



Odisha State Disaster Management Authority (OSDMA)
Government of Odisha
Rajiv Bhawan, Bhubaneswar-751001, Odisha

CORRIGENDUM

TO REQUEST FOR PROPOSAL DOCUMENT FOR ESTABLISHMENT OF AWS & ARG NETWORK IN THE STATE OF ODISHA

Ref No. 886/OSDMA dated 07.03.2018

NO: 1441/OSDMA

Date: 7.04.2018

In reference to our tender notice No.886/OSDMA dated 7.3.2018, Request for Proposal are invited for Procurement of GPRS based Automatic Weather Stations(AWS) & Automatic Rain Gauges(ARG), Data Receiving Servers and LED Display facility. The descriptions in the original RFP document are hereby amended/ clarified as per the followings.

SL No.	page / para	Description in the RFP document	Amendments/ Clarifications
1	Page-2 (1)	As a part of augmentation of surface observation network, OSDMA is going to install GPRS based 320 nos of AWS at all Block HQs/selected Municipality wards and about 6000 ARGs in all Panchayats/ selected Municipality wards. All ARGs in Panchayats will be categorized as A or B or C according to exposure condition and ARGs equipped with rainfall, temperature & Humidity sensor will be installed at 'A' category Panchayats but category 'B' or 'C' will have only ARG with rainfall sensor. 35 LED display at district HQ, office of Chief Secretary, SRC, OSDMA & Agriculture department and 320 LED display at block HQ/municipality wards will be	As a part of augmentation of surface observation network, OSDMA is going to install GPRS based 320 nos of AWS at all Block HQs/selected Municipality wards and about 6000 nos. of ARGs (category A about 1000 nos. and Category B & C- about 5000 nos) in selected Panchayats/ Municipality wards. All ARGs are categorized as A or B or C according to exposure condition and sensors. Category 'A' ARGs will be equipped with rainfall, temperature & Humidity sensor Category 'B' or 'C' ARGs will have only with rainfall sensor. 35 nos of 55" LED TV (at district HQ, office of Chief Secretary, SRC, OSDMA & Agriculture department) and 320no of 42" LED TV at block HQ/municipality wards will be installed for displaying the AWS/ARG data.

	Page-12 17(i) Page-27 29 Page-40 11(a)(b) (c) & other pages	installed. LED Display	“LED display” should be read as “LED TV” in all the cases The LED TV should be SONY/LG/Samsung make. Bidder has to quote only one brand for all the required units.
2	Page -2 para 2 (a)	The bidder must be Original Equipment Manufacturer (OEM) or Consortium for quoted automated systems.	<ul style="list-style-type: none"> • The OEM, here, refers to the manufacturer of all major components of AWS and ARG, i.e., sensors, data loggers. • The consortium refers to the group of members for this tender and it shall declare one of the members as the lead member.
3	Page -2 para 2 (b)	The bidder should be a profit making firm and must have minimum annual turnover of INR 50 Crores for consecutive past three years.	In the case of consortium, the cumulative turnover of the members of the consortium will be considered. The lead member must have minimum 50% of the financial eligibility.
4	Page -2 para 2 (d)	A certificate in this regard from minimum three users about satisfactory and proven performance of the networks of the system must be enclosed with the technical bid.	In addition to the para: The bidder must provide users web link address of the AWS and ARG data for real time data transmission to user’s server system.
5	Page -3 para- 4	Date and time for the submission and opening of bid <ul style="list-style-type: none"> • Sale of tender document: 09.03.2018 at 11.00 AM to 09.4.2018 at 1.00 PM • Last date for Receipt of completed tender document: 09.04.2018 up to 6.00 PM. • Opening of Tender paper: 10.04.2018 at 11.00AM 	<ul style="list-style-type: none"> • Sale of tender document: 09.03.2018 at 11.00 AM to 25.4.2018 at 2.00 PM • Last date for Receipt of completed tender document: 25.04.2018 up to 6.00 PM. • Opening of Tender paper: 26.04.2018 at 11.30AM
6	Page -5 para- 5 (ix)	Refund of security deposit will be made only after expiry of guarantee/warranty period.	Refund of security deposit will be made only after expiry of comprehensive Annual maintenance contract period.
7	Page-8 Para 9.9	The manufacturer should provide CIMO (WMO) / IMD / NABL accredited labs or any other government department / Lab reports for the systems/sensors, if any, which are internationally compared, along with the technical	The manufacturer should provide CIMO (WMO) / IMD / NABL/NPL accredited labs for all the systems/sensors which are internationally compared, along with the technical bid. All sensors should be NIST (National Institute for

