

**Rate Contract  
for  
Supply, Installation and Maintenance of  
Network Items for a period of Five Years**

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## **1 Instructions & Guidelines to Bidders**

### **1.1 Introduction**

M/s Bharat Heavy Electricals Limited (A Govt. of India Undertaking) incorporated under the Companies Act 1956 having registered office at BHEL House, Siri Fort, New Delhi-110 049 through its office at New Delhi (hereinafter referred to as "BHEL", which expression shall include its successors and assigns), invites tenders from bidders who qualify as per criteria listed in relevant section of this document. The tender is invited offers to enter into a Rate Contract for supply, installation & maintenance of Network Items throughout India at more than 20 locations for a period of FIVE years on "Financial Lease Purchase" mode, as per requirements and Commercial Terms and Conditions detailed in the tender documents.

The Total Price shall be for the complete scope as per technical specifications, inclusive of comprehensive on-site maintenance including repair/replacement of parts during the contract period, insurance (as applicable) and any other incidental charges.

Contract Period of Five years shall start from the date of successful installation by bidder and acceptance by BHEL at respective locations. In case the delay for installation is attributed to BHEL due to site not ready, then the contract shall start after 30 days from the date of delivery of equipment (acceptance by BHEL for total scope) at the location of installation/ supply as directed by the MU/PS-Region/Divisions placing the order for supply of Network equipment. If the delay is from vendor side then the contract shall start from the date of successful installation by bidder. Details of acceptance procedure, if any, are enclosed separately along with technical specifications. Bidder shall be responsible for comprehensive on-site maintenance of the supplied equipment & services during the entire contract period. Payments shall be released as per Payment terms and other Commercial Terms & Conditions, enumerated in later part of this document.

The summary of requirements is enclosed in Annexure-VII(A) & Annexure-VII(B) for Group A and Group B items respectively. The quantities mentioned are indicative only and the final requirement may have a variation of upto  $\pm 15\%$  of the overall contract value of each group (Group A & Group B). The rates for the various items will be finalized centrally and orders will be placed for the indicated quantities from respective places. The agreement for Rate Contract will be signed centrally. The release of payment will be from the place (unit) of release of order(s).

The placement of orders for the items covered in this enquiry will also be available to BHEL for a period of SIX months from the date of LOA (Letter of Award). The vendor on whom rate contract is finalized shall provide the latest specifications in this period at the same rental charges.

### **1.2 Pre-Bid Conference**

- 1.2.1 The bidders are expected to carefully go through this Tender Document and understand all the requirements thoroughly before submitting their offer. Any pre-Bid clarification and query pertaining to this tender enquiry must be submitted in writing and addressed to the official inviting the offers. All these queries will be clarified in the Pre-Bid Meeting. BHEL will not be liable to entertain or respond to bidders' queries received after the Pre-Bid Meeting.
- 1.2.2 Pre-Bid conference of the Bidders shall be convened at the designated date, time and place. A maximum of 3 representatives of each Bidder shall be allowed to participate on production of authority letter from the Bidder.

- 1.2.3 During the course of Pre-Bid conference, the Bidders will be free to seek clarifications and make suggestions for consideration. BHEL shall endeavour to provide clarifications and such further information as it may, in its sole discretion, consider appropriate for facilitating a fair, transparent and competitive Bidding Process.
- 1.2.4 Any submission of tender by the bidder shall be deemed to have been done after careful study and examination of the tender documents and with the full understanding of the implications thereof. Bidders shall be deemed to have fully understood the statutory, obligatory, mandatory requirements of various authorities and obtain for themselves all necessary information as to the risks, contingencies and all other circumstances, which may influence or affect the various obligations under the Contract.

### 1.3 Deviations

Bids shall be submitted strictly in accordance with the requirements and terms & conditions of the Tender Enquiry. Vendors are required to submit a “No Deviation Certificate” in Part-I of the offer as per format enclosed as per Annexure-II.

**Technical & Commercial - No deviation is acceptable.**

### 1.4 Other Important Terms and Conditions

- 1.4.1 Enclosures consisting of all specified documents shall be bound and cross-referenced with respect to relevant clause of this tender document. This shall be submitted along with the technical bid as a separate volume. A check list of such documents has also been incorporated into the tender to guide the bidders.
- 1.4.2 Canvassing in any way concerning this tender, wrong declaration, incorrect information, misleading or incorrect certifications, etc. shall make the Bidder debarred to participate in this tender.

## 2 Qualification Criteria for Bidders

2.1 Bidders shall be either OEMs or System Integrators of OEMs. Bidders other than OEMs must obtain and submit authorization letter (Refer Annexure-I for format) from OEM specifically for this tender only mentioning BHEL's tender reference number. For this tender, definition of OEM means manufacturer of Group A and Group B equipment only.

2.1.1 Group A – Network Active Components

2.1.2 Group B – Network Passive Components

2.2 The pre-qualification criteria for the bidders will be as follows:

Sl. No	Parameter	Description	Documents to be submitted
1	<b>Registered Company</b>	The bidder should be a registered company in India under Indian Companies Act 1956 / 2013.	Certificate of incorporation document to be submitted

2	<b>Manufacturers Authorization Form</b>	<p>The bidder shall be Original Equipment Manufacturer (OEM) / OEM's Joint Venture Company / OEM's Subsidiary / OEM's authorized partner or System Integrator (SI) of OEMs.</p> <p>Bidders other than OEMs must obtain and submit authorization letter from OEM (Refer <b>Annexure-I</b> for format) specifically for this tender mentioning BHEL's tender reference number</p>	<p>Documentary evidence for OEM / OEM's Joint Venture Company / OEM's Subsidiary / OEM's authorized partner or system integrator.</p> <p>- Authorization letter from OEM, in case bidder is not OEM (As per Annexure-I)</p>
3	<b>OEM Criteria</b>	<ol style="list-style-type: none"> <li>1. OEM should be an manufacturer of the respective product portfolio mentioned in this tender for the last 7 years.</li> <li>2. The OEM should have TAC and R&amp;D support in India</li> <li>3. The OEM should have minimum 5 spare depots in India spread across south, north, east and west regions with atleast 1 depot in each region.</li> </ol>	<p>Supporting document from OEM to be submitted</p>
4	<b>Turnover</b>	<p>Average Annual financial turnover of the bidder during the last 3 years ending 31<sup>st</sup> March 2023, should be at least 63 cr for Bidder</p>	<p>Audited balance sheet and Profit &amp; Loss Statements or a certificate from CA confirming the same</p>
5	<b>Profitability</b>	<p>The Bidder should have been profitable in any of the last 3 financial years i.e. 2020-21, 2021-22, 2022-23.</p>	<p>Audited balance sheet and Profit &amp; Loss Statements or a certificate from CA confirming the same</p>
6	<b>Net Worth</b>	<p>The Bidder should have positive net worth as on 31<sup>st</sup> March 2023.</p>	<p>Certificate from CA confirming the same</p>
7	<b>Past Experience</b>	<p>The bidder should have executed any one of the following Similar Works in the preceding seven years in India as on the date of opening of Techno-Commercial proposal:</p> <p>i. One similar work costing more than ₹27 Crores</p> <p>OR</p>	<p>Verifiable documentary evidence to be provided as per format available in Annexure-IV.</p>

		ii. Two similar works costing more than ₹17 Crores each OR iii. Three similar work costing more than ₹ 13 Crores each	
8	<b>Quality Certification</b>	The bidder or its associated group companies delivering the services must have valid ISO 27001 and valid ISO 9001 Certificate	Copy of ISO certificates

**Note:**

- i) *All data shall be verifiable by BHEL*
- ii) *For this tender, definition of OEM means Original Equipment Manufacturer of Group A and Group B equipment only.*
- iii) *“Similar” Work means any work, which includes Supply, Installation and Commissioning of IT Network Equipment. Network Equipment mentioned here shall include Chassis Switch(es), fibre switch(es) (all port fibre), wireless access points along with other items.*
- iv) *The work “executed” mentioned above means the bidder should have achieved the criteria specified above, even if the total contract is started earlier and / or is not completed / closed.*
- v) *In case where audited results for the last preceding financial year are not available, certification of financial statements from a practicing Chartered Accountant shall be considered acceptable.*
- vi) *BHEL reserves the right to visit bidder’s facilities like registered office, Service / Support Centres, etc. or talk to customers/clients to ascertain the capability of the bidder or the veracity of the testimonies at any time during evaluation of the bid.*
- vii) **Insolvency:**
  - a) *If “Insolvency Resolution Process” has been initiated against the bidder and is pending, or the bidder is under insolvency, the bidder shall not be eligible to bid for this tender.*
  - b) *Even during the processing period of tender till declaration of L1 if “Insolvency Resolution Process” is initiated against the bidder, or where the liquidation commencement date has occurred or a liquidation order has been passed or liquidation has been initiated in relation to the bidder, such bidder shall be disqualified from the process and BHEL will proceed further with tendering process without considering such bids.*

*The bidder should provide an undertaking on its letter head to this effect signed by its authorised signatory.*

- viii) *For evaluation of PQR, the credentials of the bidder alone, and not that of the Group Company shall be considered.*
- ix) *In case of any discrepancy, the decision of BHEL is final.*

### **3 Commercial Terms & Conditions for Bidders**

#### **3.1 General**

The words incorporating singular shall include plural and vice-versa, in the words importing masculine gender shall include feminine and vice-versa and the words importing persons shall include bodies; corporate, limited liability companies, partnership and other legal entities.

#### **3.2 Payment Terms**

- 3.2.1 The Rate Contract Agreement will be signed centrally; however, the payment will be made on quarterly basis after completion of each quarter and submission of invoice(s) in triplicate to the Manufacturing Units/ PS-Region/Divisions placing the order for supply of equipment, from where the payments will be directly released.
- 3.2.2 Bidder has to complete installation at the locations to be identified by BHEL along with Order. The lease quarterly payment will be due after completion of the quarter from the date of successful completion of installation & acceptance by BHEL. However, 1st quarter lease payment will be proportionate as per installation dates of various equipment, if required.
- 3.2.3 Pro rata lease rental charges will be payable for the quarter in which installations & acceptance takes place.
- 3.2.4 Payment will be released on submission of verified invoices. In case any rectification/ changes is required in the submitted invoice(s) or any other document is required to be submitted for the completeness of the invoice(s), same shall be intimated by BHEL within 10 days of submission of initial invoice.
- Micro & Small Enterprises (MSEs) - 100% Direct EFT payment within 45 days.
  - Medium Enterprises - 100% Direct EFT payment within 60 days.
  - Non MSME Bidders - 100% direct EFT Payment within 90 Days. MSEs (covered under MSME Act) need to submit Latest Udhya certificate/NSIC certificate and to be register and renew periodically and update the same with BHEL. MSE Trader category are exempted from 45 days' payment terms.
- 3.2.5 No interest shall be payable for delayed payment (if any).

#### **3.3 Liquidated Damages (LD) for Late Delivery**

For any delay in supply, installation, configuration and commissioning of the solution against any order placed by a location, LD shall be levied on the Contractor at the rate of 0.5% per week (or part thereof) subject to a maximum of 10% of the total order value for entire contract period. This LD will be deducted from the first payment. In case the LD amount to be deducted is more than the first payment charges (initial quarterly charge), the same will be adjusted from the subsequent payments. However, if the delay is due to any reason on BHEL's account, then that delay will not be counted on service provider's part and no LD will be levied on the bidder.

### 3.4 Insurance

The insurance (transit & during contract life) shall be in the scope of the vendor / bidder. Insurance for the complete Systems/Goods shall be arranged by the Bidder at his own risk and cost during transit, movement, storage and throughout the period of contract. BHEL, under any circumstances, will not be responsible for any loss/damage/theft of any Systems/goods, due to any reasons, whatsoever. Claim(s) etc., if any, will be dealt with the underwriters directly by the Bidder. Evidence of insurance policy shall be submitted to BHEL. If the bidder fails to renew the policy before the expiry, BHEL may renew the insurance and recover from the lease rental.

### 3.5 Non-Disclosure Agreement

- 3.5.1 The successful bidder shall comply with the Information Security Management System of BHEL and work within the framework of ISMS as applicable in BHEL from time-to-time.
- 3.5.2 All the material / information sent to the successful bidder shall be treated as confidential and should not be disclosed in any matter to any unauthorized person under any circumstances. The successful bidder has to furnish a Non-Disclosure Agreement (NDA) (as per **Annexure-IX**) in line with the Owner's Information Security Management System (ISMS).

### 3.6 Sub-Contracting

Order/contract or any part thereof shall not be sub-contracted, assigned or otherwise transferred to any other party without prior written consent of BHEL. As an exception, Sub-contracting of manpower / Sourcing of manpower from business partner can be done after acceptance by respective BHEL Unit/Region. All the statutory requirements are to be fulfilled by the bidder/sub-contractor/business partner. The invoices will be raised by the bidder only and all payments/deductions will be done against the bidder bills only.

### 3.7 Termination of The Order/ Contract & Its Consequences

- 3.7.1 BHEL reserves the following rights in respect of this contract during the original contract period or its extensions if any, as per the provisions of the contract, without entitling the contractor for any compensation. If the Contractor fails to fulfil its contractual obligations:
  - i) BHEL will issue a written notice of non-compliance to the Contractor. In case the Contractor fails to take the remedial action within a rectification period of One month, BHEL at its discretion may take up termination and/or foreclosure as per the relevant applicable clauses.
  - ii) BHEL reserves the right to terminate the order/contract, either wholly or in part, upon situations arising due to non-compliance of stipulations of the Order/contract, by the Contractor, at the risk and cost of the Contractor.
  - iii) BHEL reserves the right to terminate the order/contract or a portion thereof for the contracted Systems/Goods not delivered within the stipulated period, and procure from an alternate source at the risk and cost to the Contractor. The Bidder shall be liable to BHEL for any additional costs thereof.
  - iv) Bidder shall continue the performance of the order/contract under all circumstances, to the extent not cancelled expressly by the BHEL.
  - v) BHEL reserves the rights to cancel the contract agreement in case the equipment and services are not found to be satisfactory by BHEL and take the

equipment and services from an alternate source at the risk and cost to the Bidder. The Bidder shall be liable to BHEL for any additional costs thereof.

- 3.7.2 Fore-closure: In case of fore-closure of the contract agreement / tri-partite agreement by BHEL for no fault of the Lessor, pro-rata compensation will be payable. Compensation will be equivalent to the percentage of outright purchase cost (Hardware Charges on outright basis) proportionately linked to balance contract period, plus a nominal charge of ₹1.00 per order as terminal payment for transfer of the ownership of all the equipment against that order to BHEL.

