

**CONSORTIUM OF  
PUBLIC SECTOR UNDERTAKINGS  
(CPSUs)**

**Request for Proposal**

*For  
Supply, Installation, Integration and Maintenance  
of  
IT Solution Products such as Servers, Storage,  
Tape Library , and OS  
For CPSU H.Q.s of NPR Project*

07<sup>th</sup> August, 2013

Reference No : ECIL/SCG/39-5390/J

This RFP is available in the websites : [www.ecil.co.in](http://www.ecil.co.in) and [www.tenders.gov.in](http://www.tenders.gov.in)

Enquiry Ref.: ECIL/SCG/39-5390/J

Date: 07-08-2013

To

**Sub: Request for proposal for Supply, Installation, Integration and maintenance of IT Solution Products such as Servers, Storage, Tape Library , and OS For CPSU H.Q.s of NPR Project.**

Dear Sir,

Consortium of Public Sector Undertakings (CPSUs) consisting of Electronic Corporation of India Limited (ECIL), Bharat Electronics Limited (BEL), and ITI Limited (ITIL) is implementing Creation of National Population Register (NPR) in different States, National Capital Territory of Delhi and Union Territories of India for Office of Registrar General of India, Ministry of Home Affairs, Govt. of India.

As part of creation and maintenance of huge electronic database of demographic as well as biometric information of nearly 120 crore of Indian Population, CPSUs is planning to procure IT related Software and Hardware (Servers, SAN Storage, scale-out NAS storage, Tape Library, SAN switches, Ethernet Switches, Backup Software, RHEL etc.) at their Hd. Qrs. (total three sites termed as CPSUs-DC). The tender will be processed in a THREE BID System (Eligibility bid, Techno-commercial bid and Price bid).

Bids are invited from registered and reputed vendors having experience in supply, installation, integration and maintenance of above products and meeting eligibility criteria over-laid in the RFP. The bidders satisfying the Minimum Eligibility Criteria (MEC) are only considered. The RFP document attached herewith explains the scope of the work, specifications, terms & conditions, instructions to the bidders, price bid format etc.

## Time Schedule of Various Bid related events

<b>Reference No</b>	<b>ECIL/SCG/39-5390/J</b>
<b>Bid Issue Date</b>	<b>07-08-2013</b>
<b>Last date for receiving queries</b>	<b>17-08-2013</b>
<b>Pre-Bid Meeting</b>	<b>22-08-2013 at 10:00 AM</b>
<b>Corrigendum</b>	<b>24-08-2013</b>
<b>Due date for submission of bid at ECIL, Hyderabad</b>	<b>10-09-2013 up to 2:30 PM</b>
<b>Techno-commercial Bid opening Date</b>	<b>10-09-2013 at 3:00 PM</b>

Should you require any clarification, please contact the undersigned.

Thanking you,

Yours Faithfully,

For Electronics Corporation of India Limited,

Dy. General Manager (Purchase)  
Smart Card Group,  
Electronics Corporation of India Limited  
ECIL POST  
HYDERABAD -500 062

Phone No: 040-27122569/27182248/6393

Fax No. 040-27120288/0495

Email: cdpurchase@ecil.co.in

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## 1. Definitions

“Accounting Year”	- The financial year commencing from 1st April of any calendar year and ending on 31st March of the next calendar year.
“EMD”	- Earnest Money Deposit
“Letter of Intent (LoI)”	- A letter issued by the Tendering Agency indicating his intention to place Purchase Order on the successful bidder.
“LRUR”	- Local Register of Usual Residents.
“NDA”	- Non Disclosure Agreement
“Net worth”	- (subscribed and paid up equity + reserve) less (Revaluation reserves + miscellaneous expenditure not written off "Accumulated Loses").
“NPR”	- National Population Register
“PBG	- Performance Bank Guarantee
“RFP	- Request for Proposal.
“RGI	- Registrar General, India.
“Tendering Agency”	- The agency which has released Request For Proposal, i.e., ECIL, ECIL Post, Hyderabad, India
“The Bidder”	- The Company participating in this bidding process.
“Purchase Order”	- The order placed by the individual PSUs (ECIL/BEL/ITIL) for procurement of IT Related Hardware and Software.
“ORGI”	- Office of the Registrar General, India
“DEO”	- Data Entry Operator
“CPSU-DC”	- CPSUs Data Center.
“BDC”	- Bulk Data (Entry) Center

## 2. Role of CPSUs in NPR Project

CPSUs undertake the following activities on behalf of the ORGI to enable Creation of the National Population Register for the residents within the states/UTs assigned to CPSUs

1. Digitization: CPSUs to complete manual data entry from scanned images of NPR schedules provided by the ORGI, in two languages, i.e. English Language and Local Language of the State/UT. The major portion of this job is already over.
2. Biometric Data Capture: Upon completion of manual data entry, CPSUs capture biometric data of all residents aged 5 years and above. The job is going on full-fledgedly through-out the country.
3. Data Consolidation and Delivery: CPSUs shall consolidate the captured data, including demographic and biometric data, and deliver consolidated databases to ORGI for further action after executing certain processes.

The electronic database of demographic information is used for enrolment of Biometric data which includes photographs, 10 fingerprints and both irises.

## 3. Process Flow at CPSUs-DC

- 3.1 Consolidated Biometric data on LTO media/External Hard Disks/DVDs is received (ORGI packets and UIDAI packets ) at CPSUs-DC. Registrar Packets are extracted at CPSUs-HQ to construct the biometric databases. Same will be forwarded to the Data Collection Centers for generation of LRUR in a secured manner.
- 3.2 The cleansed Demographic data is transported to CPSUs-DC from each data collection center (BDC), after incorporation of LRUR corrections.
- 3.3 It is proposed to keep separate logical block for each of BDC to store Demographic data and Biometric data belonging to that BDC. A copy of 100% demographic data is kept in active area and on LTO tapes in backup form.
- 3.4 UIDAI consolidated data is uploaded to UIDAI after segregation either from BDCs or from CPSUs-DC.
- 3.5 However, the Registrar packets received are extracted and data is stored in the biometric Databases.
- 3.6 The UID Number received from UIDAI against uploaded packets will be integrated with the Database. Data required for the card preparation is generated and sent to Card production station.
- 3.7 Database servers would be in active–passive mode of operations with common storage.
- 3.8 Supply, integration, commissioning and maintenance of IT components for the CPSU-DCs is the main scope of this RFP.

#### 4. Scope Of Work

The scope of work under the project includes the following:

- 4.1. Supply and safe delivery of stores to the CPSUs-DC at i) Nalanda Complex, ECIL, Hyderabad-500062, A.P., ii) Bharat Electronics Limited, Jalahalli Post, Bangalore-560013, Karnataka & iii) ITI Limited, Kanjikode West, Palakkad, Kerala - 678623. The Bill of Material for Hardware, operating system and Tape backup solution is provided in Chapter-10.
- 4.2. The scope of supply shall also include accessories / devices and special tools required to make the equipment/ materials fully operational. In case, no accessories or devices or special tools are required, the same shall be explicitly stated.
- 4.3 The bidder shall undertake Installation and commissioning tasks of stores at the locations indicated above. The bidder will specify in advance and verify the suitability of infrastructure like space, power etc., provided at the installation site prior to installation and commissioning. The Bidders shall position their engineers at site to support and guide ECIL/BEL/ITIL engineers during installation and commissioning of equipment, at no additional cost. Certified engineers from respective OEMs of Servers, Storages, RHEL should be present along with the technical manpower of the bidder (if the bidder is not the OEM of the corresponding product) at each site during integration and implementation of the solution till the successful installation and commissioning.
- 4.4 Seamless integration of the servers, third party OS, system software, application software, Storages, Tape Drives, Tape Backup System, Back up s/w, LAN switches etc. meeting the required functionality is the responsibility of the bidder. Bidders shall provide licenses and support for a period of 5 years for all the third-party software, Operating System, Backup software proposed in the solution.
- 4.5 Providing maintenance support (both service and spare parts) for the supplied stores at the site for availability of minimum 95% in each month, during the whole warranty period of five years. Bidder has to depute two engineers at each site and necessary spares are to be stored at the nearest service center for carrying out repair activity.
- 4.6 The bidder shall clearly indicate and cover all licensing issues for various software components including any special tools required.
- 4.7 Bidder shall supply the UPS of adequate capacity (as per the solution offered and considering the existing setup) complying with the specifications mentioned at **ANNEXURE A-13**. Bidder shall indicate power rating of each component in the offered solution and the total power requirement as per **ANNEXURE-H**. Considering the load of existing migration server setup and safety factor, the capacity of the UPS for each CPSU site shall be 1.5 times the cumulative power ratings of the offered solution components.

- 4.8 Bidder shall supply In-row Air Conditioning System as per the specification mentioned at **ANNEXURE A-14**. AC Capacity may be calculated based on the area required, load of the offered solution and load of the existing migration server infrastructure (10TB storage with Two Servers).
- 4.9 In addition, integration of existing Migration Servers (2 nos.) with the LAN to be established is the responsibility of the bidder.
- 4.10 All the cables drawn for the purpose of inter-connection among the various components including power cables and LAN cables, if any, are to be neatly laid and covered using suitable and descent conduit.

## 5 Minimum Eligibility Criteria (MEC)

The following are the Minimum Eligibility Criteria to be necessarily fulfilled by the bidder. Non-compliance, fully or partially, with any of the following conditions will result in disqualification of the bid.

- 5.1 The Bidder must be a Registered and reputed Company / firm in India and should be operating in India for the last 5 (five) years. The certificate of Incorporation and Certificate of Commencement of Business issued by the Registrar of Companies or any other Government Agency shall be submitted.
- 5.2 The Bidder must have a CMMi Level 5 Certification. Copy of the certificate shall be submitted.
- 5.3 The Bidder shall submit copies of certificates for Service Tax Registration No. , Income tax Permanent Account No. (PAN) and Sales Tax No.
- 5.4 The bidder should be a profit making company for the past 3 years with positive net worth. The bidder should have a turnover of at least Rs. 400 Crores per annum, for Computer Hardware & SW supply, maintenance, system integration, networking, data centre implementations, for at least 3 years as on 31 Mar 2013. Documentary evidence in the form of certificate by a chartered accountant should be provided.
- 5.5 Bidder should have executed orders worth Rs. 50 Crores towards supply and installation of servers, and storage, put together, for the OEM Products in the last 3 financial years (cumulative). Documentary evidence of details of orders executed shall be submitted.
- 5.6 Bidder should have proven experience and executed at least ONE Single order worth Rs. 15 Crores, in the past three financial years, involving supply, installation, and commissioning activity. Supporting copies of customer order and successful implementation / completion certificate should be submitted.
- 5.7 Bidder should be an Authorized partner or service provider of (at least one among the) server / storage OEM whose products are being offered. The bidder shall submit



unconditional authorization letters from OEMs for submitting the proposal with their products.

- 5.8 Bidder shall submit the non-refundable and non-transferable bid fee of Rs. 50,000/- along with the bid as per clause 7.2.
- 5.9 Bidder shall submit EMD as per clause 7.4.
- 5.10 The bidder shall submit the authorization for signing the Bid document in the form of a power of attorney on a Rs. 100/- non judicial stamp paper duly notarized.
- 5.11 Bidder should not have been debarred, blacklisted or prosecuted by any Government organization/ agency / PSU for corrupt, fraudulent or any other unethical business practices and a written declaration in the form of notarized Affidavit shall be submitted to this effect.
- 5.12 Bidder shall not have any litigation pending with any of the CPSUs Members (M/s. ECIL or M/s. BEL or M/s. ITIL) and a written self declaration to that effect from the competent authority of the bidder's firm shall be submitted.
- 5.13 Bidder shall submit the Non-Disclosure Agreement as per the Format provided at Annexure D-3.

CPSUs reserve the right to seek additional supporting documents for any of the above.

## **6. Techno Commercial Criteria**

The following are the minimum Criteria to be necessarily fulfilled by the prospective bidder for technical evaluation. Non-compliance, fully or partially, with any of the following conditions will result in disqualification of the bid.

- 6.1 The bidders shall confirm compliance to each item of specifications, mention specifications offered by them and deviations if any is to be stated explicitly. Simple mention of "Yes" or "No" under compliance columns would render the bid to be treated as non-responsive.
- 6.2 The bidders shall submit their company profile with details of registered office, branch offices in the states of Andhra Pradesh, Karnataka and Kerala, support offices, ASPs etc along with details of contact persons.
- 6.3 The Bidder shall submit the following from the OEM whose Products are being offered:
  - a. Undertaking from OEM that all equipment supplied are new and are not declared as "End of Life" products and
  - b. Letter of spare parts support for a minimum period of 5 years, from the date of firm purchase order.

- 6.4 The bidder shall submit a statement of unconditional acceptance of full responsibility for executing the “Scope of Work” as defined in the RFP and meeting all obligations. In addition, similar statement from the OEMs should be submitted where OEMs shall agree to accept the full responsibility of performing the contractual obligations (including supply, installation, commissioning and warranty support) in respect of their own products, in the event the bidder fails, for any reason whatsoever, at anytime during the entire period of contract, to execute the responsibilities as defined in the RFP.
- 6.5 The bidder shall submit a statement of unconditional acceptance of Risk Purchase clause 9.16 as per proforma given in Annexure-B2.
- 6.6 The bidder shall have on their rolls at least two OEM certified engineers each for the Server, OS & Storage being offered. Self certified statement providing the summary of name of the service / support personnel, employee code no., qualification, experience, certification held and current projects involved shall be submitted.
- 6.7 The bidder shall submit the Support Plan indicating the methodology of providing warranty support during Project. Project exigencies for support in case of redeployment of equipment during the warranty period shall be suitably addressed.

CPSUs reserve the right to seek additional supporting documents for any of the above.

## **7 General Information, Terms and Conditions**

### **7.1 Invitation to Bid**

Considering the critical and prestigious nature of NPR Project, its size and the requirement of resources to implement the project, companies/OEMs having expertise, proven experience and resources for System Integration as defined in this RFP are invited to participate in this Tender.

### **7.2 Bid Fee**

Along with the bid, a Bid-fee of Rs. 50,000/- (Rupees fifty thousand) only towards the cost of the tender document shall be submitted by way of a Demand Draft, drawn on any Nationalized / Scheduled bank, in favor of “Accounts Manager, ECIL, Hyderabad-500 062”, and Payable at Hyderabad,

### **7.3 Clarifications on RFP**

- 7.3.1 Prospective Bidders are required to send their queries, if any, through e-mail addressed to '[cdpurchase@ecil.co.in](mailto:cdpurchase@ecil.co.in)', by the date as mentioned in the time schedule on Page -3, so that the same may be clarified during the pre-bid meeting.
- 7.3.2 The pre-bid meeting will be held as per the time schedule given on page-3, at ECIL Nalanda Complex, ECIL, Hyderabad-500062 for giving clarification of queries raised by the prospective vendors.
- 7.3.3 Reply to clarifications / amendments / addendum if any will be published in the Website of ECIL ([www.ecil.co.in](http://www.ecil.co.in)) as corrigendum to RFP.

#### **7.4 Earnest Money Deposit (EMD)**

- 7.4.1 The Bidder shall submit an EMD of Rs 45,00,000/- (Rupees Forty Five Lakhs Only) by way of a demand draft, drawn on any Nationalized / Scheduled bank, in favor of "Accounts Manager, ECIL, Hyderabad-500 062", and Payable at Hyderabad.
- 7.4.2 The EMD of unsuccessful bidders during evaluation of Techno-commercial bid will be returned within 45 days from the date of bid opening.
- 7.4.3 The EMD of unsuccessful bidders in price bid evaluation will be returned within 30 days from the date of award of contract to the successful bidder.
- 7.4.4 The EMD of successful Bidder will be returned on receipt of SD/PBG as per clause 8.2.
- 7.4.5 EMD of the successful bidder will be forfeited if the bidder fails to submit the Security Deposit as per clause 8.2 or fails to accept the LoI/Purchase Orders issued based on the L1 status.

#### **7.5 Signing of Bids**

- 7.5.1 The bid shall be signed by the person or persons duly authorized to bind the Bidder to the Contract.
- 7.5.2 The authorization shall be in the form of a written power of attorney on Rs. 100/- non judicial stamp paper accompanying the Eligibility bid.
- 7.5.3 Bid should be preferably bound securely after all the pages have been signed affixing the seal before submitting.

#### **7.6 Bid Validity**

7.6.1 Bids shall remain valid for 180 days after the due date of bid submission.

7.6.2 Validity may be extended on mutual consent, if necessary.

7.6.3 CPSUs shall reject a bid as non-responsive if the bid is submitted with a shorter validity period.

## **7.7 Bid Submission**

The tender will be processed in a THREE PART BID SYSTEM (Minimum Eligibility Bid, Techno-commercial Bid and Price Bid)

### **7.7.1 Submission of Minimum Eligibility Bid**

- i. The Minimum Eligibility bid shall be submitted in a separate sealed envelope super scribing "Minimum Eligibility bid" indicating the enquiry reference and due date.
- ii. The cover marked Minimum Eligibility Bid shall contain all necessary documents as per Minimum Eligibility Criteria in clause (5) along with the check list as per Annexure.
- iii. The Minimum Eligibility Bid should be accompanied with EMD. Any Minimum Eligibility Bid without EMD will be liable for rejection.

### **7.7.2 Submission of Techno commercial Bid :**

- i. The Techno-commercial bid shall be submitted in a separate sealed envelope super scribing "Techno-commercial bid" indicating the enquiry reference and due date.
- ii. The techno-commercial bid shall include all documents pertaining to Techno Commercial Criteria as per Clause (6) of the tender document.
- iii. Bidders shall submit the Techno Commercial Offer indicating clearly the Bill of Materials without price. Techno Commercial Offer indicating the Bill of Materials with price will be liable for rejection.

### **7.7.3 Submission of Price Bid**

- 7.7.3.1 The Price bid as per the format at Annexure-C shall be submitted in a separate sealed envelope super scribing "Price bid" indicating the enquiry reference and due date.
- 7.7.3.2 Blank or Absence of price bid will lead to rejection of the bid and forfeiture of EMD.

- 7.7.3.3 Bidder should submit the price bid mentioning quantities and price against each line item of the RFP, Duties and Taxes shall be indicated against each line entry in the price bid as per the Format at Annexure-C.
- 7.7.3.4 Prices shall be indicated both in figures and words. In case of disagreement in prices between words and figures, the price whichever is less will only be considered for the purpose of evaluation.
- 7.7.3.5 Prices shall be quoted on FOR Destination basis, and shall include all charges towards packing, forwarding, freight, transit insurance and unloading.
- 7.7.3.6 The prices quoted shall be unconditional. Any rider/ rejoinder/ condition mentioned in the Price Bid would render the Bid liable for rejection.
- 7.7.3.7 Prices shall remain firm till completion of the contract, under all circumstances. No price escalation will be entertained during the tenure of contract period.
- 7.7.3.8 Details of all Govt. Levies & Taxes should be mentioned separately.

## 7.8 Address for Bid Submission

All the three sealed bids (Minimum Eligibility bid, Techno-commercial bid and Price bid) shall be submitted in an outer cover and sealed. The outer cover shall bear the details of the RFP reference, due date, bidder's address and should be addressed to the CPSU at the following address:

**The Dy. General Manager (Purchase)**  
**Smart Card Group**  
**Electronics Corporation of India Limited**  
**ECIL POST**

**HYDERABAD -500 062**

Phone No: 040-27122569/27182248/6393

Fax No. 040-27120288/0495

Email: [cdpurchase@ecil.co.in](mailto:cdpurchase@ecil.co.in)

## 7.9 Rejection of Bids

- 7.9.1 Bids received by Mail/FAX are not considered.
- 7.9.2 Bids received after the due date of submission will be rejected.
- 7.9.3 It shall be the bidder's responsibility to ensure that the bids are submitted at the correct delivery address and before the bid closing time. The CPSUs assume no

responsibility of Bids delivered to any address other than mentioned above as delivery address.

- 7.9.4 The CPSUs reserve the right to accept or reject any or all bids, in total or in any part thereof, without assigning any reasons. Bids not containing sufficient information in the view of the CPSUs, to permit a thorough analysis, may be rejected.
- 7.9.5 The CPSUs reserve the right to verify the validity of bid information, and to reject any bids where the contents appear to be incorrect, inaccurate or inappropriate in the CPSUs' estimation.
- 7.9.6 CPSUs shall have the right to cancel the RFP process at any time prior to award of contract without any liability to the bidders thereof.

## 7.10 Bid Evaluation Process

- 7.10.1 The evaluation of the bids will be carried out by the committee of CPSUs to assess and finalize the acceptability of the bids.
- 7.10.2 The CPSUs will first open the Minimum Eligibility Bids and the Bidders who fulfill the Minimum Eligibility Criteria will be short listed for Techno Commercial evaluation.
- 7.10.3 The Techno-commercial bids of the short listed bidders will be opened.
- 7.10.4 If required by the CPSUs, the Bidders shall provide/ arrange a Demo/ PoC at one of the CPSUs Headquarters, covering both Hardware, Software and networking items for the tendered solution in a short notice of 7 days. Suitable Date, time and venue for the same would be intimated.
- 7.10.5 The Price bids of Bidders qualified in Techno commercial evaluation only will be considered for further processing.
- 7.10.6 Price bid opening date will be informed to the Techno commercially qualified Bidders.
- 7.10.7 **For price comparison, financial bid will be evaluated taking into account RFP quantities of all the items except A-17 (in ANNEXURE-A), i.e. "Backup Software", which is an optional item.** However, price negotiations on optional item will be held with the techno-commercially qualified lowest Bidder of the rest of the items (A-1 to A-16).

Price negotiations on other items (A-1 to A-16), if required, will be held only with the techno-commercially qualified lowest Bidder.