		bid. All sensors should be NIST (National Institute for Standards and Technology, USA) traceable.	Standards and Technology, USA) traceable
8	Page-13 Para 17 (viii)	Safeguard of all accessories /equipment of AWS and ARG shall be the responsibility of the vendor and to ensure the same, the vendor shall make necessary arrangement and insurance cover.	Safeguard of all accessories /equipment of AWS and ARG shall be the responsibility of the vendor and to ensure the same, the vendor shall make necessary arrangement for safety and security.
9	Page-14 Para 18 (ii)	The AWS & ARG data (csv. format) shall also be received at central servers at OCAC and OSDMA with separate IP address via FTP service facility at an interval of 10 minutes. Provision of dissemination of data either from OCAC or OSDMA server to GIS server at OCAC as per WMO coding format and to IMD (Pune) Server as per csv. format.	The AWS & ARG data (.csv format) shall also be received at central servers at OCAC and OSDMA with separate IP address via FTP service facility at an interval of 10 minutes. Provision of dissemination of data either from OCAC or OSDMA server to GIS server as per WMO coding format and to IMD (Pune) Server as per .csv format.
10	Page-14 Para 18 (xii)	Details of network block diagram and Schematic diagram of AWS & ARG site separately with 10 meter Triangular mast is given in Annexure- III	deleted
11	Page-16 (h)	Rain Gauge Tipping Bucket: (h) Material of Outer Body/housing (Base/Collector) of ARG- Collector should be marine grade stainless steel or brass or UV resistant fibre glass.	Material of Outer Body/housing (Base/Collector) of ARG- Collector should be marine grade stainless steel .
12	Page-17(a)	Soil Temperature- Range °C to +75 °C	Soil temperature ranges 0°C to +75 °C
13	Page-17	Soil Salinity Sensor	Soil salinity sensor not required
14	Page-19 Para 20(i) (a) (b)(c)	(a)Battery: Single12V chargeable sealed maintenance free battery 65 AH capacity. (b)Solar Charge controller: It should the charge the 12 V,65 AH SMF battery through 40 W Solar panel and also Over-load protection, Short circuit protection ,Protection from the lightning strike and Under-voltage protection. (c)Solar Panel: Rated capacity 40W, Open Circuit voltage: 18 V ,Short circuit voltage:2.3 A or as per requirement at the site	(a)Battery: Single12V chargeable sealed maintenance free battery 42 AH capacity for AWS and Single12V chargeable sealed maintenance free battery 26 AH capacity for ARG (b)Solar Charge controller: It should the charge the 12 V/42 AH SMF battery for AWS through 30 W solar panel & 12V/26AH SMF battery for ARG through 20 W Solar panel and also Over-load protection, Short circuit protection, protection from the lightning strike and Under-voltage