**Consequences:** As soon as the contract agreement / tri-partite agreement is cancelled / terminated by the BHEL on account of fore-closure no further lease rent will be payable to the bidder.

**3.7.3 Recoveries arising out of Risk & Cost due from Bidder.**

Following sequence shall be applicable for recoveries from bidder:

- a) Dues available in the form of Bills payable to bidder, SD, BGs against the same contract.
- b) Demand notice for deposit of balance recovery amount shall be sent to bidder, if funds are insufficient to effect complete recovery against dues indicated in (a) above.
- c) If bidder fails to deposit the balance amount to be recovered within the period as prescribed in demand notice, following action shall be taken for balance recovery:
  - i) Dues payable to bidder against other contracts / orders in the same ordering location shall be considered for recovery.
  - ii) If recovery cannot be made out of dues payable to the bidder as above, balance amount to be recovered, shall be informed to other Regions/Units for making recovery from the Unpaid Bills/Running Bills/SD/BGs/Final Bills of bidder.
  - iii) In-case recoveries are not possible with any of the above available options, Legal action shall be initiated for recovery against bidder.

**3.8 Acceptance of LOA / Rate Contract**

Letter of Seller/ Contractor/ bidder's acceptance of the LOA / Rate Contract is to be submitted within one week of issue date of LOA/Rate Contract.

**3.9 Terminal Payment**

BHEL shall have the right to acquire all the equipment at the end of the contract period by paying a nominal charge of ₹1.00 per Order as terminal payment. Maintenance of these equipment shall be with the successful bidder until the ownership is transferred to BHEL without any extra charges for a period of not exceeding 60 days from the last date of the contract period.

#### 4 Bid Security/Earnest Money Deposit (EMD)

Bid Security [also known as Earnest Money Deposit (EMD)] of amount of Rs 300 Lakhs is to be submitted by the bidders along with their bids (except Micro and Small Enterprises (MSEs) or Start-ups as recognized by Department for Promotion of Industry and Internal Trade (DPIIT)).

- a) The EMD may be accepted only in the following forms:
  - (i) Electronic Fund Transfer credited in BHEL account (before tender opening).
  - (ii) Banker's cheque/ Pay order/ Demand draft, in favour of BHEL (along with offer)
  - (iii) Fixed Deposit Receipt (FDR).
  - (iv) Bank Guarantee from any of the Scheduled Banks.
  - (v) Insurance Surety Bonds.
- b) EMD by the Tenderer will be forfeited as per Tender Documents if, the successful bidder/vendor refuses to honour the Order after award of the same on him and/or withdraws his bid and /or unilaterally changes the offer and/or any of its terms & conditions within the validity period.
- c) EMD given by all unsuccessful Tenderers shall be refunded on after expiry of the final bid validity period and latest by the 30th day after the award of the contract. However, Bid securities of unsuccessful bidders during first stage i.e. technical evaluation etc. should be returned within 30 days of declaration of result of first stage i.e. technical evaluation etc.
- d) The EMD of successful bidder shall be returned after submission of Performance Bank Guarantee(PBG) or Security Deposit (SD).

EMD shall not carry any interest.

#### 5 Performance Security

Performance Bank Guarantee (PBG) or Security Deposit (SD), shall be submitted by the successful bidder awarded the contract.

The total amount of Security Deposit will be 5% of the contract value and shall be collected from the successful bidder after Installation & Configuration of required Hardware and Software as prescribed in PO (Supply + E&C). Security Deposit shall be released to the Bidder upon fulfilment of contractual obligations as per terms of the contract. The Security Deposit shall not carry any interest. The bidder shall forfeit the Security Deposit in the event bidder fails to execute the work as per terms and conditions of the contract.

- a) Performance security may be furnished in the following forms:
  - (i) Local cheques of Scheduled Banks (subject to realization)/ Pay Order/ Demand Draft/ Electronic Fund Transfer in favour of BHEL.
  - (ii) Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL.
  - (iii) Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL).

(iv) Securities available from Indian Post offices such as National Savings Certificates, Kisan Vikas Patras etc. (held in the name of Contractor furnishing the security and duly endorsed/ hypothecated/ pledged, as applicable, in favour of BHEL).

(v) Insurance Surety Bond.

Performance Security is to be furnished by a specified date mentioned in contract and it should remain valid for a period of 60 (sixty) days beyond the date of completion of all contractual obligations of the supplier, including warranty obligations.

## **6 Integrity Pact**

Bidders shall have to enter into Integrity Pact with BHEL for Tender value of rupees two crores and above and shall be signed by the authorized signatory along with the offer, failing which Bidder's offer will be rejected.

## **7 BHEL Fraud Prevention Policy**

The Bidder along with its associate/ Collaborators/ Sub-contractors/ sub-bidders/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention policy displayed on BHEL Website <http://www.bhel.com> and shall immediately bring to the notice of BHEL management about any fraud or suspected fraud as soon as it comes to their notice.

List of nodal officers is hosted on BHEL Hyderabad website <https://hpep.bhel.com/>.

## **8 Conflict of Interest**

- a) "A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests. The bidder found to have a conflict of interest shall be disqualified. A bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if:
  - b) They have controlling partner (s) in common; or
  - c) They receive or have received any direct or indirect subsidy/ financial stake from any of them; or
  - d) They have the same legal representative/agent for purposes of this bid; or
  - e) They have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; or
  - f) Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ subassembly/assemblies from one bidding manufacturer in more than one bid; or
  - g) In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorize only one agent/dealer. There can be only one bid from the following:
    - h) The principal manufacturer directly or through one Indian agent on his behalf; and
    - i) Indian/foreign agent on behalf of only one principal; or
    - j) A Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid; or

- k) In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies.

## 9 Contract Agreement

(Based on the finalized terms and conditions of Rate Contract, units will be placing the order for Supply of Network Equipment shall execute a Bipartite Agreement with the Successful Bidder. If the Successful Bidder informs that he has tied up a Lessor also, then a Tripartite Agreement among the Successful Bidder, Lessor and the MU/ Region placing the order for Network equipment shall be executed after placement of LOA.)

After the Owner notifies the successful Bidder that its bid has been accepted (through issuance of LOA for Rate Contract), the Bidder shall sign and return back to the Owner duplicate copy of the LOA for Rate Contract as an acceptance of the LOA within 7 working days. Thereafter, the Owner shall issue the draft contract agreement within 15 days of acceptance of LOA. One Principal Agreement with Terms and conditions, but without the specific period (start and end of contract) for ordering locations shall be signed by the Lead Purchase Agency. Bipartite/ Tripartite agreement (as applicable) shall be signed by each unit from where Order is released for the required equipment in the next 15 days.

## 10 Technical Specification

All equipment will be taken on lease and shall be provided as per Bill of Material (BoM). Any other item(s), necessary for completeness of the solution but are not part of BoM, shall be provided by the bidder at no additional cost to BHEL.

Minimum technical requirements, specifications for active components is attached as **Annexure-V**.

Minimum technical requirements, specifications for passive components is attached as **Annexure-VI**.

Bidders shall note that these are minimum specifications only and if higher specifications / configuration, higher models or upgrades are required for proper delivery of services and SLA conformance, the same shall be provided at no additional cost to BHEL.

## 11 Brief Scope of Work – Technical

### 11.1 Supply Condition

All equipment supplied and installed at the stipulated locations shall be NEW and conforming to the contract technical specifications. The certificate of newness is to be furnished.

The Bidder will also have to produce a certificate from the principal OEM(s) for back-to-back support for the complete contract period for all items. The period of back-to-back support with OEM will start from the date of acceptance issued by respective locations.

Back-to-back support shall mean:

- The bidder shall replace all faulty components with original and new parts of the OEM throughout the validity of the contract. If the faulty part is not available, the same shall be replaced with a higher configuration part of the OEM.
- The bidder shall ensure firmware/software updates & patches from the OEM throughout the validity of the contract.

The OEM of the UPS has also to comply to the “Batteries (management and handling) rules, 2001 under the Environment (Protection) Act, 1986” and shall provide an undertaking on the official letter head of the OEM of the UPS battery in this regard.

### 11.2 Location & Consignee

The tentative list of consignees and respective locations with the tentative quantity and type of equipment to be delivered for Group A & Group B requirement are detailed in Annexure-VIII(A) & Annexure-VIII(B) respectively.

### 11.3 Delivery

Delivery (i.e. Supply, installation and commissioning) period shall start from the date of placement of firm order. Item wise “Delivery period” shall be as detailed below and it will be counted from the date of Order:

Item	Delivery Period
All items	20 weeks

### 11.4 Downtime Calculation for Network Equipment

Bidder shall be responsible for running the Equipment at the uptime as per details given below:

The bidder shall ensure that the following SLA parameters are met.

The vendor shall maintain the overall uptime to minimum 99% on quarterly basis during the lease period.

A deduction from the overall quarterly charges shall be made at the rate of 1% for each 1% fall of uptime from 99%, e.g. if the uptime is 98%, one percent of quarterly rental for the particular quarter shall be deducted. The calculation for uptime shall be made on quarterly basis. The downtime calculation shall be based on 24x7 hours.

There shall be no downtime due to mutually agreed scheduled maintenance of equipment or due to power outage.

Downtime of network shall be the period (in hours) during which expected connectivity is not available on the network or part of network. The downtime factors for calculation of the penalty shall be as follows:

SI No	Category	Equipment Covered	Downtime Factor
1	A	Core Switch, Data Centre Core Switch, Data Centre Access Switch, LAN Distribution Switch, Wireless LAN Controller, Firewall, NAC	10
2	B	NMS, Access Switches, Indoor Access Point, Outdoor access point, UPS	6

#### **Downtime calculation**

Downtime calculation will be applicable for non-availability of Network services arising due of malfunctioning of switches, UPS, wireless network components etc.

### Example of Downtime Calculation

Penalty will be calculated as indicated below:

Equipment down	-	Distribution switch
Downtime (in Hours)	-	Y
Quarterly maintenance value for the equipment (Rs)	-	A
Acceptable downtime per quarter (in Hours)	-	$24 * 30 * 3 * 1\% = X$
Downtime factor	-	F
Penalty (Rs)	-	$(A * F * (Y - X)) / (3 * 30 * 24)$

Penalty will be limited to maximum quarterly maintenance value for the equipment

There shall be no downtime due to mutually agreed scheduled maintenance of equipment or due to power outage.

In situations where equipment needs to be repaired/replaced and the same model is not available in the market, the Vendor shall repair/ replace the faulty Equipment immediately of equivalent or higher model considering the compatibility of equipment.

If the uptime for equipment/system falls below 95% continuously for 3 months, the system/equipment shall have to be replaced by the Bidder within 30 days without any extra charge.

### Penalty for absence of Resident Engineer (RE):

The bidder shall arrange for substitution for RE on leave or absence. At any point of time, the number of RE(s) deployed in a particular location shall be maintained. In case the same is not maintained, then a penalty @₹500/- per day per RE, for every absent RE, shall be levied on the bidder.

This penalty will be deducted from the total quarterly maintenance charges as per order.

The total deduction due to downtime, and absence of RE, per quarter for each location against a particular order will be limited to the 25% of the total quarterly charges for that location as per the order.

## 11.5 Maintenance

11.5.1 Maintenance service shall cover services, repairs and replacements necessary to keep the equipment in good working order during the contract period. Preventive maintenance, wherever required, should be carried out to keep the equipment in good working condition. Maintenance shall include, but not limited to, all plastic and/or rubber parts, adapters. UPS batteries are to be replaced as and when required (found defective) during the contract period. All UPS batteries should be mandatorily replaced in the last quarter of contract period.

11.5.2 Maintenance charges shall also cover RE charges and 5-year warranty charges of the equipment.

11.5.3 E-Waste disposal

11.5.3.1 Vendor shall ensure full compliance to E-waste (Management and Handling) Rules issued by Government for products being supplied to BHEL.

11.5.3.2 Vendor should ensure that either them or the producer of products supplied by them has required authorization from respective State Pollution Control Boards / Pollution Control Committees for implementing EPR (Extended Producer Responsibility) across the concerned state.

## 11.6 Training

11.6.1 The bidder shall organize minimum 10 working day training from authorized training partner of the OEM(s) of the active components with proper lab environment for minimum 15 BHEL officials. The course shall include:

- Hands on training on all different type of equipment mentioned under 11.10.3 under Active component (LAN and Data Center Switches, NAC, Firewall, NMS, Wireless)
- Operational / administration level training for the network administrators for all the supplied equipment.

In case the training involves physical travel of participants (BHEL), the traveling & stay charges for the participants will be borne by BHEL. Traveling & stay charges for the trainer will be in vendor's scope. The training needs to be completed within 6 months of date of sign off for BHEL HPEP unit.

## 11.7 Shifting of Equipment from a Location to Other

After initial installation as per location details given by BHEL, shifting of equipment from one location to another shall be the responsibility of the Bidder. The entire requisite works like dismantling of equipment, packing, transportation and transit insurance shall be the responsibility of the Bidder. A mutually agreed cost can be paid by BHEL to the Bidder on this account. The time given for shifting and installation of equipment at new location will be mutually agreed and time taken beyond that period will be treated as downtime.

## 11.8 Warranty and Support

- 11.8.1 The successful bidder shall provide comprehensive on-site support of the all the hardware / software with back to back support with the respective OEM, for a period of 5 years, from the date of sign-off.
- 11.8.2 Contract/Support period of 5(five) years will start from the date of Sign Off or 'Go-Live' date provided by BHEL respective units.
- 11.8.3 During this Comprehensive Onsite Maintenance Support period, Vendor needs to provide complete support for any Software / Hardware issues and provide either repair or replacement support with identical or higher configuration at no extra cost to BHEL. There shall be no limitations on no. of support calls / visits by the Vendor / Vendor's representative whenever required. Replacement or Repair under Comprehensive Onsite Maintenance Support clause shall be made by the Vendor free of all charges at sites including freight, insurance or any other charges related to maintenance of the items supplied. Comprehensive Onsite Maintenance Support covers all hardware, software patches and upgrades, Firmware Upgrades, Networking and Peripheral components and there shall be no exclusions.
- 11.8.4 Warranty period of 5 years for all the active components from the project sign-off date.
- 11.8.5 On-Site support from SI should be available during warranty and support period for the offered solution. Escalation support Engineer (Other than Resident Engineer) has to visit BHEL site if needed on BHEL request to attend the issue on priority.

