the entire network with 5 years Warranty. iv) Clause No. 5.7: Specification for the Workstation Setup	Please refer **Annexure-1** of this Corrigendum for the amended clauses.
4.	**Clause No. (iii) (V).2 at Page No. 59**	**(V).2. API Integration of the Monitoring Software with Integrated Dashboard:** (iii) EMMC users must be able the access the data from Integrated Dashboard based on the time-stamping i.e. able to	**(V).2. API Integration of the Monitoring Software with Integrated Dashboard:** (iii) 1. EMMC monitors must be able the access the data from NMW's Integrated Dashboard based on the time-stamping i.e. able to select the

		select the specific time & date, TV channel name, type of analysis to be performed on the selected video clips and must be able to download the analyzed report from Monitoring software itself. It may be noted that analysis will be done by the Integrated Dashboard and Monitoring Software will only pull the analyzed data.	specific time & date, TV channel name, type of analysis to be performed on the selected video clips and must be able to download the report (analyzed by Integrated Dashboard) from Monitoring software itself. It may be noted that analysis will be done by the Integrated Dashboard and Monitoring Software (ACTUS) will pull the analyzed data, for the human vetting and curation. 2. The data post vetting / correction by EMMC will be pushed back to the Integrated Dashboard (cloud) for the use of all PIB users etc. through Integrated Dashboard.
5.	**Clause No. (V).2 at Page No. 59**	**Additional condition** in Clause No. (V).2. API Integration of the Monitoring Software with Integrated Dashboard:	Since, NMW's Integrated Dashboard is doing the AI analysis and for the ease of accessing the **specific category of AI analytics from Integrated Dashboard Cloud,** Monitoring Software must be customized to have modules such as Transcription, Translation, Keyword alerts, Summarization etc. Selected agency shall be responsible for any kind of customization of the Monitoring Software (ACTUS) as per client satisfaction at no additional cost during whole contract period.
6.	**Clause No. (V).2 at Page No. 59**	**Additional Condition**	All the bidders are requested to refer the indicative **Work flow Diagram (Annexure-2)** is attached for the better understanding of the Project. This is the indicative diagram for the brief understanding of the Project work flow. However, post vendor selection, actual work flow must be finalized as per client requirement.

7.	**Clause No. I at Page No. 52**	**Additional Condition** in clause No. I METHOD OF EVALUATION AND AWARD.	Financial Bids that are less than **50% of the median-price** may be disqualified, where the median-price is computed by adding all Financial Bid values of ALL the financial qualified bidders and dividing the same by the number of qualified bidders.
8.	**Clause No. 2.1.1.1. at Page No. 62**	**Additional Condition** in Clause No. 2.1.1.1. TERMS & CONDITIONS FOR PHASE-I (SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF EQUIPMENT AND SOFTWARE):	EMMC monitoring setup need to operate 24x7x365 and accordingly, existing system is monitoring with 900 TV channels. Interested bidders must be well informed that complete revamped system is needed to be functionally handed over to the client within the specific timeline in RFP. However, during installation & commissioning Phase of the Project & till the signing of FHTO document, at any given instant of time, it is the responsibility of the selected agency to ensure the **minimum 300 TV channels** *(through old system or through partially upgraded system)* are available for monitoring. **Accordingly, interested bidders must ensure that the final solution and approach for the installation & commissioning phase must be designed to accommodate the said requirement.** In case, bidder is not able the maintain the availability of minimum 300 TV channels for monitoring during installation & commissioning phase of the Project *(for reasons pertaining to engaged agency),* then **INR 500/- per channels per day** will be deducted with maximum celling of INR 10 Lakhs.

			List of important 300 TV channels which are need to be monitored uninterrupted, shall be shared by EMMC as and when required and the same can be amended time to time as per client requirement.
9.	Clause No. 7 (c) at Page No. 18	Clause No. 7 (c): CONFLICT OF INTEREST Has the same legal representative/ agent as another Bidder for purposes of this bid. A Principal can authorize only one agent, and an agent also should not represent or quote on behalf of more than one Principal. However, this shall not debar more than one Authorized distributor from quoting equipment manufactured by an Original Equipment Manufacturer (OEM), in procurements under Proprietary Article Certificate; or	Deleted
11	Clause No. 4 at Page No. 124	Clause No. 4: High-Availability Features under the heading Fire wall with Load Balancer with 5year Warranty. 4.1. Firewall should support Active/Standby and Active/Active failover and should not be based on stacking units in clustering. 4.2. Firewall should support ether channel or equivalent functionality for the failover control and providing additional level of redundancy.	Clarification; This is to clarify that the required system must have capability to have "High Availability Features" as and when required by the client.

		4.3. Firewall should support redundant interfaces to provide interface level redundancy before device failover. 4.4. Firewall should support 802.3ad Ether channel or equivalent functionality to increase the bandwidth for a segment. 4.5. Firewall should have integrated redundant power supply.	
12	**Clause No. 5.1.4. at Page No. 113**	**Clause No. 5.1.4. SPECIFICATION FOR COOLING RACK**	Considering the limitations with Cooling Rack solution, it has been decided to replace the *"Cooling Rack solution"* with the *"Procurement of Precision Air Conditioner (PAC) (1 Nos.)"* for providing cooling solution for revamped infrastructure. Therefore, it has now been decided to **read** the Clause No. 5.1.4. *"SPECIFICATION FOR COOLING RACK"* **as** *"SPECIFICATION FOR PRECISION AIR CONDITIONING SOLUTION (1 NOS.) WITH 5 YEARS COMPREHENSIVE WARRANTY"*. Updated specifications along with additional terms & conditions for the PAC are placed as **Annexure-3** of this corrigendum. ***Applicable terms & conditions:*** 1. Since, Cooling Rack solution is no longer required, therefore, bidder need to utilize the existing 42U racks of RITTAL make for the installation of IT equipments under

| | | | | this Project.

Accordingly, existing racks (9 Nos.) of "RITTAL" Make is hereby **REMOVED** from the tentative Buyback list at Page No. 143 of said RFP.

2.   Further, due to non-editable Bill of Material (BoM) (.xls file) on GeM-CPPP Portal at this stage of tendering, all the bidders are requested to read Line item No. 12 at Part-A of BoM and submit their financial bid online accordingly:

"Supply, Installation, Testing and Commissioning of 6 Cooling Rack solution along with all the required accessories"

as

"Supply, Installation, Testing and Commissioning of 1 Precision Air Conditioning Solution along with all the required accessories".

3.   Interested bidders are suggested to **visit the project site** to analyze the co-existence of new PAC (1 Nos.) with the already installed PACs (3 Nos.) and submit their bid accordingly.

4.   This amended cooling solution requirement will be governed by tender timeline and other terms & conditions. |

NOTE: Other terms & conditions of the RFP will remain same.