	<p>being reported to the administrator on Email/SMS in case of the failure event.</p> <p>ii. All three servers will be loaded with original software and should be always in Hot position to take over from main server to secondary server and vice versa.</p> <p>iii. Both servers should have mirror servers and separate IP address for central servers at OCAC and OSDMA . Server at OSDMA is a replicated server (hyper v or vm). No UPS is required for the OCAC server</p> <p>iv. The data base will be updated in both the servers in real time to avoid any loss of data in case of server failure. Preferable database (oracle) may be used.</p> <p>v. For storing of data up to 20 years or in case of failure of server, san-storage capacity of 60 TB or higher capacity may be attached with all central servers so that 20 years data can be stored.</p> <p>vi. One server with GIS facility for preparation of different maps for display and plotting of data station wise/block wise/district wise should be installed at OCAC. San-storage of capacity 60 TB may be used for storing data as external storage.</p> <p>vii. The performance/benchmark during the acceptance of system will include all hardware details.</p> <p>viii. Identical servers required for Hot redundancy located within Central Station in 21” rack.</p> <p>ix. Manufactured by ISO 9000 and 14000 certified manufacturing unit HP/COMPAQ/IBM/DELL.</p> <p>x. <u>Model:</u> Rack mountable 2U server.</p> <p>xi. <u>Processor:</u> Intel Xeon 5600</p>	<p>provided with the rack. The architect of the servers should be 100% redundancy with heart beat / status being reported to the administrator on E-mail/SMS in case of the failure event.</p> <p>ii. All three servers will be loaded with original software and should be always in Hot position to take over from main server to secondary server and vice versa.</p> <p>iii. Both servers should have mirror servers and separate IP address for central servers at OCAC and OSDMA . Server at OSDMA is a replicated server (hyper v or vm). No UPS is required for the OCAC server</p> <p>iv. The database will be updated in both the servers in real time to avoid any loss of data in case of server failure.</p> <p>v. For storing of data up to 20 years or in case of failure of server, san-storage capacity of 100 TB capacity shall be attached with central server at OCAC so that 20 years data can be stored.</p> <p>vi. One server with GIS facility for preparation of different maps for display and plotting of data station wise / block wise / district wise should be installed at OSDMA.</p> <p>vii. The performance/benchmark during the acceptance of system will include all hardware details.</p> <p>viii. Identical servers required for Hot redundancy located within Central Station in 42U rack.</p> <p>ix. Deleted</p> <p>x. Deleted (refer Annexure-IX)</p> <p>xi. deleted(refer Annexure-IX)</p>
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		<p>Series processor OR LATEST</p> <p>xii. <u>Rack Mountable:</u> 2U Rack Mountable Server with rack mounting kit .</p> <p>xiii. <u>Memory:</u> 8 GB RAM, PC3 registered or more</p> <p>xiv. <u>Networking:</u> 2 x 10/100/1000 MBPS Ethernet controller</p> <p>xv. DVD reader and writer</p> <p>xvi. <u>Power Supply:</u> Redundant Hot Pluggable power supply</p> <p>xvii. <u>Operating System:</u> LINUX based Server (latest available version)</p> <p>xviii. <u>Database (oracle) in all servers</u></p> <p>xix. <u>Monitor:</u> 32” Flat Panel LED Monitor.</p> <p>xx. <u>Keyboard and optical mouse.</u></p>	<p>xii. <u>Rack Mountable:</u> 2U Rack Mountable Server with rack mounting kit. All required accessories must be provided with the rack.</p> <p>xiii. deleted(refer Annexure-IX)</p> <p>xiv. deleted(refer Annexure-IX)</p> <p>xv. External DVD reader and writer</p> <p>xvi. deleted(refer Annexure-IX)</p> <p>xvii. Preinstalled Operating System: Microsoft Windows Server 2012 R2 (64bit) or latest with 5 User license</p> <p>xviii. Database (oracle) software in all servers</p> <p>xix. Monitor: two numbers of 32” Flat Panel LED Monitor</p> <p>xx. Keyboard and optical mouse for each server</p> <p>The detail specifications of servers, SAN storage and Server Chassis is given at Annexure- IX</p>
19	Page26 26(c)	<p>The successful bidder shall verify the site at block HQs, Gram Panchayat location & municipality wards before site preparation. Space for AWS 7X5 m and for ARG 5X5 m with good exposure condition are required but the site should be away from obstacles such as tree, building etc. and also away from high tension electric supply.</p> <p>..... interfacing of sensors, installation and configuration of communication system leveling, installation of fencing shall be the responsibility of the Successful bidder. The payment of leveling and fencing shall be made as per actual</p>	<p>The successful bidder shall verify the site at block HQs, Gram Panchayat location & municipality wards before site preparation. Space for AWS 7X5 m and for ARG 5X5 m with good exposure condition are required but the site should be away from obstacles such as tree, building etc. and also away from high tension electric supply.</p> <p>..... interfacing of sensors, installation and configuration of communication system levelling, installation of fencing shall be the responsibility of the Successful bidder.</p>
20	Page 29 31(a)	<p>Delivery of all equipment and accessories shall be done in three consignments within 9 months from</p>	<p>Delivery of all equipment and accessories shall be done in three consignments within 12 months from</p>