- 11.8.6 All proposed products shall not be End-of-sale till 2 years from the date of bid submission end date. Letter from OEM mentioning the same shall be provided.
- 11.8.7 All proposed products shall not be End-of-support till 7 years from the date of bid submission end date. Letter from OEM mentioning the same shall be provided.
- 11.8.8 In case a product or part of the product (component) is rendered end of life/support during the contract period, a substitute of equivalent or higher capacity should be provided free of cost to the BHEL in place of the original product given in the bidding document submitted by the successful bidder. The bidder shall inform the BHEL well in advance, whenever OEM declares end of life/support of the relevant product during the contract period.
- 11.8.9 Warranty Support level from OEM for all active components shall be available throughout the entire contract period. However, RMA Support level from OEM for the following component should be as follows:

UNITS	EQUIPMENT	REQUIRED SUPPORT
Delhi, Hyderabad, Bengaluru, Chennai	Data Centre Core, Data Centre Access, LAN Core Switch, Distribution Switch, Wireless Controller	24 x 7 x 4
	Other Equipment	NBD
All other locations	All Equipment	NBD

Note:

- i) NBD – Next Business Day
  - ii) The return of faulty hardware (for which replacement is provided) to OEM's premises / warehouse / service or support centre shall be arranged by the bidder at his own risk and cost.
  - iii) Warranty of devices must not be quote with default or any limited lifetime warranty. It must be as per above mentioned SLA.
- 11.8.10 Component Warranty Support level from OEM during the period of the contract, all upgrades/ patches or requirements in hardware, software, licensing, implementation of upgrades/patches/version changes etc., would be done by the bidder without any additional cost to BHEL.
- 11.8.11 If during the contract period, the solution is not performing as per specifications and scope of work mentioned in this RFP, bidder shall upgrade/enhance the devices or place additional devices and reconfigure the system without any extra cost to the BHEL till the required performance is achieved.
- 11.8.12 Repair / Replacement of faulty / defective Hardware and other supplied items inclusive of supply of all types of spare parts etc.
- 11.8.13 All Software Patches, Upgrades, updates, Service Packs, etc. of Software supplied by the OEM must be made available free of cost during the entire contract period.
- 11.8.14 The successful bidder shall be responsible for any reconfiguration, new configuration changes in the solution as per BHEL requirements during the entire period of contract.
- 11.8.15 The Successful bidder should participate and provide necessary support during the DC-DR Drill, or during real disaster.
- 11.8.16 During the warranty/support period, the vendor in addition to attending to calls for repairs/maintenance shall conduct on-site preventive maintenance checks on quarterly basis and report is to be submitted to BHEL within 15 days of quarter end.

In case bidder does not submit preventive maintenance report as per prescribed time, payment for the comprehensive support will not be released for that quarter until bidder submits the PM report.

11.8.17 Maintenance service shall cover services, repairs and replacements necessary to keep the equipment in good working order on reasonable use of the equipment during the lease period. Preventive maintenance, wherever required, should be carried out to keep the equipment in good working condition. Maintenance shall include, but not limited to, all plastic and/or rubber parts, adapters etc.

11.8.18 The OEM must supply the product Quality Test and Assurance Certificate

11.8.19 The Bidder/OEM must quote the product which are common criteria certified under NDcPP/EAL or Meity Approved.

### 11.9 Summary of Requirements & Location Details

The tentative list of consignees and respective locations with quantity and type of equipment to be delivered as per Annexure–VIII(A) and VIII(B).

### 11.10 General Points

The broad scope of work includes the following:

11.10.1 Supply, Installation, Configuration, Commissioning, integration, Migration, Testing and Maintenance of complete hardware including all necessary software licenses as per the BoQ and Technical specifications (Annexure-V and Annexure-VI) at different locations of BHEL .

11.10.2 Successful Bidder has to provide hardware and software support, subscription, Upgrades, Updates, patches, support from the OEM for the entire solution during entire lease period.

11.10.3 Scope of work consists of two (2) groups:

#### Group A: Active Components

##### A.1

- Data Centre Core Switch (SW02)
- Data Center Access Switch -Type 1 (Fiber) (SW03)
- Data Center Access Switch -Type 2 (Copper) (SW04)
  
- LAN Core Switch (SW01)
- LAN Distribution Switch - Type 1 (16 port) (SW05)
- LAN Distribution Switch - Type 2 (24 port) (SW06)
- Access Switch -Type 1 to Type 6 (SW07 – SW12)
  
- Wireless Controller & Wireless Access Points (WL01 - WL04)
  
- NAC (NAC01, NAC02)

##### A.2

- NMS (NMS01, NMS02)

##### A.3

- Firewall (FW01, FW02)

#### A.4

- UPS (UPS01, UPS02)

#### A.5

- SFP Modules (FM01 - FM07)

#### Group B: Passive Components

- Fiber/Copper cable
- Racks

Vendor has to ensure Inter OEM compatibility for any component supplied under this contract.

- 11.10.4 The set of active components mentioned under any sub-Group (A.1 to A.5) of 11.10.3 should be from same OEM, and the total quantity of any line item shall be of same Make & Model. No third-party components are to be integrated into the system. All SFP modules mentioned under sub-Group A.5 shall be of the same Make & Model of the Line Item they are provided with. Passive components (Fiber and copper cabling along with accessories) should be from same OEM.
- 11.10.5 The bidder must undertake the complete responsibility of supply, installation and commissioning of all hardware, software & other equipment which may belong to different OEMs (i.e. the entire scope of work of this tender) and to provide complete warranty and support as per terms and conditions.
- 11.10.6 The selected Bidder shall appoint a single point of contact for any activity pertaining to the requirements of this RFP.
- 11.10.7 OEM best practices must be followed for installation and configuration of hardware /software. Vendor needs to integrate the hardware supplied with the existing Network and structured network cabling should be implemented as per the best practices and to the satisfaction of BHEL. Vendor needs to demonstrate all the features mentioned in the specification after completion of installation.
- 11.10.8 High Level Design (HLD) and Low-Level Design (LLD) must be prepared and proposed by OEM directly and it should be submitted to BHEL by the OEM.
- 11.10.9 The implementation and deployment should be overseen and handhold by the OEM. Bidder need to provide OEM declaration of procuring OEM Professional services for minimum number hours.
- 11.10.10 Vendor will be responsible to configure and install the solution according to the technical environment of BHEL and specification specified by BHEL to work with its existing infrastructure.
- 11.10.11 NTP server time synchronization should be supported for all the networking components.
- 11.10.12 Successful bidder has to integrate the proposed solution with other existing security solution such as SOC, SOAR, Firewalls, Antivirus, Active Directory (Microsoft), Desktop & patch Management, etc. The bidder should provide necessary licenses as a part of the solution if required to connect / integrate with other above solutions.
- 11.10.13 Vendor has to comply the audit observations conducted by the BHEL or any controlling authorities during the contract period.
- 11.10.14 Access switches shall be deployed in stacking wherever required.

- 11.10.15 Stacking module, stacking cable etc. for the access switch to be provided along with the switches by the successful bidder wherever required.
- 11.10.16 Successful bidder shall integrate all endpoints with the proposed NAC solution.
- 11.10.17 Successful Bidder need to carry out the heat map in order to decide the suitable positioning of access point.
- 11.10.18 Supply and configuration of all components for NAC Solution (software, license, firmware etc.) and its integration with BHEL's existing/future network infrastructure (during the period of contract) as per technical specifications. The solution should be capable of being bypassed in the event of any failure of the solution.
- 11.10.19 Solution should have centralized architecture with web or Graphical User, Interface (GUI) based dashboard console to monitor, reporting, notification, maintaining and policy push for the registered users centrally.
- 11.10.20 The solution must be able to generate report on different parameters i.e. Compliance, Non-Compliance, frequency and variety of end points, Corporate, Guest, BYOD, Mobile Devices, IOT's, etc.
- 11.10.21 The solution should able to create complete separation for Guest and BHEL Employee.
- 11.10.22 The proposed solution should be able to integrate with existing Antivirus solutions, active directory for compliance. Integration with other solutions if any should not be limited to the above-mentioned OEMs and integration should be available with other OEMs also without any additional licensing
- 11.10.23 The solution should be SDN ready in the data center from Day-1.
- 11.10.24 All the Network Product (Switches and Wireless) during system boots, the system's software signatures should be checked for integrity. System should capable to understand that system OS are authentic and unmodified, it should have cryptographically signed images to provide assurance that the firmware & BIOS are authentic.
- 11.10.25 All supplied licenses should be in the name BHEL and BHEL should be able to log the support calls directly with the OEM.
- 11.10.26 All cabling must be "structured" and cable laying shall be through PVC Pipe, Casing.
- 11.10.27 The successful bidder shall properly dress and label all the cables, I/Os, Jack Panel, Switches for new connections.
- 11.10.28 Repair/Refurnishing work owing to damage caused due to cabling or any other work related to this Project. There should not be any hanging or uncovered wire.
- 11.10.29 Total quantity of any line item shall be of same Make & Model. No mix and match are allowed. This clause is applicable to all line items belonging to Group A and Group B.
- 11.10.30 Make and Model of the equipment shall be specified in the space provided in the technical specifications.
- 11.10.31 Equipment offered must have current certifications as detailed in relevant sections. Future expectations of certification, conditional certifications, variation in certification and certification for equipment different from the make and model offered in the bid is not acceptable.
- 11.10.32 Any format not properly filled, partially filled or not filled will make the bid liable for rejection.
- 11.10.33 Bidders are requested to note that all columns, rows and spaces provided to fill up the data must be filled with relevant data without fail. In case any bidder fails to do

so or fills up irrelevant data, BHEL is not bound to seek clarifications on such items and will be free to reject the tender summararily.

11.10.34 If required, BHEL is entitled to ask for any equipment (covered under Group A and/or Group B) for evaluation and all bidders are requested to note that they shall provide equipment exactly as per specification without any change and precondition(s) to BHEL within 15 working days of receiving such notice. Upon completion of such evaluation BHEL shall return the equipment to the unsuccessful bidder. However, successful bidder's equipment will be returned only after complete delivery of the ordered equipment.

### 11.11 Scope of work for Active components

For installation, a brief scope of work is given as under. However, if any activity or component is required for the completeness or successful functioning of any item, the same shall be part of the scope of supply and work as per BHEL Requirement.

#### 11.11.1 Switches

- Inventory verification & Configuration against Ordered Specification
- Perform power on self-test
- Installation/Upgradation of OS
- Assign IP address
- Establish LAN connectivity
- Configure VLANs & VTP
- Perform system & verification test
- Mounting into the rack
- Configuration of trunks / Ethernet channels where ever required
- Configuration of HSRP/VRRP
- Enabling / configuring security features like Port Security, BPDU Guard, Root Guard etc.
- Enabling / configuring performance features like Portfast, Link fast, Backbone fast etc.
- Configuring ACLs
- Enabling/ disabling Telnet, SSH, HTTP, SNMP, Syslog etc.

#### 11.11.2 Wireless

- Inventory verification & Configuration against Ordered Specification
- Perform power on self-test
- Installation/Upgradation of OS
- Assign IP address
- Establish LAN connectivity
- Perform system & verification test
- Configuration of trunks / Ethernet channels where ever required
- Creating SSIDs for Wireless access
- Configuring High availability for Wireless Controllers
- Applying security policies in Controller
- Mounting of Wireless Access Points
- Configuring Indoor and Outdoor Access Points and associating with Controllers
- Guest access portal for outside users.
- Enabling/ disabling Telnet, SSH, HTTP, SNMP, Syslog etc.

#### 11.11.3 NAC

- Inventory & Configuration, verification against Ordered Specification
- Perform power on self-test
- Installation/Upgradation of OS
- Assign IP address
- Establish LAN connectivity
- Perform system & verification test
- Integrating NAC with Active Directory
- Creating templates and policies for various devices
- BYOD Access for guest users
- Enabling/ disabling Telnet, SSH, HTTP, SNMP, Syslog etc.

#### 11.11.4 NMS

- Inventory & Configuration, verification against Ordered Specification
- Perform power on self-test
- Installation/Upgradation of OS
- Assign IP address
- Establish LAN connectivity
- Perform system & verification test
- Integrating all active components such as switches, wireless controller and wireless access points with NMS.
- Daily monitoring of all network devices status using NMS
- Configuration backup of all network devices
- Software image upgrade of network devices
- Reports configuration
- Configuration Backup of NMS
- Enabling/ disabling Telnet, SSH, HTTP, SNMP, Syslog etc.

#### 11.11.5 Firewall

- Inventory & Configuration, verification against Ordered Specification
- Perform power on self-test
- Installation/Upgradation of OS
- Assign IP address
- Establish LAN connectivity
- Perform system & verification test
- Implementation of security policies
- Enabling next generation firewall features such as IPS/IDS etc
- High availability configuration
- Integrating firewall with SOC
- Configuration backup
- Enabling/ disabling Telnet, SSH, HTTP, SNMP, Syslog etc as per requirement.

#### 11.11.6 UPS

- Inventory & Configuration, verification against Ordered Specification
- Connecting batteries
- Perform power on self-test
- Perform system & verification test
- Verify backup time on full load
- Connecting load to UPS

- Quarterly preventive maintenance
- Attending to UPS related issues
- Replacement of faulty equipment/faulty parts.
- In case of all online UPS, bidder shall inform BHEL at least 1 month before delivery about switchgear, space, cabling and any civil work requirements.

#### 11.12 Scope of work for Passive Components

##### Copper Cabling & Fiber Cabling

- Both Copper Cabling & Fiber Cabling shall be done as per industry standards and best practices.
- Supply, laying, termination, testing and maintenance of OFC cable, UTP cable.
- Repairing/replacing any fiber/UTP during full lease period, cut due to any reason whatsoever, will be done by the vendor. BHEL shall not bear any cost for the same.
- Supply and installation of all passive components including I/O boxes, Light Interconnect Units (LIUs), Patch panels, Patch cords, connectors etc required to complete the work on structured cabling concept.
- Supply of all cable laying accessories including GI/MS conduits, PVC pipes/channels, supporting structures, clamps, identification tags, ferules, cable route markers etc required for laying of cables. The vendor shall include in his scope, any digging work required for laying of cables.
- Minor civil works such as chipping / cutting of floors for making grooves, making holes/opening through walls, ceiling or floors, drilling of holes through steel structures and frames, grouting of frames, hooks on walls/ceiling etc. required for execution of work. After erection, surface shall be made good by plastering / painting to their original shape and finish. Road cutting, if any, shall also be resurfaced and brought to their original shape and finish.
- The vendor shall ensure that the structured cabling system work is carried out by an experienced, registered and certified contractor of the proposed system. The technical support staff engaged by the contractor shall be experienced and approved by the structured cabling system solution provider.