- 7.10.8 If CPSUs decide to distribute the quantities among more than one bidder, CPSUs reserves the right to negotiate with bidders other than L1.
- 7.10.9 Based on L1 quote, a Letter of Intent (LoI) would be issued by ECIL, indicating the quantity to be supplied to each CPSU, viz., ECIL, BEL and ITIL.
- 7.10.10 On acceptance of the LoI by the successful Bidder, all PSUs will issue Purchase Order in favour of the Vendor for the quantities to be supplied to each PSU at its Head Quarters.
- 7.10.11 Decision of PSUs shall be final in allocation of Purchase Order quantities.
- 7.10.12 PSUs reserve the right to cancel the Purchase Order without any liability to the PSUs account if the supplies are not satisfactory in terms of quality, quantity, time of supply and also on such an eventuality, the PSUs reserve the right to award the contract to any other Bidder to complete the work on time.
- 7.10.13 The quoted prices shall remain firm for additional quantities for a period of one year from the date of Purchase Order. PSUs may procure some additional quantities at these prices (indicated in the purchase order), within that period.

## **8 Post Tender Evaluation Process**

### **8.1 SIGNING OF CONTRACT**

When PSUs notify the successful bidder that its bid has been accepted, it will also send the bidder the contract form incorporating all agreements. Immediately on the receipt of contract document the successful bidder shall sign, stamp and date the contract and return it to PSUs.

### **8.2 Performance Bank Guarantee (PBG)**

Within one week of receipt of the Purchase order from respective PSU, Bidder shall submit a Security Deposit for 10% of the contract value in the form of Bank Guarantee from any Nationalized /Scheduled Bank in favor of respective PSU placing the Purchase Order. The proforma for security deposit shall be as per Annexure – D2. The bank guarantee should be valid covering the entire warranty period from the date of successful installation.

### **8.3 ORDER AMMENDMENT**

PSUs may at any time, by written order given to the Supplier / Bidder, make changes within the general scope of contract with the mutually agreed terms for such changes.

## 8.4 CONTRACT AMENDMENTS

Subject to condition of clause 8.3 no variation in or modification of the terms of the contract shall be made except by written amendment signed by both the parties.

## 9 Execution of the Contract

### 9.1 DELIVERY

The Bidder shall agree to deliver materials as a single lot or in multiple lots as specified in the purchase order, within 8 weeks from the date of Purchase Order.

### 9.2 DISPATCH DOCUMENTATION

The following documents shall be sent directly to the respective PSU.

- i. Delivery Challan / Packing list, Original Invoice indicating Excise Duty/VAT/CST, Excise Gate Pass all in triplicate, LR / Courier Details.

One copy of Delivery Challan, Invoice, Dispatch Particulars, and Packing List shall be sent to PO issuing authority by Fax / e-Mail attachment, immediately after dispatch. Invoice shall indicate PO Number & Date, Description of the material, Unit, Quantity, Unit Rate, strictly as per the Purchase Order. Financial loss to PSUs, if any, due to non-compliance of the above shall have to be borne by the Bidder.

- ii. Warranty Certificate as per Annexure-B1.
- iii. Certificate of Conformance (CoC) stating that the dispatched goods conform to all the specifications as per the scope of supply.

### 9.3 PACKING

9.3.1 Bidder shall ensure proper packing of the materials / equipment to prevent damage / deterioration during transit to the specified destination.

9.3.2 Packing shall be capable of withstanding rough handling during transit and exposure to extreme temperatures, saline weather and precipitation during transit and open storage.

9.3.3 Packing slip shall be kept in each box /case and the same shall indicate Total Net weight, Total Gross weight of the package, volume and number of packages.



9.3.4 Packing so provided shall be reusable for repacking of the same material / equipment. Packing shall be eco-friendly and sea/air/road worthy and shall be able to withstand all associated hazards during transit and handling.

#### **9.4 SHORTSHIPMENTS / DAMAGES**

In the event of short shipment / damage noticed on receipt and opening of packages, all such shortages or damages shall be made good within 7 days from the date of reporting. Beyond this period, the provisions for Liquidated Damages as detailed under clause 9.6 would become applicable.

#### **9.5 REJECTION / REPLACEMENTS**

Equipment / Materials will be inspected within 60 days from the date of receipt at site. Reasons for rejections, if any, will be intimated within this period. Bidder shall deliver replacements within 7 days from the date of reporting, without waiting for the rejected items to be returned. All the expenses that may be incurred for such replacements shall be borne by the Bidder. Also PSU at its discretion may invoke the provisions for Liquidated Damages as detailed under clause 9.6.

#### **9.6 LIQUIDATED DAMAGES (LD)**

9.6.1 If the Bidder fails to complete the supplies (in full quantities and specifications as per the Purchase Order) as per the stipulated delivery schedules, LD will be levied and recovered @ 0.5 % per week of delay or part thereof for the first 4 weeks of delay and @ 5 % per week of delay or part thereof for the next 2 weeks of delay subject to a maximum of 12% of the total order value.

9.6.2 Date of physical delivery of the materials at the sites would be reckoned for the purpose of determination of LD.

9.6.3 If the materials are not delivered within fourteen weeks from the date of purchase order, PSU may invoke the provisions under the Risk Purchase Clause as per 9.16.

#### **9.7 PAYMENT TERMS**

9.7.1. 60% of the supply value with 100% taxes and duties will be paid after successful installation and commissioning of the systems as per terms of the P.O., provided applicable PBG for 10% of the contract value and valid till discharge of all warranty obligation, has

been submitted by the vendor. Delivery Challan as well as installation & commissioning certificate duly signed, stamped and dated by the site in-charge should be submitted by the vendor along with invoice for this purpose.

9.7.2 20% of the supply value will be paid within 90 days of successful installation and commissioning of the systems as per terms of the P.O.

9.7.3 Balance 20% of the supply value will be paid in 10 equal installments, half-yearly, starting after six months from the date of successful installation and commissioning after adjusting penalties, if any, as per SLA clause 9.11.

9.7.4 No advance payments will be made under any circumstances.

## 9.8 TRAINING

9.8.1 Bidder shall arrange for training of certification standard on solution components, such as - i) Storages, ii) Servers, iii) Operating System, iv) Tape Library, v) Backup Software and vi) Network, to be imparted to two engineers from each PSU for each of above solution components (including hands on) , minimum for seven days, at supplier's facility. The training shall cover all aspects of equipment like functioning, installation, testing, commissioning, troubleshooting, system operation, management & administration, maintenance and repair. Necessary charges for training, if any, have to be quoted separately in the price bid as per the format.

The Training faculty shall include experts from the OEMs of the respective solution components.

9.8.2 In addition to training on various components, bidder shall arrange for a two-day training on complete setup of the offered configuration for four engineers of each PSU.

9.8.3 The training programs should be arranged prior to starting the installation jobs of the solution components.

9.8.4 Bidder shall provide the following details on the training program to be offered:

- i) Scope of Training
- ii) Supporting documentation
- iii) Number of days of training program for each of the components specified in 9.8.1

## 9.9 WARRANTY

9.9.1 Bidder shall provide Comprehensive On-site Warranty for equipments/ materials supplied for a period as mentioned in specifications and in clause 9.9.9 from the Date of successful

installation and commissioning. Bidder shall submit warranty certificate as per Annexure-B1. Bidder shall provide stock of recommended spares to reduce the down time, at places near to Hyderabad, Bangalore and Palakkad.

9.9.2 During the warranty period, Bidder shall provide all software updates /Patches downloadable/ improvements in features of equipment, free of cost.

9.9.3 Bidder shall clearly specify the support plan during warranty period -discharge of warranty obligation, in terms of warranty spares, service set up and response time.

9.9.4 Bidder shall specify the frequency of routine maintenance during the warranty period and shall also provide a broad list of the activities proposed to be undertaken during such Preventive/Routine Maintenance. In case such Preventive/Routine maintenance activities put the equipment out of Production, the estimated duration of such non-availability for Production shall also be clearly mentioned.

9.9.5 In the event of breakdown of equipment/system, the Bidder shall bring the system back to working condition or replace the equipment within 24 (Twenty-Four) hours from the time of reporting.

9.9.6 Bidder shall ensure availability of materials / spares required for warranty maintenance at the site. Bidder has to maintain minimum spares required to prevent any downtime in case of any breakdown.

9.9.7 Non-compliance with the performance/uptime requirements as mentioned in RFP SLA Clause 9.11 would attract penalty on the vendor.

9.9.8 Subcontracting or subletting of maintenance services is not permitted.

9.9.9 Comprehensive on-site Warranty for all IT infrastructures (both hardware and software) shall be for a period of **5 (five) years**.

9.9.10 All sorts of licenses required for the offered solution should remain valid for **five years** from the date of successful installation and commissioning.

## 9.10 SPARES

Bidder shall furnish an undertaking to supply necessary maintenance equipment and spare parts for the equipment and total system for a period of 2 years on continuing basis beyond the expiry of warranty period.

Obsolescence of parts, if any, shall be intimated in advance. Bidder shall provide alternate suggestion/solution to overcome the obsolescence.

## 9.11 SERVICE LEVEL AGREEMENT (SLA)

9.11.1 During the Contract Period, the Call resolution Time shall be 24 hours from the Time of logging the Service Call.

9.11.2 Each incidence of non-compliance with the above would attract penalty as detailed below.

Sl. No.	Time taken to resolve the Problem	Penalty
1	Less than 24 Hours	- Nil -
2	Greater than 24 Hours and Less than 48 Hours	Rs. 10,000/-
3	Greater than 48 Hours and Less than 96 Hours	Rs. 25,000/-
4	Greater than 96 Hours	Rs. 50,000/-

9.11.3 The percentage of monthly system availability for a month is calculated as under:

System Availability =

$$\frac{(\text{Total no. of working hours in the month} - \text{Total down time})}{\text{Total no. of working hours in the month}} \times 100 \%$$

- i. Minimum number of Working Hours per day is 16.
- ii. The System Availability shall be at least 95% during a month.
- iii. Non-compliance with the above would attract penalty as detailed below.

Sl.No.	System Availability for the month (%)	Penalty
1	Greater than or equal to 95%	- Nil -
2	Greater than or equal to 90% and Less than 95%	Rs. 5,000/- per hour of Down Time
3	Less than 90%	Rs. 10,000/- per hour of Down Time

All the above penalties would be recovered from the half-yearly due amount as per clause 9.7.3.

## 9.12 NON DISCLOSURE AGREEMENT

9.12.1 The bidder (and his employees) shall not, disclose any part or whole of this RFP document, of the proposal and/or any specification, information furnished by PSU or

connection therewith to any person other than a person employed by the bidder in the performance of the proposal and/or contract. Disclosure to any such employed person shall be made in confidence and shall extend only as far as may be necessary for purposes of such performance. The employees or any other personnel engaged by the bidder shall maintain strict confidentiality. The bidder shall sign a non-disclosure agreement to that effect.

9.12.2 The bidder, his/her employees and agents shall not make any use of any document or information given by user except for purposes of performing the contract award.

9.12.3 In case of breach of confidentiality by the Bidder, PSU shall take such legal action as may be deemed fit.

### **9.13 FORCE MAJEURE**

9.13.1 For purpose of this clause, Force Majeure means an event beyond the control of the supplier/Bidder and not involving the supplier/Bidder's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of PSU either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

9.13.2 If a Force majeure situation arises, the supplier/Bidder shall promptly notify PSU in writing of such conditions and the cause thereof. Unless otherwise directed by PSU in writing, the supplier/Bidder shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force majeure event.

### **9.14 TERMINATION**

PSU may, without prejudice to any other remedy, by written notice of termination sent to the Bidder, terminate the contract, in whole or in part, without any liability to PSU whatsoever, if -

- i. Supplies are not satisfactory in terms of quality, quantity and time schedules.
- ii. The Bidder fails to deliver the items within the period specified in the contract, or within any extension thereof granted by PSU pursuant to conditions of contract or if the bidder fails to perform any other obligations under the contract.
- iii. The Bidder becomes bankrupt or otherwise insolvent.

In any of the above event, termination will be without compensation to the Bidder, and such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue hereafter to PSU.

### **9.15 Resolution of Disputes and Arbitration**

9.15.1 All disputes arising between the Parties hereto (PSU and Supplier) out of or in connection with this contract shall be amicably settled between the Parties. Where the Parties hereto fail to settle the disputes amicably, within ninety (90) days of the written notice of its existence given by either Party to the other, then such dispute shall be settled by arbitration by a sole Arbitrator in accordance with the rules of Arbitration of the International center for Alternate Dispute Resolution ( ICADR Arbitration Rules 1996 ) and the award made in pursuance thereof shall be binding on the Parties.

9.15.2 The arbitration proceedings shall take place in Bengaluru (for BEL & ITIL) and Hyderabad (for ECIL). The proceedings would be conducted in English Language.

9.15.3 The award may be entered into a court of competent jurisdiction for its execution forthwith.

### **9.16 RISK PURCHASE**

In the event of Bidder's failure to supply the equipment / materials as per ordered terms and conditions, PSU shall have the right to cancel the Purchase Order and procure these equipment / materials from alternate sources. In such an event PSU will recover the additional amount the PSU has spent in procuring the materials plus 10% to cover the incidental expenses, from bills/payables, or by invocation of Bank Guarantee, or through other means as provided under the Law.

### **9.17 CONFIDENTIALITY**

9.17.1 All the terms and conditions, including Technical Brochures, if any, shall be confidential and shall not be disclosed to any third party.

9.17.2 Bidder shall undertake and comply that highest standards of ethics are followed and that no corrupt or fraudulent or collusive practices are resorted to, during the complete process of execution of the Purchase Order.

9.17.3 Bidder shall not advertise or publicize through media on the scope and execution of the Purchase Order. PSU reserves the right to prosecute and/or claim damages for non-compliance.

#### **9.18 ASSIGNMENT**

The Bidder shall not assign any obligations of the purchase order, when awarded, either in whole or in part to another party, except under written consent from PSU.

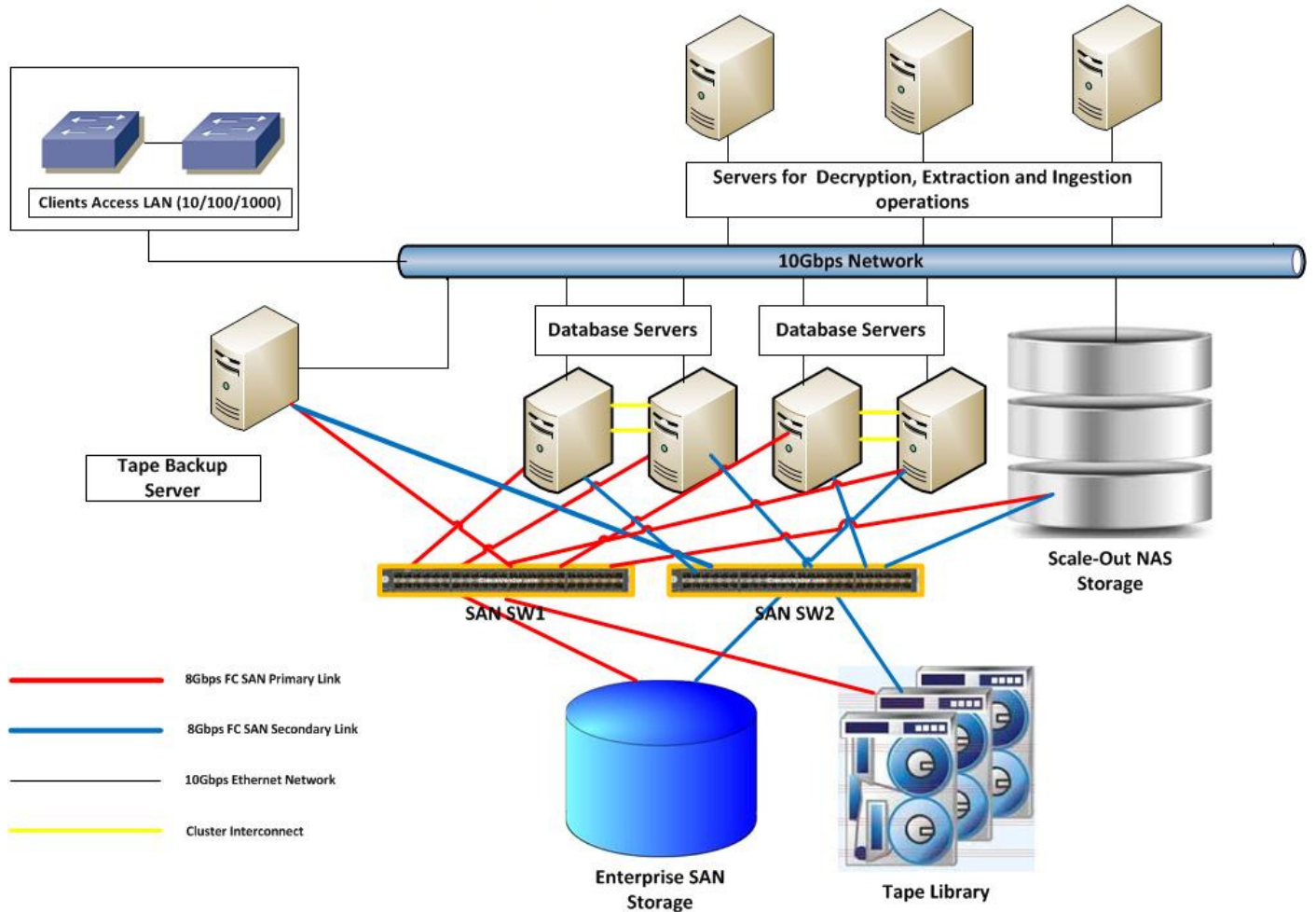
## 10. Bill of Materials

Sl. No.	Material Description	Qty. per site	Total Qty.
1	Database Server/Backup Server (4 Database servers/1 for tape backup)	5	15
2	Application/File Server (2 application/1 file server)	3	9
3	SAN Disc Storage System with OEM racks	1	3
4	Scale-out NAS Disk Storage with OEM racks	1	3
5	LTO Tape Drive unit	4	12
5.a	LTO-5 Ultrium Tape Media	500	1500
5.b	LTO-6 Ultrium Tape Media	500	1500
6	LTO Tape Library	1	3
7	SAN Switch	2	6
8	12 Port KVM Switch with standard accessories for rack mounting	2	6
	Color Console, Keyboard and Mouse	2 sets	6 sets
	KVM to Server USB Cables (3 Mtrs )	10	30
	KVM to KBD + MOUSE + Monitor cables	2 sets	6 sets
9	24 Port Gigabit Ethernet Switch L2 Type	2	6
10	24 Port 10 Gigabit Ethernet Switch L3 Type, Managed	2	6
	Patch Cords, MMF - 1 Mtr	Lot	Lot
	Patch Cords, MMF - 2 Mtr	Lot	Lot
	Patch Cords, MMF - 5 Mtr	Lot	Lot
11	19" 36U Industrial Rack	2	6
12a	RHEL Premium	4	12
12b	RHEL with High Availability Add-on and Virtualization Manager	4	12
13	Online Modular UPS	1 set	3 sets
14	In-row Air-Conditioning System	3 sets	9 sets
15	Comprehensive onsite Warranty support (both service and parts) for all the above hardware items (sl. 1 to 11, 13, 14) for 5 years	1 lot	3 lots
16	Training of CPSU engineers as detailed in clause 9.8	1 lot	3 lots
<b>OPTIONAL Item :</b>			
17	Backup S/W with onsite warranty support for 5 years	1	3



# ANNEXURES

### Proposed Central DC Architecture



### SCHEMATIC DIAGRAM OF HARDWARE CONNECTIVITY FOR EACH DATA CENTER

## Annexure-A: Technical Specifications

### A-1: Technical Specifications for Database Servers/Backup Server

Sl. No	Item	Tender Specification	Qty per site	Total Qty.
	Make & Model		5	15
1	Processor	The Server should be populated with 4 X Intel® Xeon® E7-4850 (2.00GHz/10-core/24MB/130W)		
2	Chipset	Intel 7500 Chipset		
3	Memory Type	PC3-10600R Registered DIMMs		
4	Memory	The server should be supplied with 256 GB DDR3 Memory & Upgradeable to 1TB of Memory		
5	Memory Slots	The Server should support minimum 64 DIMM Slots. The memory type should be DDR3 Memory		
6	Network Ports	2 x Dual port 10GE NIC		
7	Server – Storage HBA	The server should be supplied with 2 x 8Gbps dual ported FC Ports in redundancy		
8	Expansion Slots	Min. 5 (Five) PCI-e slots standard. (optional mixed PCI-X / PCI-Express)		
9	Storage Bays	The server should have a minimum of 8 number drive bays		
10	HDD Controller	a) Onboard support for RAID 0 & 1 on SAS, to connect 3 * 600 GB SAS drives (internal) b) Separate SAS controller with external port to connect to Ultrium Tape Unit.		
11	Hard Disk Drive	The server should be populated with 3 x 600 GB 10K rpm SAS SFF Hot Plug drives, provided drives should be configured with RAID0,1		
12	Optical Drive	The Server should be configured with a Slimline DVD		
13	Interfaces	The server should have 1*Serial, 1*Key Board, Video , 1 Mouse, 6 USB , 1*Remote Management Port		
14	Form Factor	The server form factor should not be higher than 4U Rack Mountable		
15	Manageability	The server should have Dedicated Hardware Controller based Management		
16	Manageability Features	Should be able to manage systems through a web-browser		
		OEM to provide its own systems management software.		
		Pre-failure WARRANTY for CPU, Memory & Hard Disk. Part to be replaced based on impending failure alert to be provided by the systems management software BEFORE actual failure of component.		
		Should be able to generate a report on Inventory		
		Automatic check & update of hardware drivers & Bios Version Control		
17	Benchmark	Model family should have a certified TPC Benchmark		

18	Warranty	5 years comprehensive onsite Support including DMR		
19	Delivery	The BOM and Compliance should be vetted and signed by OEM.		
20	Accessories	All the necessary cables Ethernet / Fibre / Power etc. required for making the system operational shall be provided by the bidder.		
21	Certifications	Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Oracle Solaris VMware Citrix XenServer		