		<p>the date of placement of supply order (For Indian supplier) and from the date of opening of Letter of Credit. (For Foreign supplier)</p> <p>1st Consignment: 320 AWS & about 3000 ARG System and central servers within three months from the date of placement of supply order</p> <p>2nd Consignment: About 2000 ARG System and central server within three months after delivery of 1st consignment.</p> <p>3rd Consignment: About 1000 ARG System and central server within three months after delivery of 2nd consignment.</p>	<p>the date of placement of supply order (For Indian supplier) and from the date of opening of Letter of Credit. (For Foreign supplier)</p> <p>1st Consignment: 150 AWS & 2000 ARG (Category A-400,Category B&C-1600) System and central servers and 355TV units within six months from the date of placement of supply order.</p> <p>2nd Consignment: 100 AWS & 2000 ARG(Category A-300,Category B&C-1700) System within three months after delivery of 1st consignment.</p> <p>3rd Consignment: 70AWS & 2000 ARG (Category A-300,Category B&C-1700) System within three months after delivery of 2nd consignment.</p>
21	Page 30 para 32(i)	<p>a) Only 50% of the Project cost will be paid after successful supply of hardware/material.</p> <p>b) Final 50 % of the project cost will be paid after installation & Commissioning of AWS & ARG.</p> <p>c) It is to be noted that the bidder may submit bills for payment after completion of supply/installation/maintenance for every 50 numbers of AWS & 500 numbers of ARG stations or more in each part (However in the final part the number of station may be less than 50, as actual). Bills of both Hardware and software of central servers including 355 LED display systems should be made</p>	<ul style="list-style-type: none"> • 5% advance against bank guarantee. • 40% on Delivery and successful installation at specified location and upon receipt uninterrupted data at desired intervals for 15 days as per the schedule mentioned in Page 29 para 31(a) above • 10% at acceptance of the the end of 1st year warranty • 15% at the end of 2nd year warranty • 10% at acceptance of the the end of 1st year CAMC • 10% at the end of 2nd year CAMC • 10% at the end of 3rd year CAMC
22	Page-30 Para 32(ii) (c)	Calibration charges of sensors will be paid on yearly basis.	Deleted.
23	Page 33 para A3 (c)	Concrete Platform for the mast should be 1.0 ft x 1ft (length x width) and 2 ft height (1.0 ft below ground level and 1.0 ft. above the ground level).	Concrete Platform for the AWS mast should be 3.5 ft x 3.5ft (length x width) and 7 ft height (5.0 ft below ground level and 2.0 ft. above the ground level) and for ARGs, 1.0 ft x 1ft (length x width) and 2 ft height (1.0 ft below ground level and 1.0 ft. above the ground level). The depth of the foundation shall be

			increased based on the soil condition. The structural stability certificate by a Civil Engineer shall be produced.
24	Page-39 para E(f)	special flags (e.g. levels surface, significant, standard, tropopause with upper air data)	deleted.
25	Page44. Annexur e –V1	The successful bidder shall provide onsite Comprehensive Warranty/ for Two Year followed by Comprehensive AMC for Five Years of all AWS, ARG, three Central Servers and 355 Led display systems .The warranty period shall start from date of successful commissioning of the system. After expiry of one year Warranty, OSDMA will sign an agreement with the firm for Comprehensive AMC of AWS, ARG, display systems and Central Severs for Five years.	The successful bidder shall provide onsite Comprehensive Warranty for Two Year followed by Comprehensive AMC for three Years of all AWS, ARG, three Servers and 355 Led TV systems .The warranty period shall start from date of successful commissioning of the system. After expiry of two year Warranty , OSDMA will sign an agreement with the firm for Comprehensive AMC of AWS, ARG, display systems and Central Severs for three years.
26	Page 47 Pt.5	GSNT	To be read as GSTN
27	Page 49- 51 Annexur e-VII	Deliverables	To be changed as per the modification