##### **1. Outdoor Fibre Optic Cable Laying in Soft Soil:**

- a. The cable shall be laid underground by excavating the earth to a depth of 1 metre, in HDPE pipe.
- b. The pipe shall be covered with half round standard concrete trough of 4-inch dia.
- c. New cable route markers shall be provided and installed at intervals of 25 meters and at turning points.
- d. Route marker shall be of concrete and the same shall be painted in orange colour, clearly indicating "OFC" in the markers.
- e. The excavated portion shall be refilled to about 60 cm and warning tape, half-round concrete trough shall be placed.
- f. The balance soil shall be refilled upto the ground level.
- g. Bidder shall supply and use necessary half-round concrete trough and Warning tape as per the requirement.
- h. Outdoor optical fibre cable and HDPE pipe necessary for the work will be provided by BHEL. Any other materials shall be provided by the vendor.

## **2. Outdoor Fibre Optic Cable Laying in Road:**

- a. The cable shall be laid under road by excavating the road to a depth of 0.5 metre, in steel pipe.
- b. The excavated portion of the road shall be refilled fully with excavated earth.
- c. For the excavated portion of the road finishing and levelling shall be done using cement/ concrete.
- d. Steel pipe and Outdoor optical fibre cable necessary for the work will be provided by BHEL. Any other materials shall be provided by the vendor.

## **3. Indoor Fibre Optic Cable Laying in PVC:**

- a. The cable shall be laid in 1-inch diameter PVC pipe.
- b. The pipe shall be securely fixed using proper clamps to brick wall or steel girders.
- c. Bidder shall supply and use the necessary PVC pipes as per the requirement.
- d. PVC pipe should be of ISI standard.
- e. Indoor optical fibre cable necessary for the work will be provided by BHEL. Any other materials shall be provided by the vendor.

## **4. Fibre Patch Panel Installation:**

- a. All the fibre cladding shall neatly be arranged using splice holders inside LIU.
- b. The fibre cores shall be terminated at the fibre patch panel using couplers.
- c. Labelling of the Fibres entering LIU as well as on the front side of LIU shall be done using metal or plastic tags.
- d. The LIU shall be fixed inside the rack.
- e. Fibre Patch Panel / LIU necessary for the work will be provided by BHEL. Any other materials shall be provided by the vendor.

## **5. Splicing of Fibre Optic Core:**

- a. The pigtails shall be spliced to the ends of fibre cores.
- b. The spliced area should be protected by using splice protector sleeves.
- c. All the fibre cores shall neatly be arranged using splice holders inside LIU or splice enclosure box.
- d. The LIU shall be fixed in the rack.
- e. Pigtails and Splice Holder Kit / Fibre Patch Panel / LIU necessary for the work will be provided by BHEL. Any other materials shall be provided by the vendor.

## **6. Testing of Fibre Optic Core:**

- a. End to end OTDR testing of fibre optic cores.
- b. Determination of the approximate location of fibre cut.
- c. Providing test report within 2 days of testing.

## **7. Fixing of Information Outlet:**

- 7.1 Installation of Information Outlet involves following:
  - a. Mounting of surface mount box.
  - b. Punching UTP cable in the I/O jack.
  - c. Ferruling the cable.
  - d. Labelling of the Information Outlet.
  - e. Testing connectivity and providing report.
- 7.2. UTP cables, Information Outlets, faceplates and back boxes necessary for the work will be provided by BHEL. Any other materials shall be provided by the vendor.

## **8. UTP Patch Panel Installation:**

8.1 Installation of UTP patch panel in rack involves following:

- a. Mounting of patch panel,
- b. Punching UTP cable in the patch panel,
- c. Ferruling the cable,
- d. Dressing of UTP cables,
- e. Labelling of the Information Outlet,
- f. Testing connectivity and providing report.

8.2. UTP cables and UTP patch panels necessary for the work will be provided by BHEL. Any other materials shall be provided by the vendor.

## **9. Fixing of Wall Mount Rack:**

- a. The rack shall be mounted on brick walls by grouting or on steel girders using suitable clamps.
- b. Fixing cable managers and power strip inside rack.
- c. Wall mount racks with cable managers necessary for the work will be provided by BHEL. Any other materials shall be provided by the vendor.

## **10. Laying of PVC Duct/Channel/Conduit only:**

- a. PVC duct/channel/conduit are required to be laid on brick walls or along steel girders.
- b. In case of brick walls, PVC channel / PVC cable duct shall be laid.
- c. In case of laying along steel girders, PVC conduit shall be laid.
- d. The bidder shall supply and use the necessary PVC channel / conduit / cable duct as per the requirement.
- e. The PVC channel / conduit / cable duct shall be of ISI standard.

## **11. Laying of UTP Cables in the already available PVC Duct/Channel/Conduit:**

- a. UTP cables are required to be laid on brick walls or along steel girders.
- b. In case of brick walls, UTP cable shall be laid in PVC channel / PVC cable duct.
- c. In case of laying along steel girders, the cable shall be laid in PVC conduit.
- d. The bidder shall label the UTP clearly for proper identification.
- e. UTP cables necessary for the work will be provided by BHEL. Any other materials shall be provided by the vendor.

## **12. Removal of PVC Channel/Conduit/Cable Duct:**

- a. Existing PVC Channel/Conduit/Cable Duct along with cables within it shall be neatly removed.
- b. Cement patch works shall be done wherever necessary.

### **11.13 Equipment and System Deliverables**

11.13.1 The Successful bidder's scope of work includes supply, installation, configuration, commissioning, acceptance testing, integration and handing over of the proposed solutions and services to BHEL team.

11.13.2 It also includes other activities like assembly, quality and quantity checks, packing, supply, transportation, transit insurance, local delivery, unloading, handling, storage at site, mounting, movement of hardware to the designated locations, cabling, integration of devices and systems to the existing BHEL network.

11.13.3 It also includes customization, configuration, re-configuration, performance tuning, documentation, warranty and training of BHEL personnel which are supplied as part of this RFP.

11.13.4 The vendor shall provide documentation on:

- Configuration of all active equipment
- Licensing documents
- Network architecture
- Network diagram which includes IP address, Port numbers, Device name etc
- Passives routing map with route markers
- Total inventory details

11.13.5 The Successful bidder shall also provide all required hardware, software, components and equipment which may not be specifically stated herein, but are required to meet the intent of ensuring completeness, maintainability and reliability of the complete system covered under this scope. List of such items along with Licences, if any, shall also be provided along with the bid and during the execution of the project.

11.13.6 Upon successful completion of installation and implementation, the OEM (active components) should check and certify that all components are configured as per industry best security practices.

11.13.7 All the cables, power cables, patch cords and connectors required for the functionality of solutions shall be provided by the successful bidder.

11.13.8 The successful bidder shall properly dress and label the cables in the network rack. All accessories for dressing and labelling shall be provided by successful bidder at no extra cost.

11.13.9 The Successful bidder shall submit a certificate of undertaking from respective OEM certifying that the equipment offered are original and not refurbished.

11.13.10 The delivery and installation of hardware, software, licenses and other equipment shall be as per the Bill of Quantities (BoQ) and technical specifications.

11.13.11 The successful bidder should take adequate care at the time of installation and should not cause any damage to BHEL property. If any such damage is caused, then the successful bidder shall repair/replace it and the cost of repairing will be borne by the successful bidder.

#### **11.14 IPv6 Compliance**

All the network equipment provided should be IPv6 Ready (Dual Stack) and deployed network should be IPv6 ready (Dual Stack) with end to end IPv6 supported applications. The equipment should be either TEC certified or IPv6 Ready Logo certified.

#### **11.15 Manpower Support during Installation, Commissioning & Maintenance(lease)**

11.15.1 The supplier shall assign a qualified Project Manager having at least 10 years of experience to supervise the installation and deployment of all the items across all the BHEL locations. The engineers deployed to carry out the installation should have the following minimum qualifications/certifications:

- For installation of network devices, the engineers should have CCNP or equivalent certification.

11.15.2 Resident Engineers during Maintenance (Lease period)

11.15.3 The successful bidder shall post qualified resident engineers (REs) at different locations as per requirement. The requirement of RE at various locations of BHEL is

given in Annexure-VIII(A) and Annexure-VIII(B). The RE posted at BHEL locations should have the following minimum qualification and experience:

- 3 years diploma/Engineering degree in electronics / computers/ hardware.
- CCNA or equivalent certified engineers for providing support on network devices.

11.15.4 Before posting engineers to BHEL locations, the supplier/service provider shall submit the CV of engineers to respective BHEL locations for vetting and acceptance. The respective BHEL locations may interview the candidate for acceptance/rejection before they are actually posted.

11.15.5 The vendor has to abide by the rules & regulations of the respective Contract Labour Cell at locations.

11.15.6 The bidder has to submit the PF and ESI registration details at the time of bidding. If the bidder at the time of bidding does not have PF/ESI registration, then the bidder has to submit the undertaking that PF/ESI registration will be submitted within 30 days from the date of issue of LOI. If the required information is not furnished within 30 days then BHEL reserves the right to cancel the Order and forfeit EMD and SD.

11.15.7 The vendor has to submit the PF/ESI documents before posting the RE's at locations. The vendor will also submit the details (PF/ESI etc) of the OEM personnel who would be coming to the BHEL premise for maintenance calls. The vendor has to submit any other documents required by BHEL and or Govt Bodies as and when required.

11.15.8 Contractor has to ensure payment of statutory minimum wages as prescribed by BHEL/Central/State Government (whichever is higher) at respective locations where equipment's are supplied.

11.15.9 If resident engineer is absent for more than 2 consecutive working days, a substitute shall be arranged.

11.15.10 In case the RE resigns, the same has to be intimated to respective BHEL location and alternative resource has to be deployed prior to the relieving of the RE.

11.15.11 BHEL reserves the right to ask for change of RE, if it is observed that they are not technically competent, don't respond properly to the users, are not courteous to users, etc. On request of change of RE by BHEL, the Contractor shall deploy a new RE within 30 days of the request.

11.15.12 The responsibilities of the RE include, but are not limited to, the following activities:

- Attending to and resolution of user complaints and maintaining record of all complaints / calls.
- Call Logging with OEM for any Hardware / Software faults, supplied as part of this contract.
- Maintaining and managing all active and passive components supplied as part of contract.

## 12 Payment Centre & Administration of Contract

The tender envisages supply and installation of equipment at different locations as per tentative consignee list given below. The administration of contract will be at respective locations. As part of this rate contract, the rates will be finalized centrally and orders will be placed by respective units / divisions for their requirements. The tentative list of such locations is given below. The bidder is to clearly understand that the service is to be provided on site at all the locations as detailed in relevant section ("**Location & Consignee**" clause of this document) and payment, as per "**Payment terms**" clause mentioned in this document,

will be released from the MU/ PS Region/Divisions placing the order as per details enclosed below:

No.	Unit / Division	Address
1.	BHEL, BAP, Ranipet	Ranipet, Vellore – 632406 (Tamilnadu)
2.	BHEL, HEEP, Haridwar	Ranipur, Haridwar – 249403 (Uttarakhand)
3.	BHEL, HEP, Bhopal	Piplani, Bhopal – 462022 (MP)
4.	BHEL, HPBP, Tiruchirapalli	Tiruchy – 620014 (Tamilnadu)
5.	BHEL, HPEP, Hyderabad	RC Puram, Hyderabad – 502032 (AP)
6.	BHEL, Corp R&D, Hyderabad	Vikasnagar, Hyderabad – 500093 (AP)
7.	BHEL, EDN, Bangalore	Mysore Road, Bangalore – 560026 (Karnataka)
8.	BHEL, ISG, Bangalore	Malleswaram, Bangalore – 560012 (Karnataka)
9.	BHEL, SBD, Bangalore	Malleswaram, Bangalore – 560012 (Karnataka)
10.	BHEL, TP, Jhansi	Jhansi – 284129 (UP)
11.	BHEL, PPPU, Thirumayam	Tiruchy – 620014 (Tamilnadu)
12.	BHEL, CFP, Rudrapur	Rudrapur, Udham Singh Nagar– 263153 (Uttaranchal)
13.	BHEL, IVP, Goindwal	Goindwal, Amritsar – 143423 (Punjab)
14.	BHEL, HERP, Varanasi	Tarna, Shivpur, Varanasi-221003
15.	BHEL, FSIP, Jagdishpur	Sultanpur Distt (UO) -227817
16.	BHEL, EMRP, Mumbai	Mumbai
17.	BHEL, PEM, Noida	Sector-16A, Noida -201301 (UP)
18.	BHEL, CO	BHEL CDT Noida
19.	BHEL, IS, New Delhi	Lodi Road, New Delhi - 110003
20.	BHEL, IO, New Delhi	Lodi Road, New Delhi - 110003
21.	BHEL, PS-HQ	Asiad, New Delhi – 110049
22.	BHEL, PS-NR	Noida – 201301 (UP)
23.	BHEL, PS-ER	BHEL Bhavan, Salt Lake City, Kolkata, West Bengal
24.	BHEL, PS-WR, Nagpur	Nagpur – 440001 (Maharashtra)
25.	BHEL, PS-SR, Chennai	Chennai (Tamilnadu)
26.	BHEL, ROD	Lodi Road, New Delhi - 110003
27.	BHEL, TBG	Sector-16A, Noida -201301 (UP)
28.	BHEL, HPVP, Vizag	HPVP UNIT, BHPV POST, VISAKHAPATANAM -530012, ANDHRA PRADESH.

### 13 Documents (Three sets) to be submitted for claiming Quarterly Charges

#### 13.1 In the First Quarter:

- Agreement (Signed)
- Copy of Insurance valid for at least 1 year.
- Copy of Installation Certificates signed by BHEL Coordinator.
- Original copy of Certificate signed by BHEL Coordinator certifying only non- availability /downtime figures for the quarter.
- Newness certificate of the equipment supplied from OEM.
- Invoice(Digitally Signed) or Hard copies(3 copies original).