S/d
Deputy General Manager

AMENDED TECHNICAL SPECIFICATION:

5.1. BRIEF DISCRIPTION OF SPECIFICATION OF HARDWARE OF DATACENTER

5.1.1.   SERVERS

Server:	Compute- Servers Specs-UI
Item	**Description of Requirement**
Chassis	2U Rack Mountable
CPU	Should support minimum 5th Generation Intel Xeon processors. **2*28C or better XeonGold Processor.**
Memory	32DIMM slots. **4* 32GB** DDR4 Smart Memory DIMMS in Servers should be scalable upto minimum **8.0TB** using DDR5 Load Reduced DIMM (LRDIMM) operating at **4800 MT/s or better.**
HDD Bays	Must support minimum **12 LFF HDD/SSD or better** and additional 8 slots with disk enclosure.
Disk Drive for OS	**2* 480GB or better** M.2 NVMe SSD boot drive with **RAID1 Configuration**
Disk Drive for Data	Server should be populated with **6 * 4TB NL SAS** on day 1. Hot Plug **NL SAS/** LFF SATA/SAS/SATA SSD/SAS SSD / NVMe SSD drives must be supported and server should be scalable to at-least **250TB or more** of space in single server for future expansion.
Networking features	**1* 10 Gbps 2-port Intel Ethernet Adapter with Transceivers** Server should support below networking cards for future

	requirements: 1. 1Gb 4-port network adaptors 2. 10Gb 2-port Ethernet adaptor 3. 10Gb 4-port Ethernet Adapter 4. 10GBaseT 2-port Ethernet adaptor 5. 10/25Gb 2-port SFP28 Ethernet adaptor 6. 10/25Gb 4-port SFP28 Ethernet adaptor 7. 100Gb QSFP28 Ethernet 8. 100Gb 2-port QSFP56 Ethernet 9. 200Gb QSFP56 Ethernet 9. Pensando Distributed Services Platform DSC-25 Enterprise 10/25Gb 2-port SFP28 Card or equivalent Infiniband Options: 100Gb or 200Gb Single or Dual port Adapter (or equivalent)
SAN	**1 x 32Gbps - 2 port** FC HBA Card should be bundeled
Interfaces	Serial - 1 (Optional) USB support with minimum 4 ports: 1 front, 2 rear, 1 internal. 1GbE Dedicated management port
Bus Slots	Server should support upto eight PCI-Express 4.0 slots, atleast two x16 PCIe slots
Power Supply	Should support hot plug redundant power supplies with minimum 94% efficiency with minimum **2 x 800W Power supplies** should be there with Flex slots.
Fans	Redundant hot-plug system fans

Industry Standard Compliance	ACPI 6.3 Compliant PCIe 4.0 Compliant WOL Support Microsoft® Logo certifications PXE Support USB 3.0 Compliant Energy Star SMBIOS 3.2 Redfish API IPMI 2.0 Secure Digital 4.0 TPM 1.20 and 2.0 Support Advanced Encryption Standard (AES) SNMP v3 TLS 1.2 DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP) Active Directory v1.0 ASHRAE A3/A4 UEFI (Unified Extensible Firmware Interface Forum) 2.6
System Security	UEFI Secure Boot and Secure Start support Tamper-free updates – components digitally signed and verified Immutable Silicon Root of Trust Ability to rollback firmware FIPS 140-2 validation Secure erase of NAND/User data Common Criteria certification TPM (Trusted Platform Module) 2.0 or better option Configurable for PCI DSS compliance TPM (Trusted Platform Module) 2.0 option Advanced Encryption Standard (AES) on browser Bezel Locking Kit option Support for Commercial National Security Algorithms (CNSA) Chassis Intrusion detection option Secure Recovery – recover critical firmware to known good state on detection of compromised firmware

Latest Operating Systems and Virtualization Software	**Pre-installed and licenced for the complete Project Duration as per the solution requirement: Microsoft Windows Server 2022 or latest** **Support:** Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Vmware , Oracle linux and Oracle VM , Citrix , Ubuntu
Provisioning	1. Should support tool to provision server using RESTful API to discover and deploy servers at scale 2. Provision one to many servers using own scripts to discover and deploy with Scripting Tool (STK) for Windows and Linux or Scripting Tools for Windows PowerShell
Firmware security	1. For firmware security, system should support remote management chip creating a fingerprint in the silicon, preventing servers from booting up unless the firmware matches the fingerprint. This feature should be immutable 2. Should maintain repository for firmware and drivers recipes to aid rollback or patching of compromised firmware. Should also store Factory Recovery recipe preloaded to rollback to factory tested secured firmware

Embedded Remote Management and firmware security	1. System remote management 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 2. Server should have dedicated 1Gbps remote management port 3. Server should have storage space earmarked to be used as a repository for firmware, drivers and software components. The components can be organized in to install sets and can be used to rollback/patch faulty firmware 3. Server should support agentless management using the out-of-band remote management port 4. The server should support monitoring and recording changes in the server hardware and system configuration. It assists in diagnosing problems and delivering rapid resolution when system failures occur 5. Applications to access the server remotely using popular handheld devices based on Android or Apple IOS should be availabile 6. Remote console sharing upto 6 users simultaneously during pre-OS and OS runtime operation, Console replay - Console Replay captures and stores for replay the console video during a server's last major fault or boot sequence. Microsoft Terminal Services Integration, 128 bit SSL encryption and Secure Shell Version 2 support. Should provide support for AES on browser. Should provide remote firmware update functionality. Should provide support for Java free graphical remote console. 7. Should support managing multiple servers as one via Group Power Control Group Power Capping Group Firmware Update Group Configuration Group Virtual Media and Encrypted Virtual Media Group License Activation 8. Should support RESTful API integration

	9. System should support embedded remote support to transmit hardware events directly to OEM or an authorized partner for automated phone home support 10. Server should have security dashboard : displaying the status of important security features, the Overall Security Status for the system, and the current configuration for the Security State and Server Configuration Lock features. 11. One-button Secure Erase designed to decommission/repurpose servers 12. NVMe wear level display 13. Workload Performance Advisor - Provides server tuning recommendations to improve server performance
Cloud Enabled Monitoring and Analytics	1. Offered servers shall have cloud enabled monitoring and analytics engine for proactive management. All required licenses for same shall be included in the offer. 2. Cloud Enabled Monitoring and analytics engine shall have capability to provide following: a. Providing Firmware upgrade and patch upgrade recommendations proactively. b. Providing power and support entitlement status. c. Recommendations to eliminate performance bottlenecks and critical events, based on Analytics engine having capability of proactive recommendation for arresting the issues / problems. d. Automatic creation of support cases e. Detection of the Service Pack for Server and notifications for any hotfixes that may be available for the particular Configuration. f. Customer advisories based on their relevance to server configuration. g. Should have continuous, proactive health monitoring and recording of required system parameters as well as diagnostic telemetry data on a 24x7 basis. h. Should have monitoring & analytics feature for the offered server/chassis along with its sub-components to predict, prevent, and auto-resolve problems and by providing automating case creation and log file submission for the problems that can't be auto resolved.
General Terms & Conditions	**Any additional hardware / software (such as switches, etc.) required for the completeness of the above required solution / functionality, selected agency will provide the same at NO Additional cost.**

Server:	Compute-- Servers Specs-Recording server (RSA)
Item	**Description of Requirement**
Chassis	2U Rack Mountable
CPU	Should support minimum 5th Generation Intel Xeon processors. **2*28C or better XeonGold Processor.**
Memory	32DIMM slots. **4* 32GB** DDR4 Smart Memory DIMMS in Servers should be scalable upto minimum **8.0TB** using DDR5 Load Reduced DIMM (LRDIMM) operating at **4800 MT/s or better.**
HDD Bays	Must support minimum **12 LFF HDD/SSD or better** and additional 8 slots with disk enclosure.
Disk Drive for OS	**2* 480GB or better** M.2 NVMe SSD boot drive with **RAID1 Configuration**
Disk Drive for Data	Server should be populated with **6 * 6TB NL SAS** on day 1. Hot Plug **NL SAS/** LFF SATA/SAS/SATA SSD/SAS SSD / NVMe SSD drives must be supported and server should be scalable to at-least **250TB or more** of space in single server for future expansion.
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SAN	**1 x 32Gbps - 2 port** FC HBA Card should be bundled
Interfaces	Serial - 1 (Optional) USB support with minimum 4 ports: 1 front, 2 rear, 1 internal. 1GbE Dedicated management port