Detailed Technical Specifications**1. Blade Chassis (Quantity: two nos.)**

Sl No	Parameter	Specification
1	Gartner Ranking	OEM should be in Leader's quadrant in latest Gartner's magic quadrant report for "Modular Servers".
2	Blade Chassis Feature	EIA standard rack mountable unit with support for six/higher nos Four-CPU servers (full-height), or Twelve/higher nos Two-CPU servers (half-height) or a combination. Should simultaneously support full-height and half-height servers along with storage modules in the same enclosure. Offered enclosure should support latest generation Intel Xeon processors based on Two-CPU and Four-CPU blades as well as storage Blades.
		Offered solution shall support for future scalability/growth through stacking of multiple such blade enclosures with dedicated stacking interfaces (10G or higher bandwidth) in minimum 1+1 redundant connectivity to form single management plane and single console of management for connected enclosures. Layer 2 network traffic should be switched within enclosure aggregation (without using top of the rack switch). Should support Multi-module link aggregation (MLAG) for resiliency against interconnect failure
		Offered solution should support provisioning virtual and physical infrastructure from pools of compute, storage and networking resources.
		Offered solution should have single console for provisioning of compute, storage and server side network configuration with choice of direct attach storage (DAS), iSCSI and FC.
		Offered solution should support standard API for integration into popular management tools such as Microsoft SystemsCenter and VMWare vCenter including open source automation and DevOps tools.
		Offered solution should support software defined templates to quickly make changes to the infrastructure. Template should include server BIOS, firmware, boot order, RAID, storage and network configurations of the infrastructure required
		Offered solution should support scripting to reassign compute resources to different workloads to effectively utilize the infrastructure
3	Configured Components	Chassis should be configured with following common resources:
		Fully populated Hot-pluggable redundant power supplies of (maximum available rating) to support maximum configuration for the chassis.
		Power supplies should support N+1 & N+N redundancy.
		N+N power supply configuration should support protection against AC grid loss i.e. if one power grid fails, half the power supplies lose their AC source, other half power supplies on the other grid should remain powered, providing sufficient power for the system to continue running.
		Offered enclosure should be fully populated with redundant hot pluggable cooling fans or blowers enabled with technologies for improved power consumption and acoustics
		Redundant chassis management with secure access paths to manage and provision multiple enclosures and blades from a single interface.

		<p>Management network should be isolated from production network. Should support integrated solution/technology for auto-discovery of resources within the enclosure and across multiple connected enclosures.</p> <p>Blade Chassis must support a minimum of six I/O module bays to configure in 3+3 redundancy. Offered enclosure must support hot-swappable I/O modules for provisioning FCoE, Ethernet (such as 1G, 10G, 25G, 40G, 50G, and 100G), FC (such as 8Gb and 16Gb), and SAS (12Gb). Option for 1G as well as 10G BaseT external connectivity must be supported from the offered I/O modules.</p> <p>Redundant I/O modules must be provided. Each such module must support minimum 12 x 20GbE internal downlink ports to the servers, 2 x 1/10G Base T external ports, 2 x external 10G-SR SFP+ uplink ports, and 2 x 8Gb FC external ports.</p> <p>Each downlink port to support up to 3 Network and 1 no of FCoE port with adjustable speeds from 200Mb to 20Gb in 100Mb increments. Minimum 2.5Tb non-blocking fabric capacity for the offered I/O module. Support up to 250K MAC entries.</p>
4	Switch Configuration	Addition of any server to the chassis in the future should not need any port or license up-gradation of the Ethernet or SAN switches.
5	SAN/Storage Management	Should support Internal and external storage provisioning: Local/zoned direct attached storage (DAS), software-defined storage (SDS) and storage area networks (SAN). Should support Storage virtualization for flexible performance tiering on highly-dense, scalable storage platforms. Should support SAN storage management compatibility for switched fabric, direct attached, or vSAN topologies. Should support SAN zoning policy customization to control zone-/alias- configuration fit with local data center standards. Should support private/shared storage volumes for DAS/SAN attach to server profiles/templates to enable automated and policy-driven volume provisioning. Should support Boot-from-SAN for Fibre Channel (FC), Fibre Channel over Ethernet (FCoE), and iSCSI storage. Offered storage must comply to above SAN/storage management.
6	Redundancy	<p>a) Mechanical Devices such as Fans and Power Units should be completely Hot Swappable and Redundant to ensure High Availability.</p> <p>b) Enclosure management must be provided in fail-over and high-availability redundancy.</p>
7	Chassis Management	<p>a) Management/controlling software have to be from the OEM.</p> <p>b) Should support auto-discovery of Compute, Memory, Storage and Fabrics within an enclosure or on multiple connected enclosures.</p> <p>c) Should support software-defined intelligence for configuring profiles to provision compute, storage, fabrics and images</p> <p>d) Should support Firmware and OS Driver updates for the servers using profile templates to monitor, flag, and remediate</p> <p>e) Should offer collaborative user interface which support logical resources to physical resources mapping, Smart Search, Activity Log, HTML5 mobile access, and Customizable Dashboard</p> <p>f) Should support frictionless Firmware and OS Driver updates using profile templates to 'monitor, flag, and remediate</p> <p>g) Should support solution in 1+1 redundancy for provisioning of</p>