#### 13.2 Subsequent Quarters:

- Original copy of Certificate signed by BHEL Coordinator certifying only non-availability/downtime figures for the quarter.
- Invoice(Digitally Signed) or Hard copies(3 copies original).

#### 13.3 Annually:

- Copy of Renewal of Insurance valid for the next one year.
- Declaration on bidder's official letterhead for back-to-back support of items from

the OEM of the product.

#### 14 Checklist of Enclosures (for techno-commercial offer)

The bidder(s) shall enclose the following document in their techno-commercial offers. Any document, not mentioned in the table below but are mentioned in clauses in any section of the tender document (like GCC, TCC, etc.) shall also be enclosed in the techno-commercial offer.

Sl. No.	Annexures to be attached	Format attached as	Whether attached or not	Page No. in Bid document
1.	Certificate of Incorporation of bidder (PQ)			
2.	Authorization letter from OEMs of Group A items (PQ)	Annexure-I		
3.	Authorization letter from OEMs of Group B items (PQ)	Annexure-I		
4	No Deviation Certificate	Annexure-II		
4.	Annual Turnover Format (PQ)	Annexure-III		
6.	Copy of major orders received in last 7 years (PQ)	Annexure-IV		
7.	Proofs for Qualification Criteria			
8	Technical Specifications of Active Components	Annexure-V		
9	Technical Specifications of Passive Components	Annexure-VI		
10	List of items (BOM) for Group A	Annexure-VII(A)		
9.	List of items (BOM) for Group B	Annexure-VII(B)		
10.	Location-wise Requirement for Group A Items	Annexure-VIII(A)		
11.	Location-wise Requirement for Group B Items	Annexure-VIII(B)		
12.	Non-disclosure Agreement (NDA)	Annexure-IX		
13.	Tripartite Agreement	Annexure-X		
14.	Other enclosures, as per different clauses of the tender document.			

**AUTHORIZATION BY OEM**

Date:

To,

BHEL

RCPURAM

HYDERABAD

**Subject: Letter of Authority**

Tender Ref. No Ref. No: \_\_\_\_\_ dated \_\_\_\_\_

Dear Sir,

We hereby authorize \_\_\_\_\_ who fulfills the requirements of the tender enquiry ref. no Ref. No.: \_\_\_\_\_ dated \_\_\_\_\_ to quote/ negotiate and service the equipment as required in the above tender enquiry.

This authorization is valid only for the following equipment for which we are the OEM:

- 
- 
- 
- 
- 

The authorized agency would ensure reliable service during complete lease period of 5 years.

(Authorized Signatory)

For \_\_\_\_\_

**Note:**

- i) This 'Letter of Authority' should be issued on the letterhead of OEM
- ii) In case OEM has own format for MAF, bidder may submit MAF in OEM Format. BHEL's tender reference number along with the list of equipment should be mentioned in the MAF.

**NO DEVIATION CERTIFICATE**

This is to certify that our offer is exactly in line with your tender enquiry no Ref. no.: \_\_\_\_\_ dated \_\_\_\_\_ . This is to expressly certify that our offer contains no deviation either Technical or Commercial in either direct or indirect item.

Signed by:

Name : -----

Designation: -----

Organisation:-----

Date & place:-----

Phone/Fax/Mobile/Email:-----

Stamp & Seal:-----

**Annual Turnover and Profit Of Bidder**

<b>S.No</b>	<b>Financial Year</b>	<b>Turnover (in Crores)</b>	<b>Profit (in Crores)</b>
1	2022-2023		
2	2021-2022		
3	2020-2021		



**TECHNICAL SPECIFICATIONS OF ACTIVE COMPONENTS**

<b>Item Name:</b>		<b>LAN Core Switch</b>	
<b>Item Code</b>		<b>SW01</b>	
<b>Make &amp; Model</b>			
<b>S.No</b>	<b>Criteria</b>	<b>Feature Description</b>	<b>Vendor Compliance</b>
<b>Hardware and Performance Requirements</b>			
1	Architecture	Chassis based Multilayer Switch with sufficient modules/line cards to fit required transceivers/UTP ports. Chassis shall have minimum 4 payload slots.	
2	Security	Switch should have an integrated Trusted Platform Module (TPM) for platform integrity and trusted boot process.	
3	System Throughput	The total aggregate switching capacity should be 8 Tbps or more. Switch should support 1.2 Tbps or more per slot throughput.	
4	Switch Redundancy	There should not be any single point of failure in the switch. All the main components like CPU module/ switching fabric, power supplies and fans etc should be in redundant configuration. Components, like modules/power supplies/fan tray should be Hot Swappable.	
5	CPU Level Redundancy	The switch should have redundant CPU's working in an active-active or active-standby mode. There should not be any traffic disruption during the CPU fail-over/change-over.	
6	Flash & Memory	The proposed switch should have sufficient RAM and Storage to hold the latest Software Release. It should support all features of switch and parameters like MAC Address Table, IP Routing Tables, VLANs etc.at their peak values as claimed in the Data Sheets of the Switch.	
7	Switch Forwarding Rates (Layer 2)	The Switch should support non-blocking Layer 2 switching and Layer 3 routing on all ports.	
8	Backplane Connect Capacity	The switch should have modular-chassis based design, hot-swappable components and optimized airflow/power consumption.	
9	Fiber Connectivity Options	The switch must support 1G, 10G, SFP+ ports with 40G QSFP up link ports as Day 1 Requirement. The switch must support 100 Gbps SFPs for future scalability.	
10	Line Cards required from day 1	48 port 1/10G SFP+ Fiber ports, 24Port 40G ports, Two line cards free for future scalability.	
<b>Layer 2 Functionality</b>			
11	802.3ad	Should support Industry Standard Port/Link Aggregation for All Ports. Also Cross Module Link aggregation should be supported.	
12	Jumbo Frames	Jumbo Frames support more than 9000 Bytes on Gigabit / 10 G Ports and 40G ports.	
13	Storm Control	Support for broadcast, multicast and unknown unicast storm control to prevent degradation of switch performance from faulty end stations.	
14	802.1Q	Should support port, subnet based 802.1Q VLANs. The switch should support 4000 vlans. The switch must support Private VLAN or equivalent.	
15	Layer 2 scale	The switch should support minimum 80,000 no. of MAC addresses.	
16	Spanning-Tree protocol	The switch must support IEEE 802.1w RSTP and IEEE 802.1s MSTP.	
17	Multi Chassis Link Aggregation	Switch must support Multi Chassis Link Aggregation feature and work with any downstream switch and server from various vendors.	
<b>Layer 3 Functionality</b>			
18	Routing Protocols	Should support routing protocol IP v4 - Static routing, OSPF v2, BGPv4, and IP v6 - BGP, OSPF v3.	

19	FHRP Support	Switch must support IP v4 VRRP and VRRP v6. It must also support DHCP Relay V4 and V6.	
20	VRF Functionality	Switch should support VRF - Lite and VRF Route leaking functionality (or) equivalent.	
21	No. of Route Entries	Should support minimum 128K Route entries for IPv4 and IPv6 routes. The switch must support minimum 8 way ECMP.	
<b>Security Features</b>			
22	Access Control Lists	Should support Standard and Extended ACLs / Firewall filters.	
23	Various type of ACLs	Should support various type of ACLs like MAC Based, Port based, Vlan Based and routed ACLs.	
24	Integrated Security	Should support integrated security features like DHCP snooping with option-82, Dynamic Arp Inspection, IP Source guard and encryption as per IEEE 802.1ae or equivalent.	
25	MAC Address Filtering	Should Support MAC Address Filtering based on source and destination address.	
26	AAA	Should support AAA. It must support RADIUS and TACACS+protocol as well. The switch must support Role Based access control (RBAC). Should be able to integrate with all leading PIM solutions.	
27	Access Control Entries	It should support Security and QOS ACL's.	
28	Port Security	The switch should support Port-security.	
<b>Switch Redundancy</b>			
29	Redundancy in Hardware	Must Have Redundancy for Power Supply, FANs to minimize unavailability of switch. Online insertion and removal (OIR) support is must for modules, Power supply and FAN.	
30	Stateful Supervisor Switchover	Stateful Switchover to ensure that in case of failure of active CPU module the redundant CPU should start switching L2/L3 traffic in less than 1 sec (in case switch has redundant CPU).	
31	Hitless Software Upgrades	Should Support Hitless software upgrades (ISSU) or equivalent to reduce downtime during software upgrade. The switch must support Fault isolation per process and process patching to enhance the switch availability	
<b>Quality of Service</b>			
32	Ingress/Egress Queuing	Should support Ingress or Egress Queuing.	
33	QoS Scheduling	Should support QoS scheduling with queues supported in hardware.	
34	Queue per port	Should support up to 4 queues per port.	
35	Traffic Classification	Should support ACL based traffic classification.	
<b>Multicast</b>			
36	Multicast	Should support H/W based IPv4 and IPv6 Multicasting.	
37	IGMP	Should Support IGMP v1, v2 , v3, IGMP Snooping.	
38	PIM	Should support IPv4 Multicast with support for PIM-SM and IGMPv3. Should support IPv6 Multicast with support for MLD, MLD v2, IGMPv3, SSM for IP and PIM-SM.	
39	Multicast route Scalability	Switch should support 8K Multicast route for IPV4 and IPV6.	
40	Multicast Group Scalability	Switch should support minimum 1K IGMP Group.	
<b>Management</b>			
41	Network monitoring/management	Switch should be manageable through NMS on per port/switch basis with common interface for all manageable devices on the network. Should Support SNMP, RMON/RMON-II, SSH/telnet, web management through network management software.	
42	Port Mirroring	Should support port mirroring feature for monitoring network traffic of a particular port/VLAN/group of ports/entire switch. The switch should support 4 port mirroring Session.	

43	Management interface support	Switch should support Syslog, XML (NetConf) or REST API or equivalent, SSHv2/Telnet, OOB Management port, Console Port.	
44	Config rollback	The switch should support configuration verification and roll-back.	
45	SNMP	The switch should support SNMP v1,v2c and v3.	
<b>SDN</b>			
46	SDN support	Switch should support Open Flow/Open Day light/Open Stack controller/ANSIBLE or Equivalent.	
		Switch should support Python/NetConf/XML/REST API or equivalent, Bash/ Power shell/ Industry standard CLI.	
		Switch should support VXLAN (Bridging and Routing) or NVGRE or both overlay encapsulation protocol in hardware to support multiple hypervisor deployment. Switch should also support VXLAN based architecture.	
		Switches operating system must support providing better network analytics and Telemetry to help finding the root cause of issues.	
		Switches Operating system must support telemetry of system information and real time monitoring to identify and automate the issues resolution.	
<b>Certification</b>			
47	Supported Standards	IEEE 802.1D Bridging and Spanning Tree	
		IEEE 802.1p QoS/CoS	
		IEEE 802.1Q VLAN Tagging	
		IEEE 802.1w Rapid Spanning Tree	
		IEEE 802.1s Multiple Spanning Tree Protocol	
		IEEE 802.1AB Link Layer Discovery Protocol	
		IEEE 802.3ad Link Aggregation with LACP	
		IEEE 802.3x Flow Control	
		IEEE 802.3ab 1000BASE-T	
		IEEE 802.3z Gigabit Ethernet	
		IEEE 802.3ae 10 Gigabit Ethernet	
		IEEE 802.3ba 40 Gigabit Ethernet	
		IEEE 802.1ae or equivalent	
		RFC 2460 IPv6	
RFC 2461 Neighbor Discovery for IPv6			
RFC 2462 IPv6 Stateless Address Auto configuration			
RFC 2463 ICMPv6			
<b>Licenses</b>			
48	Licenses	Licenses required to run all the above features must be included from day 1.	
<b>Environment</b>			
49	Operating temperature	32 to 104°F (0 to 40°C).	
50	Operating relative humidity	15% to 90%, noncondensing.	
<b>Others</b>			
51	Mounting	Switch must be rack mountable. Rack mounting kits and accessories should be supplied.	
52	Cables & Accessories	All necessary cables - FC, power & accessories should be supplied	
53	Support & Warranty	OEM's Premium 24x7 support for throughout the contract period should include remote and onsite support, labor, comprehensive warranty covers software update and upgrades.	
54	Compliance Standard	Switch shall conform to UL 60950-1, IEC 60950-1, CAN/CSA-C22.2 No. 60950-1, EN 60950 1 Standards.	
55	Feature from Day One	All the features asked above should be available from the day one and if any licenses to be added to achieve the same, those should be added as part of the proposals and BOM.	