Bus Slots	Server should support upto eight PCI-Express 4.0 slots, atleast two x16 PCIe slots
Power Supply	Should support hot plug redundant power supplies with minimum 94% efficiency with minimum **2 x 800W Power supplies** should be there with Flex slots.
Fans	Redundant hot-plug system fans
Industry Standard Compliance	ACPI 6.3 Compliant PCIe 4.0 Compliant WOL Support Microsoft® Logo certifications PXE Support USB 3.0 Compliant Energy Star SMBIOS 3.2 Redfish API IPMI 2.0 Secure Digital 4.0 TPM 1.20 and 2.0 Support Advanced Encryption Standard (AES) SNMP v3 TLS 1.2 DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP) Active Directory v1.0 ASHRAE A3/A4 UEFI (Unified Extensible Firmware Interface Forum) 2.6
System Security	UEFI Secure Boot and Secure Start support Tamper-free updates – components digitally signed and verified Immutable Silicon Root of Trust Ability to rollback firmware FIPS 140-2 validation Secure erase of NAND/User data Common Criteria certification TPM (Trusted Platform Module) 2.0 or better option Configurable for PCI DSS compliance TPM (Trusted Platform Module) 2.0 option Advanced Encryption Standard (AES) on browser Bezel Locking Kit option Support for Commercial National Security Algorithms (CNSA) Chassis Intrusion detection option Secure Recovery – recover critical firmware to known good state on

	detection of compromised firmware
Latest Operating Systems and Virtualization Software	**Pre-installed and licenced for the complete Project Duration as per the solution requirement: Microsoft Windows Server 2022 or latest** **Support:** Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Vmware , Oracle linux and Oracle VM , Citrix , Ubuntu
Provisioning	1. Should support tool to provision server using RESTful API to discover and deploy servers at scale 2. Provision one to many servers using own scripts to discover and deploy with Scripting Tool (STK) for Windows and Linux or Scripting Tools for Windows PowerShell
Firmware security	1. For firmware security, system should support remote management chip creating a fingerprint in the silicon, preventing servers from booting up unless the firmware matches the fingerprint. This feature should be immutable 2. Should maintain repository for firmware and drivers recipes to aid rollback or patching of compromised firmware. Should also store Factory Recovery recipe preloaded to rollback to factory tested secured firmware
Embedded Remote Management and firmware security	1. System remote management 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 2. Server should have dedicated 1Gbps remote management port 3. Server should have storage space earmarked to be used as a repository for firmware, drivers and software components. The components can be organized in to install sets and can be used to rollback/patch faulty firmware 3. Server should support agentless management using the out-of-band remote management port 4. The server should support monitoring and recording changes in the server hardware and system configuration. It assists in diagnosing problems and delivering rapid resolution when system failures occur 5. Applications to access the server remotely using popular handheld devices based on Android or Apple IOS should be availabile 6. Remote console sharing upto 6 users simultaneously during pre-OS and OS runtime operation, Console replay - Console Replay captures

	and stores for replay the console video during a server's last major fault or boot sequence. Microsoft Terminal Services Integration, 128 bit SSL encryption and Secure Shell Version 2 support. Should provide support for AES on browser. Should provide remote firmware update functionality. Should provide support for Java free graphical remote console. 7. Should support managing multiple servers as one via Group Power Control Group Power Capping Group Firmware Update Group Configuration Group Virtual Media and Encrypted Virtual Media Group License Activation 8. Should support RESTful API integration
Cloud Enabled Monitoring and Analytics	1. Offered servers shall have cloud enabled monitoring and analytics engine for proactive management. All required licenses for same shall be included in the offer. 2. Cloud Enabled Monitoring and analytics engine shall have capability to provide following: a. Providing Firmware upgrade and patch upgrade recommendations proactively. b. Providing power and support entitlement status. c. Recommendations to eliminate performance bottlenecks and critical events, based on Analytics engine having capability of proactive recommendation for arresting the issues / problems. d. Automatic creation of support cases e. Detection of the Service Pack for Server and notifications for any hotfixes that may be available for the particular Configuration. f. Customer advisories based on their relevance to server configuration. g. Should have continuous, proactive health monitoring and recording of required system parameters as well as diagnostic telemetry data on a 24x7 basis. h. Should have monitoring & analytics feature for the offered server/chassis along with its sub-components to predict, prevent, and auto-resolve problems and by providing automating case creation and log file submission for the problems that can't be auto resolved.
General Terms & Conditions	**Any additional hardware / software (such as switches, etc.) required for the completeness of the above required solution / functionality, selected agency will provide the same at NO Additional cost.**

5.1.2.   STORAGE:

Parameter	Functionality
Capacity & Scalability	1. Offered Storage array shall be supplied minimum with **1000 TiB (Usable) Capacity** using **encrypted NL-SAS drives** and shall be configured in **Raid 6**. Vendor shall not use more than 10D + 2P / 14D +2P / 12D +2P while sizing the array. 2. Offered array shall support **at-least 550 drives.** 3. Offered Storage shall be able to protect at-least 2 drives failure simultaneously within a given raid group. 4. Offered storage shall support both **SSD** and **HDD**. **HDD** shall support both **SAS** and **NL SAS** drives. **5. Proposed STORAGE system should be from same OEM who is providing SERVER in this tender.**
Data Availability	1. Offered storage shall be an enterprise storage array & **99.999% data availability guaranteed architecture**. Shall be published as enterprise array on the OEM's web site. 2. **99.999% or better** data availability guaranty shall be clearly mentioned on vendor web site for the offered model. **If vendors are not supporting the 99.999% or better data availability as per their web site then vendor shall provide additional controllers and 10% additional capacity as cold spare along with array for mitigating the failure situations (at NO additional cost).**
Operating System & Clustering Support	The storage array should support industry-leading Operating System platforms & clustering including: **Windows Server 2022 or better**, VMware 7/8, Linux and etc.
Storage Encryption	1. Vendor shall offer only the **encrypted drives** with appropriate encryption licenses and shall meet **FIPS 140-2 – Level 2 security** requirements. **Vendor shall not offer any controller based or Software based encryption.** 2. Offered FIPS 140-2 Validated encryption drives shall support both KMIP 1.3 and KMIP 1.4 for key management solutions. Vendor shall offer at-least internal Key manager engine for key management.
No. of	1. Offered Storage shall be supplied with at-least **Quad controller** from

Controllers	day one. Vendor shall ensure that all controllers, with and without scalability, shall be connected to a common back-plane. Additional controller may be added for viable solution.
Cache and CPU Processing Power	1. Offered Storage array should have at-least **1024 GB protected DRAM cache**. 2. Complete offered cache shall be both **Global and Coherent.** 3. DRAM Cache shall be completely dynamic for read and write ratios and operations and vendor shall not offer any additional card / module / drive for write cache operations. 4. Offered storage shall be based upon latest generation Intel CPUs, minimum skylake series, and shall be supplied with at-least **40 or better** numbers of CPU cores.
Processing Power - Parallel processing engine	1. Offered Storage shall have dedicated, separated **parallel processing engines**, apart from CPU cores / intelligent algorithms / code for effectively handling Raid-Rebuilding and data striping, thin re-claim etc. 2. **Storage array** shall be supplied with **at-least 8 dedicated above processing engines** either in the form of **ASICs or other equivalent technologies** and shall be scalable to at-least 16 such engines without replacing the existing controllers. 3. If vendor doesn't support above critical feature, then additional 16 CPU Cores shall be supplied.
Architecture & Processing Power	1. Controllers shall be true symmetric / asymmetric active-active so that a single logical unit / pool can be shared across all offered controllers in symmetrical / asymmetrical fashion, while supporting all the major functionalities like Thin Provisioning etc. 2. Offered storage array shall have native virtualization support so that Raid can be carved out from a logical space instead of dedicating separate physical disks for each application.
No Single point of Failure	Offered Storage Array shall be configured in a No Single Point of configuration including Array Controller card, Cache memory, FAN, Power supply etc.