## A-2: Technical Specifications for Application/File Servers

S.No	Item	Tender Specification	Qty per site	Total Qty.
	Make & Model		3	9
1	Processor	The Server should be populated with 4 X Intel® Xeon® E7-4850 (2.00GHz/10-core/24MB/130W)		
2	Chipset	Intel 7500 Chipset		
3	Memory Type	PC3-10600R Registered DIMMs		
4	Memory	The server should be supplied with 256GB DDR3 Memory & Upgradeable to 1TB of Memory		
5	Memory Slots	The Server should support minimum 64 DIMM Slots. The memory type should be DDR3 Memory		
6	Network Ports	2 x Dual port 10GE NIC		
7	Expansion Slots	Min. 5 (Five) PCI-e slots standard.(optional mixed PCI-X / PCI-Express)		
8	Storage Bays	The server should have a minimum of 8 number drive bays		
9	HDD Controller	a. Onboard support for RAID 0 & 1 on SAS, to connect 3 * 600 GB SAS drives (internal) b. Separate SAS controller with external port to connect to Ultrium Tape Unit.		
10	Hard Disk Drive	The server should be populated with 3 x 600 GB 10K rpm SAS SFF Hot Plug drives, provided drives should be configured with RAID0,1		
11	Optical Drive	The Server should be configured with a Slimline DVD		
12	Interfaces	The server should have 1*Serial, 1*Key Board, Video , 1 Mouse, 6 USB , 1*Remote Management Port		
13	Form Factor	The server form factor should not be higher than 4U Rack Mountable		

14	Manageability	The server should have Dedicated Hardware Controller based Management		
15	Manageability Features	Should be able to manage systems through a web-browser		
		OEM to provide its own systems management software.		
		Pre-failure WARRANTY for CPU, Memory & Hard Disk. Part to be replaced based on impending failure alert to be provided by the systems management software BEFORE actual failure of component.		
		Should be able to generate a report on Inventory		
		Automatic check & update of hardware drivers & Bios Version Control		
16	Benchmark	Model family should have a certified TPC Benchmark		
17	Warranty	5 years comprehensive onsite warranty Support including DMR		
18	Delivery	The BOM and Compliance should be vetted and signed by OEM .		
19	Accessories	All the necessary cables Ethernet / Fibre / Power etc. required for making the system operational shall be provided by the bidder.		
20	Certifications	Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Oracle Solaris VMware Citrix XenServer		

### A-3: SAN Disk Storage System Specifications

Sl. No.	Storage System Specifications/Requirements	Qty per site	Total Qty
	<b>Make and Model :</b>	<b>1</b>	<b>3</b>
1	<b>Storage Architecture</b>		
	<p>The Storage Systems should be Enterprise Class Storage System with multi-controller architecture (Should have at least 8 controllers) and supplied with 320TB Usable capacity using</p> <ul style="list-style-type: none"> <li>- 3% capacity on SSD Disks with Raid-5 Protection</li> <li>- 7% capacity on 15K RPM FC/SAS disks with Raid-5 Protection</li> <li>- 90% capacity on 7200RPM NL-SAS disks with Raid-6 Protection.</li> </ul> <p>Array should be provided with software feature to enable Sub-LUN Tiering across SSD, SAS/FC and NL-SAS/SATA tiers for proposed capacity. Proposed capacity should be configured using Enterprise Class Dual Ported disks.</p> <p><b>Housing :</b> All the storage components are to be housed in suitable OEM racks.</p>		
2	<b>Raid Level Support</b>		
	The Storage should support RAID 5, RAID 6, RAID1+0 etc.		
3	<b>Global Hot Spares</b>		

	Storage System should have multiple Global Hot Spares. One Hot spare disk should be provided for every 30 Disk Drives over and above the usable capacity of 320TB.		
4	<b>Host Ports</b>		
	Storage should have minimum 32 FC ports with 8 Gbps speed for host connectivity and scalable up to 64x8Gbps ports or higher		
5	<b>Backend Ports</b>		
	Storage should have minimum 32x6Gbps SAS Links for Disk connectivity and scalable up to 64x6Gbps SAS Links or higher <b>OR,</b> Storage should have minimum 48x4Gbps FC-AL for Disk connectivity and scalable up to 96x4Gbps FC-AL or higher <b>OR ,</b> Storage should have minimum 32x8Gbps FC-AL for Disk connectivity and scalable up to 64x8Gbps FC-AL or higher		
6	<b>Array Cache Memory</b>		
	The storage system should have minimum 512 GB Global DRAM cache memory and scalable to 1024 GB or higher Global DRAM Cache memory. The write cache must be mirrored. Array should be capable to dynamically allocate at least 50% of the usable cache memory for Write operations.		
7	<b>High availability</b>		
	The storage should be with No Single Point of Failure (SPOF). All the components should be redundant and hot swappable including power supply, fans, batteries, controllers etc. The proposed storage must support non-disruptive replacement of hardware component.		
8	<b>Non Disruptive Code Upgrades</b>		
	The storage must provide non-disruptive firmware/micro code upgrade, device reallocation and configuration changes.		
9	<b>Cache Protection</b>		
	The storage should have protection of cache data during a power down either scheduled or unexpected power outage by battery backup for at least 72 hours OR by de-staging the data in cache to non-volatile Disk.		
10	<b>Virtual Provisioning</b>		
	The storage should have Virtual/Thin provisioning for Storage allocation to hosts.		
11	<b>Online LUN Expansion</b>		
	The storage should support dynamic LUN expansion/concatenation while LUN is mounted on the host		
12	<b>Maximum device support</b>		
	The proposed storage system should support more than 600 LUNs or volumes		
13	<b>Storage Audit Logs</b>		
	The storage should be able to generate audit logs to record activities including host-initiated actions, physical component changes, attempts blocked by security control.		
14	<b>OS Support</b>		
	The storage should support multiple operating systems such as Windows, Unix, Linux, Solaris etc. on a single port		
15	<b>Cluster Support</b>		

	The storage should support clustering solutions such as Microsoft cluster, MS SQL cluster, SUN Solaris cluster, Linux cluster etc.		
16	<b>Database Support</b>		
	The storage should have integration capability with major Databases like Oracle, MS-SQL, MySQL, DB2 etc to take application consistent copies when doing replication. Any Licenses for this support must be provided with System.		
17	<b>VAAI Support</b>		
	Storage should support VMware vStorage API for Array Integration ( i.e. VAAI) and VASA API.		
18	<b>Feature License</b>		
	The storage should be supplied with Storage management, virtual/thin provisioning, local copy (clone and snapshots both) to meet the technical requirements.		
19	<b>Storage Management Features</b>		
A	Proposed array should have web based as well as CLI based management tool for storage provisioning, snap/clone operations and remote replication operations.		
B	Storage management s/w should have roles based access for user accounts to the storage system.		
C	Storage management software should provide interface/wizards to perform configuration operations like create LUNs, present LUNs to host, set LUN attributes etc.		
D	Storage management software should be able to perform and monitor local and remote replication operations. Storage management software should be able to configure and manage tiering and auto-tiering		
E	Storage management software should be able to monitor alerts		
F	Storage management software should provide real time monitoring and historical analysis of storage performance data such as total IOPS, read%, write %, cache-hit %, throughput, etc. for analyzing performance of the systems.		
G	Storage management or additional software shall be provided which shall show topology views i.e. host HBA to storage end to end connectivity (including SAN Switches) in graphical format. It shall have drill down features to see greater details of components visible in topology. Administrator shall have Search facility to search objects in topology view.		
H	Storage Management or additional software shall be capable to show end to end performance data i.e. host to storage in a single console.		
I	Storage Management or additional Software shall be capable to show capacity utilization and trend.		
20	<b>Local copy features</b>		
A	The storage should support local copy of single source device to at least three or more target devices with background copy. Resync operations should be incremental for all copies i.e. subsequent resync operation should copy only the delta changes.		
B	The proposed storage should have point-in-time copy or snapshots. Relevant license should be provided.		
21	<b>Remote Replication features</b>		



A	The storage should support both Synchronous and Asynchronous Data Replication to remote site. Proposed Storage based replication solution should scale to support Concurrent (A to B and A to C) or Cascaded (A to B to C) topology for three site replication and Zero RPO.		
B	The replication solution should support up to 2048 volume pairs for remote replication		
C	The proposed Storage Array should have feature (internal/external) to Virtualize / Integrate, 3rd party storage arrays from leading Storage OEMs like NetApps, EMC, Hitachi, IBM, HP, Oracle etc.		
22	<b>Warranty</b> : 5 years Comprehensive on site		

#### A-4: Scale-out NAS Disk Storage System Specifications

Sl. No.	Storage System Specifications/Requirements	Qty per site	Total Qty
	<b>Make and Model :</b>	<b>1</b>	<b>3</b>
1	<b>Controllers</b>		
	<ul style="list-style-type: none"> <li>Proposed Storage should be configured with minimum 8 Active/Active Storage Node/Controllers to meet capacity requirement mentioned below. Storage solution should have Truly distributed fully symmetric clustered architecture upgradeable up to 24 Storage Nodes/Controllers without any requirement of Data Migration or host side configuration change.</li> <li>Storage Nodes/Controllers must be based on 64 Bit Intel Xeon Processor.</li> <li>Must not require downtime during software/firmware upgrades.</li> </ul>		
2	<b>Array Memory</b>		
	<ul style="list-style-type: none"> <li>Proposed Storage should be configured with Minimum 48 GB ECC Memory per Storage controller/Storage node. In case storage node is different than the storage array, vendor should ensure at least 8 storage controllers are proposed each with 48GB cache Memory.</li> <li>Entire Memory must be Globally Coherent and must be available for both read and write operation.</li> </ul>		
3	<b>Capacity</b>		
	<p>Proposed Storage shall be supplied with 400TB Usable capacity. This capacity shall be supplied using:</p> <ul style="list-style-type: none"> <li>- 8% capacity using 10K RPM 600GB or higher SAS disks</li> <li>- 92% capacity using 7200 RPM 3TB/4TB NL-SAS Disks</li> </ul> <p>License feature to enable policy based tiering across SAS and NL-SAS/SATA tier should be provided for proposed capacity. Entire capacity should be available as a Single Filesystem/ single namespace. Proposed Storage Cluster shall be scalable to meet Usable capacity of 1.5PB in a single filesystem / single namespace.</p> <p>The proposed storage should have N+1 redundancy across the controller nodes and one storage node/controller failure should not impact performance or data availability.</p>		



	<b>Housing</b> : All the storage components are to be housed in suitable OEM racks.		
4	<b>Array Operating System</b>		
	<ul style="list-style-type: none"> <li>Scale-Out Storage must have Journaled filesystem, fully distributed, Purpose Built 64 bit Scale-Out NAS Operating System, dedicated for serving file data efficiently. It must not be based on NAS Gateway model.</li> <li>Proposed Storage should support simultaneous access to same file data from Linux/Unix and Windows users.</li> <li>Proposed Storage should be configured with software feature for Locking of File Data from unauthorized updates or deletion for pre-configured duration.</li> </ul>		
5	<b>Host Ports</b>		
	<ul style="list-style-type: none"> <li>Each Storage Controller/Storage node must have minimum 2 x 10GigE ports. Must Support VLAN, Trunking and Link aggregation for High Availability &amp; Performance.</li> <li>Proposed NAS Cluster shall have NDMP Backup Feature to backup NAS DATA over Fiber Channel ports. Minimum 4 FC ports shall be provided for SAN connectivity.</li> </ul>		
6	<b>Supported Disk Type</b>		
	Storage must support SSD, SAS, SATA/NLSAS Disk Types in the same storage System with software feature to dynamically tier data across SSD, SAS, SATA/NL-SAS Tiers.		
7	<b>Availability Features</b>		
	<ul style="list-style-type: none"> <li>Usable Capacity must be configured with protection against simultaneous double disk failure.</li> <li>Data should be striped across multiple storage controllers for higher performance and High Availability.</li> <li>Communication between Storage Controllers/Storage Nodes should happen only using Infiniband/10Gig which provides High Bandwidth and low latency with no single point of failure.</li> <li>Redundant and Hot replaceable modules: Controllers, Hard Disk Drive, power supplies (230V AC, 50 Hz.) and fans.</li> <li>The Scale-Out Storage should have No Single Point of Failure (SPOF). Bidder Must propose storage capacity with additional reserve of 3% space in a pool in addition to asked capacity. This reserve should be used for data regeneration in the event of a drive failure.</li> <li>In case of disk failure, data regenerated must be spread across entire available free capacity of the storage.</li> <li>Storage solution must be able to protect data against any one storage controllers / Nodes failure without loss of data or service availability. In case of Power failure, Storage Controller/ Storage Node shall be able to hold data in the cache for at least 48 hours of time.</li> <li>Proposed Storage should support creation of 1024 Snapshots for each Directory and volume. Administrator should be able to recover data from snapshot in case of any accidental data loss. License if any required for taking snapshots or recovery from snapshots should be provided.</li> <li>Proposed Storage should support asynchronous remote replication in bi-directional, one to many and many to one topologies.</li> <li>Storage system must support detection of silent data corruption by doing parity checking on write and read operations both. System should also support fixing of</li> </ul>		

	corruption in case of parity mismatch. System should provide safeguard against data errors due to disk failure, unrecoverable read errors and network-induced errors.		
8	<b>Performance Characteristics</b>		
	<ul style="list-style-type: none"> <li>Scale-Out Storage must be configured to provide Sustained Aggregate Sequential Write performance of 1.5GB/sec which needs to be demonstrated with the help of third party tools like IO meter/IO Zone at the time of technical evaluation. Cluster throughput should be scalable to 10GB/sec by adding controllers in the same Cluster.</li> <li>There should not be more than 12.5% degradation of performance in case of any component or Controller failure in the storage.</li> </ul>		
9	<b>Quality of Service</b>		
	<ul style="list-style-type: none"> <li>Storage Upgrades should be seamless without any requirement of downtime or partial service unavailability. Proposed Storage should scale linearly for Performance and Capacity.</li> <li>In the event of addition of storage controller/storage node to storage solution, existing data should be rebalanced (auto-balanced) across all storage controllers/storage nodes. This rebalancing should be done with low priority avoiding any impact on performance.</li> <li>Client Connections must be balanced across all the Storage Controllers/Storage Nodes.</li> <li>Scale-Out Storage must provide features to provide Users, Group Quotas. Scale-Out Storage should support feature to create different tiers of performance and capacity and must be able to move data between these tiers based on policy such as Age, type, Access time, modify time, size, extension without requiring any additional software.</li> </ul>		
10	<b>Standard Software Features</b>		
	<ul style="list-style-type: none"> <li>Proposed Storage should have Single Web based Management Interface/Tool to manage entire storage cluster. Proposed Storage should have a CLI interface as well for Cluster Management.</li> <li>Should support user security mechanisms like AD, LDAP and NIS.</li> </ul>		
11	<b>Warranty</b> : Comprehensive onsite warranty for 5 years.		

**A-5: Technical Specifications for LTO Tape Drive**

Sl. No	Specifications	QTY per site	Total Qty
	<b>Make and Model :</b>		
	<b>TAPE BACKUP SYSTEM</b> Consisting of:	<b>4</b>	<b>12</b>
1	External Single LTO 6 Ultrium Tape Drive with minimum 3 Gbps SAS Connectivity, with Interface Cable, Power cord, and Rack mount kit		
2	Tape Cleaning Cartridge	<b>12</b>	<b>36</b>
3	Tape drive should have compatibility with existing LTO-4 and LTO-5 cartridges		
4	<b>Warranty :</b> 5 years Comprehensive on site		
5	<b>Ultrium Tape Media :</b>		
a	LTO-5 Ultrium Tape media	<b>500</b>	<b>1500</b>
b	LTO-6 Ultrium Tape media	<b>500</b>	<b>1500</b>

**A-6 : Technical Specifications for LTO Tape Library**

Sl. No.	Specification	Requirement	Qty per site	Total Qty
	<b>Make and Model</b>		<b>1</b>	<b>3</b>
	<b>Drive technology</b>	Offered Tape Library should support LTO-6, LTO-5, LTO-4 tape drives		
1	<b>Capacity</b>	1. Shall be offered with <ul style="list-style-type: none"> <li>• Minimum of eight LTO-6 FC tape drives.</li> <li>• Each drive should have minimum 8 Gbps FC port for SAN connectivity</li> <li>• Tape Drive shall support encryption.</li> </ul> 2. Shall be offered with <ul style="list-style-type: none"> <li>• minimum 100 Nos. of Cartridge slots</li> <li>• 100 Nos. LTO-6 Cartridges and</li> <li>• 12 Nos. of Cleaning Cartridges.</li> </ul>		
2	<b>Speed</b>	Offered LTO-6 drive shall support minimum 160MB/sec in Native Burst mode		
3	<b>Scalability</b>	Tape Library shall be further scalable to 200 slots		
4	<b>Connectivity</b>	Offered Tape Library shall provide minimum dual 8 Gbps native FC connectivity to SAN switches.		
5	<b>Partitioning</b>	Offered Tape Library shall have partitioning support so that drives can be configured in a separate partition.		
6	<b>Management</b>	Tape Library shall provide web based remote management.		

7	<b>Barcode Reader and Mail slots</b>	Tape library should have Barcode reader and at-least 8 mail slots.		
8	<b>Expandability</b>	a. The proposed library shall not expand using 2 individual control module libraries for stackable expansion by setting one as master control module and the other as slave module. b. The control modules shall have a flexible racked option		
9	<b>Other Features</b>	1. Tape Library shall have operator panel, 2. Shall have configuration for redundant power supply		
10	<b>Automation</b>	Proposed Tape Library shall use single high performance robotic design without any pass-thru mechanism		
11	<b>Warranty</b>	5 years Comprehensive on site		

### A-7 : Technical Specifications for SAN Switch

Sl. No	Specification/Requirement for Edge Fiber Switch	Qty per site	Total Qty
	<b>Make and Model :</b>	<b>2</b>	<b>6</b>
1	The fiber switch should be quoted with minimum 32 Active FC ports of 8Gbps or higher speed each scalable to at least 128 ports.		
2	The switch should have support for 2, 4, and 8 Gbps HBA		
3	The switch should have auto sensing, Zoning, Integrated Ethernet and Serial Port for communication.		
4	Switch should be rack mountable and should be supplied with mounting kit.		
5	The switch should be equipped with redundant hot swap power supply and Fan and allow hot swap ability without resetting the switch, or affecting the operations of the switch		
6	The switch should be backward compatible		
7	The switch should be capable for Non-disruptive firmware update.		
8	The switch should be capable of End to end performance monitoring		
9	The switch should have Support for POST & online diagnostics		
10	The switch should be capable to interface with host based adapters (HBA) of multiple OEM, supporting multiple Operating Systems		
11	The switch should have following Zoning and security features -		
	a. Support for hardware -enforced zoning.		
	b. Support for secure access.		
	c. Support for RADIUS, SSH, SNMP		
	d. Support for Hardware based Inter Switch linking / trunking.		
12	<b>Warranty : 5 years Comprehensive on site</b>		

**A-8: Technical Specifications for KVM Switch**

KVM SWITCH		Qty. per site	Total Qty.
<b>Make and Model :</b>			
Sl.No.	Specifications		
1	12 Port KVM Switch, Rack mountable with : <ul style="list-style-type: none"> <li>• Rack mountable 17" Wide LCD TFT Color Console ,</li> <li>• Keyboard, and</li> <li>• Mouse</li> </ul> Connectivity : <ol style="list-style-type: none"> <li>a. Console side is of PS/2 or USB and</li> <li>b. System side is of USB.</li> </ol> Rack mounting kits to be supplied with KVM switch.	2 set	6 set
2	KVM to SERVER USB Cables ( 3 Mtrs )	10 no.	30 no.
3	KVM to Console Keyboard, Monitor & Mouse Cables	2 sets	6 sets
4	<b>Warranty:</b> 5 year Comprehensive on site		

**A-9 : Technical Specifications for L2 Gigabit Switch (24 port)**

S.No.	Feature	Technical Specification	Qty. per site	Total Qty.
	<b>Make and Model</b>		2	6
1	<b>Architecture</b>	Fixed Configuration Layer 2 Rack mountable Switch. Rackmount kit to be provided along with the switch		
	No. of Interfaces	Switch should have minimum 24 x 10/100/1000BaseT Ports		
	Uplink Ports	2 nos. of 10GE SFP+ Ports along with 10G SFP modules on MMF		
	Performance	88 Gbps or more		
	Switch Forwarding Rates	Minimum forwarding rate of 65 mpps		
2	<b>Layer 2 Features</b>	Layer 2 switch ports and VLAN trunks		
		IEEE 802.1Q VLAN encapsulation		
		MSTP (IEEE 802.1s), RSTP (IEEE 802.1w)		
		Spanning Tree PortFast/equivalent		
		Spanning Tree Root Guard		
		Spanning Tree Bridge Assurance or STP Loop Guard feature		
		LACP: IEEE 802.3ad		
		Storm control (multicast, and broadcast)		
	Multicast	IGMP Snooping v2, v3		
3	<b>Quality of Service Features</b>	Support for Automatic Quality of Service for easy configuration of QoS features for critical applications.		
		Support for QoS features like 802.1p CoS (Class of Service)		

4	<b>Security Features</b>	IEEE 802.1x to allow dynamic, port-based security, providing user authentication.		
		Port-based ACLs (PACLs) for Layer 2 interfaces to allow application of security policies on individual switch ports.		
		Support for RADIUS authentication to enable centralized control of the switch and restrict unauthorized users from altering the configuration.		
		Should support DHCP snooping, DHCP Option 82, DHCP Option 12 (Hostname), Dynamic ARP Inspection (DAI) and IP Source Guard		
		Multilevel security on console access to prevent unauthorized users from altering the switch configuration.		
		Should support a mechanism to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.		
		Remote port mirroring to remotely monitor ports in a Layer 2 switch network from any other switch in the same network.		
5	<b>Management</b>	SNMPv1, SNMPv2c, and SNMPv3		
6	<b>IEEE Standards</b>	Ethernet: IEEE 802.3x, 10BASE-T, 100BASE-TX, 1000BASE-T		
		Fast Ethernet: IEEE 802.3u, 100BASE-TX, 100BASE-FX		
		Gigabit Ethernet: IEEE 802.3z, IEEE 802.3ab, 1000BASE-X (mini-GBIC/SFP), 1000BASE-SX, 1000BASE-LX/LH		
		IEEE 802.1D Spanning-Tree Protocol		
		IEEE 802.1S & 1W for Rapid Spanning tree convergence		
		IEEE 802.1p CoS Prioritization		
		IEEE 802.3x Flow Control		
		IEEE 802.3ad Link Aggregation		
7	<b>Warranty</b>	5 years Comprehensive on site		