56	Software Defined Campus Network	Proposed hardware should be capable of supporting SDN.	
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<b>Item Name:</b>		<b>Data Centre Core Switch</b>	
<b>Item Code</b>		<b>SW02</b>	
<b>Make &amp; Model</b>			
<b>S.No</b>	<b>Criteria</b>	<b>Feature Description</b>	<b>Vendor Compliance</b>
1	Architecture	19" Rack mountable .	
		Maximum of 2RU size.	
		Must have Redundancy Power Supply Units (PSUs), Hot-swappable, field-replaceable power supplies, 1:1 power redundancy.	
		Must have N+1 fan module redundancy.	
		All components (including elements such as power supplies and fans) must be hot swappable with zero disruption to traffic forwarding (Unicast or multicast).	
2	Security	Switch should have an integrated Trusted Platform Module (TPM) for platform integrity and trusted boot process	
3	Interfaces Support	Switch must have at least 32 no. of 10/ 40/100G QSFP or 40/100G QSFP form-factor ports capable of providing line rate forwarding. 10G Connectivity can be provided using breakout cable	
4	Port Throughput	Minimum 2.56 Tbps and 720 MPPS processing.	
5	Switching Features	Should have 32Mb buffer with Memory Support of 8GB DRAM and 8GB Flash.	
		Should support Standard & Extended ACLs using L2, L3 and L4 fields.	
		should support Rapid Spanning Tree protocol, MST, Root Guard, and Bridge Assurance/BPDU Protection.	
		Should support Private VLAN or Equivalent feature.	
		Should support LACP: IEEE 802.3ad.	
		Should Support line rate ingress and egress ACL filtering: Allow and deny, port filters, VLAN filters, and routed filters, including filters on management port.	
		Should support VRRPv3.	
		Should support DHCP Snooping, IP Source Guard, IPv6 Security features like RA Guard and DHCPv6 Snooping	
		Switch should be able to provide security from layer 2 broadcast, multicast and unknown unicast by rate limiting such traffic.	
		Should have support for QoS policies including shaping, weighted random early detection (WRED) or explicit congestion notification (ECN) features.	
		Should support Modular QoS CLI/COS or equivalent mechanism wherein traffic can be segregated into categories and policies created per category, which inturn can be applied to ingress/egress interfaces.	
should support multicast.			
Should support BFD			

		Switch must support VXLAN Switching/Bridging and VXLAN Routing without any performance degradation.	
		Should support VXLAN Routing from Day 1.	
		Should support VRF Aware VXLAN Routing from Day 1.	
		Should support VXLAN Network with MP-BGP EVPN Control Plane from Day 1.	
		Should support VPC/Multi-chassis LAG with active-active forwarding with VxLAN.	
		Should support Standard & Extended ACLs/Firewall Filters using L2, L3 and L4 fields.	
6	Scale	Switch hardware should be capable of supporting at least: 1. 4K Multicast routes 2. 128K IPv4 route prefixes 3. 120K host routes 4. 90K MAC addresses 5. 256 VRF's	
7	Monitoring and Management Features	Should have Open APIs or REST APIs to manage the switch through remote-procedure calls (JavaScript Object Notation [JSON] or XML or equivalent) over HTTPS after secure authentication for management and automation purpose.	
		Should support SNMP v2 and v3	
		Should have Control plane Packet Capture functionality for troubleshooting purpose.	
		Should support syslog.	
		SSH v2 for CLI access with Secure interface login and password.	
		Should support configurable telemetry for various device and protocol parameters.	
		Should support Netflow version 9 or sFlow v5.	
		Should support Encapsulated Remote SPAN/port mirroring with selective traffic mirroring using ACL or filters.	
		Should be able to export real-time flow table entries to monitoring/analytics software's.	
Should be supplied with monitoring software for single point of config management, troubleshooting and monitoring of all proposed switches.			
		Real-time statistics on per interface -> Buffer Utilization -> Queue drops -> Queue depth -> Queue congestion	
8	Software Version	Version of software for supplied switch should be latest release with necessary licenses to support all required features.	
9	Licenses	Licenses required to run all the above features must be included from day 1.	
10	Mounting	Switch must be rack mountable. Rack mounting kits and accessories should be supplied.	
11	Cables & Accessories	All necessary cables - FC, power & accessories should be supplied	
12	Support & Warranty	OEM's Premium 24x7 support for throughout the contract period should include remote and onsite support, labor, comprehensive warranty covers software update and upgrades.	

13	Compliance Standard	<ul style="list-style-type: none"> <li>● UL 60950-1 Second Edition</li> <li>● CAN/CSA-C22.2 No. 60950-1 Second Edition</li> <li>● EN 60950-1 Second Edition</li> <li>● IEC 60950-1 Second Edition</li> <li>● IPv6 Ready logo Certified /USGv6 Certificate</li> <li>● EAL/NDPP Certified.</li> </ul>	
14	Feature from Day One	All the features asked above should be available from the day one and if any licenses to be added to achieve the same, those should be added as part of the proposals and BOM.	
15	Software Defined Campus	Proposed hardware should be capable of supporting SDN.	



<b>Item Name:</b>		<b>Data Centre Access Switch Type 1 (Fiber)</b>	
<b>Item Code</b>		<b>SW05</b>	
<b>Make &amp; Model</b>			
<b>S No</b>	<b>Criteria</b>	<b>Feature Description</b>	<b>Vendor Compliance</b>
1	Architecture	19" Rack mountable .	
		Maximum of 1RU size.	
		Must have Redundancy Power Supply Units (PSUs), Hot-swappable, field- replaceable power supplies, 1:1 power redundancy.	
		Must have N+1 fan module redundancy.	
		All components (including elements such as power supplies and fans) must be hot swappable with zero disruption to traffic forwarding (Unicast or multicast).	
2	Security	Switch should have an integrated Trusted Platform Module (TPM) for platform integrity and trusted boot process	
3	Interfaces Support	Must have minimum 48 x 10/25G SFP+ natively and 6 X 40/100 G ports.	
4	Port Throughput	Minimum 2 Tbps.	
5	Latency	Maximum upto 3 microseconds.	
		Physical standards for Network Device	
		Must support Gigabit Ethernet (IEEE 802.3z, 802.3ab)	
		Must support Ten Gigabit Ethernet (IEEE 802.3ae)	
		Must support 40 Gigabit Ethernet (IEEE 802.3ba)	
		Software based standards for Network Device	
		Should support IPv6 protocol as per the RFC 2460 from day one	
		Must support IEEE 802.1d - Spanning-Tree Protocol	
		Must support IEEE 802.1w - Rapid Spanning Tree	
		Must support IEEE 802.1s - Multiple Spanning Tree Protocol	
		Must support IEEE 802.1q - VLAN encapsulation	
		Must support IEEE 802.3ad - Link Aggregation Control Protocol (LACP)	
		Must support IEEE 802.1ab - Link Layer Discovery Protocol (LLDP)	
		Must support IEEE 802.3x Flow Control	
		Must support auto-sensing and auto-negotiation (Link Speed/Duplex)	
		Must support Static IP routing	
		Must support Open Shortest Path First (OSPF) v2 (RFC 2328) and OSPF v3	
		Must support Protocol Independent Multicast Version 2 (PIMv2) sparse mode, Source Specific Multicast (SSM), Multicast Source Discovery Protocol (MSDP), and Internet Group Management Protocol Versions 2, and 3 (IGMP v2, and v3)	
		Must support Border Gateway Protocol - BGPv4	
Support for up to 1000 multicast routes			
Support for 256 VRF entries			

6	Switching Features	Virtual Route Forwarding (VRF): VRF-lite (IP VPN); VRF-aware unicast; and BGP-, OSPF- and VRF-aware multicast	
		Must support 8-way equal-cost multipathing (ECMP)	
		Must have Layer 2 IEEE 802.1p	
		Must have 4 hardware queues per port with per port QoS configuration	
		Must have Modular QoS/CoS classification compliance	
		Must have per port virtual output queuing or Egress Queuing	
		Must support Jumbo Frame Size (9k)	
		IEEE 802.3ad Link Aggregation or equivalent capabilities	
		Must be able to load balance across a logical bundle using the following algorithms:	
		<i>Source IP</i>	
		<i>Destination IP</i>	
		<i>Source and Destination IP</i>	
		<i>Source MAC</i>	
		<i>Destination MAC</i>	
<i>Source and Destination MAC</i>			
<i>TCP Port (destination and/or source)</i>			
<i>UDP Port (destination and/or source)</i>			
	Switch must support VXLAN (Bridging and Routing) as well as BGP EVPN overlay encapsulation protocol in hardware to support multiple hypervisor deployment in the Data Center		
7	QoS Feature	Must support IEEE 802.1p class-of-service (CoS) prioritization	
		Must have 4 Hardware queues per port	
		Must have Per-Port QoS configuration	
		Must have CoS Trust	
		Must have CoS-based egress queuing	
		Must have Egress strict-priority queuing	
		Must have Modular QoS/CoS classification compliance	
		Must have per port virtual output queuing or Egress Queuing	
		Must support Egress port-based scheduling: Weighted Round-Robin (WRR) / SDWRR/DWRR/Equivalent.	
Must have ACL-based QoS classification (Layers 2, 3, and 4)			
8	Management Feature	Must provide management using 10/100/1000-Mbps management or console ports	
		Must have CLI-based console to provide detailed out-of-band management	
		Must have Configuration synchronization & Configuration rollback	
		Must support Secure Shell Version 2 (SSHv2)/Telnet & SNMPv1, v2, and v3	
		Must support AAA, AAA with RBAC or equivalent, Radius, TACACS+ for user authentication	
		Must support RMON	
		Must support XML or REST API	
		Must have Advanced Encryption Standard (AES) for management traffic	
		Must support Unified username and passwords across CLI and SNMP	

		Must have Switched Port Analyzer (SPAN) or Port mirroring on physical, PortChannel, VLAN	
		<b>Troubleshooting capabilities</b>	
		Must provide Comprehensive bootup diagnostic tests	
		Must have Ingress and egress packet counters per interface	
		Must support SPAN /Port Mirroring on physical, PortChannel or equivalent, VLAN	
		Must have support for Embedded packet analyzer or equivalent internally/Externally	
9	Software Version	Version of software for supplied switch should be latest release with necessary licenses to support all required features	
10	Licenses	Licenses required to run all the above features must be included from day 1	
11	Mounting	Switch must be rack mountable. Rack mounting kits and accessories should be supplied.	
12	Cables & Accessories	All necessary cables - FC, power & accessories should be supplied	
13	Support & Warranty	OEM's Premium 24x7 support for throughout the contract period should include remote and onsite support, labour, comprehensive warranty covers software update and upgrades.	
14	Compliance Standard	<ul style="list-style-type: none"> <li>● UL 60950-1 Second Edition</li> <li>● CAN/CSA-C22.2 No. 60950-1 Second Edition</li> <li>● EN 60950-1 Second Edition</li> <li>● IEC 60950-1 Second Edition</li> <li>● AS/NZS 60950-1</li> </ul>	
15	Feature from Day One	All the features asked above should be available from the day one and if any licenses to be added to achieve the same, those should be added as part of the proposals and BOM.	
16	Software Defined Campus Network	Proposed hardware should be capable of supporting SDN.	

<b>Item Name:</b>		<b>Data Centre Access Switch Type 2 (Copper)</b>	
<b>Item Code</b>		<b>SW06</b>	
<b>Make &amp; Model</b>			
<b>S.No</b>	<b>Criteria</b>	<b>Feature Description</b>	<b>Vendor Compliance</b>
1	Architecture	19" Rack mountable .	
		Maximum of 1RU size.	
		Must have Redundancy Power Supply Units (PSUs), Hot-swappable, field-replaceable power supplies, 1:1 power redundancy.	
		Must have N+1 fan module redundancy.	
		All components (including elements such as power supplies and fans) must be hot swappable with zero disruption to traffic forwarding (Unicast or multicast).	
2	Security	Switch should have an integrated Trusted Platform Module (TPM) for platform integrity and trusted boot process	
3	Interfaces Support	Must have minimum 48 x 10G Copper natively and 4 X 40/100 G ports.	
4	Port Throughput	Minimum 1.76 Tbps	
5	Latency	Maximum upto 3 microseconds	
		Physical standards for Network Device	
		Must support Gigabit Ethernet (IEEE 802.3z, 802.3ab)	
		Must support Ten Gigabit Ethernet (IEEE 802.3ae)	
		Must support 40 Gigabit Ethernet (IEEE 802.3ba)	
		Software based standards for Network Device	
		Should support IPv6 protocol as per the RFC 2460 from day one	
		Must support IEEE 802.1d - Spanning-Tree Protocol	
		Must support IEEE 802.1w - Rapid Spanning Tree	
		Must support IEEE 802.1s - Multiple Spanning Tree Protocol	
		Must support IEEE 802.1q - VLAN encapsulation	
		Must support IEEE 802.3ad - Link Aggregation Control Protocol (LACP)	
		Must support IEEE 802.1ab - Link Layer Discovery Protocol (LLDP)	
		Must support IEEE 802.3x Flow Control	
		Must support auto-sensing and auto-negotiation (Link Speed/Duplex)	
		Must support Static IP routing	
		Must support Open Shortest Path First (OSPF) v2 (RFC 2328) and OSPF v3	

6	Switching Features	Must support Protocol Independent Multicast Version 2 (PIMv2) sparse mode, Source Specific Multicast (SSM), Multicast Source Discovery Protocol (MSDP), and Internet Group Management Protocol Versions 2, and 3 (IGMP v2, and v3)	
		Must support Border Gateway Protocol - BGPv4	
		Support for up to 1000 multicast routes	
		Support for 256 VRF entries	
		Virtual Route Forwarding (VRF): VRF-lite (IP VPN); VRF-aware unicast; and BGP-, OSPF- and VRF-aware multicast	
		Must support 8-way equal-cost multipathing (ECMP)	
		Must have Layer 2 IEEE 802.1p	
		Must have 4 hardware queues per port with per port QoS configuration	
		Must have Modular QoS/CoS classification compliance	
		Must have per port virtual output queuing or Egress Queuing	
		Must support Jumbo Frame Size (9k)	
		IEEE 802.3ad Link Aggregation or equivalent capabilities	
		Must be able to load balance across a logical bundle using the following algorithms:	
		<i>Source IP</i>	
		<i>Destination IP</i>	
		<i>Source and Destination IP</i>	
		<i>Source MAC</i>	
		<i>Destination MAC</i>	
		<i>Source and Destination MAC</i>	
		<i>TCP Port (destination and/or source)</i>	
<i>UDP Port (destination and/or source)</i>			
Switch must support VXLAN (Bridging and Routing) as well as BGP EVPN overlay encapsulation protocol in hardware to support multiple hypervisor deployment in the Data Center			
7	QoS Feature	Must support IEEE 802.1p class-of-service (CoS) prioritization	
		Must have 4 Hardware queues per port	
		Must have Per-Port QoS configuration	
		Must have CoS Trust	
		Must have CoS-based egress queuing	
		Must have Egress strict-priority queuing	
		Must have Modular QoS/CoS classification compliance	
		Must have per port virtual output queuing or Egress Queuing	
		Must support Egress port-based scheduling: Weighted Round-Robin (WRR) / DWRR / DWRR/Equivalent.	
		Must have ACL-based QoS classification (Layers 2, 3, and 4)	
Must have CLI-based console to provide detailed out-of-band management			

8	Management Feature	Must have Configuration synchronization & Configuration rollback	
		Must support Secure Shell Version 2 (SSHv2)/Telnet & SNMPv1, v2, and v3	
		Must support AAA, AAA with RBAC or equivalent, Radius, TACACS+ for user authentication	
		Must support RMON	
		Must support XML or REST API	
		Must have Advanced Encryption Standard (AES) for management traffic	
		Must support Unified username and passwords across CLI and SNMP	
		Must have Switched Port Analyzer (SPAN) or Port mirroring on physical, PortChannel, VLAN	
		<b>Troubleshooting capabilities</b>	
		Must provide Comprehensive bootup diagnostic tests	
		Must have Ingress and egress packet counters per interface	
		Must support SPAN /Port Mirroring on physical, PortChannel or equivalent, VLAN	
Must have support for Embedded packet analyzer or equivalent internally/Externally			
9	Software Version	Version of software for supplied switch should be latest release with necessary licenses to support all required features	
10	Licenses	Licenses required to run all the above features must be included from day 1	
11	Mounting	Switch must be rack mountable. Rack mounting kits and accessories should be supplied.	
12	Cables & Accessories	All necessary cables - FC, power & accessories should be supplied	
13	Support & Warranty	OEM's Premium 24x7 support for throughout the contract period should include remote and onsite support, labour, comprehensive warranty covers software update and upgrades.	
14	Compliance Standard	<ul style="list-style-type: none"> <li>● UL 60950-1 Second Edition</li> <li>● CAN/CSA-C22.2 No. 60950-1 Second Edition</li> <li>● EN 60950-1 Second Edition</li> <li>● IEC 60950-1 Second Edition</li> <li>● AS/NZS 60950-1</li> </ul>	
15	Feature from Day One	All the features asked above should be available from the day one and if any licenses to be added to achieve the same, those should be added as part of the proposals and BOM.	
16	Software Defined Campus Network	Proposed hardware should be capable of supporting SDN.	