Cloud Enabled Monitoring and Analytics	a. Providing Firmware upgrade and patch upgrade recommendations proactively along with release notes and with awareness of the peripheral infrastructure connected to the array. b. Dashboard shall clearly highlight whether there is any issue with array with respect to best practices and shall recommend the required action, if any. c. Providing extremely granular per-minute historical capacity and performance trend analysis by default, without the need to enable extra logging, install any appliances (physical or virtual), or install any software. d. Vendor cloud enabled monitoring and analytics engine shall be completely integrated or separate with their support team so that it can provide history of support cases logged with Support team under different column like Critical, Normal and low severity along with closed cases. Cloud monitoring tool shall be able to provide the complete month-wise breakup. e. Shall be able to provide the executive Dashboard covering various critical and must aspects of Total Capacity, overall health / wellness score of array. De-duplication and compression ratio, over-all front-end performance etc.
Cloud Enabled - Analytics	Cloud enabled Analytics engine shall have capability to provide following: a. Shall have capability of global learning – Analytics engine shall collect control information from at-least 50000+ arrays across vendor installed base for meaningful output. b. Analytics engine shall have capability of proactive recommendation for arresting the issues / problems noticed at other install base of vendor after idenfying the problematic signature.
Cloud Enabled - HyperVisor Integration	Cloud enabled monitoring and analytics engine integration with Hypervisor a. Offered Cloud enabled monitoring and analytics engine shall be tightly integrated with Hypervisor layer and shall be certified to work with at-least VMware. b. Hypervisor integration shall be able to provide end to end monitoring

	of hypervisor Datacenter, Data-store, Hypervisor Host and VMs running within the hypervisor datacenter and shall be able to link with offered storage array. c. Cloud monitoring and integration tool shall provide the detailed analysis of CPU Contention, Memory contention, IO contention for each VM – including the latency. d. Cloud monitoring and integration tool shall have capability to identify the top VMs which are contributing towards maximum IOs and Latency. e. In case vendor doesn't support the above offered functionality then Vendor shall supply the enterprise license for VMware vRealize suite for at-least 20 Physical servers, each running with dual physical CPUs.
Cloud native data console (Management)	Offered Storage array should have cloud native data console for managing unlimited number of arrays. Cloud native console shall provide following functionalities: a. Common Dashboard for all managing multiple arrays through a single cloud native data console. b. Main Dashboard shall provide the information of Total number of Arrays, Volumes, hosts, Capacity and performance information of top Arrays and Volumes. c. Common role based access control for managing multiple arrays through a single data console instead of creating users and assigning roles individually at each array. d. Common Audit management for all arrays. e. Shall have capability for tagging the Storage volume to given host applications so that performance charts can be drawn for application instance for easy management and troubleshooting. f. Offered console shall advise about Placement of application on best fit system based on workload after application tagging. g. Shall be able to provide the context aware software updates on the storage array.

	h. Shall be able to offer storage management and configuration as a service instead of controlling, patching and upgrading the management application by onsite team.
Cloud Native data console Management - Life Cycle	1. Management application shall be truly cloud native so that there shall be no need to configure, upgrade, patching of management application during the life-cycle of support contract and shall be offered as a service. 2. In case, vendor need any additional service like clustering / federation for managing multiple arrays from a single console and doesn't have cloud native data console – then all required accessories like dual Ethernet switches, cables, at-least dual management server in HA etc. shall be provided upfront for at-least 16 arrays.
Site Assessment	1. Vendor shall do comprehensive Cloud based assessment, at-least for VMware environment on a quarterly basis and shall factor the required services for it. 2. Assessment shall provide the detailed analysis of VMware Hosts – CPU & Memory utilization, Storage analysis and relevant findings of contention, Culprit and Victim VMs in the environment attached to offered storage. Offered assessment shall do complete analysis of licensing as well.
Data Protection	1. In case of power failure, storage subsystem shall have de-staged mode so that un-committed information can be protected. De-staging shall happen to vault drives and vault drives shall be encrypted. 2. Vendor shall not use any Vault drive as data drives for capacity calculation. Offered Vault drives shall not be the part of supplied disk enclosures.
Host Ports and Back-end Ports	1. Offered Storage array shall have **minimum** of **16 x 32Gbps Fiber Channel ports** and **8 x 25Gbps ISCSI** ports. All ports shall have capability to work at line speed. 2. Offered Storage array shall be scalable to at-least **32 x 32Gbps Fiber channel ports** and **16 x 25Gbps ISCSI ports.** 3. Offered Storage array shall have minimum of **32 SAS lanes** in the back-end for disk connectivity running at 12Gbps speed and shall be scalable to at-least **64 SAS Lanes** without replacing the existing

	controllers. 4. Offered Storage array system shall be supplied with quad additional native 10Gbps IP ports for storage based replication and shall be scalable to 8 Native 10Gbps IP ports. All ports shall be provided with SFP+ transceiver for fiber connectivity.
Investment Protection	Offered Storage shall support data in place non-disruptive upgrade without any downtime to next model of array within the same offered series.
Global Hot Spare	1. offered Storage Array shall support distributed Global hot Spare for offered Disk drives. 2. Global hot spare shall be configure as per industry practice.
Quality of service	1. Offered storage array shall support quality of service for critical applications so that appropriate and required response time can be defined for application logical units at storage. It shall be possible to define different service / response time / IOPS / Throughput for different application logical units. 2. Quality of service engine shall allow to define minimum / maximum cap for required IOPS / bandwidth for a given logical units of application running at storage array. 3. It shall be possible to change the quality of service / Response time IOPS, bandwidth specification at real time.
Capacity efficiency	1. Offered storage array shall support inline data efficiency engine (Supporting Thin Zero detect and re-claim, De-duplication and Compression) and shall be enabled by default. 2. Vendor shall have flexibility to enable / disable the data efficiency engine at the time of Volume creation. 3. Storage subsystem shall be supplied with Thin Provisioning, Thin Re-claim, Snapshot, De-duplication, Compression, Performance Monitoring, and Quality of service on day 1 for the maximum supported capacity of array.
Firmware Upgrade	Offered storage shall support online non-disruptive firmware upgrade for both Controller and disk drives without any reboot of controller.

Storage Management	Offered Storage array management console shall be able to manage at-least 8 arrays from a single console. Management console shall provide following functionalities: a. Common Dashboard for all managed arrays through a single management console. b. Data migration through same console for all supported heterogeneous arrays c. On-premise performance analysis, workload planning etc. through a single console. d. End to end connected topology view in pictorial format within management console, from Hypervisor to Storage arrays. At-least one of the hypervisor among VMware or Hyper-V shall be qualified. e. In case, vendor need any additional service like clustering / federation for managing multiple arrays from a single console – then all required accessories like dual Ethernet switches, cables shall be provided upfront for at-least 8 arrays.
Integration – VMWARE	1. Offered storage array shall be tightly integrated with VMware and shall be certified for VVOL. Shall provide following functionalities for VVOL 2. Shall be certified for vVol based replication 3. Shall support more than 25,000 vVol and at-least 5000VMs using Vvol. 4. Shall support both compression and de-duplication for VVOL 5. Shall be qualified to work with both Fiber Channel and ISCSI for VVOL.
Integration – Container	Offered Storage array shall be integrated with Red-hat OpenShift, Kubernetes and other industry K8 based container platform through CSI driver set. Vendor shall support at-least following functionalities through their CSI / CSP integration : a. Shall support both Static and Dynamic provisioning b. Shall be able to expand, re-size the persistent volumes given to statefulset applications.