#### A-10: Technical Specifications for L3 10 Gigabit Switch (24 Port)

S.No.	Feature	Technical Specification	Qty per site	Total Qty
	<b>Make and Model</b>		<b>2</b>	<b>6</b>
1	<b>Physical Interfaces &amp; modules</b>	<ul style="list-style-type: none"> <li>24 fixed SFP+ ports (10 Gbps)</li> <li>Dual redundant, hot-swappable power supplies</li> <li>Redundant fans</li> <li>10/100/1000-Mbps management port</li> <li>One console port</li> <li>Support for Direct-attach cables with SFP+ connectors, MMF &amp; SMF SFP+ modules</li> <li>Load with SFP+ modules as required</li> </ul>		

2	<b>Performance Features</b>	<ul style="list-style-type: none"> <li>• 480 Gbps switching capacity</li> <li>• Forwarding rate of 357.1 million packets per second (mpps)</li> <li>• Configurable maximum transmission units (MTUs) of up to 9216 bytes (jumbo frames)</li> <li>• Low latency</li> </ul>		
3	<b>Layer 2 Features</b>	<ul style="list-style-type: none"> <li>• Layer 2 switch ports and VLAN trunks</li> <li>• IEEE 802.1Q VLAN encapsulation</li> <li>• Support for up to 4096 VLANs</li> <li>• MSTP (IEEE 802.1s), RSTP (IEEE 802.1w)</li> <li>• Spanning Tree PortFast/equivalent</li> <li>• Spanning Tree Root Guard</li> <li>• Spanning Tree Bridge Assurance or STP Loop Guard feature</li> <li>• LACP: IEEE 802.3ad</li> <li>• Storm control (multicast, and broadcast)</li> </ul>		
4	<b>Layer 3 Features</b>	<ul style="list-style-type: none"> <li>• Routing protocols: Static, Routing Information Protocol Version2 (RIPv2), Open Shortest Path First Version 2 (OSPFv2)</li> <li>• Support for IPV6</li> <li>• Equal-Cost Multipath (ECMP)</li> <li>• VRRP</li> <li>• ACL: Routed ACL with Layer 3 and 4 options to match ingress and egress ACLs</li> <li>• Support for OSPFv3, BGP, VRF-Lite/MCE/EQUIVALENT</li> </ul>		
5	<b>Multicast Protocols</b>	<ul style="list-style-type: none"> <li>• PIM Sparse Mode (PIM-SM)</li> <li>• Internet Group Management Protocol (IGMP) Versions 2 and 3</li> </ul>		
6	<b>QOS</b>	<ul style="list-style-type: none"> <li>• Layer 2 IEEE 802.1p (CoS) hardware queues per port</li> <li>• Per-port QoS configuration</li> <li>• ACL-based QoS classification (Layers 2, 3, and 4)</li> </ul>		
7	<b>High availability features</b>	<ul style="list-style-type: none"> <li>• In-Service Software Upgrade (ISSU)</li> <li>• Hot-swappable field-replaceable power supplies</li> <li>• Power supply module redundancy</li> </ul>		
8	<b>Data Centre Bridging</b>	Support for Data Center Bridging (DCB) protocols supports IEEE 802.1Qbb Priority Flow Control (PFC) and IEEE 802.1Qaz Enhanced Transmission Selection (ETS) for converged applications.		
9	<b>Security Features</b>	<ul style="list-style-type: none"> <li>• Ingress ACLs (standard and extended) on Ethernet</li> <li>• Standard and extended Layer 3 to 4 ACLs include IPv4, Internet Control Message Protocol (ICMP), TCP, and User Datagram Protocol (UDP)</li> <li>• VLAN-based ACLs (VACLs)</li> <li>• Port-based ACLs (PACLs)</li> <li>• ACLs on virtual terminals (VTYs)</li> <li>• DHCP relay</li> </ul>		

10	<b>Management Features</b>	<ul style="list-style-type: none"> <li>• SNMP v1, v2, and v3</li> <li>• Switch management using 10/100/1000-Mbps management or console ports</li> <li>• SSHv2, Telnet</li> <li>• RADIUS</li> <li>• SNMP MIB support</li> <li>• Remote monitoring (RMON) / sFlow</li> <li>• Advanced Encryption Standard (AES) for management traffic</li> <li>• Username and passwords across CLI and SNMP</li> <li>• Network Time Protocol (NTP)</li> <li>• Comprehensive bootup diagnostic tests or Syslog capability</li> </ul>		
11	<b>Accessories</b>	<ul style="list-style-type: none"> <li>• Patch Cords, MMF -1 Mtr</li> <li>• Patch Cords, MMF -2 Mtr</li> <li>• Patch Cords, MMF -5 Mtr</li> </ul>	As per requirement	
12	<b>Warranty</b>	5 years Comprehensive on site		

### A-11: Technical Specifications of 36U Industrial Rack

Sl. No	Specifications	Qty per site	Total Qty
	<b>Make and Model :</b>	<b>2</b>	<b>6</b>
	<b>19" Industrial Rack, 36U, Colour Black:</b> The racks will be used for housing Servers, SAN switches, LAN switches, KVM switches, Consoles and LTO tape drives.  <b>Each Rack Consisting of :</b>		
1	Steel Enclosure, of dimensions 800 mm width * 1000 mm Depth * 36U height, supporting 1000 Kgs load. Bottom cover with knock out holes for cable entry to be provided. Three pairs of horizontal support shall be fitted on both right and left sides		
2	Front & Rear Door shall be of 100% perforated with three point locking system. Provision for mounting fans on Rear door with concealed AC wiring.		
3	Fan 230V, 90 CFM ( Fan make : Hi cool), to be mounted on Rear Door		
4	AC Main Channel vertical, 12x 5/15 Amps Sockets, Make: Anchor with 32 Amps MCB make : Northwest		
5	Horizontal Cable Manager		
6	Vertical Cable Manager		
7	Copper based Electrical Grounding / Earthing Strip . Provision for Fifteen (15) points		
8	a) Castor with Brake – 2 No. b) Castor without Brake – 2 No. c) Adjustable screw legs – 4 No. OR		



	Base frame - 1 No.		
9	Light provision activation : in the rack up on opening of the front/rear door		
10	H/W Packet of 20 Sets		
11	Grounding Nuts		
12	Eye bolts on the top for lifting the rack		
	<b>Optional items:</b>		
	Equipment support angles		
	Ventilated shelf 2 No.		
	Required no. of 1U & 2U dummy panels are to be provided		
13	<b>Warranty:</b> 5 year Comprehensive on site		

### A-12: Technical Specifications for Operating System

Operating System for servers		Qty per site	Total Qty
1	Red Hat Enterprise Linux Premium ( 4 Socket ) (up to 1 Guest), 5 year with L1 to L3 support	4	12
2	Red Hat Enterprise Linux Premium ( 4 Socket ) (up to 4 Guests) including High Availability add-on and GUI based Virtualization manager, 5 Year with L1 to L3 support	4	12

### A-13: Online Modular UPS Specifications

S/no.	Specifications	Qty per site	Total Qty
<b>A</b>	<b>SUMMARY</b>	<b>1 set</b>	<b>3 sets</b>
1	<b>Make and Model</b>		
2	<b>System capacity</b>		
	( As per calculation in <b>Annexure-H</b> )		
<b>B</b>	<b>GENERAL SPECIFICATIONS</b>		
1	Continuous duty, three-phase, solid-state, static Uninterruptible Power System (UPS) shall be comprised of hot swappable / user replaceable ups modules, which shall operate in parallel, and be configured for N+1 redundant operation at rated load.		
2	Each ups module should contain a full rated input rectifier / boost converter, full rated output inverter (KVA=KW), and battery charging circuit.		
3	The system should comprise of a user-replaceable continuous duty bypass static switch module		

4	The system should comprise of user-replaceable hot swappable battery modules, which can be swapped without switching of the ups modules when required.		
5	The system shall also comprise of redundant main controller modules, redundant logic power supplies, which can be swapped without switching off any ups modules when required.		
6	The UPS manufacturer should provide an output distribution system to distribute quality uninterrupted power for data centre load. This distribution system should be installed outside the ups modules along with input, output & manual bypass switches in a metal enclosure which should be in a rack form factor. <b>Output distribution should happen through UL Certified 3phase &amp; neutral bus bar with hot swappable breaker modules having cable whips terminated with IEC309 socket.</b>		
7	The ups units & the batteries shall be scalable with out shutting down the mission critical Data Centre load.		
8	Power modules connecting to the AC power bus should have CAN (Controlled Area Network) bus for communications and logical control		
<b>C</b>	<b>MODES OF OPERATIONS</b>		
1	A. <u>Normal</u> : The input converter and output inverter shall operate in an on-line manner to continuously regulate power to the critical load. The input and output converters shall be capable of full battery recharge while simultaneously providing regulated power to the load for all line and load conditions within the range of the UPS specifications.		
2	B. <u>Battery</u> : Upon failure of the AC input source, the critical load shall continue being supplied by the output inverter, which shall derive its power from the battery system. There shall be no interruption in power to the critical load during both transfers to battery operation and retransfers from battery to normal operation.		
3	C. <u>Recharge</u> : Upon restoration of the AC input source, the input converter and output inverter shall simultaneously recharge the battery and provide regulated power to the critical load respectively.		
4	D. <u>Static Bypass</u> : The static bypass shall be used to provide transfer of critical load from the Inverter output to the bypass source. This transfer, along with its retransfer, shall take place with no power interruption to the critical load. In the event of an emergency, this transfer shall be an automatic function.		
5	E. <u>Maintenance Bypass</u> : The system shall be equipped with an external make-before-break Maintenance Bypass to electrically isolate the UPS during routine maintenance and service of the UPS. The MBC shall completely isolate both the UPS input and output connections.		
<b>D</b>	<b>SYSTEM CHARACTERISTICS.</b>		
1	<b>System Capacity</b> : The system shall be rated for full kW output.		
2	<b>UPS Input</b>		
a	AC Input Nominal Voltage: 230 V, 3 Phase, 4 wire + G, 50 Hz.		

b	AC Input Voltage Window: 304Volts to 477Volts (while providing nominal charging to the battery system).		
c	Maximum Frequency Range: 40-70Hz		
d	Input Power Factor:		
	a. > 0.99 at 50% load b. > 0.99 at 100% load		
e	Input Current Distortion:		
	The input current THD <sub>i</sub> shall be held to 5% or less while supporting loads of both linear and non-linear types. This shall be accomplished with no additional filters, magnetic devices, or other components.		
f	Soft-Start:		
	The UPS shall contain soft-start functionality, capable of limiting the input current from 0-100% of the nominal input over a default 15 second period, when returning to the AC utility source from battery operation.		
<b>3</b>	<b>UPS OUTPUT.</b>		
a	AC Output Nominal: 230V, 3 Phase, 4 wire + G, 50 Hz.		
b	AC Output Voltage Distortion: Max. 2% @ 100% Linear Load.		
c	AC Output Voltage Regulation: +/- 1% For 100 % Linear or Nonlinear Load		
d	Voltage Transient Response: +/- 5% maximum for 100% load step		
e	Voltage Transient Recovery within <50 milliseconds		
f	Output Voltage Harmonic Distortion:		
	a. <2% THD and 1% single harmonic for a 100% linear load b. <5% THD for a 100% non-linear load		
g	Phase Angle Displacement:		
	a. 120 degrees +/- 1 degree for balanced load b. 120 degrees +/- 1 degrees for 50% imbalanced load c. 120 degrees +/- 3 degrees for 100% imbalanced load		
h	Overload Rating : Normal Operation:		
	1) 150% for 60 seconds 2) 125% for 10minutes		
i	Overload Rating : Bypass operation		
	1) 110% continuous 2) 1000% for 100 milliseconds		
j	Output Power Factor Rating:		
	The UPS output shall not require derating for purely resistive loads (PF of 1). The potential kW and kVA ratings of the UPS output shall be equal. For loads exhibiting a power factor of 0.5 leading to 0.5 lagging , no derating of the UPS should be required.		
k	Overload Capability:		

	The output power converters shall be capable of 300% for short-circuit clearing.		
l	Battery Protection:		
	The inverter shall be provided with monitoring and control circuits to limit the level of discharge on the battery system.		
m	Over all efficiency $\geq 95\%$ at 35% to 100% load		
<b>4</b>	<b>CHARGING</b>		
a	The battery charging shall keep the DC bus float voltage at $\pm 1\%$ of tolerance		
b	The battery charging circuit shall contain a temperature compensation circuit, which will regulate the battery charging to optimize battery life.		
c	The battery charging circuit shall remain active when in Static Bypass and in Normal Operation		
<b>5</b>	<b>BATTERIES for 30min Backup on 85% Load</b>		
a	The UPS battery shall be of modular construction made up of user replaceable, hot swappable, fused, battery modules. Each battery module shall be monitored for voltage and temperature for use by the UPS battery diagnostic, and temperature compensated charger circuitry.		
b	The battery jars housed within each removable battery module shall be of the Valve Regulated Lead Acid (VRLA) type.		
c	The UPS shall incorporate a battery management system to continuously monitor the health of each removable battery module. The system shall notify the user in the event that a failed or weak battery module is found.		
d	BATTERY DISCONNECT BREAKER : Each UPS system shall have a thermal magnetic trip circuit breaker. Each circuit breaker shall be equipped with shunt trip mechanisms.		
<b>6</b>	<b>UNATTENDED SHUT DOWN</b>		
a	The UPS, in conjunction with a network interface card, shall be capable of gracefully shutting down one or more operating systems during when the UPS is on low battery condition		
b	The UPS shall also be capable of using an RS232 port to communicate by means of serial communications to gracefully shut down one or more operating systems during a low battery situation.		
<b>7</b>	<b>DISPLAY UNITS</b>		
a	A microprocessor controlled display unit shall be located on the door in front of the ups system & out put power distribution unit. The display shall consist of an alphanumeric display with backlight, an alarm LED, and a keypad consisting of pushbutton switches. Branch level monitoring of current & voltage (all three phases & neutral) has to be possible through power distribution unit display and over network.		
b	<u>Metered Data</u> : Data of all the input, out put & battery parameters shall be available on the alphanumeric display		

c	<u>Event log</u> : The display unit shall allow the user to display a time and date stamped log of at least 60 most recent status and alarm events.		
d	<u>Controls</u> : All the ups controls or programming functions shall be accomplished by use of the display unit. Pushbutton membrane switches shall facilitate these operations		
<b>8</b>	<b>REMOTE MONITORING</b>		
a	<u>Web Monitoring</u> : Remote monitoring shall be available via a web browser such as Internet Explorer.		
b	<u>RS232 Monitoring</u> : Remote UPS monitoring shall be possible via either RS232 or contact closure signals from the UPS.		
c	<u>Simple Network Management Protocol (SNMP)</u> : Remote UPS Monitoring shall be possible through a standard MIB II compliant platform.		
d	The UPS manufacturer shall have available software to support graceful shutdown and remote monitoring		
<b>9</b>	<b>ENVIRONMENTAL</b>		
a	Storage Ambient Temperature: -40°C to 70°C		
b	Operating Ambient Temperature: 0°C to 40°C		
c	Relative Humidity: 0 to 95% Non-condensing		
	Audible Noise 54dBA at 100% load		
<b>10</b>	<b>FACTORY ASSISTED START-UP &amp; MAINTENANCE</b>		
	If a factory assisted UPS start-up is requested, factory trained service personnel shall perform the following inspections, test procedures, and on-site training:		
a	On-Site Operational Training: During the factory assisted start-up, operational training for site personnel shall include key pad operation, LED indicators, start-up and shutdown procedures, maintenance bypass and AC disconnect operation, and alarm information.		
b	The UPS manufacturer shall have service centers in Hyderabad, Bangalore and Palakkad (Kerala), equipped with manufacturer trained field service personnel to perform start-up, preventative maintenance, and service of the UPS system and power equipment.		
c	Replacement parts: Parts should be available at the service centers in above mentioned cities. CPSU will not allow any component level repairs in Data Center ups systems inside the DC / Equipment room / ups room.		
<b>11</b>	<b>STANDARDS</b>		
	A. UL 1778 - Uninterruptible Power Supply Equipment		
	B. UL 891 - Dead-Front Switchboards		
	C. UL 1558 - Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear		
	D. IEC 61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5		
	E. EN50091-2 / IEC62040 (Class A) , FCC 15A		
	F. UL60950-1, UL1778(CUL), IEC 62040-2 - Information Technology		

	Equipment		
	G. VFI-SS-111 performance level compliance		
	H. VFI-ss-112 Protection class		
	The UPS shall also be designed in accordance with publications from the following organizations and committees		
	1. NFPA- National Fire Protection Associations		
	2. NEMA - National Electrical Manufacturers Association		
	3. OSHA - Occupational Safety and Health Administration		
	4. IEEE 519-1992 Standard Practices and Requirements for Harmonic Control in Electrical Power Systems.		
	5. ISO 9001		
	6. ISO 14001		
<b>12</b>	<b>PROPOSAL SUBMITTALS</b>		
	1. As bid system bill of materials. 2. Product catalog sheets or equipment brochures. 3. Product guide specifications. 4. System single-line operation diagram. 5. Installation information, including weights and dimensions. 6. Information about terminal locations for power and control connections. 7. Drawings for requested optional accessories.		
<b>13</b>	<b>DELIVERY SUBMITTALS</b>		
	1. Installation manual, which includes instructions for storage, handling, examination, preparation, installation, and start-up of UPS. 2. User manual, which includes operating instructions.		
	<b>WARRANTY</b>		
	5 years comprehensive onsite		

#### A-14: In-row Air-Conditioning System Specification

Sl. No.	Specification	Requirement	Qty per site	Total Qty
<b>1</b>	<b>Make and Model</b>			
<b>A. In row Chilled water Cooling Units</b>			<b>3 sets</b>	<b>9 sets</b>
2	Total net cooling capacity	50KW		
3	Sensible net cooling capacity	50KW		

4	Return air dry bulb temperature	32 Deg C		
5	<b>CABINET CONSTRUCTION</b>			
	<p>1 Exterior panels shall be 18 gauge metal with 5 lb/ft<sup>3</sup> (80 kg/m<sup>3</sup>) density foam insulation. Insulation complies with UL94-5VA ASTM E84 flame spread and smoke developed rating of 25/50. Front and rear exterior panels shall be 18 gauge perforated steel with 69.5% open free area, and equipped with a keyed lock.</p> <p>2 The frame shall be constructed of 16 gauge formed steel welded for maximum strength. All units shall provide full service from the front and rear, allowing units to be placed within a row of racks.</p> <p>3 All exterior panels and frame shall be powder coated for durability and attractive finish.</p> <p>4 Units shall include casters and leveling feet to allow ease of installation in the row and provide a means to level the equipment with adjacent IT racks.</p>			
6	<b>VARIABLE SPEED DC FAN ASSEMBLY</b>			
	<p>1 Fan: The unit shall be configured for draw-through air pattern to provide uniform air flow over the entire face of the coil. Each unit shall include eight 200 mm mixed flow direct drive DC axial fans.</p> <p>2 Variable Speed Fans: Fans shall be variable speed capable of modulating from 30-100%. Fans shall soft start to minimize in-rush current when starting.</p> <p>3 Fan Protection: Each fan assembly shall consist of a plastic injection molded bezel with integral fan discharge finger guard. Inlet of the fan should include a cage type finger guard.</p> <p>4 Operation and Service: The unit should be capable of operation in the event of a fan failure. Fans shall be replaceable while the unit is in operation.</p>			
7	<b>DUAL POWER SUPPLIES AND A-B POWER INPUT</b>			
	<p>1. Input Power Feeds: Dual A-B power inputs should be a locking NEMA or IEC plug connection suitable for the input power selected.</p> <p>2. Power Supplies: The unit shall include two power supplies, each capable of running the unit at 60% capacity in the event of a single power supply failure.</p> <p>3. Operation and Service: Power supply shall be user replaceable.</p>			
8	<b>MICROPROCESSOR CONTROLLER</b>			
	<p>1 Monitoring and Configuration: The master display shall allow monitoring and configuration of the air conditioning unit through a menu-based control. Functions include status reporting, set-up, and temperature set points. LEDs to report the operational status of the connected air conditioning unit.</p> <p>2 Controls: The microprocessor controller shall come equipped with control keys to allow the user to navigate between menus, select items,</p>			



	<p>and input alpha numeric information.</p> <p>3 Alarms: The microprocessor controller shall activate a visible and audible alarm in the occurrence of the following events:</p> <ul style="list-style-type: none"> <li>a. Internal Communications Fault</li> <li>b. Link Isolation Relay Fault</li> <li>c. Cooling Failure</li> <li>d. Rack Inlet High Temperature</li> <li>e. Air Filter Clogged</li> <li>f. Lower Return Air Sensor Fault</li> <li>g. Upper Return Air Sensor Fault</li> <li>h. Lower Supply Air Sensor Fault</li> <li>i. Upper Supply Air Sensor Fault</li> <li>j. Rack Inlet Temperature Sensor</li> <li>k. Coil Fluid Valve Actuator Fault</li> <li>l. Fan Fault</li> <li>m. Condensate Pump Fault</li> <li>n. Fluid Flow Meter Failure</li> <li>o. Entering Fluid High Temperature</li> <li>p. Entering Fluid Temperature Sensor</li> <li>q. Leaving Fluid Temperature Sensor</li> <li>r. Condensate Pan Full Alarm</li> <li>s. Power Feed Failure</li> <li>t. Fan Power Supply Fault</li> <li>u. Air Filter Run Hours Exceeded</li> <li>v. RACS Air Pressure High</li> <li>w. Supply Air High Temperature</li> <li>x. Return Air High Temperature</li> <li>y. Group Communications Lost</li> <li>z. Filter Sensor Fault</li> <li>aa. RACS Pressure Sensor Fault</li> </ul> <p><u>Logging:</u> The microprocessor controller shall log and display all available events. Each alarm log shall contain time/date stamp as well as operating conditions at the time of occurrence. Controller shall display the run time hours for major components.</p>		
9	<b>NETWORK MANAGEMENT CARD</b>		
	The unit shall include a network management card to provide management through a computer network through TCP/IP. Management through the network should include the ability to change set points as well as view and clear alarms.		
10	<b>COOLING COIL AND CONDENSATE PAN</b>		
	<p>1 Cooling coil shall use raised lance type aluminum fin and 3/8 inch OD (9.5 mm) copper tube coils. Coil end supports shall be a minimum 18 gauge galvanized steel.</p> <p>2 The unit shall consist of a primary and secondary drain pan. Secondary</p>		



	drain pan shall be piped to primary pan for removal of condensate. Primary drain pan shall include a condensate pump and dual floats for control and overflow protection. Condensate pans should be V-0 thermal formed, anti-fungal, non-ferrous material for higher indoor air quality.		
11	<b>2-WAY/3-WAY FLOATING POINT VALVE</b>		
	<p>1 Chilled water system shall utilize a three-way valve to regulate the amount of chilled water to the cooling coil to maintain desired conditions. Unit shall be equipped with a manual shut-off to close the by-pass leg for field configuration of 2-way or 3-way operation. Valve shall be piped internally with unions to allow for easy replacement in the field. The standard valve pressure rating shall be 600 psig.</p> <p>2 Valve Actuator: Actuator shall be direct connect rotary floating point style actuator and should be capable of being replaced without disconnecting piping from the valve.</p>		
12	<b>CONDENSATE PUMP</b>		
	Factory Installed and wired condensate pump shall pump 1.3 gal/h (5.9 liters/hour) at 16 ft (4.9 m) of lift and a 50 ft (15.2 m) horizontal run.		
13	<b>FILTERS</b>		
	<p>1 Standard Air filter: &lt;20% efficient per ASHRAE 52.1, MERV 1 per ASHRAE 52.2, 1/2" washable mesh filter</p> <p>2 Optional Air filter: High capacity 2" pleated, UL 900 Class 2, Moisture with average atmospheric dust spot efficiency of 30% per AHRAE Standard 52.1, MERV 8 per ASHRAE 52.2</p>		
14	<b>REMOTE TEMPERATURE SENSOR</b>		
	Remote temperature sensor shall ship factory wired to the unit for placement in the field to provide control input based on rack inlet temperature.		
15	<b>FLOW METER</b>		
	Flow meter shall be factory piped inside the unit and connected to microprocessor controls to provide water flow rate through the unit. The microprocessor controller shall also use this information to provide total unit capacity out of the unit while in operation.		
16	<b>BRIDGE POWER CABLE TROUGH</b>		
	Overhead power distribution bridge between adjacent racks that allows for removal of the unit without disrupting the overhead power cabling		
17	<b>CHILLED WATER</b>		
	The unit shall be piped in accordance with the highest commercial quality procedures. All pipe forming shall be tool bent with the proper bend radii to prevent flattening in the curve. The chilled water piping shall be insulated with closed neoprene thermal insulation. All piping connections should be made at the rear of the unit for top or bottom accessibility.		