<b>Item Name:</b>		<b>LAN Distribution Type 1 (16 port)</b>	
<b>Item Code</b>		<b>SW03</b>	
<b>Make &amp; Model</b>			
<b>S.No.</b>	<b>Criteria</b>	<b>Feature Description</b>	<b>Vendor Compliance</b>
1	General Requirements:	Minimum 16 gigabit Ethernet 1/10/25 Gbps Fiber SFP+ Ports.	
		Must have scalability to add minimum 2 x 40G Fiber QSFP+ ports from day 1.	
		Minimum 480 Gbps Switching bandwidth capacity.	
		Minimum Packet Forwarding Rate of 360 Mpps.	
		Minimum 4K VLANs.	
		Minimum 8GB Flash Memory and 8GB DRAM/SDRAM.	
		Redundant Power Supply.	
		Minimum support for 64K MAC address and 4K Multicast routes.	
		Minimum support for 16MB buffer size.	
2	Security	Switch should have an integrated Trusted Platform Module (TPM) for platform integrity and trusted boot process.	
3	Access Control Features:	Port security, IEEE 802.1x, IPv6 first hop security/ IPv6 ACLs, SPAN /port mirroring, SSH and MacSec-128/256 or overlay tunnels using standard Protocols like GRE.	
		Advanced Access Control Lists (ACL), TACACS+ and RADIUS authentication.	
		SSHv2 and SNMPv3, DHCP snooping, IGMPv3.	
		Multilevel security on console access to prevent unauthorized access.	
4	VLAN Features	802.1Q Tagged VLAN.	
		Dynamic VLAN Registration.	
		Should supports IEEE 802.1Q trunk for inter switch links.	
		Protocol support for addition, deletion, renaming of VLANs on a network-wide basis	
		IEEE 802.1s, IEEE 802.1w, 802.1X support	
5	Protocol and Traffic Features	Shaped Round Robin (SRR) or Weighted Round Robin (WRR) scheduling or shaped deficit weighted round robin (SDWRR) or DWRR or Equivalent and congestion avoidance or equivalent.	
		8 egress Queues , Strict priority queuing, WRR/SRR / SDWRR /DWRR or Equivalent, flow based rate limiting or ACL based rate limiting.	
		Traffic segmentation	
		Should support IPv6 protocol as per the RFC 2460 from day one	
		Traffic classification should be based on user-definable application types: Port based, Mac address, IP address, TCP/UDP port number	
6	Management Features	USB or RS-232 console port for management via a console terminal or PC	
		SNMP v1, v2, v3	
		Web-based management, Web GUI traffic monitoring	
		Web management. Should support Netflow or equivalent for traffic monitoring.	
		CLI management support.	
		Layer 2/Layer 3 trace route	
		TFTP, Four RMON groups (history, statistics, alarms, and events) support	

7	Switches Operating System	(i)All the LAN (Access, Distribution and Core Switches) Components must have same Operating system architecture	
		(ii) Switches operating system must support providing better network analytics and network visibility to help finding the root cause of issues.	
		(iii) Switches Operating system must support telemetry of system information and real time monitoring to identify and automate the issues resolution.	
8	Operating temperature	32 to 104°F (0 to 40°C)	
9	Operating relative humidity	15% to 90%, noncondensing	
10	Mounting	Switch must be rack mountable. Rack mounting kits and accessories should be supplied.	
11	Cables & Accessories	All necessary cables - FC, power & accessories should be supplied	
12	Support & Warranty	OEM's Premium 24x7 support for throughout the contract period should include remote and onsite support, labor, comprehensive warranty covers software update and upgrades.	
13	Compliance Standard	Switch shall conform to UL 60950-1, IEC 60950-1, CAN/CSA-C22.2 No. 60950-1, EN 60950-1 Standards.	
14	Feature from Day One	All the features asked above should be available from the day one and if any licenses to be added to achieve the same, those should be added as part of the proposals and BOM.	
15	Software Defined Campus Network	Proposed hardware should be capable of supporting SDN.	

<b>Item Name:</b>		<b>LAN Distribution Type 2 (24 port)</b>	
<b>Item Code</b>		<b>SW04</b>	
<b>Make &amp; Model</b>			
<b>S.No</b>	<b>Criteria</b>	<b>Feature Description</b>	<b>Vendor Compliance</b>
1	General Requirements:	Minimum 24 gigabit Ethernet 1/10/25 Gbps Fiber SFP+ Ports.	
		Must have scalability to add minimum 2 x 40 GB Fiber QSFP+ ports from day 1.	
		Minimum 1280 Gbps Switching bandwidth capacity.	
		Minimum Packet Forwarding Rate of 600 Mpps.	
		Minimum 4k VLANs.	
		Minimum 8GB Flash Memory and 8GB DRAM/SDRAM.	
		Redundant Power Supply.	
		Minimum support for 64K MAC address and 4K Multicast routes.	
		Minimum support for 16MB buffer size	
		Should support IPv6 protocol as per the RFC 2460 from day one.	
2	Security	Switch should have an integrated Trusted Platform Module (TPM) for platform integrity and trusted boot process	
3	Access Control Features:	Port security, IEEE 802.1x, ipv6 first hop security/ IPv6 ACLs, SPAN /port mirroring, SSH, MacSec-128/256 or overlay tunnels using standard Protocols like GRE	
		Advanced Access Control Lists (ACL), TACACS+ and RADIUS authentication	
		SSHv2 and SNMPv3, DHCP snooping, IGMPv3	
		Multilevel security on console access to prevent unauthorized access	
4	VLAN Features	802.1Q Tagged VLAN	
		Dynamic VLAN Registration	
		Should supports IEEE 802.1Q trunk for inter switch links	
		Protocol support for addition, deletion, renaming of VLANs on a network-wide basis	
		IEEE 802.1s, IEEE 802.1w, 802.1X support	
5	Protocol and Traffic Features	Shaped Round Robin (SRR) or Weighted Round Robin (WRR) scheduling or shaped deficit weighted round robin (SDWRR) or DWRR or equivalent and congestion avoidance or equivalent.	
		8 egress Queues , Strict priority queuing, WRR/SRR / SDWRR/DWRR or equivalent, flow based rate limiting or ACL based rate limiting	
		Traffic segmentation	
		Traffic classification should be based on user-definable application types: Port based, Mac address, IP address, TCP/UDP port number	
6	Management Features	USB or RS-232 console port for management via a console terminal or PC	
		SNMP v1, v2, v3	
		Web-based management, Web GUI traffic monitoring	
		Web management. Should support Netflow or equivalent for traffic monitoring.	
		CLI management support.	
		Layer 2/Layer 3 trace route	
		TFTP, Four RMON groups (history, statistics, alarms, and events) support	
		(i)All the LAN (Access, Distribution and Core Switches) Components must have same Operating system	

7	Switches Operating System	(ii) Switches operating system must support providing better network analytics and network visibility to help finding the root cause of issues.	
		(iii) Switches Operating system must support telemetry of system information and real time monitoring to identify and automate the issues resolution.	
8	Operating temperature	32 to 104°F (0 to 40°C)	
9	Operating relative humidity	15% to 90%, noncondensing	
10	Mounting	Switch must be rack mountable. Rack mounting kits and accessories should be supplied.	
11	Cables & Accessories	All necessary cables - FC, power & accessories should be supplied	
12	Support & Warranty	OEM's Premium 24x7 support for throughout the contract period should include remote and onsite support, labor, comprehensive warranty covers software update and upgrades.	
13	Compliance Standard	Switch shall conform to UL 60950-1, IEC 60950-1, CAN/CSA-C22.2 No. 60950-1, EN 60950-1 Standards.	
14	Feature from Day One	All the features asked above should be available from the day one and if any licenses to be added to achieve the same, those should be added as part of the proposals and BOM.	
15	Software Defined Campus Network	Proposed hardware should be capable of supporting SDN.	

<b>Item Name:</b>		<b>Access Switch -Type 1 (48 port NonPOE)</b>	
<b>Item Code</b>		<b>SW07</b>	
<b>Make &amp; Model</b>			
<b>S No.</b>	<b>Criteria</b>	<b>Feature Description</b>	<b>Vendor Compliance</b>
1	General Requirements	i) 48 gigabit Ethernet 10/100/1000Mbps	
		ii) Uplink module supplied must be able to support minimum 4 x 1/10G Fiber Uplink ports.	
		iii) Switch should be of 1 RU configuration. Switch should support stacking of minimum 8 switches.	
		iv) Should support IPv4 and IPv6 IP protocol from day one	
		v) All 48 ports can auto-negotiate between 10Mbps/100Mbps/1000, half-duplex or full duplex and flow control for half-duplex ports	
		vi) Minimum 175 Gbps Switching bandwidth capacity.	
		vii) Minimum Packet Forwarding Rate of 100 Mpps (based on 64-byte packet)	
		viii) Minimum 1000 VLANs	
		ix) Minimum 16K MAC address	
		x) Minimum 2GB Flash Memory and 2GB DRAM, Minimum 6MB of packet buffer memory	
		xi) Should have support for dual internal field replaceable redundant AC Power and redundant FAN unit	
		xii) Switch ports should support MDIX (medium-dependent interface crossover)	
		xiii) Switch should have support for Private Vlan	
		xiv) Switch should have switch hibernation mode or energy efficient Ethernet 802.3az standard.	
		xv) Switch should support stack bandwidth of at least 40 Gbps.	
		xvi) Required modules/cables for stacking to be provided.	
		xvii) The offered switch should support Ether channel/IEEE 802.3ad support	
		xviii) Multidomain / multi-user Authentication should be supported	
		(xix) The uplink ports shall support 1000BaseLX, 1000BaseLH, 1000BaseSX, 1000BaseT, 10GBaseSR, 10GBaseLR, 10GBaseER transceivers	
2	Security	Switch should have an integrated Trusted Platform Module (TPM) for platform integrity and trusted boot process	
3	Performance & QoS Features	(i) Auto negotiating on all ports that automatically selects half- or full-duplex transmission mode to optimize bandwidth.	
		(ii) Per-port broadcast, multicast, and unicast storm control support	
		(iii) Port Mirroring, Port Trunking and 802.3ad Link Aggregation port trunks	
		(iv) IEEE 802.3x flow control for full-duplex mode ports.	
		(v) IEEE 802.1D Spanning Tree, IEEE 802.1W RSTP, IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)	
		(vi) Provision for loop avoidance in case of Unidirectional fiber.	
		(vii) Switch should be capable of detecting and disabling port(s) causing spanning tree Protocol loops	
		(viii) It should be possible to configure STP on a per VLAN basis.	
		(ix) IEEE 802.1Q VLAN, IGMP snooping, 802.1p Priority Queues	
		(x) IEEE 802.1p CoS and DSCP field classification	
		(xi) Strict priority queuing support, IGMP Filtering	
		(xii) Support for Granular Rate limiting	

4	Access Control Features	(i) Port security, IEEE 802.1x, ipv6 first hop security or equivalent, SPAN Or Equivalent and SSH.	
		(ii) Advanced Access Control Lists (ACL), enhanced TACACS+ and RADIUS authentication	
		(iii) 802.1x port-based authentication	
		(iv) SSHv2 and SNMPv3, DHCP snooping, IGMPv3 snooping, IGMP Filtering	
		(v) Spanning Tree Root Guard Support	
		(vi) Multilevel security on console access to prevent unauthorized access	
		(vii) MacSec-128/256 or overlay tunnels using standard Protocols like GRE	
5	VLAN Features	(i) 802.1Q Tagged VLAN and port based Vlan, cross stack ether-channel,	
		(ii) Dynamic VLAN Registration	
		(iii) Should supports IEEE 802.1Q trunk for inter switch links	
		(iv) Protocol support for addition, deletion, renaming of VLANs on a network-wide basis	
		(v) IEEE 802.1s, IEEE 802.1w and IEEE 802.1ae or overlay tunnels using industry standards	
		(vi) Protocol support for maintaining a separate spanning-tree instance for each VLAN	
6	Protocol and Traffic Features	(i) 8 egress Queues per port, Strict priority queuing, WRR/SRR/SDWRR/DWRR or equivalent, WTD or congestion management, Rate limiting	
		(ii) Multicast filtering per port	
		(iii) Traffic segmentation	
		(iv) Switch should support basic Layer 3 protocols such as OSPF or ISIS, PBR, VRRP/HSRP etc	
		(v) Traffic classification should be based on user-definable application types: TOS, DSCP, Port based, IP address, TCP/UDP port number	
7	Management Features	(i) USB or RS-232 console port for management via a console terminal or PC	
		(ii) SNMP v1, v2, v3	
		(iii) Web-based management, Web GUI traffic monitoring	
		(iv) Web management. Should support Netflow or equivalent for traffic monitoring.	
		(v) CLI management support.	
		(vi) Layer 2/Layer3 trace route	
		(vii) TFTP, Four RMON groups (history, statistics, alarms, and events) support	
8	Switches Operating System	(i) All the LAN (Access, Distribution and Core Switches) Components must have same Operating system	
		(ii) Switches operating system must support providing better network analytics and network visibility to help finding the root cause of issues.	
		(iii) Switches Operating system must support telemetry of system information and real time monitoring to identify and automate the issues resolution.	
9	Operating temperature	32 to 104°F (0 to 40°C)	
10	Operating relative humidity	15% to 85%, noncondensing	
11	Mounting	Switch must be rack mountable. Rack mounting kits and accessories should be supplied.	
12	Cables & Accessories	All necessary cables - FC, India power cable (5A) & accessories should be supplied	

13	Support & Warranty	OEM's Premium 24x7 support for throughout the contract period should include remote and onsite support, labor, comprehensive warranty covers software update and upgrades.	
14	Compliance Standard	Switch shall conform to UL 60950-1, IEC 60950-1, CAN/CSA-C22.2 No. 60950-1, EN 60950-1 Standards.	
15	Feature from Day One	All the features asked above should be available from the day one and if any licenses to be added to achieve the same, those should be added as part of the proposals and BOM.	
16	Software Defined Campus Network	Proposed hardware should be capable of supporting SDN.	