		boot/run storage volumes and deploying OS along with application. Such a solution should support stateless operation with IP addresses assigned to bootable images and generating iSCSI target for the boot/run volume.
8	Reporting	Should support reporting capabilities such as: 1) Asset and inventory information for the devices in the enclosures 2) Thermal and power information, including real-time actual power usage per server and per enclosure 3) Reports should be exportable to csv or Microsoft Excel format
9	KVM	Offered enclosure should provide display port and USB port to connect Laptop/Monitor locally. Virtual KVM feature to be provided in the offered enclosure as well.

2. Application Server (Quantity: 3 nos. Blade Server)

Sl No	Parameter	Specification
1	CPU	Two nos. of Intel® Xeon® processors Gold 6152 (22 core, 2.1GHz)
2	Chipset	Intel® C621 Series Chipset or equivalent
3	Memory	128GB DDR4 RAM with 2666MHz. Total 24 DIMM slots
4	Cache Memory	As per offered processor
5	RAID	RAID 0 and RAID 1
6	Hard disk drive	2 x 1.2TB 10K 12Gbps SFF SAS Hard drives
7	RAID Controller	PCIe 3.0 based 12G SAS Raid Controller with RAID 0, 1 with 1GB of Flash backed write cache onboard.
8	Ethernet ports	Dual port 10GbE/higher Converged Network Adaptor
9	Clustering	Should support Cluster mode for High Availability (HA)
10	FC ports	Should be capable of supporting 8 Gbps Dual port FC HBA
11	Graphics	Integrated G200eh video controller
12	Bus Slots	Minimum of 3 Nos of x16 PCIe 3.0 based mezzanine slots supporting Converged Ethernet, Ethernet, FC and SAS adaptors
13	Industry Standard Compliance	ACPI 2.0, Microsoft® Logo certifications, USB 3.0 Support, IPMI 2.0, Secure Digital 2.0, TPM 1.2 and 2.0 Support, IEEE, AES, 3DES, SNMP, SSL 2.0, DMTF Systems Management Architecture for Server Hardware Command Line Protocol (SMASH CLP), Active Directory v1.0, PCIe 3.0, ASHRAE A3
14	OS Support	Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) VMware
15	Server Management	a) Should support integration with management software to deliver 'composable infrastructure' with a view of resources. This should be flexible and scalable solution providing IT managers with the architecture to implement their software-defined data center (SDDC) -- and to address the changing business needs and the challenges of today's enterprise data centers b) Should support Gigabit out of band management port to monitor the