	c. Shall be able to create and delete the snapshots.
	d. Shall support CSI Raw block volume as well as CSI Volume cloning.
	e. Support for both Fiber channel as well as ISCSI.
Snapshot / Point in time copy & No. of Volumes	1. The storage array should have support for controller-based snapshots (At-least 1024 copies for a given volume). 2. Offered Storage array shall support more than 32000 base volume on the storage array without snapshot and clone.
Multi-tenancy	Offered storage array shall be true multi-tenant and shall support more than 512 Tenant per storage array. Every tenant shall be treated as a separate logical storage array with its own user control access.
General Terms & Conditions	**Any additional hardware / software (such as switches, etc.) required for the completeness of the above required solution / functionality, selected agency will provide the same at NO Additional cost.**

5.6.3. SIEM (Security Information and Event Management) system for the entire network with 5 years Warranty:

S. No.	Technical Requirement
1	Security Analytics Solution would be acting as a core technological solution for Organization. Solution must act as central log management, correlation, analytical and executive dashboard to facilitate continuous threat and event monitoring. Solution with capacity of 3,000 from Day 1 and scalable to 10,000 EPS.
2	Bidder must ensure seamless migration of existing solutions (if required) (without any impact to Organization system) to new solution to provide log collection, management, and central correlation with Analytical capabilities.
3	Bidder to provide solution for complete Organization with 3000 EPS for log collection with central log processing and capability of On-Demand scalability at log collection, management, and central correlation.
4	Proposed solution should be software with support of 3 months of online logs retention. The architecture should be scalable to scale for retention of 6 months logs and 10,000 EPS, whichever is required on-demand basis. In case of Software based bidder to provide required server and storage to run the infra.
5	The solution is expected to collect logs from security and network devices, servers, and application security logs spread across locations.
6	The proposed solution should provide time based, criticality-based store and forward feature at each log collection point
7	The proposed solution should have the ability to gather information on real time threats and zero-day attacks issued by anti-virus vendors or audit logs and add this information as intelligence feed in to the solution via patches or live feeds
8	The proposed solution should generate the following reports (but not restricted to): User activity reports, Configuration change reports, Incident tracking report, Attack source reports etc.
9	The proposed solution must have a robust alerting framework that can be tailored to the specific needs of the organization, ensuring relevant stakeholders are notified of incidents in a timely manner.
10	The proposed solution should provide the ability to monitor and alert on non-compliance events in real-time and provide necessary reports and dashboards. Dashboard should support reporting for consolidated relevant compliance across all major standards and regulatory requirements.

11	The proposed solution should have a mechanism to track security incidents across a wide range of relevant attributes (i.e., IP addresses, usernames, MAC address, log source, correlation rules, user defined, etc.).
12	The proposed solution should be possible to define purging and retention rules for log storage.
13	The proposed solution should support creation of automated incident management workflows to track incident from creation to closure, provide reports on pending incidents.
14	The proposed solution should seamlessly integrate with existing IT and security infrastructure, monitoring tools, and other critical applications.
15	The should provide role based access to restrict access to the data and also restrict access to the GUI.
16	Ability to integrate Threat Intelligence (TI) feeds:
	a. Integration via REST API with different supported data format (CSV, Custom, STIX)
	b. Support for STIX/TAXII
	c. Support for but not limited to IP Addresses, Domains, Hashes, URLs, Malware Process Names
	d. Ability to correlate TI data in real-time, in memory against event data.
	e. Ability to correlate TI data against historic event data.
17	Ability to collect network device configuration, identify changes and provide side-by-side comparison.
18	PCI dashboard that provides a *Red Amber Green status or solution should be able to notify the status of the monitored devices* of the logging status of the monitored devices.
19	Notification and Incident Management
	a. Policy-based incident notification framework
	b. API-based integration to external ticketing systems — ServiceNow, ConnectWise, and Remedy
20	Solution shall have Built-in ticketing/case management system or the vendor shall propose one that has the below minimum capabilities:
	i. Ability to define an escalation policy that sends an email to management when thresholds reached.

	ii. Ability to add PDF and PNG to tickets
	iii. Ability to assign tickets to other operators
	iv. Timeline view to capture activities on a Case and on related incidents
	v. Provides Mean Time To Resolution metric
21	The proposed solution shall have automated response and remediation capabilities as integrated or as a separate solution to be integrated with SIEM.
22	i. The solution must have over built-in Response & Remediation actions for a number of different vendors such as but not limited to :Microsoft, Linux, Fortinet, Palo Alto, Infoblox, Cisco, Aruba. The solution shall also provide for manual remediation capabilities wherever required
23	Powerful and Scalable Analytics
	a. Search events in real-time— without the need for indexing and using logical operators such as AND, OR, NOT and parenthesis.
	b. Schedule reports and deliver results via email
	i. Ability to export reports in CSV and PDF
	c. Search events across the entire organization, or down to a physical or logical reporting domain
	d. Dynamic watch lists for keeping track of critical violators — with the ability to use watch lists in any report or rule
	e. Correlation Rules should be mapped to MITTRE (https://attack.mitre.org/matrices/enterprise/) categories and the Incidents view must include a dashboard mapping devices, incidents and their MITTRE category.
	f. Able to automatically correlate user to location and IP address:
24	i. Provide ability to report and search on user to IP address to location. Location may be physical switch port, mac address or VPN.
25	ii. Enrich events where no user context is provided based on IP address.
26	Solution shall have capability to perform an automated response should an incident occur
27	Policy based archiving of data to another location such as an NFS mount. Data must be able to be restored via the GUI for analytics searches.
28	Solution shall include File integrity monitoring capabilities as integrated or separate solution to be integrated with SIEM, wherein deletion or modification of

	any critical file needs to be monitored and alerted
29	SIEM should provide capabilities of Network Traffic Analysis and Behaviour Anomaly, if not, the vendor shall propose a solution that can be integrated into SIEM.
30	The vendor shall mandatorily provide their own Threat Intel along with the SIEM solution
31	The vendor should consider User and Entity Behaviour Analytics (UEBA) capability as integrated solution.
32	Solution shall have Threat Hunting Capability based on Machine Learning
33	The proposed solution should be a challenger or leader in the latest Magic Quadrant
34	The solution shall have AI based capabilities to predict Risk based on data collected from network, user systems, vulnerability scanners etc.
35	Solution should have Agent based discovery for collectiong performance metric on Windows,Linux, OS Version,Software,Processes,Disk interfaces etc.
36	Solution should have inbuilt feature for forensic monitoring through OSQUERY which provide processes,users,registry,software and can schedule task which is not typicaly avialable in usual logs.
37	Solution should have generative AI assistance capability and integration available to guide the incident response based on alert/Threat category
38	Solution should have Python / API based framework for threat feed integrations with SIEM platform.
39	SIEM must be able to provide SIEM solution migration to new proposed platform. Detailed migration plan and strategy to be proposed by bidders.
40	Proposed solution must have capability to identify attack at early stage through decoy activity and attack confidence to be highlighted centrally at SIEM level from day 1 natively or using additional solution.
41	Solution must provide embedded generative AI assistance to guide and turbocharge SOC analysts actions during incident investigation, response, threat hunting, and more.
42	Proposed gen-AI should automatically interpret security events, generating a detailed summary, potential impact, and remediation recommendations.
43	Analysts must have capability to query AI in natural language to create rich reports and get product help.It must have built-in prompts to make it simple for analysts to invoke AI help during typical workflow activities.

44	Solution must have capability to provide guided investigation and analytical support by accelerating many of the time-consuming tasks of SecOps. Below key use cases to be achived:-
	1. Make events, alerts, and incidents easier to understand through auto response via AI.
	2. Speed response activity and effectiveness through AI.
	3. Translate natural language requests into the technical queries required to execute complex database queries and automatically build rich reports.
	4. Provide guidance on playbook templates, recommend playbook components, and even build entire playbooks.