<b>B. <u>Air Cooled Chiller</u></b>			<b>2 no.</b>	<b>6 no.</b>
1	Nominal Cooling Capacity:	32TR		
2	Ambient Condition:	42 Deg C		
3	Chilled Water Inlet/Outlet Temperatures:	7.2 Deg C and 12.7 Deg C		
4	<b>Specifications for Air cooled scroll chiller with Variable Speed Drive</b>			
	<ul style="list-style-type: none"> <li>• Supply &amp; Installation of Inverter scroll chiller with inbuilt variable speed chilled water recirculation pump.</li> <li>• The Self-supporting galvanized sheet steel framework with panels painted with epoxy powder paints equipped with fast screws for easy and quick access</li> <li>• Inverter-driven hermetic Scroll compressor, equipped with <ul style="list-style-type: none"> <li>- Inverter speed control.</li> <li>- Oil by-pass valve and line.</li> <li>- Soft start.</li> <li>- Integrated power factor correction condenser.</li> <li>- Integrated thermal protection.</li> <li>- Anti-vibration supports.</li> </ul> </li> <li>• Inverter driver with IP54 protection grade coupled with a specific compressor and positioned in a dedicated housing compartment.</li> <li>• Hermetic Scroll compressor with integrated thermal protection and anti-vibration feet.</li> <li>• Compressor sound-proofing with noise insulating jackets.</li> <li>• Single refrigerant circuit in accordance with EC standards (directive PED 97/23/CE) in copper piping including dehydration filter, liquid sight glass, electronic expansion valve connected to and driven by the unit control, high and low pressure switches and transducers.</li> <li>• Environment friendly refrigerant R410A.</li> <li>• Crankcase heaters and inverter with oil heating function.</li> <li>• Water flow differential pressure switch.</li> <li>• Air side exchange coil with aluminium fins and mechanically expanded copper piping.</li> <li>• Acousti-composite fans: Sickle-blade axial fans statically balanced and made from composite material ensuring elevated efficiency and low noise, with external and internal protection grill.</li> <li>• Modulating condensation control by means of continuous fan speed control.</li> <li>• Electrical panel in accordance with EC standards (directive 73/23/EC and directive EMC 89/336/EC) IP54 protection grade with auxiliary transformer, minimum and maximum temperature control, general door interlock cut off switch, protection and remote control</li> </ul>			

	switches. • Phase sequence control. • Microprocessor control including: - Chilled / hot water temperature regulation by means of self adaption of the set point regulation band. - Management of the electronic thermostatic valve. - Compressor management driven by inverter. - Quick start start-up procedure. - Integrated LAN card. - Integrated clock card.		
	<b>WARRANTY :</b> 5 years comprehensive onsite		

**ANNEXURE A-15 and A-16** are not present

### **OPTIONAL ITEM :**

#### **A-17: Backup/Restore Software Specifications.**

Sl. No	Specification	Requirement	Qty per site	Total Qty
			<b>1</b>	<b>3</b>
1	Platform Support	Should be available on various OS platforms such as Windows, Linux and UNIX platforms and be capable of supporting backup/ restores from various platforms including HP-UX, IBM AIX, Linux simultaneously. Both Server and Client software should be capable of running on all these platforms.		
		The solution should support both LAN based and LAN-Free (SAN Based) Backup with data de-duplication.		
		The solution shall provide online backup facility for popular databases like Oracle, MySQL, MS-SQL, SAP on Windows/ Linux/ Unix platforms.		
2	Management SW	The solution must be easy to configure with graphical wizard based interfaces.		
		The solution should have inbuilt feature for extensive alerting and reporting with pre-configured and customizable formats.		
		The solution must have capability to do trend analysis for capacity planning of backup environment.		
		Should support to help in troubleshooting for backup issues and RCA		

3	De-Duplication Support	The solution should allow de-duplication to occur at the source (client), before transferring the data across the network		
		Should integrate with third party VTL which has data de-duplication capabilities.		
4	VTL Support	Backup Software shall support VTL as backup target in addition to Tape Libraries.		
5	Encryption Support	The backup software should be able to encrypt the backed up data using 256-bit AES encryption on the backup client and should not demand for additional license or hardware, any such license if needed should be quoted for the total number of backup clients asked for.		
6	Basic Backup Features	<ul style="list-style-type: none"> <li>Should have in-built scheduling system and should support the resumption of failed backups from the point of failure for both file and block volumes.</li> <li>The solution must provide full, differential, Incremental and cumulative incremental backup while data/ system is online.</li> <li>The software should be able to do restoration of complete databases, individual table spaces or individual data files.</li> <li>Should support advanced backup to disk/VTL, where backups and restores from the backup media can be done simultaneously.</li> <li>The backup software should support data movement directly from the backup client to the disk target without passing through the backup server.</li> <li>The solution must support client-direct backup feature to cater stringent backup window.</li> <li>The solution must be licensed to backup data using disk, LTO Tape libraries and Virtual Tape Libraries for backups via SAN or through NDMP.</li> </ul>		
7	Multiplexing and Multi Streaming support	Software should support Multiplexing (Backup multiple clients' data on the media simultaneously), Multithreading/ Multi-streaming (Backup of more than one streams of data from client to the backup server)		
8	Virtual Environment affinity	The software should support backup and restore on virtual platform like VMWare, Citrix Xen Server and Hyper V		
9	Licenses	<p>Bidder shall propose licenses for :</p> <ul style="list-style-type: none"> <li>SAN Backup for 4 Servers</li> <li>NDMP Backup for 1 ScaleOut NAS Storage cluster of 400TB of data. It shall be scalable to 1.5PB usable backup capacity in future.</li> <li>10 Backup Agents for LAN backup</li> <li>Additional Media Servers licenses and hardware if needed to backup 320TB SAN and 400TB NAS Environment.</li> </ul>		

10	Multi-Tenancy Support	Backup Solution must support multi tenancy feature for creation of distinct data zones where the end users have access without being able to view data, backups, recoveries, or modify in other data zones.		
11	Reporting Features	The solution must have capability to do trend analysis for capacity planning of backup environment. Management software shall assist administrator to : <ul style="list-style-type: none"> <li>• Troubleshoot backup related issues and Root cause analysis.</li> <li>• Generate reports for multiple backup servers together.</li> <li>• Allow selective users to generate reports.</li> <li>• It shall support creation of pre-defined reports regularly.</li> <li>• Support various chart types for displaying reports.</li> </ul>		
12	Portability	Backup created in one PSU should be compatible for restoring it in the setup of another PSU		
13	Warranty	The back-up software is to be installed and demonstrated by the supplier and should be under warranty for 5 years.		
14	<b>IMPORTANT:</b> CPSUs have several servers at centers located in different states on which EMC NetWorker 7.6.3 Back-up software is being used. In order to maintain read/write compatibility with the existing Back-Up software, the offered software should be fully read/write compatible with it.			
<b>NOTE</b>	<b>This Item will not account for Financial Evaluation of the Tender</b>			

**NOTE :**

1. Bidder/supplier has to ensure functional integrity of all offered hardware and software in totality.
2. Bidder may quote items with higher capacity or functionality, but without entitlement for getting any price advantage thereby.

## Annexure – B1 : Warranty Certificate

### ON SITE COMPREHENSIVE WARRANTY CERTIFICATE

(To be enclosed with Techno-Commercial bid)

To

Dy. General Manager (Purchase),  
Smart Card Group  
Electronics Corporation of India Limited  
HYDERABAD – 500 062  
INDIA

Ref: Your RFP No. \_\_\_\_\_ Dt \_\_\_\_\_

We guarantee that everything to be supplied under this RFP shall be brand new, free from all encumbrances, defects and faults in material, workmanship and manufacturing and shall be of the highest grade and quality and consistent with the established and generally accepted standards for equipments/ materials of the type ordered and shall be in full conformity with the specifications, drawings or samples, if any, and shall operate properly. We shall be fully responsible for performance of the equipment/materials till the warranty period of 60 ( Sixty ) MONTHS from the date of final acceptance by the Purchaser.

The obligations under the guarantee expressed above shall include all costs relating to labor, repair, maintenance (including preventive and unscheduled), and transport charges from site to manufacturers' works and back, and for repair / adjustment or replacement at site of any part or whole of the equipment/ material which is under normal care and proper use and maintenance proves defective in design, material or workmanship or fails to operate effectively and efficiently, or does not conform to the specifications and for which notice is promptly given to us by the Purchaser.

We hereby also undertake to adhere and comply to all the conditions of the Purchase Order, governing the warranty obligation.

SIGNATURE, DATE & SEAL OF BIDDER

DATE: \_\_\_\_\_

## Annexure - B2 : Undertaking

### UNDERTAKING

(To be submitted along with Techno-Commercial Bid)

We, the undersigned, hereby give our unconditional acceptance to the clause 9.16 of Request for Proposal against the enquiry ref:        dt:    /    / 2013 .

We unconditionally agree that CPSUs have all the rights to evaluate the bids and the decision taken by CPSUs is final and binding on us. We agree that CPSUs reserve the right to cancel the order without any liability to CPSUs' account if the progress is not satisfactory in terms of quality, quantity, time and then CPSUs reserve the right to award the contract to any Bidder to complete the work in time.

Further we agree unconditionally that in the event of our deviation from the tender conditions during the supply period which results in project delays or affects the quality of the outputs, CPSUs can terminate the contract without assigning any reasons and we will not lodge any claims on CPSUs for any liabilities. We agree for imposition of risk purchase clause and any other penalties.

For the Bidder's Firm

(Authorized Signatory with Name and Stamp)

**Annexure - C : Price Schedule Format****PRICE SCHEDULE FORMAT**

RFP NO: \_\_\_\_\_ RFP Date: \_\_\_\_\_ Due Date: \_\_\_\_\_ ( All figures in INR)

Sl. No	Material Description	RFP Qty.	Basic Unit Price	ED	VAT/ CST	Service Tax	Total Price per unit (Rs.)	
							In Figures	In Words
1	Database Server/Backup Server	15						
2	Application/File Server	9						
3	SAN Disc Storage System with OEM racks	3						
4	Scale-out NAS Disk Storage with OEM racks	3						
5	LTO Tape Drive unit	12						
5.a	LTO-5 Ultrium Tape Media	1500						
5.b	LTO-6 Ultrium Tape Media	1500						
6	LTO Tape Library	3						
7	SAN Switch	6						
8	12 Port KVM Switch with standard accessories for rack mounting	6						
	Color Console, Keyboard and Mouse	6 sets						
	KVM to Server USB Cables (3 Mtrs )	30						
	KVM to KBD + MOUSE + Monitor cables	6 sets						
9	24 Port Gigabit Ethernet Switch L2 Type	6						
10	24 Port 10 Gigabit Ethernet Switch L3 Type, Managed	6						
	Patch Cords, MMF - 1 Mtr	*						
	Patch Cords, MMF - 2 Mtr	*						
	Patch Cords, MMF - 5 Mtr	*						
11	19" 36U Industrial Rack	6						
12a	RHEL Premium	12						
12b	RHEL with High Availability Add-on and Virtualization Manager	12						
13	Online Modular UPS	3 sets						
14	In-row Air-Conditioning System	9 sets						
15	Comprehensive onsite Warranty support (both service and parts) for all the above hardware items (sl. 1 to 11, 13, 14) for 5 years	3 lots						
16	Training of CPSU engineers as detailed in clause 9.8	3 lots						
<b>Following Item will not be part of Financial Evaluation :</b>								
17	Backup S/W with onsite warranty support for 5 years	3						

\* Bidder should identify and quote actual quantity required.



## Annexure - D1 : Check List

### QUESTIONNAIRE/ ELIGIBILITY/ DOCUMENT CHECK LIST–EVALUATION SHEET

(to be filled by the bidder)

1	Name and address of the Bidder	
2	Name of authorized signatory for signing the Bid document along with Power of Attorney (Ref Clause 5.10)	
3	The certificate of Incorporation / commencement of business attached ? (ref. Clause 5.1)	YES / NO
4	Whether duly attested financial data for the last three financial years attached ? (ref Clause 5.4)	YES / NO
5	Turnover of the Company	Rs..... Crores
6	Whether DD for Rs.50,000/- attached towards Registration fee / document cost ? (7.2)	YES / NO
7	Is validity of Bid is 180 days from the due date of bid submission (7.6.1)	YES / NO
8	Whether clause wise compliance submitted as Per Clause 6.1 in the Techno-commercial bid	YES / NO
9	Whether Experience Certificate & declaration Enclosed? (clause 5.5, 5.6, 5.7)	YES / NO
10	Whether Price bid format duly filled as per Annexure C	YES / NO
11	Whether copy of Service Tax Registration attached ? (5.3)	YES / NO
12	Whether copy of PAN attached ? (5.3)	YES / NO
13	Whether copy of Sales Tax Registration attached ? (5.3)	YES / NO
14	Whether copy of CMMI-4 certificate attached ? (5.2)	YES / NO
15	Whether EMD submitted as per clause 7.4	YES / NO
16	Whether Affidavit for non-conviction attached ? (5.11)	YES / NO
17	Whether Undertaking enclosed as per Annexure B-2	YES / NO

## Annexure – D2 : Security Deposit

### PROFORMA FOR SECURITY DEPOSIT / PBG

Ref No.:

Date:

SECURITY DEPOSIT NO:

DATED:

To

The Dy. General Manager (Purchase)  
Smart Card Group,  
Electronics Corporation of India Limited,  
ECIL Post,  
Hyderabad – 500 062.

Dear Sirs,

1. In consideration of Electronics Corporation of India Limited, (A Government of India Enterprise), Incorporated under the Companies Act 1956 having its registered Office at ECIL Post, Hyderabad-500 062 (herein after referred to as “Company” which expression shall mean and include, unless repugnant to the context or meaning thereof, all its successors, administrators, executors and assigns) having entered into a Contract No: .....dated .....(hereinafter called: “The Contract” which expression shall include all the amendments thereto) with M/s ..... having its Registered/Head Office at..... (hereinafter referred to as “The Contractor” which expression shall mean and include, unless repugnant to the context or meaning thereof, all its successors, administrators, executors and assigns) and Company having agreed that the Contractor shall furnish to Company a performance guarantee for Indian Rupees ..... for the faithful performance of the entire Contract.
2. We {Name of the Bank} registered under the laws of INDIA having head/registered office at .....(hereinafter referred to as “The Bank”) which expression shall, unless repugnant to the context or meaning thereof, include all its successors, administrators, executors and permitted assigns) do hereby guarantee and undertake to pay immediately on first demand in writing and any/all moneys to the protest and/or without any reference to the Contractor. Any such demand made by Company on the Bank by serving a written notice shall be conclusive and binding, without any proof, on the bank as regards the amount due and payable, notwithstanding any dispute(s) pending before any Court, tribunal, Arbitrator or any other authority and/or any other matter or things whatsoever, as

liability under these presents being absolute and unequivocal. This agrees that the guarantee herein contained shall be irrevocable. This guarantee shall not be determined, discharged or affected by the liquidation, winding up dissolution or insolvency of the Contractor and shall remain valid, binding and operative against the Bank.

3. The bank also agree that Company as its option shall be entitled to enforce this Guarantee against the Bank as a principal debtor, in the first instance, without proceeding against the Contractor and notwithstanding any security or other guarantee that Company may have in relation to the Contractor's liabilities.
4. The Bank further agree that Company shall have the fullest liberty without our consent and without affecting in any manner or obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said contractor(s) from time to time or to postpone for any time or from time to time exercise of any of the powers vested in Company against the said Contractor(s) and to forebear or enforce any of the terms and conditions relating to the said agreement and we shall not be relieved from our liability by reason of any such variation, or extension being granted to the said Contractor(s) or for any forbearance, act or omission on the part of the Company or any indulgence by Company to the said Contractor(s) or any such matter or thing whatsoever which under the law relating to sureties would, but for this provision, have effect of so relieving us.
5. The bank further agree that the guarantee herein contained shall remain in full force during the period that is taken for the performance of the Contract and all dues of Company under or by virtue of this Contract have been fully paid and its claim satisfied or discharged or till Company discharges this guarantee in writing, whichever is earlier or until the date of expiry of the claim period specified in para-9 of this Bank Guarantee, whichever shall occur first.
6. This Guarantee shall not be discharged by any change in our constitution, in the constitution of Company or that of the Contractor.
7. The Bank confirms that this guarantee has been issued with observance of the appropriate laws of the country of issue.
8. The Bank also agree that this guarantee shall be governed and construed in accordance with Indian Laws and subject to the exclusive jurisdiction of Indian Courts of the place from where tenders have been invited.
9. Notwithstanding anything contained herein above, our liability under this Guarantee is limited to Indian Rs. {In figures} Indian Rupees {In words} and our guarantee shall remain in force until {Indicate the date of expiry of Bank Guarantee}.

10. Any claim under this Guarantee must be received by us before the expiry of this Bank Guarantee. If no such claim has been received by us by the said date, the rights of Company under this Guarantee will cease. However, if such a claim has been received by us within the said date, all the rights of Company under this Guarantee shall be valid and shall not cease until we have satisfied that claim.

11. In witness whereon, the Bank through its authorized officer has set its hand and stamp on this .....day of ..... 2013 at .....

\_\_\_\_\_  
Signature

Full name, designation and Official Address

With Bank Stamp.

Attorney as per Power of Attorney No:

Date:

WITNESS NO: 1

.....  
(SIGNATURE)

Full name, designation and Official Address

WITNESS No: 2

.....  
(SIGNATURE)

Full name, designation and Official Address

**Note:** This Bank Guarantee / all further communications relating to this Bank Guarantee should be forwarded to The DGM (Purchase), Smart Card Group, Electronics Corporation of India Limited, ECIL Post, Hyderabad-500 062.

### **Instructions for furnishing Performance Guarantee**

1. The Bank Guarantee by Indian Bidders will be given on non-judicial stamp paper of value of Rs.100/-. The Non-Judicial Stamp Paper should be in the name of the issuing bank and should not be state at the time of execution.
2. The expiry date as mentioned in clause 9 should be arrived at by adding 60 days to the warranty period.
3. The Bank Guarantee by Indian bidder will be given from Nationalized/Scheduled bank only.
4. This Bank Guarantee / all further communication relating to the bank guarantee should be forwarded to The DGM (Purchase), Smart Card Group, ECIL, Hyderabad-500 062, for ECIL.
5. The full address along with the Telex/Fax No. and email address of the issuing bank to be mentioned.
6. Full particulars to be filled in at respective places as required in curling brackets.