		<p>servers for ongoing management, service alerting and reporting.</p> <p>c) Should support UEFI to configure and boot the servers securely.</p> <p>d) System should support RESTful API integration.</p> <p>e) System management should support provisioning servers by discovering and deploying 1 to few servers with Intelligent Provisioning.</p> <p>f) System should support embedded remote support to transmit hardware events directly to OEM or an authorized partner for automated phone home support</p>
16	Remote Management	<p>a) 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.</p> <p>b) Dedicated remote management port should be provided and it should be able to download the firmware from the website directly or from internal system. Server should support automated firmware update.</p> <p>c) Server should support agentless management using the out-of-band remote management port. Remote management port should have 4GB NAND flash with 1GB available for user access. NAND flash should be used for keeping system logs and downloading firmware from manufacture's website or internal repository</p> <p>d) The server should support Active Health System which monitors and records continuously every hardware change, every configuration change, temperature and voltage variations, and alerts changes in the server hardware and system configuration without impacting server performance. This assists in diagnosing problems and delivering rapid resolution when system failures occur.</p> <p>e) Should support remote console sharing up to 6 users simultaneously during pre-OS and OS runtime operation, Console Replay that captures and stores and supports replay of 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 and 3DES on browser. Should provide remote firmware update functionality. Should provide support for Java free graphical remote console.</p>
17	Security	<p>Power-on password</p> <p>Administrator's password</p> <p>Keyboard password (QuickLock)</p> <p>System Management Chipset with:</p> <ul style="list-style-type: none"> - SSL encryption - Secure Shell version 2 - Advanced Encryption Standard (AES) and Triple Data Encryption Standard (3DES) on browser, CLP and XML scripting interface - AES and RC4 encryption of video <p>External USB port enable/disable</p> <p>Network server mode</p> <p>Serial interface control</p> <p>TPM (Trusted Platform Module) 1.2 or 2.0 option</p> <p>Advanced Encryption Standard (AES)</p> <p>Intel® Advanced Encryption Standard-New Instructions (AES-NI)</p>

18	Gartner Ranking	Should be in Leader's quadrant in latest report Magic Quadrant for "Modular Servers".
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3. SAN Storage (Quantity: One no.)

SI No	Parameter	Specification
1	Storage System	Fault tolerant storage controllers, must not have a single point of failure between controllers and must be configured in active/active mode. Controllers shall be true active-active so that a single logical unit can be shared across all offered controllers in symmetrical fashion, while supporting all the major functionalities like Thin Provisioning, Data Tiering etc.
		Unified storage system with standards based FC SAN, NAS and IP SAN functionality.
		Storage array shall be configured in No-Single-Point-of-Failure configuration with redundant components
		<ul style="list-style-type: none"> a) Two redundant hot-swappable active-active RAID controllers supporting for RAID 0, 1, 5, 6 levels or better. The useable capacity of 100TB should be configured on RAID 5/6. b) Offered storage array shall have native virtualization support so that Raid 1, Raid 5, Raid 6 can be carved out from a logical space instead of dedicating separate physical disks for each application. c) Every supplied disk shall be able to participate into multiple and different raid sets simultaneously. d) In case vendor doesn't have above functionality, then 20% additional raw capacity shall be provided for each type of disk to balance out the capacity utilization.
		Global hot spare disks to be configured as per industry practice
		The Storage array shall have 12Gbps SAS architecture for Backend Disk connectivity. The architecture should allow modular upgrades of hardware and software.
		The proposed solution must support of mix drives. The solution must be proposed with 25TB using SAS 10K drives in RAID5/6, and 75TB using NL-SAS in RAID5/6.
		The storage system should support non-disruptive field replacement capabilities for components like Disk Drives, Disk connections, power supplies, fans, controllers etc
2	Cache	Array should be supplied with 128 GB of DRAM cache memory scalable up to 256GB.
3	Protocol	The array should support block protocols such as FC & iSCSI and File protocols like CIFS, & NFS.
4	Disk Drive Support	Offered Storage Array shall support 12Gbps dual-ported 600 /1200GB hot-pluggable Enterprise SAS hard drives, Minimum of 400GB SSD Drives along with NL-SAS 2TB / 4TB drives
5	Connectivity	The array should be supplied with 4 X 16G FC ports and 4 X 10G iSCSI ports for SAN connectivity
		The array should be supplied with 4 X 4 SAS lanes for back-end connectivity across the storage controllers. Each lane with 12Gbps speed.
		There should not be single points of failure in the connection path up to