5.7. Specification for the Workstation Setup with 5 years Comprehensive Warranty:

5.7.1. Workstations (200 Nos.)

S. No	Item	Minimum Specifications
1	Form Factor	Tower/Micro Tower/Mini Tower
2	Chassis	Tool-less Chassis (Tool-less Hard Drive, Memory & Optical drive Removal)
3	Chipset	Commercial Class Intel® Q670 Chipset
4	Processor	Minimum Intel Core i7-14700
5	Memory	8 GB DDR5-4800 Memory expandability up to 64 GB with 2 DIMM Slots
6	Storage	512GB M.2 PCIe NVMe SSD
7	Graphics	Minimum Intel UHD Graphics 770
8	Audio	Integrated audio controller with internal speaker of atleast 2W
8	Operating System	**Microsoft Windows 11 Professional** with OEM Recovery DVD or option of Cloud Recovery
9	Networking	Integrated Intel Gigabit 10/100/1000 Ethernet Controller
		Wi-Fi 6 +Bluetooth 5.3 WW WLAN
10	Ports	Video: 1 Display Port, 1 HDMI
		USB:2 USB 2.0, 3 USB 3.2 Gen 1, 3 USB 3.2 Gen 2, 1 USB Type C, 1 audio out
11	Slots	1 PCI Express v4.0 x16
		1 PCI Express v4.0 x1
		1 PCI
		2 M.2
		3 SATA Ports
12	Bays	2X 3.5" Internal, 1 External bay
13	Keyboard	USB Wired Keyboard
14	Mouse	USB Optical Wired Mouse

15	Power Supply	180 W with 90% efficiency or better
16	Volume	No More than 16.5 L
17	Security	Hardware based endpoint security controller TPM 2.0
		Integrated Intrusion Sensor.
		Support for chassis cable lock devices & Support for chassis padlocks devices
		Drive lock option for HDD to secure Data
		Integrated protection from malware that lurks on malicious websites
		Integrated real-time detection and prevention of zero-day threats and advanced
		persistent threat (APT) attacks for Windows applications.
18	Manageability	out-of-band manageability allowing technician to execute full remote control of computing endpoint over an Ethernet or Wi-Fi 802.11 connection, regardless of OS state. Endpoint could be on premise behind corporate firewall or outside the corporate firewall. IT admin should be able to monitor full boot up / reset sequence, including BIOS access, to identify any issue with the PC
19	Certifications	Microsoft Windows 11, Ubuntu
		FCC,CE, RoHS, UL, EPEAT Gold India, Energy Star, TCO, MIL STD 810 ISO 9001,14001,20001,27001 for OEM
20	Display	**23.5" inches or Higher**, IPS Display with Minimum resolution of 1920X1080, with VGA, DP/ HDMI, TCO 8.0 Certified
		(Same OEM as desktop)
21	Warranty	All the workstation procured against this RFP will be under comprehensive warranty for the period of 5 years. (on-site)
22	**ATC Terms & Conditions**	**Windows 11 Professional should be OEM factory preloaded. OEM preloaded OS Certificate must be submitted on OEM letterhead**

5.7.2. MS Office 2019 or better professional MOLP+F25 (200 Nos).

5.7.3. Printer Scanner (MFP) (5 Nos.):

S. No.	Specifications	
1	**Function**	Print,Copy, Scan
2	**Print Technology**	Laser
3	**Monthly Page Volume Expected**	Upto 2500 Pages
4	**Features Required**	Automatic Document Feeder
		Colour Print
		Two Sided Printing
		Scan to PDF
5	**Print Speed**	Upto 25 PPM
6	**Connectivity for Printing**	Mobile
		Wireless
		USB
		Network Connectivity
7	**Print Quality (Black and White and Colour)**	upto 600x 600 dpi
8	**Media type**	Paper (Bond,Brochure,coloured,Glossy,Letterhead,Lables,Envelops etc)
9	**Media Size**	76 x127mm to 216 x 356mm
10	**Scaner type**	Flatbed
11	**Colour Scanning**	Required
12	**Scan File Format Required**	PDF,JPG,TIFF ETC
13	**Scan Resolution**	upto 300 x300 dpi for ADF & upto 1200x 1200 dpi for Flatbed
14	**Scan Size**	Maximum 216 x297 mm

15	**Compatible Operating Sytem**	Windows 11 or better
16	**Control System**	Touch Display

NOTE:

All the workstation procured against this RFP will be under comprehensive warranty for the period of 5 years.

Selected agency will be responsible for the miscellaneous work (at no additional cost) required for the complete the installation of work station as per the locations specified by the client and if relocation of the work station is required during the period of contract, selected need to do this at no additional cost.

Work Flow Diagram (Tentative)
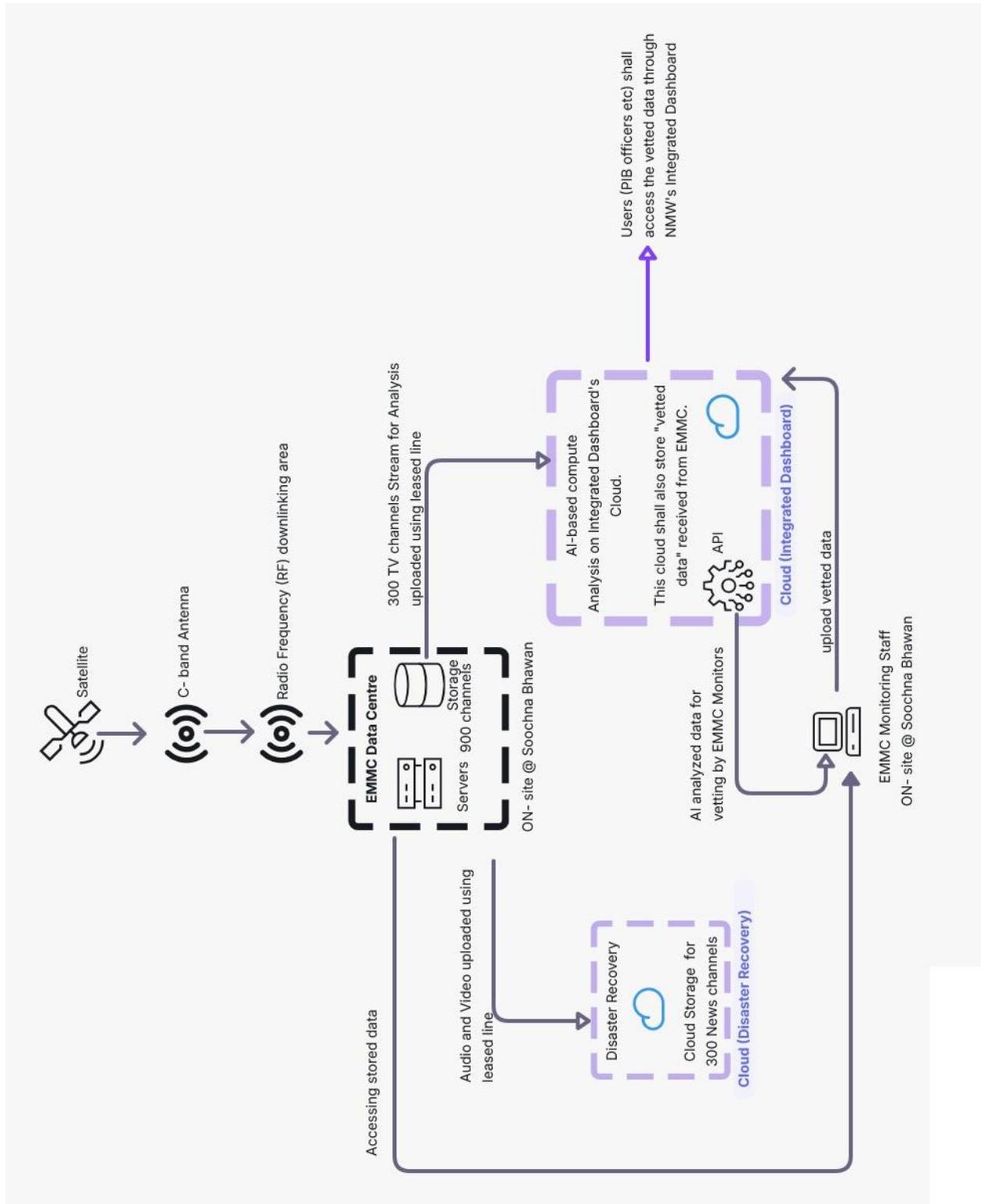
5.1.4. Specification for Precision Air Conditioning Solution (1 Nos.) with 5 years Comprehensive Warranty:

Sl. No.	Parameter	Description
	DX Type Units with **EC Fan- Motors & Scroll Compressors**	
1	**Total Cooling Capacity**	Scope of **8.0 TR capacity** (minimum 4600 CFM) of Bottom Discharge Precision Air conditioning Systems for high side and low side and shifting of PAC units.
2	**Cabinet Construction**	The frame and panels shall be constructed of heavy gauge corrosion resistant sheet steel and have modular construction and hinged doors.
		The cabinet shall be powder coated and have a textured finish.
		The cabinet Shall be provided with double skin side panels on all four sides with inner panel of minimum thickness of 0.8mm and outer panel of thickness of 1.0mm
		Insulation in the side panels should be 19 mm thick glass wool and front & back panels should be insulated with 25 mm thick special acoustic mineral/Rock wool.
3	**Refrigeration Circuit**	The refrigeration system shall be of the direct expansion type and unit must incorporate hermetic scroll compressors having independent evaporator coil circuit and outdoor unit. Compressors will be with necessary protection devices and valves complete. The system shall include an auto reset HP control and LP switch, filter drier and charging port. A thermal expansion valve, sight glass and filter drier shall be provided in each circuit. Additionally, the system must be provided with on the suction & discharge side of compressor piping to minimize chances of any leaks due to compressor vibrations during start / stop cycle; this must be in addition to the anti -vibration mounts provided for the compressors.
4	**Evaporator Coil (Dx)**	The evaporator coil shall be constructed of rifled bore copper tubes and louvered aluminum fins, with the aluminum/ GI frame. The coil should be straight/ slant coil configuration and drip tray should be fabricated from heavy gauge steel with powder coating to avoid corrosion. The drip trays must be double angled for condensate flow and easily removable for cleaning. The cooling coil shall be of suitable rows deep and designed for high sensible cooling. The distance between the fins should not be less than 1.8 mm and the face velocity shall not be more than 2.75 m/sec

5	**Compressor**	The compressor shall be of the high efficiency complaint fixed scroll design with an E E R of not less than 11.1 BTUH/watt (C O P of not less than 3.25) at ARI rating conditions. Each compressor shall have in-built overloads, HP and LP controllers and mounted on vibration isolators. Compressor can be single / double of the required capacity as per manufacturer standard.
		Crankcase heaters are not required as the compressor is mounted in the indoor unit. Compressors should be without Rota lock valves as Ball valves are provided in the refrigerant circuit for service purpose.
		Digital scroll compressors which are generally used in comfort application i.e. (VRF/ VRV) where the load is fluctuating and hence these compressors should not be quoted for the Data centre/ Server room application
6	**Vibration Absorber**	All units must have **VIBRATION ABSORBERS in compressor suction & discharge lines** to prevent cracks on high pressure copper pipe lines during start/stop cycle of the compressor.
7	**Power Monitoring Switch**	All units must be provided with CE certified main power line supervisor switch to monitor under voltage / over voltage / phase reversal of incoming power supply. Provision of one common power monitoring device in electrical panel will not be acceptable. The switch provided must be of reputed make.
8	**Fan and Motor: ELECTRONICALLY COMMUTATED DRIVES**	Fans: Unit must be provided with **direct drive backward curved Plug fans each running with DC drive electronically communicated motors**, the fans should be aligned and balance statically and dynamically. The fan speed must be controlled based on the room return air Temperatures and also must have automatic speed control without manual intervention. The fans can be one /two/ three no's as per the manufacturer's standard. **Units with latest innovative EC fan technology with "COMPOSITE" Blade material will be required.** **Composite blade EC fan saves more energy compared to Standard EC fan with aluminum blade.** Units shall be factory balanced in accordance with Section 15071, Mechanical Sound and Vibration Control. **Only direct drive fans to be provided in offered units and centrifugal fans with belt drive is strictly not acceptable.**
9	**Noise Level:**	70 dB from 1 MT of unit in free filed conditions

10	**Accessibility: Service Area:**	· The unit shall be accessed from front which will be enabling to access all the main components of the machine from the front for installation purposes and routine servicing.
		· The unit shall be serviceable from the front with a maximum service space required of 1 mtr.
11	**Electrical Heating**	· The electric heating elements shall operate at a level not exceeding 60 KW / sqm. The low watt density elements shall be of finned tubular nickel plated steel construction.
		· The heating circuit shall include dual safety protection through loss of air and high temperature controls.
12	**Humidification**	· Humidity shall be achieved by using Steam-electrode type humidifier by which steam shall be produced and the steam shall be distributed evenly into the bypass air-stream of the process cooling unit. The Humidifier operation should have periodic flushing cycle. The Humidifier should guarantee a perfect efficiency with low energy consumption and greater durability of components. The humidifier shall be fully serviceable with replaceable electrodes.
		· Steam humidifier capacity 3/5/8 or 10 kg/hr with 3 phase electrodes having function of auto drain and proportional control for capacity complete with steam supply and water drain hose pipe.
13	**De-Humidification**	· De- Humidification to be achieved by controlling the evaporator fan speed. De- humidification done via split coil and solenoid valve is an out dated practice and not recommended for the latest generation Precision units.
14	**Filtration**	· Filtration level should be of 90% - 10 microns. Filter should be of HDPE media & washable type. **Filters with combustible / dry disposable media are strictly not accepted**
15	**Electrical Panel**	Control cabinet to be provided with Type 2 enclosure, with grounding lug, combination magnetic starters with overload relays, circuit breakers and cover interlock, and fusible control circuit transformer.
		The electric panel provided for the unit must be equipped with main incoming power isolation switch, additionally the unit must be provided with under voltage / over voltage / phase reversal / single phasing protection, all three phase motors must be operated only via 24V coil voltage contactors and MPCB's, additionally step down transformer must be provided for power supply to the unit controller. The electrical panel must also be providing with relay block for common alarm.