## **Annexure - D3 : NDA**

### **Non-Disclosure Agreement**

This Agreement (hereinafter called the "Agreement") is made on the [day] day of the month of [month], [year], between, Electronics Corporation of India Limited, ECIL Post Hyderabad 500 062 on the one hand, (hereinafter called the "Buyer") and, on the other hand, [M/s....] (hereinafter called the "Seller") having its registered office at [Address ]. The Buyer and the Seller agree as follows:

1. The SELLER shall treat this contract and the supplies and services made therein as absolutely "CONFIDENTIAL". Further, he shall not disclose the existence of the contract or of supplies made therein or provide any information, which may come to their knowledge or passed on to them during the operation of the contract to any third party, person or country under any circumstances without prior written consent of BUYER.
2. The SELLER shall keep all technical specifications, scope, details of equipment at the site, terms and conditions, including Annexures, Drawings, if any, as secret, confidential and shall not disclose to any third party, without the written consent of BUYER. The SELLER shall not advertise or publicize through media – print or electronic, on the scope and execution of this contract. The parties herein shall not publish the existence and execution of this contract in their respective 'in-house' newsletters, bulletins, annual reports or any other publications, for limited circulation or public circulation.
3. The SELLER shall not claim, solicit, reveal, disclose, advertise or publicize through press or electronic media or through any other media on the scope and execution of the purchase order, and the logo of end customer, without prior written consent from the BUYER. The BUYER reserves the right to prosecute the SELLER and/or claim damages for non-compliance.
4. The SELLER undertakes to comply with highest standards of ethics and shall not resort to any corrupt or fraudulent or collusive practices, during the total process of execution.
5. The Agreement shall apply to all Information relating to the Project disclosed by the Buyer to the Seller under this Agreement.
6. Nothing contained in this Agreement shall be construed as granting or conferring rights of license or otherwise, to the seller, in any of the Information.
7. This Agreement shall benefit and be binding upon the Buyer and the Seller and their respective subsidiaries, affiliates, successors and assigns.
8. This Agreement shall be governed by and construed in accordance with the Indian laws.

For and on behalf of the Seller

\_\_\_\_\_ (signature) \_\_\_\_\_

(Name of the Authorized Signatory)

Date:

Address:

Place:

## Annexure - E1 : Check List for Eligibility Criteria

(to be enclosed with techno-commercial bid)

Sno	Document	Enclosed? Yes/No	Annexure Ref.
1	Certificate of Incorporation		
2	Certificate of commencement of business		
3	Copy of CMMi level 4 Certificate		
4	Service tax Registration certificate		
5	Income tax PAN no. reference		
6	Sales tax registration Certificate (CST / VAT)		
7	Audited Balance Sheets for past 3 years		
8	Statement of orders for Servers & Storage		
9	Statement of experience		
10	Single order in the same year for SI & Implementation		
11	Unconditional Authorisation from OEM		
12	Bid Fee		
13	EMD		
14	Power of Attorney for signing		
15	Affidavit for non-conviction		
16	Certification for "No Litigation pending"		
17	Non-disclosure Agreement		

## Annexure – E2 : Check List for Techno commercial Bid

Sno	Document	Enclosed? Yes/No	Annexure Ref.
1	Clause wise compliance statement (Terms & Conditions)		
2	Company profile		
3	OEM certification for New equipment		
4	OEM undertaking for spare part support		
5	Acceptance of Scope of work by bidder and OEMs		
6	Acceptance of Risk Purchase clause (Annexure - B2)		
7	Statement of certified engineers		
8	Item wise Technical compliance statements (Annexure – G)		
9	Un priced Commercial Bid		
10	Project Plan		
11	Support Plan		



## Annexure - E3 : Statement of experience of major projects involving similar activities

(Indicate approximate value of the respective component & enclose Order copy & Project completion certificate)

Sl no	Year	Customer	Order Reference	Value	Project Duration	HW & SW supply	Storage supply	System Integrn.	Support Services	FM Services	Man power Deployed	Project status

## Annexure – E4 : Statement of POs executed for Servers and storage for OEM products offered:

(Indicate approximate value of the respective component & enclose Order copy & Project completion certificate)

Sl no	Year	Customer	Order Reference	Product	OEM	Servers (Rs.)	Storage (Rs.)	Total (Rs.)

## Annexure - E5 : RFP Compliance Statement

(To be enclosed with Techno-commercial Bid)

S.No.	Compliance Criteria	Complied?	
		Yes	No
1	Bid furnished as 3 part, as per Clause no 7.7		
2	Enclosures as per clause 6. techno commercial criteria.		
3	Scope of work as per clause 4		
4	Delivery Schedule as per clause 9.1		
5	Warranty as per clause 9.9		
6	Training as per clause 9.8		
7a	Is Authorization applicable as per clause 5.7		
7b	If applicable, is the authorization enclosed		
8	Dispatch documents as per clause 9.2		
9	Spares as per clause 9.10		
10	Packing clause as per clause 9.3		
11	Prices as per clause		
12	Liquidated Damages as per clause 9.6		
13	Terms of payment as per clause 9.7		
14	Security Deposit /PBG as per clause 8.2		
15	Short shipments / damages clause as per clause 9.4		
16	Rejections/ replacements clause as per clause 9.5		
17	EMD furnished as per clause 7.4		
18	Risk Purchase Clause accepted as per clause 9.16		
19	Affidavit for non-conviction furnished as per clause 5.11		
20	Confidentiality clause agreed as per clause 9.17		
21	Assignment clause as per clause 9.18		
22	Arbitration Clause as per clause 9.15		
23	Validity of offer is for 180 Days as per clause 7.6		

Signature:

Office Seal of the Bidder:

Date: \_\_\_\_\_

## **Annexure - F : Technical Compliance Sheets**

For Technical compliance, mere Yes/No is not sufficient, what is being offered is to be mentioned.  
Technical compliance is to be given for all optional items, if any, as well.

## Annexure-G : Technical Compliance

### Annexure-G1 : Technical Compliance of Database/Backup Servers

Sl. No	Item	Tender Specification	Complied? Yes/No	Offered Specification	Deviations If any
	Make & Model				
1	Processor	The Server should be populated with 4 X Intel® Xeon® E7-4850 (2.00GHz/10-core/ 24MB/ 130W)			
2	Chipset	Intel 7500 Chipset			
3	Memory Type	PC3-10600R Registered DIMMs			
4	Memory	The server should be supplied with 256 GB DDR3 Memory & Upgradeable to 1TB of Memory			
5	Memory Slots	The Server should support minimum 64 DIMM Slots. The memory type should be DDR3 Memory			
6	Network Ports	2 x Dual port 10GE NIC			
7	Server – Storage HBA	The server should be supplied with 2 x 8Gbps dual ported FC Ports in redundancy			
8	Expansion Slots	Min. 5 (Five) PCI-e slots standard. (optional mixed PCI-X / PCI-Express)			
9	Storage Bays	The server should have a minimum of 8 number drive bays			
10	HDD Controller	c) Onboard support for RAID 0 & 1 on SAS, to connect 3 * 600 GB SAS drives (internal) d) Separate SAS controller with external port to connect to Ultrium Tape Unit.			
11	Hard Disk Drive	The server should be populated with 3 x 600 GB 10K rpm SAS SFF Hot Plug drives, provided drives should be configured with RAID0,1			
12	Optical Drive	The Server should be configured with a Slimline DVD			
13	Interfaces	The server should have 1*Serial, 1*Key Board, Video , 1 Mouse, 6 USB , 1*Remote Management Port			
14	Form Factor	The server form factor should not be higher than 4U Rack Mountable			
15	Manageability	The server should have Dedicated Hardware Controller based			

		Management			
16	Manageability Features	Should be able to manage systems through a web-browser			
		OEM to provide its own systems management software.			
		Pre-failure WARRANTY for CPU, Memory & Hard Disk. Part to be replaced based on impending failure alert to be provided by the systems management software BEFORE actual failure of component.			
		Should be able to generate a report on Inventory			
		Automatic check & update of hardware drivers & Bios Version Control			
17	Benchmark	Model family should have a certified TPC Benchmark			
18	Warranty	5 years comprehensive onsite Support including DMR			
19	Delivery	The BOM and Compliance should be vetted and signed by OEM.			
20	Accessories	All the necessary cables Ethernet / Fibre / Power etc. required for making the system operational shall be provided by the bidder.			
21	Certifications	Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Oracle Solaris VMware Citrix XenServer			

### Annexure-G 2 : Technical Compliance of Application/File Servers

S.No	Item	Tender Specification	Complied? Yes/No	Offered Specification	Deviations If any
	Make & Model				
1	Processor	The Server should be populated with 4 X Intel® Xeon® E7-4850 (2.00GHz/10-core/24MB/130W)			
2	Chipset	Intel 7500 Chipset			
3	Memory Type	PC3-10600R Registered DIMMs			
4	Memory	The server should be supplied with 256GB DDR3 Memory & Upgradeable to 1TB of Memory			

5	Memory Slots	The Server should support minimum 64 DIMM Slots. The memory type should be DDR3 Memory			
6	Network Ports	2 x Dual port 10GE NIC			
7	Expansion Slots	Min. 5 (Five) PCI-e slots standard. (optional mixed PCI-X / PCI-Express)			
8	Storage Bays	The server should have a minimum of 8 number drive bays			
9	HDD Controller	c. Onboard support for RAID 0 & 1 on SAS, to connect 3 * 600 GB SAS drives (internal) d. Separate SAS controller with external port to connect to Ultrium Tape Unit.			
10	Hard Disk Drive	The server should be populated with 3 x 600 GB 10K rpm SAS SFF Hot Plug drives, provided drives should be configured with RAID0,1			
11	Optical Drive	The Server should be configured with a Slimline DVD			
12	Interfaces	The server should have 1*Serial, 1*Key Board, Video , 1 Mouse, 6 USB , 1*Remote Management Port			
13	Form Factor	The server form factor should not be higher than 4U Rack Mountable			
14	Manageability	The server should have Dedicated Hardware Controller based Management			
15	Manageability Features	Should be able to manage systems through a web-browser			
		OEM to provide its own systems management software.			
		Pre-failure WARRANTY for CPU, Memory & Hard Disk. Part to be replaced based on impending failure alert to be provided by the systems management software BEFORE actual failure of component.			
		Should be able to generate a report on Inventory			
		Automatic check & update of hardware drivers & Bios Version Control			
16	Benchmark	Model family should have a certified TPC Benchmark			
17	Warranty	5 years comprehensive onsite warranty Support including DMR			
18	Delivery	The BOM and Compliance should be			

		vetted and signed by OEM .			
19	Accessories	All the necessary cables Ethernet / Fibre / Power etc. required for making the system operational shall be provided by the bidder.			
20	Certifications	Microsoft Windows Server Red Hat Enterprise Linux (RHEL) SUSE Linux Enterprise Server (SLES) Oracle Solaris VMware Citrix XenServer			

### Annexure-G3. Technical Compliance of SAN Disk Storage System

Sl. No.	Storage System Specifications/Requirements	Complied? Yes/No	Offered Specification	Deviations If any
	<b>Make and Model :</b>			
1	<b>Storage Architecture</b>			
	<p>The Storage Systems should be Enterprise Class Storage System with multi-controller architecture (Should have at least 8 controllers) and supplied with 320TB Usable capacity using</p> <ul style="list-style-type: none"> <li>- 3% capacity on SSD Disks with Raid-5 Protection</li> <li>- 7% capacity on 15K RPM FC/SAS disks with Raid-5 Protection</li> <li>- 90% capacity on 7200RPM NL-SAS disks with Raid-6 Protection.</li> </ul> <p>Array should be provided with software feature to enable Sub-LUN Tiering across SSD, SAS/FC and NL-SAS/SATA tiers for proposed capacity. Proposed capacity should be configured using Enterprise Class Dual Ported disks.</p> <p><b>Housing :</b> All the storage components are to be housed in suitable OEM racks.</p>			
2	<b>Raid Level Support</b>			
	The Storage should support RAID 5, RAID 6, RAID1+0 etc.			
3	<b>Global Hot Spares</b>			
	Storage System should have multiple Global Hot Spares. One Hot spare disk should be provided for every 30 Disk Drives over and above the usable capacity of 320TB.			



4	<b>Host Ports</b>			
	Storage should have minimum 32 FC ports with 8 Gbps speed for host connectivity and scalable up to 64x8Gbps ports or higher			
5	<b>Backend Ports</b>			
	Storage should have minimum 32x6Gbps SAS Links for Disk connectivity and scalable up to 64x6Gbps SAS Links or higher <b>OR</b> , Storage should have minimum 48x4Gbps FC-AL for Disk connectivity and scalable up to 96x4Gbps FC-AL or higher <b>OR</b> , Storage should have minimum 32x8Gbps FC-AL for Disk connectivity and scalable up to 64x8Gbps FC-AL or higher			
6	<b>Array Cache Memory</b>			
	The storage system should have minimum 512 GB Global DRAM cache memory and scalable to 1024 GB or higher Global DRAM Cache memory. The write cache must be mirrored. Array should be capable to dynamically allocate at least 50% of the usable cache memory for Write operations.			
7	<b>High availability</b>			
	The storage should be with No Single Point of Failure (SPOF). All the components should be redundant and hot swappable including power supply, fans, batteries, controllers etc. The proposed storage must support non-disruptive replacement of hardware component.			
8	<b>Non Disruptive Code Upgrades</b>			
	The storage must provide non-disruptive firmware/micro code upgrade, device reallocation and configuration changes.			
9	<b>Cache Protection</b>			
	The storage should have protection of cache data during a power down either scheduled or unexpected power outage by battery backup for at least 72 hours OR by de-staging the data in cache to non-volatile Disk.			
10	<b>Virtual Provisioning</b>			
	The storage should have Virtual/Thin provisioning for Storage allocation to hosts.			
11	<b>Online LUN Expansion</b>			
	The storage should support dynamic LUN expansion/concatenation while LUN is mounted on the host			
12	<b>Maximum device support</b>			
	The proposed storage system should support more than 600 LUNs or volumes			
13	<b>Storage Audit Logs</b>			

	The storage should be able to generate audit logs to record activities including host-initiated actions, physical component changes, attempts blocked by security control.			
14	<b>OS Support</b>			
	The storage should support multiple operating systems such as Windows, Unix, Linux, Solaris etc. on a single port			
15	<b>Cluster Support</b>			
	The storage should support clustering solutions such as Microsoft cluster, MS SQL cluster, SUN Solaris cluster, Linux cluster etc.			
16	<b>Database Support</b>			
	The storage should have integration capability with major Database like Oracle, MS-SQL, MySQL, DB2 etc to take application consistent copies when doing replication. Any Licenses for this support must be provided with System.			
17	<b>VAAI Support</b>			
	Storage should support VMware vStorage API for Array Integration ( i.e. VAAI) and VASA API.			
18	<b>Feature License</b>			
	The storage should be supplied with Storage management, virtual/thin provisioning, local copy (clone and snapshots both) to meet the technical requirements.			
19	<b>Storage Management Features</b>			
A	Proposed array should have web based as well as CLI based management tool for storage provisioning, snap/clone operations and remote replication operations.			
B	Storage management s/w should have roles based access for user accounts to the storage system.			
C	Storage management software should provide interface/wizards to perform configuration operations like create LUNs, present LUNs to host, set LUN attributes etc.			
D	Storage management software should be able to perform and monitor local and remote replication operations. Storage management software should be able to configure and manage tiering and auto-tiering			
E	Storage management software should be able to monitor alerts			
F	Storage management software should provide real time monitoring and historical analysis of storage performance data such as total IOPS, read%, write %, cache-hit %, throughput, etc. for analyzing performance of the systems.			

G	Storage management or additional software shall be provided which shall show topology views i.e. host HBA to storage end to end connectivity (including SAN Switches) in graphical format. It shall have drill down features to see greater details of components visible in topology. Administrator shall have Search facility to search objects in topology view.			
H	Storage Management or additional software shall be capable to show end to end performance data i.e. host to storage in a single console.			
I	Storage Management or additional Software shall be capable to show capacity utilization and trend.			
20	<b>Local copy features</b>			
A	The storage should support local copy of single source device to at least three or more target devices with background copy. Resync operations should be incremental for all copies i.e. subsequent resync operation should copy only the delta changes.			
B	The proposed storage should have point-in-time copy or snapshots. Relevant license should be provided.			
21	<b>Remote Replication features</b>			
A	The storage should support both Synchronous and Asynchronous Data Replication to remote site. Proposed Storage based replication solution should scale to support Concurrent (A to B and A to C) or Cascaded (A to B to C) topology for three site replication and Zero RPO.			
B	The replication solution should support up to 2048 volume pairs for remote replication			
C	The proposed Storage Array should have feature (internal/external) to Virtualize / Integrate, 3rd party storage arrays from leading Storage OEMs like NetApps, EMC, Hitachi, IBM, HP, Oracle etc.			
22	<b>Warranty</b> : 5 years Comprehensive on site			

**Annexure-G4. Technical Compliance of Scale-out NAS Disk Storage System**

Sl. No.	Storage System Specifications/Requirements	Complied? Yes/No	Offered Specification	Deviations If any
	<b>Make and Model :</b>			
1	<b>Controllers</b>			
	<ul style="list-style-type: none"> <li>Proposed Storage should be configured with minimum 8 Active/Active Storage Node/Controllers to meet capacity requirement mentioned below. Storage solution should have Truly distributed fully symmetric clustered architecture upgradeable up to 24 Storage Nodes/Controllers without any requirement of Data Migration or host side configuration change.</li> <li>Storage Nodes/Controllers must be based on 64 Bit Intel Xeon Processor.</li> <li>Must not require downtime during software/firmware upgrades.</li> </ul>			
2	<b>Array Memory</b>			
	<ul style="list-style-type: none"> <li>Proposed Storage should be configured with Minimum 48 GB ECC Memory per Storage controller/Storage node. In case storage node is different than the storage array, vendor should ensure at least 8 storage controllers are proposed each with 48GB cache Memory.</li> <li>Entire Memory must be Globally Coherent and must be available for both read and write operation.</li> </ul>			
3	<b>Capacity</b>			
	<p>Proposed Storage shall be supplied with 400TB Usable capacity. This capacity shall be supplied using:</p> <ul style="list-style-type: none"> <li>- 8% capacity using 10K RPM 600GB or higher SAS disks</li> <li>- 92% capacity using 7200 RPM 3TB/4TB NL-SAS Disks</li> </ul> <p>License feature to enable policy based tiering across SAS and NL-SAS/SATA tier should be provided for proposed capacity. Entire capacity should be available as a Single Filesystem/ single namespace. Proposed Storage Cluster shall be scalable to meet Usable capacity of 1.5PB in a single filesystem / single namespace.</p> <p>The proposed storage should have N+1 redundancy across the controller nodes and one storage node/controller failure should not impact performance or data availability.</p> <p><b>Housing :</b> All the storage components are to be housed in suitable OEM racks.</p>			
4	<b>Array Operating System</b>			

	<ul style="list-style-type: none"> <li>Scale-Out Storage must have Journaled filesystem, fully distributed, Purpose Built 64 bit Scale-Out NAS Operating System, dedicated for serving file data efficiently. It must not be based on NAS Gateway model.</li> <li>Proposed Storage should support simultaneous access to same file data from Linux/Unix and Windows users.</li> <li>Proposed Storage should be configured with software feature for Locking of File Data from unauthorized updates or deletion for pre-configured duration.</li> </ul>			
5	<b>Host Ports</b>			
	<ul style="list-style-type: none"> <li>Each Storage Controller/Storage node must have minimum 2 x 10GigE ports. Must Support VLAN, Trunking and Link aggregation for High Availability &amp; Performance.</li> <li>Proposed NAS Cluster shall have NDMP Backup Feature to backup NAS DATA over Fiber Channel ports. Minimum 4 FC ports shall be provided for SAN connectivity.</li> </ul>			
6	<b>Supported Disk Type</b>			
	Storage must support SSD, SAS, SATA/NLSAS Disk Types in the same storage System with software feature to dynamically tier data across SSD, SAS, SATA/NL-SAS Tiers.			
7	<b>Availability Features</b>			
	<ul style="list-style-type: none"> <li>Usable Capacity must be configured with protection against simultaneous double disk failure.</li> <li>Data should be striped across multiple storage controllers for higher performance and High Availability.</li> <li>Communication between Storage Controllers/Storage Nodes should happen only using Infiniband/10Gig which provides High Bandwidth and low latency with no single point of failure.</li> <li>Redundant and Hot replaceable modules: Controllers, Hard Disk Drive, power supplies (230V AC, 50 Hz.) and fans.</li> <li>The Scale-Out Storage should have No Single Point of Failure (SPOF). Bidder Must propose storage capacity with additional reserve of 3% space in a pool in addition to asked capacity. This reserve should be used for data regeneration in the event of a drive failure.</li> <li>In case of disk failure, data regenerated must be spread across entire available free capacity of the storage.</li> <li>Storage solution must be able to protect data against any one storage controllers / Nodes failure without loss of data or service availability. In case of Power</li> </ul>			

	<p>failure, Storage Controller/ Storage Node shall be able to hold data in the cache for at least 48 hours of time.</p> <ul style="list-style-type: none"> <li>Proposed Storage should support creation of 1024 Snapshots for each Directory and volume. Administrator should be able to recover data from snapshot in case of any accidental data loss. License if any required for taking snapshots or recovery from snapshots should be provided.</li> <li>Proposed Storage should support asynchronous remote replication in bi-directional, one to many and many to one topologies.</li> <li>Storage system must support detection of silent data corruption by doing parity checking on write and read operations both. System should also support fixing of corruption in case of parity mismatch. System should provide safeguard against data errors due to disk failure, unrecoverable read errors and network-induced errors.</li> </ul>			
8	<b>Performance Characteristics</b>			
	<ul style="list-style-type: none"> <li>Scale-Out Storage must be configured to provide Sustained Aggregate Sequential Write performance of 1.5GB/sec which needs to be demonstrated with the help of third party tools like IO meter/IO Zone at the time of technical evaluation. Cluster throughput should be scalable to 10GB/sec by adding controllers in the same Cluster.</li> <li>There should not be more than 12.5% degradation of performance in case of any component or Controller failure in the storage.</li> </ul>			
9	<b>Quality of Service</b>			
	<ul style="list-style-type: none"> <li>Storage Upgrades should be seamless without any requirement of downtime or partial service unavailability. Proposed Storage should scale linearly for Performance and Capacity.</li> <li>In the event of addition of storage controller/storage node to storage solution, existing data should be rebalanced (auto-balanced) across all storage controllers/ storage nodes. This rebalancing should be done with low priority avoiding any impact on performance.</li> <li>Client Connections must be balanced across all the Storage Controllers/ Storage Nodes.</li> <li>Scale-Out Storage must provide features to provide Users, Group Quotas. Scale-Out Storage should support feature to create different tiers of performance and capacity and must be able to move data between these tiers based on</li> </ul>			

	policy such as Age, type, Access time, modify time, size, extension without requiring any additional software.			
10	<b>Standard Software Features</b>			
	<ul style="list-style-type: none"> <li>Proposed Storage should have Single Web based Management Interface/Tool to manage entire storage cluster. Proposed Storage should have a CLI interface as well for Cluster Management.</li> <li>Should support user security mechanisms like AD, LDAP and NIS.</li> </ul>			
11	<b>Warranty</b> : Comprehensive onsite warranty for 5 years.			