		the server. All solutions need to support multipath for Windows, Linux, UNIX and virtualized environments
6	Data Security	The Storage array must provide multiple levels of access control including role-based security and auditing capability.
		The Storage array must provide end-to-end data protection using industry standard mechanism such as parity checking, checksum etc
		In the event of power failure, data in the cache should be safely written to the disks to avoid data corruption in the event of extended power outage. Alternatively, the cache should have sufficient battery backup
7	OS Support	The storage system shall support all leading operating system platforms and clustering including Windows Server 2008/2012(enterprise Edition) Sun Solaris, HP-UX, IBM AIX and Enterprise Linux.
8	Data Replication	The Storage array must support capability to replicate data to remote site array in synchronous and asynchronous modes. All the licenses for the features mentioned should be for the full capacity of the storage except replication. Replication licenses should be available in optional and active file & block replication more than two sites must be supported.
9	Data Storing	The storage should support workload optimization by dynamically moving hot data to high performance disks like SSD and cold data to low performance disks like 10K/15K RPM disks /7.2K RPM NL-SAS disks automatically based on the policies. The movement granularity must be 256 MB or lower. This license should be configured for entire supported capacity of the array.
10	Thin Provisioning	The storage array must be configured with required licenses to enable thin provisioning to allow physical allocation of just the storage that is needed or over provisioning of capacity. This license should be configured for entire supported capacity of the array.
11	Data Efficiency	The Storage array should support data efficiency features like compression and de-duplication
12	Snapshot	Configurable snapshots for block level and file level data with both create & restore functionality. The NAS must have active directory OR LDAP integration. This license should be configured for entire supported capacity of the array
13	Storage Monitoring	The Storage array should support continuous system monitoring, call-home notification, advanced remote diagnostics and proactive hot sparing to enhance system robustness, availability and reliability.
14	Data Security	The storage should be configured with easy to manage, simple integrated user interface for distributed storage environments. A single sign-on centralized console should have dashboards for at-a-glance management and reporting and other functions like configuration monitor and manage. Performance monitoring should be provided to analyze the performance data
15	Storage Management	Storage should provide a simple to use single management interface and should have key capabilities like simplicity, flexibilities and automation for optimal storage management. It should be a single sign-on centralized console should have dashboards for at-a-glance management and reporting and other functions like configuration monitor and manage.
		It should be web based remote management of storage array.
		It should have enterprise dashboard to aggregated view of entire storage environment and capability to customize dashboard. It should have dashboard for alerts on severity to allow instant update on the storage

		environment for quickly and efficiently detection of issues
		The storage management software should display the list and provide graphical depiction of storage hardware components with capability of tracking system and state information in real time.
		Should support the Storage Management Initiative Specification (SMI-S), the storage industry standard for heterogeneous storage network management based on the Common Information Model (CIM) and Web-Based Enterprise Management (WBEM).
		The storage management should have capability for performance analysis for various components like Raid Groups, Storage pools, LUNs, Disks, ports, Controllers and Cache. It should have capabilities to run performance analysis in real time and also on the historical data and ability to trigger alerts by SNMP traps or through e-mails based on performance thresholds.
		The Storage management software should be from the same OEM as the storage array. It should allow to automatically send an e-mail alert based on an event.
16	Software Licensing	All software, firmware and licenses necessary to achieve full functionality needs to be included
17	Thin Provisioning & Space Optimization	<ul style="list-style-type: none"> a) Offered storage array shall support Thin provisioning and Thin Reclaim to make the volume thin for an extended period of time for complete array supported raw capacity. b) Thin Re-claim (Zero Page reclaim) inside storage subsystem shall be automatic in nature and there shall be no need to run any utility inside storage for same. c) Offered Storage array shall support data reduction feature of De-duplication and Compression for thin volumes running on Solid state drives. Vendor shall support both de-duplication and compression on a given volume simultaneously. d) For effective capacity utilization, thin reclaim maximum unit shall be 16KB. Vendor shall provide the documentary proof for same. e) Offered storage array shall be tightly integrated with VMware so that Eager zero disks layout can be used with thin provisioning and thin re-claim.
18	Performance & QoS	<ul style="list-style-type: none"> a) Shall have capability to use more than 30 drives per array group or raid group for better performance. b) 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 for different application logical units. c) Quality of service engine shall allow to define minimum and maximum cap for required IOPS / bandwidth for a given logical units of application running at storage array. d) It shall be possible to change the quality of service Response time, IOPS (In both milliseconds as well as Sub-milliseconds), bandwidth specification on basis of real time.
19	Server Integration	Offered storage must comply with the unified management and provisioning feature of the offered blade enclosure.