16	**Air Cooled Condenser**	The condensers shall be factory matched to provide an operating range of **(-) 5 degree C to 45 degree C ambient**. Condensers shall be suitable for 24 hour operation and be capable of providing vertical or horizontal discharge.
		The condenser frame shall be constructed from heavy duty steel with powder coating to avoid corrosion and incorporate a copper tube and aluminum fin coil.
		The coil shall be a maximum of 6 rows deep, with a minimum fin spacing of 2.0 mm with a maximum face velocity of 3.6 m/s.
		The condenser fans shall be direct drive axial type operating at not more than 1440 rpm variable voltage electric motors.
17	**Fan Speed Controller for Condenser fans**	The condensers must be provided with fan speed controllers, the speed of fans must be controlled based on refrigerant pressure monitoring.
18	**Micro Processor Controller**	Air conditioners should have single microprocessor with following controls:
19	**Control Type**	The controls shall be a microprocessor programmable logic controller. The controls shall have separate indication of operating modes (cooling, heating, humidifying and dehumidifying), alarm conditions (temperature high, loss of sensor, compressor HP & LP, wet floor, no air flow and low humidifier water). The display and indication shall be visible on the front without removing any external panels. Local and remote alarms will be triggered if an alarm condition is reached. **Each unit must be provided with large screen GRAPHICAL DISPLAY and additionally the controller must have feature of DUAL SET POINT programming.**
		The control should have an auto-restart feature which will return the unit to normal operation resumption of mains power.
		Automatic load / time and alarm sequencing function to be performed by the unit.
		Microprocessor must have output point for ON/OFF of motorized damper and must be suitable to be integrated with fire point for unit shut off incase receiving signal from fire panel or fire detectors.
		The unit controller must have option of {DUAL SET} point for energy saving i.e. customer must have the option to set two independent set points for the unit based on operational requirements and energy saving concepts.
20	**Display:**	In normal operating mode the screen should display unit number, temperature and relative humidity set points and actual, operating status.

		The unit must have a large screen LCD display on controller with user friendly menus and minimum two level password protections.
		RS485 interface port for BMS compatibility with ModBus RTU protocol is required.
21	**Alarms:**	Following alarms should be available:
		1. Temperature High / Loss of Sensor
		2. Compressor 1 High / Low Pressure
		3. Compressor 2 High / Low Pressure
		4. Wet floor
		5. No Air flow
		6. Low Humidifier Water.
		7. Temperature high / low
		8. Humidity high / low
22	**Safety Protections:**	The unit shall also incorporate the following protections:
		a) Single phasing preventers.
		b) Reverse phasing
		c) Phase unbalancing
		d) Phase failure
		e) Overload tripping (MPCB) of all components
		f) Wet Floor Sensor
23	**Safety Interlocks:**	Operation of heaters & humidifiers shall be possible only when blower fan is in operation.
24	**Sequencing:**	The sequencing should be feature of the PAC units. The units shall be designed to work for equal no of run hours also in case of fault the stand by unit should start.
25	**Microprocessor Controls:**	**Following information shall be available on the display on the units:**
		a) Room temperature and humidity.
		b) Supply fan working status
		c) Current date and time.
		d) Electric heaters working status.
		e) Manual / Auto unit status.
		f) Temperature set point.
		g) Humidity set point.
		h) Working hours of main component i.e. fan, heater, humidifier
		i) Unit working hours
		j) Modes of operation (cooling, heating, humidification, de humidification,).
		k) The last 10 intervened alarms.
		The Microprocessor shall be able to perform following functions:
		a) Password for unit calibration values modification.

		c) Automatic reset of program.
		d) Cooling capacity control.
		e) Compressor starting timer
		f) Date & time of last 10 intervened alarms
		g) Start / Stop status storage by switch

Selected agency will be responsible for the following activities (at no additional cost):

1. Interested bidders are suggested to **visit the project site** to analyze the co-existence of new PAC (1 Nos.) with the already installed PACs (3 Nos.) and submit their bid accordingly.

2. All the minor /major civil work required for the installation & commissioning of new PAC (1 No.) alongside the revamped solution & existing PACs (3 Nos.) shall be undertaken by engaged agency at no additional cost.

3. In case of any shifting & re-installation / adjustment of existing PACs or requirement of additional hardware such as copper pipes etc. along with refilling of cooling gas (existing PACs) must be done without any additional cost.

4. Unit Installation Location:
The PAC unit is to be installed on the 10th floor, EMMC, New Delhi. All lifting and shifting activities, whether by manual methods, crane, or hydra, as required, shall be entirely in the selected agency scope.

5. Access through Data Center:
For bringing the unit inside the data center, if any glass doors, wooden partitions, or obstructions need to be dismantled, the same shall be properly restored to original condition by the contractor. This activity is in the engaged agency scope.

6. Floor Modifications:
Any cutting of floor tiles or false flooring required for installation shall be carried out by the engaged agency. Final finishing and aesthetic restoration must also be done by the selected agency at no extra cost.

7. Scaffolding for Copper Piping:
For laying copper piping from the lower levels to the 10th floor, scaffolding or any required arrangements shall be provided by the selected agency.

8. Copper Piping Connections:
Appropriate length of copper piping (liquid and discharge lines) and drain piping must be provided, laid, and connected by the contractor as per site requirement at no additional cost.

9. All Civil Works:
Any and all civil works related to the installation (cutting, support, fixing, sealing, finishing) must be done by engaged agency.

10. Refrigerant Charging:
As required for the proper operation of the unit, refrigerant gas charging shall be done by the contractor and is part of their scope.

11. Point by Point compliance & MAF Submission:

All bidders must submit a Point by Point compliance & Manufacturer Authorization Form (MAF) as per the format provided in RFP document.

12. Sequencing with Old Units:

The new unit must be integrated / sequenced with the existing units in such a way that the server automatically switches to standby during failure and system redundancy is maintained. Any control card/module required for this functionality must be provided by engaged agency.

13. MS Stand for Units:

Suitable MS stands/support structures for both indoor and outdoor units shall be provided and installed by the selected agency.

14. Drain & Humidifier Piping:

Drain line and humidifier water piping shall be connected as required for complete and functional installation. All necessary fittings, supports, and connections shall be provided by the contractor as part of their scope of work."

Additional Terms & Conditions for the period of 5 years comprehensive warranty:

1. Selected agency will be responsible to maintain **minimum temperature of 24ºC**. In case of failure to do so, penalties as per tender SLA may be recovered from subsequent payments.

2. Guaranteed 4 hours on site response, 7 days/week, and 24 hours/day.

3. Includes 100% parts coverage.

4. Includes 100% labor and travel coverage 7 days/week, and 24 hours/day.

5. Performed by trained Engineers. Bidder will be responsible for any fault arises during the repair work and bidder shall do the rectification for the same at no additional cost.

6. Includes monthly Preventive Maintenance. Detailed preventive maintenance reports to be submitted along with the quarterly invoices.

7. The scope of maintenance contract shall also include periodical checking, cleaning, servicing, inspection and testing, preventive maintenance/Health Check-up (monthly), necessary repair and replacement etc. ensuring continuous and effective functioning of all the ACs installed at EMMC, New Delhi.

8. Upkeep of the system and maintaining log book of Works carried out.

9. Bidder shall be solely responsible for the maintenance, repair, replacements and supply of required parts etc. No extra payment will be made for change/replacement of any part.

10. No extra payments will be paid for any repair / replacement work of PACs which includes refilling of PAC's REFRIGERANT GAS.

11. It is bidder responsibility to keep the PACs in working condition and efficient cooling throughout the warranty period.

12. Subject to all Terms & Conditions as noted in this tender documents.

SERVICE PERFORMED

➢ **Preventive Maintenance Service**

1. Cleaning up of Unit, Air Filter, cooling coil & condense coil (if required with water)

2. Cleaning of Humidifier bottle, electrodes water supply, Strainer and brain inside the Machine.

3. Checking of belt & replace, if necessary.

4. Lubrication of bearings, if necessary.

5. Checking up of operation of Unit, Controller & condenser.

6. Combing of fins of condenser & Evaporator coil, if necessary.

7. Measurement of current of each individual equipment.

8. Checking of all the overload relay settings.

9. Checking of all electrical components for loose connections and tightening, if necessary.

10. Checking of refrigeration piping for any gas leakage.

11. Checking of refrigeration system and pressure readings.

12. Checking of pulleys, motor mounts and Condenser fan mounts.

13. Checking of panel insulation.

14. Checking of temperature reading.

15. Checking of microprocessor controllers for operation.

16. Checking of valve functioning in case of Chilled water unit