### Annexure-G5 : Technical Compliance of LTO Tape Drive

Sl. No	Specifications	Complied? Yes/No	Offered Specification	Deviations If any
	<b>Make and Model :</b>			
	<b>TAPE BACKUP SYSTEM</b> Consisting of:			
1	External Single LTO 6 Ultrium Tape Drive with minimum 3 Gbps SAS Connectivity, with Interface Cable, Power cord, and Rack mount kit			
2	Tape Cleaning Cartridge			
3	Tape drive should have compatibility with existing LTO-4 and LTO-5 cartridges			
4	<b>Warranty</b> : 5 years Comprehensive on site			
5	<b>Ultrium Tape Media :</b>			
a	LTO-5 Ultrium Tape media			
b	LTO-6 Ultrium Tape media			

**Annexure-G6 : Technical Compliance of LTO Tape Library**

Sl. No.	Specification	Requirement	Complied? Yes/No	Offered Specification	Deviations If any
	<b>Make and Model</b>				
	<b>Drive technology</b>	Offered Tape Library should support LTO-6, LTO-5, LTO-4 tape drives			
1	<b>Capacity</b>	3. Shall be offered with <ul style="list-style-type: none"> <li>• Minimum of eight LTO-6 FC tape drives.</li> <li>• Each drive should have minimum 8 Gbps FC port for SAN connectivity</li> <li>• Tape Drive shall support encryption.</li> </ul>			
		4. Shall be offered with <ul style="list-style-type: none"> <li>• minimum 100 Nos. of Cartridge slots</li> <li>• 100 Nos. LTO-6 Cartridges and</li> <li>• 12 Nos. of Cleaning Cartridges.</li> </ul>			
2	<b>Speed</b>	Offered LTO-6 drive shall support minimum 160MB/sec in Native Burst mode			
3	<b>Scalability</b>	Tape Library shall be further scalable to 200 slots			
4	<b>Connectivity</b>	Offered Tape Library shall provide minimum dual 8 Gbps native FC connectivity to SAN switches.			
5	<b>Partitioning</b>	Offered Tape Library shall have partitioning support so that drives can be configured in a separate partition.			
6	<b>Management</b>	Tape Library shall provide web based remote management.			
7	<b>Barcode Reader and Mail slots</b>	Tape library should have Barcode reader and at-least 8 mail slots.			
8	<b>Expandability</b>	c. The proposed library shall not expand using 2 individual control module libraries for stackable expansion by setting one as master control module and the other as slave module. d. The control modules shall have a flexible racked option			
9	<b>Other Features</b>	1. Tape Library shall have operator panel, 2. Shall have configuration for redundant power supply			



10	<b>Automation</b>	Proposed Tape Library shall use single high performance robotic design without any pass-thru mechanism			
11	<b>Warranty</b>	5 years Comprehensive on site			

### Annexure-G7 : Technical Compliance of SAN Switch

Sl. No	Specification/Requirement for Edge Fiber Switch	Complied? Yes/No	Offered Specification	Deviations If any
	<b>Make and Model :</b>			
1	The fiber switch should be quoted with minimum 32 Active FC ports of 8Gbps or higher speed each scalable to at least 128 ports.			
2	The switch should have support for 2, 4, and 8 Gbps HBA			
3	The switch should have auto sensing, Zoning, Integrated Ethernet and Serial Port for communication.			
4	Switch should be rack mountable and should be supplied with mounting kit.			
5	The switch should be equipped with redundant hot swap power supply and Fan and allow hot swap ability without resetting the switch, or affecting the operations of the switch			
6	The switch should be backward compatible			
7	The switch should be capable for Non-disruptive firmware update.			
8	The switch should be capable of End to end performance monitoring			
9	The switch should have Support for POST & online diagnostics			
10	The switch should be capable to interface with host based adapters (HBA) of multiple OEM, supporting multiple Operating Systems			
11	The switch should have following Zoning and security features -			
	a. Support for hardware -enforced zoning.			
	b. Support for secure access.			
	c. Support for RADIUS, SSH, SNMP			
	d. Support for Hardware based Inter Switch linking / trunking.			
12	<b>Warranty</b> : 5 years Comprehensive on site			

**Annexure-G8 : Technical Compliance of KVM Switch**

KVM SWITCH		Complied? Yes/No	Offered Specification	Deviations If any
<b>Make and Model :</b>				
Sl.No.	Specifications			
1	12 Port KVM Switch, Rack mountable with : <ul style="list-style-type: none"> <li>• Rack mountable 17" Wide LCD TFT Color Console ,</li> <li>• Keyboard, and</li> <li>• Mouse</li> </ul> Connectivity : <ul style="list-style-type: none"> <li>a. Console side is of PS/2 or USB and</li> <li>b. System side is of USB.</li> </ul> Rack mounting kits to be supplied with KVM switch.			
2	KVM to SERVER USB Cables ( 3 Mtrs )			
3	KVM to Console Keyboard, Monitor & Mouse Cables			
4	<b>Warranty:</b> 5 year Comprehensive on site			

**Annexure-G9 : Technical Compliance of L2 Gigabit Switch (24 port)**

Sl. No.	Feature	Technical Specification	Complied? Yes/No	Offered Specification	Deviations If any
	<b>Make and Model</b>				
1	<b>Architecture</b>	Fixed Configuration Layer 2 Rack mountable Switch. Rackmount kit to be provided along with the switch			
	No. of Interfaces	Switch should have minimum 24 x 10/100/1000BaseT Ports			
	Uplink Ports	2 nos. of 10GE SFP+ Ports along with 10G SFP modules on MMF			
	Performance	88 Gbps or more			
	Switch Forwarding Rates	Minimum forwarding rate of 65 mpps			
2	<b>Layer 2 Features</b>	Layer 2 switch ports and VLAN trunks			
		IEEE 802.1Q VLAN encapsulation			
		MSTP (IEEE 802.1s), RSTP (IEEE 802.1w)			
		Spanning Tree PortFast/equivalent			
		Spanning Tree Root Guard			
		Spanning Tree Bridge Assurance or STP Loop Guard feature			
		LACP: IEEE 802.3ad			
		Storm control (multicast, and broadcast)			
	Multicast	IGMP Snooping v2, v3			

3	<b>Quality of Service Features</b>	Support for Automatic Quality of Service for easy configuration of QoS features for critical applications.			
		Support for QoS features like 802.1p CoS (Class of Service)			
4	<b>Security Features</b>	IEEE 802.1x to allow dynamic, port-based security, providing user authentication.			
		Port-based ACLs (PACLs) for Layer 2 interfaces to allow application of security policies on individual switch ports.			
		Support for RADIUS authentication to enable centralized control of the switch and restrict unauthorized users from altering the configuration.			
		Should support DHCP snooping, DHCP Option 82, DHCP Option 12 (Hostname), Dynamic ARP Inspection (DAI) and IP Source Guard			
		Multilevel security on console access to prevent unauthorized users from altering the switch configuration.			
		Should support a mechanism to prevent edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.			
		Remote port mirroring to remotely monitor ports in a Layer 2 switch network from any other switch in the same network.			
5	<b>Management</b>	SNMPv1, SNMPv2c, and SNMPv3			
6	<b>IEEE Standards</b>	Ethernet: IEEE 802.3x, 10BASE-T, 100BASE-TX, 1000BASE-T			
		Fast Ethernet: IEEE 802.3u, 100BASE-TX, 100BASE-FX			
		Gigabit Ethernet: IEEE 802.3z, IEEE 802.3ab, 1000BASE-X (mini-GBIC/SFP), 1000BASE-SX, 1000BASE-LX/LH			
		IEEE 802.1D Spanning-Tree Protocol			
		IEEE 802.1S & 1W for Rapid Spanning tree convergence			
		IEEE 802.1p CoS Prioritization			
		IEEE 802.3x Flow Control			

		IEEE 802.3ad Link Aggregation			
7	Warranty	5 years Comprehensive on site			

### Annexure-G10 : Technical Compliance of L3 10 Gigabit Switch (24 Port)

S.No.	Feature	Technical Specification	Complied? Yes/No	Offered Specification	Deviations If any
	<b>Make and Model</b>				
1	<b>Physical Interfaces &amp; modules</b>	<ul style="list-style-type: none"> <li>• 24 fixed SFP+ ports (10 Gbps)</li> <li>• Dual redundant, hot-swappable power supplies</li> <li>• Redundant fans</li> <li>• 10/100/1000-Mbps management port</li> <li>• One console port</li> <li>• Support for Direct-attach cables with SFP+ connectors, MMF &amp; SMF SFP+ modules</li> <li>• Load with SFP+ modules as required</li> </ul>			
2	<b>Performance Features</b>	<ul style="list-style-type: none"> <li>• 480 Gbps switching capacity</li> <li>• Forwarding rate of 357.1 million packets per second (mpps)</li> <li>• Configurable maximum transmission units (MTUs) of up to 9216 bytes (jumbo frames)</li> <li>• Low latency</li> </ul>			
3	<b>Layer 2 Features</b>	<ul style="list-style-type: none"> <li>• Layer 2 switch ports and VLAN trunks</li> <li>• IEEE 802.1Q VLAN encapsulation</li> <li>• Support for up to 4096 VLANs</li> <li>• MSTP (IEEE 802.1s), RSTP (IEEE 802.1w)</li> <li>• Spanning Tree PortFast/equivalent</li> <li>• Spanning Tree Root Guard</li> <li>• Spanning Tree Bridge Assurance or STP Loop Guard feature</li> <li>• LACP: IEEE 802.3ad</li> <li>• Storm control (multicast, and broadcast)</li> </ul>			

4	<b>Layer 3 Features</b>	<ul style="list-style-type: none"> <li>• Routing protocols: Static, Routing Information Protocol Version 2 (RIPv2), Open Shortest Path First Version 2 (OSPFv2)</li> <li>• Support for IPV6</li> <li>• Equal-Cost Multipath (ECMP)</li> <li>• VRRP</li> <li>• ACL: Routed ACL with Layer 3 and 4 options to match ingress and egress ACLs</li> <li>• Support for OSPFv3, BGP, VRF-Lite/MCE/EQUIVALENT</li> </ul>			
5	<b>Multicast Protocols</b>	<ul style="list-style-type: none"> <li>• PIM Sparse Mode (PIM-SM)</li> <li>• Internet Group Management Protocol (IGMP) Versions 2 and 3</li> </ul>			
6	<b>QOS</b>	<ul style="list-style-type: none"> <li>• Layer 2 IEEE 802.1p (CoS) hardware queues per port</li> <li>• Per-port QoS configuration</li> <li>• ACL-based QoS classification (Layers 2, 3, and 4)</li> </ul>			
7	<b>High availability features</b>	<ul style="list-style-type: none"> <li>• In-Service Software Upgrade (ISSU)</li> <li>• Hot-swappable field-replaceable power supplies</li> <li>• Power supply module redundancy</li> </ul>			
8	<b>Data Centre Bridging</b>	Support for Data Center Bridging (DCB) protocols supports IEEE 802.1Qbb Priority Flow Control (PFC) and IEEE 802.1Qaz Enhanced Transmission Selection (ETS) for converged applications.			
9	<b>Security Features</b>	<ul style="list-style-type: none"> <li>• Ingress ACLs (standard and extended) on Ethernet</li> <li>• Standard and extended Layer 3 to 4 ACLs include IPv4, Internet Control Message Protocol (ICMP), TCP, and User Datagram Protocol (UDP)</li> <li>• VLAN-based ACLs (VACLs)</li> <li>• Port-based ACLs (PACLs)</li> <li>• ACLs on virtual terminals (VTYs)</li> <li>• DHCP relay</li> </ul>			

10	<b>Management Features</b>	<ul style="list-style-type: none"> <li>• SNMP v1, v2, and v3</li> <li>• Switch management using 10/100/1000-Mbps management or console ports</li> <li>• SSHv2, Telnet</li> <li>• RADIUS</li> <li>• SNMP MIB support</li> <li>• Remote monitoring (RMON) / sFlow</li> <li>• Advanced Encryption Standard (AES) for management traffic</li> <li>• Username and passwords across CLI and SNMP</li> <li>• Network Time Protocol (NTP)</li> <li>• Comprehensive bootup diagnostic tests or Syslog capability</li> </ul>			
11	<b>Accessories</b>	<ul style="list-style-type: none"> <li>• Patch Cords, MMF -1 Mtr</li> <li>• Patch Cords, MMF -2 Mtr</li> <li>• Patch Cords, MMF -5 Mtr</li> </ul>			
12	<b>Warranty</b>	5 years Comprehensive on site			

### Annexure-G11: Technical Compliance of 36U Industrial Rack

Sl. No	Specifications	Complied? Yes/No	Offered Specification	Deviations If any
	<b>Make and Model :</b>			
	<b>19" Industrial Rack, 36U, Colour Black:</b> The racks will be used for housing Servers, SAN switches, LAN switches, KVM switches, Consoles and LTO tape drives.			
	<b>Each Rack Consisting of :</b>			
1	Steel Enclosure, of dimensions 800 mm width * 1000 mm Depth * 36U height, supporting 1000 Kgs load. Bottom cover with knock out holes for cable entry to be provided. Three pairs of horizontal support shall be fitted on both right and left sides			
2	Front & Rear Door shall be of 100% perforated with three point locking system. Provision for mounting fans on Rear door with concealed AC wiring.			
3	Fan 230V, 90 CFM ( Fan make : Hi cool), to be mounted on Rear Door			
4	AC Main Channel vertical, 12x 5/15 Amps Sockets, Make: Anchor with 32 Amps MCB make : Northwest			
5	Horizontal Cable Manager			

6	Vertical Cable Manager			
7	Copper based Electrical Grounding / Earthing Strip . Provision for Fifteen (15) points			
8	b) Castor with Brake – 2 No. b) Castor without Brake – 2 No. c) Adjustable screw legs – 4 No.			
	OR			
	Base frame - 1 No.			
9	Light provision activation : in the rack up on opening of the front/rear door			
10	H/W Packet of 20 Sets			
11	Grounding Nuts			
12	Eye bolts on the top for lifting the rack			
	<b>Optional items:</b>			
	Equipment support angles			
	Ventilated shelf 2 No.			
	Required no. of 1U & 2U dummy panels are to be provided			
13	<b>Warranty:</b> 5 year Comprehensive on site			

**Annexure-G12 :** Does not exist

### Annexure-G13. Technical Compliance of Online Modular UPS

S/no.	Specifications	Complied? Yes/No	Offered Specification	Deviations If any
<b>A</b>	<b>SUMMARY</b>			
1	<b>Make and Model</b>			
2	<b>System capacity</b>			
	( As per calculation in <b>Annexure-H</b> )			
<b>B</b>	<b>GENERAL SPECIFICATIONS</b>			
1	Continuous duty, three-phase, solid-state, static Uninterruptible Power System (UPS) shall be comprised of hot swappable / user replaceable ups modules, which shall operate in parallel, and be configured for N+1 redundant operation at rated load.			
2	Each ups module should contain a full rated input rectifier / boost converter, full rated output inverter (KVA=KW), and battery charging circuit.			
3	The system should comprise of a user-replaceable continuous duty bypass static switch module			

4	The system should comprise of user-replaceable hot swappable battery modules, which can be swapped without switching of the ups modules when required.			
5	The system shall also comprise of redundant main controller modules, redundant logic power supplies, which can be swapped without switching off any ups modules when required.			
6	The UPS manufacturer should provide an output distribution system to distribute quality uninterrupted power for data centre load. This distribution system should be installed outside the ups modules along with input, output & manual bypass switches in a metal enclosure which should be in a rack form factor. <b>Output distribution should happen through UL Certified 3phase &amp; neutral bus bar with hot swappable breaker modules having cable whips terminated with IEC309 socket.</b>			
7	The ups units & the batteries shall be scalable with out shutting down the mission critical Data Centre load.			
8	Power modules connecting to the AC power bus should have CAN (Controlled Area Network) bus for communications and logical control			
<b>C</b>	<b>MODES OF OPERATIONS</b>			
1	A. <u>Normal</u> : The input converter and output inverter shall operate in an on-line manner to continuously regulate power to the critical load. The input and output converters shall be capable of full battery recharge while simultaneously providing regulated power to the load for all line and load conditions within the range of the UPS specifications.			
2	B. <u>Battery</u> : Upon failure of the AC input source, the critical load shall continue being supplied by the output inverter, which shall derive its power from the battery system. There shall be no interruption in power to the critical load during both transfers to battery operation and retransfers from battery to normal operation.			
3	C. <u>Recharge</u> : Upon restoration of the AC input source, the input converter and output inverter shall simultaneously recharge the battery and provide regulated power to the critical load			



	respectively.			
4	D. <u>Static Bypass</u> : The static bypass shall be used to provide transfer of critical load from the Inverter output to the bypass source. This transfer, along with its retransfer, shall take place with no power interruption to the critical load. In the event of an emergency, this transfer shall be an automatic function.			
5	E. <u>Maintenance Bypass</u> : The system shall be equipped with an external make-before-break Maintenance Bypass to electrically isolate the UPS during routine maintenance and service of the UPS. The MBC shall completely isolate both the UPS input and output connections.			
<b>D</b>	<b>SYSTEM CHARACTERISTICS.</b>			
<b>1</b>	<b>System Capacity</b> : The system shall be rated for full kW output.			
<b>2</b>	<b>UPS Input</b>			
a	AC Input Nominal Voltage: 230 V, 3 Phase, 4 wire + G, 50 Hz.			
b	AC Input Voltage Window: 304Volts to 477Volts (while providing nominal charging to the battery system).			
c	Maximum Frequency Range: 40-70Hz			
d	Input Power Factor:			
	a. > 0.99 at 50% load b. > 0.99 at 100% load			
e	Input Current Distortion:			
	The input current THD <sub>i</sub> shall be held to 5% or less while supporting loads of both linear and non-linear types. This shall be accomplished with no additional filters, magnetic devices, or other components.			
f	Soft-Start:			
	The UPS shall contain soft-start functionality, capable of limiting the input current from 0-100% of the nominal input over a default 15 second period, when returning to the AC utility source from battery operation.			
<b>3</b>	<b>UPS OUTPUT.</b>			
a	AC Output Nominal: 230V, 3 Phase, 4 wire + G, 50 Hz.			

b	AC Output Voltage Distortion: Max. 2% @ 100% Linear Load.			
c	AC Output Voltage Regulation: +/- 1% For 100 % Linear or Nonlinear Load			
d	Voltage Transient Response: +/- 5% maximum for 100% load step			
e	Voltage Transient Recovery within <50 milliseconds			
f	Output Voltage Harmonic Distortion:			
	a. <2% THD and 1% single harmonic for a 100% linear load b. <5% THD for a 100% non-linear load			
g	Phase Angle Displacement:			
	a. 120 degrees +/- 1 degree for balanced load b. 120 degrees +/- 1 degrees for 50% imbalanced load c. 120 degrees +/- 3 degrees for 100% imbalanced load			
h	Overload Rating : Normal Operation:			
	1) 150% for 60 seconds 2) 125% for 10minutes			
i	Overload Rating : Bypass operation			
	1) 110% continuous			
	2) 1000% for 100 milliseconds			
j	Output Power Factor Rating:			
	The UPS output shall not require derating for purely resistive loads (PF of 1). The potential kW and kVA ratings of the UPS output shall be equal. For loads exhibiting a power factor of 0.5 leading to 0.5 lagging , no derating of the UPS should be required.			
k	Overload Capability:			
	The output power converters shall be capable of 300% for short-circuit clearing.			
l	Battery Protection:			
	The inverter shall be provided with monitoring and control circuits to limit the level of discharge on the battery system.			
m	Over all efficiency >= 95% at 35% to 100% load			
<b>4</b>	<b>CHARGING</b>			
a	The battery charging shall keep the DC bus float voltage at +/-1% of tolerance			
b	The battery charging circuit shall contain a temperature compensation circuit, which will			

	regulate the battery charging to optimize battery life.			
c	The battery charging circuit shall remain active when in Static Bypass and in Normal Operation			
<b>5</b>	<b>BATTERIES for 30min Backup on 85% Load</b>			
a	The UPS battery shall be of modular construction made up of user replaceable, hot swappable, fused, battery modules. Each battery module shall be monitored for voltage and temperature for use by the UPS battery diagnostic, and temperature compensated charger circuitry.			
b	The battery jars housed within each removable battery module shall be of the Valve Regulated Lead Acid (VRLA) type.			
c	The UPS shall incorporate a battery management system to continuously monitor the health of each removable battery module. The system shall notify the user in the event that a failed or weak battery module is found.			
d	BATTERY DISCONNECT BREAKER : Each UPS system shall have a thermal magnetic trip circuit breaker. Each circuit breaker shall be equipped with shunt trip mechanisms.			
<b>6</b>	<b>UNATTENDED SHUT DOWN</b>			
a	The UPS, in conjunction with a network interface card, shall be capable of gracefully shutting down one or more operating systems during when the UPS is on low battery condition			
b	The UPS shall also be capable of using an RS232 port to communicate by means of serial communications to gracefully shut down one or more operating systems during a low battery situation.			
<b>7</b>	<b>DISPLAY UNITS</b>			
a	A microprocessor controlled display unit shall be located on the door in front of the ups system & out put power distribution unit. The display shall consist of an alphanumeric display with backlight, an alarm LED, and a keypad consisting of pushbutton switches. Branch level monitoring of current & voltage (all three phases & neutral) has to be possible through power distribution unit display and over network.			
b	<u>Metered Data</u> : Data of all the input ,out put & battery parameters shall be available on the			

	alphanumeric display			
c	<u>Event log</u> : The display unit shall allow the user to display a time and date stamped log of at least 60 most recent status and alarm events.			
d	<u>Controls</u> : All the ups controls or programming functions shall be accomplished by use of the display unit. Pushbutton membrane switches shall facilitate these operations			
<b>8</b>	<b>REMOTE MONITORING</b>			
a	<u>Web Monitoring</u> : Remote monitoring shall be available via a web browser such as Internet Explorer.			
b	<u>RS232 Monitoring</u> : Remote UPS monitoring shall be possible via either RS232 or contact closure signals from the UPS.			
c	<u>Simple Network Management Protocol (SNMP)</u> : Remote UPS Monitoring shall be possible through a standard MIB II compliant platform.			
d	The UPS manufacturer shall have available software to support graceful shutdown and remote monitoring			
<b>9</b>	<b>ENVIRONMENTAL</b>			
a	Storage Ambient Temperature: -40°C to 70°C			
b	Operating Ambient Temperature: 0°C to 40°C			
c	Relative Humidity: 0 to 95% Non-condensing			
	Audible Noise 54dBA at 100% load			
<b>10</b>	<b>FACTORY ASSISTED START-UP &amp; MAINTENANCE</b>			
	If a factory assisted UPS start-up is requested, factory trained service personnel shall perform the following inspections, test procedures, and on-site training:			
a	<u>On-Site Operational Training</u> : During the factory assisted start-up, operational training for site personnel shall include key pad operation, LED indicators, start-up and shutdown procedures, maintenance bypass and AC disconnect operation, and alarm information.			
b	The UPS manufacturer shall have service centers in Hyderabad, Bangalore and Palakkad (Kerala), equipped with manufacturer trained field service personnel to perform start-up, preventative maintenance, and service of the UPS system and power equipment.			

c	Replacement parts: Parts should be available at the service centers in above mentioned cities. CPSU will not allow any component level repairs in Data Center ups systems inside the DC / Equipment room / ups room.			
<b>11</b>	<b>STANDARDS</b>			
	A. UL 1778 - Uninterruptible Power Supply Equipment			
	B. UL 891 - Dead-Front Switchboards			
	C. UL 1558 - Metal-Enclosed Low-Voltage Power Circuit Breaker Switchgear			
	D. IEC 61000-4-2, IEC61000-4-3, IEC61000-4-4, IEC61000-4-5			
	E. EN50091-2 / IEC62040 (Class A) , FCC 15A			
	F. UL60950-1, UL1778(CUL), IEC 62040-2 - Information Technology Equipment			
	G. VFI-SS-111 performance level compliance			
	H. VFI-ss-112 Protection class			
	The UPS shall also be designed in accordance with publications from the following organizations and committees			
	1. NFPA- National Fire Protection Associations			
	2. NEMA - National Electrical Manufacturers Association			
	3. OSHA - Occupational Safety and Health Administration			
	4. IEEE 519-1992 Standard Practices and Requirements for Harmonic Control in Electrical Power Systems.			
	5. ISO 9001			
	6. ISO 14001			
<b>12</b>	<b>PROPOSAL SUBMITTALS</b>			
	1. As bid system bill of materials. 2. Product catalog sheets or equipment brochures. 3. Product guide specifications. 4. System single-line operation diagram. 5. Installation information, including weights and dimensions. 6. Information about terminal locations for power and control connections. 7. Drawings for requested optional accessories.			
<b>13</b>	<b>DELIVERY SUBMITTALS</b>			
	1. Installation manual, which includes instructions for storage, handling, examination, preparation,			

	installation, and start-up of UPS. 2. User manual, which includes operating instructions.			
<b>14</b>	<b>WARRANTY</b>			
	5 year Comprehensive on site			

### Annexure-G14. Technical Compliance of In-row Air-Conditioning System

Sl. No.	Specification	Requirement	Complied? Yes/No	Offered Specification	Deviations If any
1	Make and Model				
<b><u>A. In row Chilled water Cooling Units</u></b>					
2	Total net cooling capacity	50KW			
3	Sensible net cooling capacity	50KW			
4	Return air dry bulb temperature	32 Deg C			
5	<b>CABINET CONSTRUCTION</b>				
	1 Exterior panels shall be 18 gauge metal with 5 lb/ft <sup>3</sup> (80 kg/m <sup>3</sup> ) density foam insulation. Insulation complies with UL94-5VA ASTM E84 flame spread and smoke developed rating of 25/50. Front and rear exterior panels shall be 18 gauge perforated steel with 69.5% open free area, and equipped with a keyed lock. 2 The frame shall be constructed of 16 gauge formed steel welded for maximum strength. All units shall provide full service from the front and rear, allowing units to be placed within a row of racks. 3 All exterior panels and frame shall be powder coated for durability and attractive finish. 4 Units shall include casters and leveling feet to allow ease of installation in the row and provide a means to level the equipment with adjacent IT racks.				
6	<b>VARIABLE SPEED DC FAN ASSEMBLY</b>				
	1 Fan: The unit shall be configured for draw-through air pattern to provide uniform air flow over the entire face of the coil. Each unit shall include eight 200 mm mixed flow direct drive DC axial fans. 2 Variable Speed Fans: Fans shall be variable speed				

	<p>capable of modulating from 30-100%. Fans shall soft start to minimize in-rush current when starting.</p> <p>3 Fan Protection: Each fan assembly shall consist of a plastic injection molded bezel with integral fan discharge finger guard. Inlet of the fan should include a cage type finger guard.</p> <p>4 Operation and Service: The unit should be capable of operation in the event of a fan failure. Fans shall be replaceable while the unit is in operation.</p>			
7	<b>DUAL POWER SUPPLIES AND A-B POWER INPUT</b>			
	<p>1. Input Power Feeds: Dual A-B power inputs should be a locking NEMA or IEC plug connection suitable for the input power selected.</p> <p>2. Power Supplies: The unit shall include two power supplies, each capable of running the unit at 60% capacity in the event of a single power supply failure.</p> <p>3. Operation and Service: Power supply shall be user replaceable.</p>			
8	<b>MICROPROCESSOR CONTROLLER</b>			
	<p>1 Monitoring and Configuration: The master display shall allow monitoring and configuration of the air conditioning unit through a menu-based control. Functions include status reporting, set-up, and temperature set points. LEDs to report the operational status of the connected air conditioning unit.</p> <p>2 Controls: The microprocessor controller shall come equipped with control keys to allow the user to navigate between menus, select items, and input alpha numeric information.</p> <p>3 Alarms: The microprocessor controller shall activate a visible and audible alarm in the occurrence of the following events:</p> <ul style="list-style-type: none"> <li>a. Internal Communications Fault</li> <li>b. Link Isolation Relay Fault</li> <li>c. Cooling Failure</li> <li>d. Rack Inlet High Temperature</li> <li>e. Air Filter Clogged</li> <li>f. Lower Return Air Sensor Fault</li> <li>g. Upper Return Air Sensor Fault</li> <li>h. Lower Supply Air Sensor Fault</li> <li>i. Upper Supply Air Sensor Fault</li> <li>j. Rack Inlet Temperature Sensor</li> </ul>			

	k. Coil Fluid Valve Actuator Fault l. Fan Fault m. Condensate Pump Fault n. Fluid Flow Meter Failure o. Entering Fluid High Temperature p. Entering Fluid Temperature Sensor q. Leaving Fluid Temperature Sensor r. Condensate Pan Full Alarm s. Power Feed Failure t. Fan Power Supply Fault u. Air Filter Run Hours Exceeded v. RACS Air Pressure High w. Supply Air High Temperature x. Return Air High Temperature y. Group Communications Lost z. Filter Sensor Fault aa. RACS Pressure Sensor Fault  <u>Logging:</u> The microprocessor controller shall log and display all available events. Each alarm log shall contain time/date stamp as well as operating conditions at the time of occurrence. Controller shall display the run time hours for major components.			
9	<b>NETWORK MANAGEMENT CARD</b>			
	The unit shall include a network management card to provide management through a computer network through TCP/IP. Management through the network should include the ability to change set points as well as view and clear alarms.			
10	<b>COOLING COIL AND CONDENSATE PAN</b>			
	1 Cooling coil shall use raised lance type aluminum fin and 3/8 inch OD (9.5 mm) copper tube coils. Coil end supports shall be a minimum 18 gauge galvanized steel. 2 The unit shall consist of a primary and secondary drain pan. Secondary drain pan shall be piped to primary pan for removal of condensate. Primary drain pan shall include a condensate pump and dual floats for control and overflow protection. Condensate pans should be V-0 thermal formed, anti-fungal, non-ferrous material for higher indoor air quality.			
11	<b>2-WAY/3-WAY FLOATING POINT VALVE</b>			



	<p>1 Chilled water system shall utilize a three-way valve to regulate the amount of chilled water to the cooling coil to maintain desired conditions. Unit shall be equipped with a manual shut-off to close the by-pass leg for field configuration of 2-way or 3-way operation. Valve shall be piped internally with unions to allow for easy replacement in the field. The standard valve pressure rating shall be 600 psig.</p> <p>2 Valve Actuator: Actuator shall be direct connect rotary floating point style actuator and should be capable of being replaced without disconnecting piping from the valve.</p>			
12	<b>CONDENSATE PUMP</b>			
	Factory Installed and wired condensate pump shall pump 1.3 gal/h (5.9 liters/hour) at 16 ft (4.9 m) of lift and a 50 ft (15.2 m) horizontal run.			
13	<b>FILTERS</b>			
	<p>1 Standard Air filter: &lt;20% efficient per ASHRAE 52.1, MERV 1 per ASHRAE 52.2, 1/2" washable mesh filter</p> <p>2 Optional Air filter: High capacity 2" pleated, UL 900 Class 2, Moisture with average atmospheric dust spot efficiency of 30% per AHRAE Standard 52.1, MERV 8 per ASHRAE 52.2</p>			
14	<b>REMOTE TEMPERATURE SENSOR</b>			
	Remote temperature sensor shall ship factory wired to the unit for placement in the field to provide control input based on rack inlet temperature.			
15	<b>FLOW METER</b>			
	Flow meter shall be factory piped inside the unit and connected to microprocessor controls to provide water flow rate through the unit. The microprocessor controller shall also use this information to provide total unit capacity out of the unit while in operation.			
16	<b>BRIDGE POWER CABLE TROUGH</b>			
	Overhead power distribution bridge between adjacent racks that allows for removal of the unit without disrupting the overhead power cabling			
17	<b>CHILLED WATER</b>			
	The unit shall be piped in accordance with the highest commercial quality procedures. All pipe forming shall be tool bent with the proper bend radii			

	to prevent flattening in the curve. The chilled water piping shall be insulated with closed neoprene thermal insulation. All piping connections should be made at the rear of the unit for top or bottom accessibility.			
<b><u>B. Air Cooled Chiller</u></b>				
1	Nominal Cooling Capacity:	32TR		
2	Ambient Condition:	42 Deg C		
3	Chilled Water Inlet/Outlet Temperatures:	7.2 Deg C and 12.7 Deg C		
4	<b>Specifications for Air cooled scroll chiller with Variable Speed Drive</b>			
	<ul style="list-style-type: none"> <li>• Supply &amp; Installation of Inverter scroll chiller with inbuilt variable speed chilled water recirculation pump.</li> <li>• The Self-supporting galvanized sheet steel framework with panels painted with epoxy powder paints equipped with fast screws for easy and quick access</li> <li>• Inverter-driven hermetic Scroll compressor, equipped with <ul style="list-style-type: none"> <li>- Inverter speed control.</li> <li>- Oil by-pass valve and line.</li> <li>- Soft start.</li> <li>- Integrated power factor correction condenser.</li> <li>- Integrated thermal protection.</li> <li>- Anti-vibration supports.</li> </ul> </li> <li>• Inverter driver with IP54 protection grade coupled with a specific compressor and positioned in a dedicated housing compartment.</li> <li>• Hermetic Scroll compressor with integrated thermal protection and anti-vibration feet.</li> <li>• Compressor sound-proofing with noise insulating jackets.</li> <li>• Single refrigerant circuit in accordance with EC standards (directive PED 97/23/CE) in copper piping including dehydration filter, liquid sight glass, electronic expansion valve connected to and driven by the unit control, high and low pressure switches and transducers.</li> <li>• Environment friendly refrigerant R410A.</li> </ul>			

	<ul style="list-style-type: none"> <li>• Crankcase heaters and inverter with oil heating function.</li> <li>• Water flow differential pressure switch.</li> <li>• Air side exchange coil with aluminium fins and mechanically expanded copper piping.</li> <li>• Acousti-composite fans: Sickle-blade axial fans statically balanced and made from composite material ensuring elevated efficiency and low noise, with external and internal protection grill.</li> <li>• Modulating condensation control by means of continuous fan speed control.</li> <li>• Electrical panel in accordance with EC standards (directive 73/23/EC and directive EMC 89/336/EC) IP54 protection grade with auxiliary transformer, minimum and maximum temperature control, general door interlock cut off switch, protection and remote control switches.</li> <li>• Phase sequence control.</li> <li>• Microprocessor control including: <ul style="list-style-type: none"> <li>- Chilled / hot water temperature regulation by means of self adaption of the set point regulation band.</li> <li>- Management of the electronic thermostatic valve.</li> <li>- Compressor management driven by inverter.</li> <li>- Quick start start-up procedure.</li> <li>- Integrated LAN card.</li> <li>- Integrated clock card.</li> </ul> </li> </ul>			
	<b>WARRANTY : 5 year comprehensive onsite</b>			

**Annexure-G15 and Annexure-G16 are not present**

**Annexure-G17. Technical Compliance of Backup/Restore Software.**

Sl. No	Specification	Requirement	Complied? Yes/No	Offered Specification	Deviations If any
1	Platform Support	Should be available on various OS platforms such as Windows, Linux and UNIX platforms and be capable of supporting backup/ restores from various platforms including HP-UX, IBM AIX, Linux simultaneously. Both Server and Client software should be capable of running on all these platforms.			
		The solution should support both LAN based and LAN-Free (SAN Based) Backup with data de-duplication.			
		The solution shall provide online backup facility for popular databases like Oracle, MySQL, MS-SQL, SAP on Windows/ Linux/ Unix platforms.			
2	Management SW	The solution must be easy to configure with graphical wizard based interfaces.			
		The solution should have inbuilt feature for extensive alerting and reporting with pre-configured and customizable formats.			
		The solution must have capability to do trend analysis for capacity planning of backup environment.			
		Should support to help in troubleshooting for backup issues and RCA			
3	De-Duplication Support	The solution should allow de-duplication to occur at the source (client), before transferring the data across the network			
		Should integrate with third party VTL which has data de-duplication capabilities.			
4	VTL Support	Backup Software shall support VTL as backup target in addition to Tape Libraries.			
5	Encryption Support	The backup software should be able to encrypt the backed up data using 256-bit AES encryption on the backup client and should not demand for additional license or hardware, any such license if needed should be quoted for the total number of backup clients asked for.			
6	Basic Backup Features	<ul style="list-style-type: none"> <li>Should have in-built scheduling system and should support the resumption of failed backups from the point of</li> </ul>			

		<p>failure for both file and block volumes.</p> <ul style="list-style-type: none"> <li>• The solution must provide full, differential, Incremental and cumulative incremental backup while data/ system is online.</li> <li>• The software should be able to do restoration of complete databases, individual table spaces or individual data files.</li> <li>• Should support advanced backup to disk/VTL, where backups and restores from the backup media can be done simultaneously.</li> <li>• The backup software should support data movement directly from the backup client to the disk target without passing through the backup server.</li> <li>• The solution must support client-direct backup feature to cater stringent backup window.</li> <li>• The solution must be licensed to backup data using disk, LTO Tape libraries and Virtual Tape Libraries for backups via SAN or through NDMP.</li> </ul>			
7	Multiplexing and Multi Streaming support	Software should support Multiplexing (Backup multiple clients' data on the media simultaneously), Multithreading/ Multi-streaming (Backup of more than one streams of data from client to the backup server)			
8	Virtual Environment affinity	The software should support backup and restore on virtual platform like VMWare, Citrix Xen Server and Hyper V			
9	Licenses	<p>Bidder shall propose licenses for :</p> <ul style="list-style-type: none"> <li>• SAN Backup for 4 Servers</li> <li>• NDMP Backup for 1 ScaleOut NAS Storage cluster of 400TB of data. It shall be scalable to 1.5PB usable backup capacity in future.</li> <li>• 10 Backup Agents for LAN backup</li> <li>• Additional Media Servers licenses and hardware if needed to backup 320TB SAN and 400TB NAS Environment.</li> </ul>			
10	Multi-Tenancy Support	Backup Solution must support multi tenancy feature for creation of distinct data zones where the end users have access without being able to view data, backups, recoveries, or modify in other data zones.			

11	Reporting Features	<p>The solution must have capability to do trend analysis for capacity planning of backup environment.</p> <p>Management software shall assist administrator to :</p> <ul style="list-style-type: none"> <li>• Troubleshoot backup related issues and Root cause analysis.</li> <li>• Generate reports for multiple backup servers together.</li> <li>• Allow selective users to generate reports.</li> <li>• It shall support creation of pre-defined reports regularly.</li> <li>• Support various chart types for displaying reports.</li> </ul>			
12	Portability	Backup created in one PSU should be compatible for restoring it in the setup of another PSU			
13	Warranty	The back-up software is to be installed and demonstrated by the supplier and should be under warranty for 5 years.			
14	<p><b>IMPORTANT:</b> CPSUs have several servers at centers located in different states on which EMC Networker 7.6.3 Back-up software is being used. In order to maintain read/write compatibility with the existing Back-Up software, the offered software should be fully read/write compatible with it.</p>				

**NOTE :**

3. Bidder/supplier has to ensure functional integrity of all offered hardware and software in totality.
4. Bidder may quote hardware items with higher capacity or functionality, but without entitlement for getting any price advantage.

**Annexure-H : Power Requirement for the Offered Solution at each location**

Sl. No.	Material Description	Qty. per site (a)	Power Rating (KW) per Unit (b)	Total Power Requirement (KW) (c) = (a) x (b)
1	Database/Backup Server	5		
2	Application/File Server	3		
3	SAN Disc Storage System with OEM racks	1		
4	Scale-out NAS Disk Storage with OEM racks	1		
5	LTO Tape Drive unit	4		
6	LTO Tape Library	1		
7	SAN Switch	2		
8	12 Port KVM Switch with standard accessories for rack mounting	2		
9	24 Port Gigabit Ethernet Switch L2 Type	2		
10	24 Port 10 Gigabit Ethernet Switch L3 Type, Managed	2		
11	19" 36U Industrial Rack	2		
A.	<b>TOTAL POWER REQUIREMENT FOR OFFERED SOLUTION [ SUM OF 1.(c) through 11.(c) ]</b>			
B.	<b>OVERALL REQUIRED CAPACITY (1.5 times of A.)</b>			
C.	<b>CAPACITY OF UPS BEING OFFERED *</b>			

**\* Capacity of offered UPS should not be less than that calculated in B.**

## Annexure – I : Bid Evaluation Methodology

The following process would be followed for evaluation of Bids received against this Tender Notification.

### 1. STAGE-1 : EVALUATION BASED ON MEC

- 1.1 All the Minimum Eligibility Criteria as mentioned under clause (5) are to be met fully and mandatorily. Bids which fail to meet any of these would not be considered for further evaluation.

### 2. STAGE-2 : EVALUATION BASED ON TECHNO COMMERCIAL CRITERIA

- 2.2 All the requirements as mentioned under clause (6) are to be met fully and mandatorily.
- 2.3 Various documents called for (under Annexure of RFP), including Technical Compliance Sheets would be examined in detail. The bidders are to note that all the parameters and compliance are Mandatory. Bids which fail to meet any of these would not be considered for further evaluation.

### 3. STAGE-3 : EVALUATION BASED ON PROOF OF CONCEPT / DEMO

CPSUs may call all the bidders qualified in Stage-2 for POC/Demo. If so, the eligible bidders are required to provide Demo/PoC on NCNC (NO COST NO COMMITMENT) basis for the quoted HW / SW Solution, in a short notice of seven days at their preferred locations. Details of the same would be separately intimated to eligible bidders.

### 4. STAGE-4 : EVALUATION OF FINANCIAL BID

For evaluation of financial bid, total price of RFP quantity of all the materials, **except Backup Software**, including all taxes of respective materials as offered in the price schedule, will be considered.



# CHECK-LISTS

### Check List for Eligibility Criteria

Sno	Document	Enclosed? Yes/No	Annexure Ref.
1	Certificate of Incorporation		
2	Certificate of commencement of business		
3	Copy of CMMi level 4 Certificate		
4	Service tax Registration certificate		
5	Income tax PAN no. reference		
6	Sales tax registration Certificate (CST / VAT)		
7	Audited Balance Sheets for past 3 years		
8	Statement of orders for Servers & Storage		
9	Statement of experience		
10	Single order in the same year for SI & Implementation		
11	Unconditional Authorisation from OEM		
12	Bid Fee		
13	EMD		
14	Power of Attorney for signing		
15	Affidavit for non-conviction		
16	Certification for “No Litigation pending”		
17	Non-disclosure Agreement		

**Check List for Techno commercial Bid**

Sno	Document	Enclosed? Yes/No	Annexure Ref.
1	Clause wise compliance statement (Terms & Conditions)		
2	Company profile		
3	OEM certification for New equipment		
4	OEM undertaking for spare part support		
5	Acceptance of Scope of work by bidder and OEMs		
6	Acceptance of Risk Purchase clause (Annexure - B2)		
7	Statement of certified engineers		
8	Item wise Technical compliance statements (Annexure – G)		
9	Un priced Commercial Bid		
10	Project Plan		
11	Support Plan		

|| End of RFP ||