<b>Item Name:</b>		<b>Access Switch -Type 2 (48 port POE)</b>	
<b>Item Code</b>		<b>SW08</b>	
<b>Make &amp; Model</b>			
<b>S.No</b>	<b>Criteria</b>	<b>Feature Description</b>	<b>Vendor Compliance</b>
		i) 48 Gigabit ethernet 10/100/1000 Mbps POE+ based switch with the POE Budget of 1440W from day one.	
1	General Requirements	ii) Dedicated uplink module supplied must be able to support minimum 4 x 1/10G Fiber Uplink ports.	
		iii) Switch should be of 1 RU configuration. Switch should support stacking of minimum 8 switches.	
		iv) All 48 ports can auto-negotiate between 10Mbps/100Mbps/1000, half-duplex or full duplex and flow control for half-duplex ports.	
		v) Minimum 175 Gbps Switching bandwidth capacity.	
		vi) Minimum Packet Forwarding Rate of 100 Mpps (based on 64-byte packet)	
		vii) Minimum 1000 VLANs	
		viii) Minimum 16K MAC address	
		ix) Minimum 2GB Flash Memory and 2GB DRAM, Minimum 6MB of packet buffer memory	
		x) Should have support for dual internal field replaceable redundant AC Power and redundant FAN unit	
		xi) Switch ports should support MDIX (medium-dependent interface crossover) connections	
		xii) Switch should have support for Private Vlan.	
		xiii) Switch should have switch hibernation mode or energy efficient Ethernet 802.3az standard.	
		xiv) Should support IPv4 and IPv6 IP protocol from day one	
		xv) Switch should support stack bandwidth of at least 40 Gbps.	
		xvi) Required modules/cables for stacking to be provided.	
		xvii) The offered switch should support Ether channel/IEEE 802.3ad support	
		xviii) Multidomain / multi-user Authentication should be supported	
		(xix) The uplink ports shall support 1000BaseLX, 1000BaseLH, 1000BaseSX, 1000BaseT, 10GBaseSR, 10GBaseLR, 10GBaseER transceivers	
		2	Security
		(i) Auto negotiating on all ports that automatically selects half- or full-duplex transmission mode to optimize bandwidth.	
		(ii) Per-port broadcast, multicast, and unicast storm control support	
		(iii) Port Mirroring, Port Trunking and 802.3ad Link Aggregation port trunks	
		(iv) IEEE 802.3x flow control for full-duplex mode ports.	

3	Performance & QoS Features	(v) IEEE 802.1D Spanning Tree, IEEE 802.1W RSTP, IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)	
		(vi) Provision for loop avoidance in case of Unidirectional fiber.	
		(vii) Switch should be capable of detecting and disabling port(s) causing spanning tree Protocol loops	
		(viii) It should be possible to configure STP on a per VLAN basis.	
		(ix) IEEE 802.1Q VLAN, IGMP snooping, 802.1p Priority Queues	
		(x) IEEE 802.1p CoS and DSCP field classification	
		(xi) Strict priority queuing support, IGMP Filtering	
4	Access Control Features	(xii) Support for Granular Rate limiting	
		(i) Port security, IEEE 802.1x, ipv6 first hop security or equivalent, SPAN Or Equivalent and SSH.	
		(ii) Advanced Access Control Lists (ACL), enhanced TACACS+ and RADIUS authentication	
		(iii) 802.1x port-based authentication	
		(iv) SSHv2 and SNMPv3, DHCP snooping, IGMPv3 snooping, IGMP Filtering	
		(v) Spanning Tree Root Guard Support	
		(vi) Multilevel security on console access to prevent unauthorized access	
5	VLAN Features	(vii) MacSec-128/256 or overlay tunnels using standard Protocols like GRE	
		(i) 802.1Q Tagged VLAN and port based Vlan, cross stack ether-channel,	
		(ii) Dynamic VLAN Registration	
		(iii) Should supports IEEE 802.1Q trunk for inter switch links	
		(iv) Protocol support for addition, deletion, renaming of VLANs on a network-wide basis	
		(v) IEEE 802.1s, IEEE 802.1w and IEEE 802.1ae or overlay tunnels using standard Protocols like GRE	
6	Protocol and Traffic Features	(vi) Protocol support for maintaining a separate spanning-tree instance for each VLAN	
		(i) 8 egress Queues per port, Strict priority queuing, WRR/SRR/SWRR/DWRR or equivalent, WTD or congestion management, Rate limiting.	
		(ii) Multicast filtering per port	
		(iii) Traffic segmentation	
7	Management Features	(iv) Switch should support basic Layer 3 protocols such as OSPF or IS-IS, PBR, VRRP/HSRP etc	
		(v) Traffic classification should be based on user-definable application types: TOS, DSCP, Port based, IP address, TCP/UDP port number	
		(i) USB or RS-232 console port for management via a console terminal or PC	
		(ii) SNMP v1, v2, v3	
		(iii) Web-based management, Web GUI traffic monitoring	
		(iv) Web management. Should support Netflow or equivalent for traffic monitoring.	
		(v) CLI management support.	
(vi) Layer 2/Layer3 trace route			
(vii) TFTP, Four RMON groups (history, statistics, alarms, and events) support			

8	Switches Operating System	(i)All the LAN (Access, Distribution and Core Switches) Components must have same Operating system	
		(ii) Switches operating system must support providing better network analytics and network visibility to help finding the root cause of issues.	
		(iii) Switches Operating system must support telemetry of system information and real time monitoring to identify and automate the issues resolution.	
9	Operating temperature	32 to 104°F (0 to 40°C)	
10	Operating relative humidity	15% to 85%, noncondensing	
11	Mounting	Switch must be rack mountable. Rack mounting kits and accessories should be supplied.	
12	Cables & Accessories	All necessary cables - FC, India power cable (5A) & accessories should be supplied	
13	Support & Warranty	OEM's Premium 24x7 support for throughout the contract period should include remote and onsite support, labor, comprehensive warranty covers software update and upgrades.	
14	Compliance Standard	Switch shall conform to UL 60950-1, IEC 60950-1, CAN/CSA-C22.2 No. 60950-1, EN 60950-1 Standards.	
15	Feature from Day One	All the features asked above should be available from the day one and if any licenses to be added to achieve the same, those should be added as part of the proposals and BOM.	
16	Software Defined Campus Network	Proposed hardware should be capable of supporting SDN.	

<b>Item Name:</b>		<b>Access Switch -Type 3 (24 port NonPOE)</b>	
<b>Item Code</b>		<b>SW09</b>	
<b>Make &amp; Model</b>			
<b>S.No</b>	<b>Criteria</b>	<b>Feature Description</b>	<b>Vendor Compliance</b>
1	General Requirements	i) 24 gigabit Ethernet 10/100/1000Mbps	
		ii) Uplink module supplied must be able to support minimum 4 Nos of 1/10G Fiber Uplink ports.	
		iii) Switch should be of 1 RU configuration. Switch should support stacking of minimum 8 switches.	
		iv) All 24 ports can auto-negotiate between 10Mbps/100Mbps/1000, half-duplex or full duplex and flow control for half-duplex ports.	
		v) Minimum 128 Gbps Switching bandwidth capacity.	
		vi) Minimum Packet Forwarding Rate of 90 Mpps (based on 64-byte packet)	
		vii) Minimum 1000 VLANs	
		viii) Minimum 16K MAC address	
		ix) Minimum 2GB Flash Memory and 2GB DRAM, Minimum 6MB of packet buffer memory	
		x) Should have support for dual internal field replaceable redundant AC Power and redundant FAN unit	
		xi) Switch ports should support MDIX (medium-dependent interface crossover) connections	
		xii) Switch should have support for Private Vlan,	
		xiii) Switch should have switch hibernation mode or energy efficient Ethernet 802.3az standard.	
		xiv) Should support IPv4 and IPv6 IP protocol from day one	
		xv) Switch should support stack bandwidth of at least 40 Gbps.	
		xvi) Required modules/cables for stacking to be provided.	
		xvii) The offered switch should support Ether channel/IEEE 802.3ad support	
		xviii) Multidomain / multi-user Authentication should be supported	
		(xix) The uplink ports shall support 1000BaseLX, 1000BaseLH, 1000BaseSX, 1000BaseT, 10GBaseSR, 10GBaseLR, 10GBaseER transceivers	
2	Security	Switch should have an integrated Trusted Platform Module (TPM) for platform integrity and trusted boot process	
3	Performance & QoS Features	(i) Auto negotiating on all ports that automatically selects half- or full-duplex transmission mode to optimize bandwidth.	
		(ii) Per-port broadcast, multicast, and unicast storm control Support	
		(iii) Port Mirroring, Port Trunking and 802.3ad Link Aggregation port trunks	
		(iv) IEEE 802.3x flow control for full-duplex mode ports.	
		(v) IEEE 802.1D Spanning Tree, IEEE 802.1W RSTP, IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)	
		(vi) Provision for loop avoidance in case of Unidirectional fiber.	
		(vii) Switch should be capable of detecting and disabling port(s) causing spanning tree Protocol loops	

		(viii) It should be possible to configure STP on a per VLAN basis.	
		(ix) IEEE 802.1Q VLAN, IGMP snooping, 802.1p Priority Queues	
		(x) IEEE 802.1p CoS and DSCP field classification	
		(xi) Strict priority queuing support, IGMP Filtering	
		(xii) Support for Granular Rate limiting	
4	Access Control Features	(i) Port security, IEEE 802.1x, ipv6 first hop security or equivalent, SPAN Or Equivalent and SSH.	
		(ii) Advanced Access Control Lists (ACL), enhanced TACACS+ and RADIUS authentication	
		(iii) 802.1x port-based authentication	
		(iv) SSHv2 and SNMPv3, DHCP snooping, IGMPv3 snooping, IGMP Filtering	
		(v) Spanning Tree Root Guard Support	
		(vi) Multilevel security on console access to prevent unauthorized access	
		(vii) MacSec-128/256 or overlay tunnels using standard Protocols like GRE	
5	VLAN Features	(i) 802.1Q Tagged VLAN and port based Vlan, cross stack ether-channel,	
		(ii) Dynamic VLAN Registration	
		(iii) Should supports IEEE 802.1Q trunk for inter switch links	
		(iv) Protocol support for addition, deletion, renaming of VLANs on a network-wide basis	
		(v) IEEE 802.1s, IEEE 802.1w and IEEE 802.1ae or overlay tunnels using standard Protocols like GRE	
		(vi) Protocol support for maintaining a separate spanning- tree instance for each VLAN	
6	Protocol and Traffic Features	(i) 8 egress Queues per port, Strict priority queuing, WRR/SRR/SDWRR/DWRR or equivalent, WTD or congestion management, Rate limiting	
		(ii) Multicast filtering per port	
		(iii) Traffic segmentation	
		(iv) Switch should support basic Layer 3 protocols such as OSPF or IS-IS, PBR, VRRP/HSRP etc	
		(v) Traffic classification should be based on user-definable application types: TOS, DSCP, Port based, IP address, TCP/UDP port number	
7	Management Features	(i) USB or RS-232 console port for management via a console terminal or PC	
		(ii) SNMP v1, v2, v3	
		(iii) Web-based management, Web GUI traffic monitoring	
		(iv) Web management. Should support Netflow or equivalent for traffic monitoring	
		(v) CLI management support.	
		(vi) Layer 2/Layer3 trace route	
		(vii) TFTP, Four RMON groups (history, statistics, alarms, and events) support	
8	Switches Operating System	(i) All the LAN (Access, Distribution and Core Switches) Components must have same Operating system	
		(ii) Switches operating system must support providing better network analytics and network visibility to help finding the root cause of issues.	
		(iii) Switches Operating system must support telemetry of system information and real time monitoring to identify and automate the issues resolution.	
9	Operating temperature	32 to 104°F (0 to 40°C)	

10	Operating relative humidity	15% to 85%, noncondensing	
11	Mounting	Switch must be rack mountable. Rack mounting kits and accessories should be supplied.	
12	Cables & Accessories	All necessary cables - FC, India power cable (5A) & accessories should be supplied	
13	Support & Warranty	OEM's Premium 24x7 support for throughout the contract period should include remote and onsite support, labor, comprehensive warranty covers software update and upgrades.	
14	Compliance Standard	Switch shall conform to UL 60950-1, IEC 60950-1, CAN/CSA-C22.2 No. 60950-1, EN 60950-1 Standards.	
15	Feature from Day One	All the features asked above should be available from the day one and if any licenses to be added to achieve the same, those should be added as part of the proposals and BOM.	
16	Software Defined Campus Network	Proposed hardware should be capable of supporting SDN.	

<b>Item Name:</b>		<b>Access Switch -Type 4 (24 port POE)</b>	
<b>Item Code</b>		<b>SW10</b>	
<b>Make &amp; Model</b>			
<b>S. No.</b>	<b>Criteria</b>	<b>Feature Description</b>	<b>Vendor Compliance</b>
1	General Requirements	i) 24 gigabit Ethernet 10/100/1000Mbps PoE+ Based with the POE budget of 720W from day one.	
		ii) Dedicated uplink module supplied must be able to support minimum 4 Nos of 1/10G Fiber Uplink ports.	
		iii) Switch should be of 1 RU configuration. Switch should support stacking of minimum 8 switches.	
		iv) All 24 ports can auto-negotiate between 10Mbps/100Mbps/1000, half-duplex or full duplex and flow control for half-duplex ports.	
		v) Minimum 128 Gbps Switching bandwidth capacity.	
		vi) Minimum Packet Forwarding Rate of 90 Mpps (based on 64- byte packet)	
		vii) Minimum 1000 VLANs	
		viii) Minimum 16K MAC address	
		ix) Minimum 2GB Flash Memory and 2GB DRAM, Minimum 6MB of packet buffer memory	
		x) Should have support for dual internal field replaceable redundant AC Power and redundant FAN unit	
		xi) Switch ports should support MDIX (medium-dependent interface crossover) connections	
		xii) Switch should have support for Private Vlan.	
		xiii) Switch should have switch hibernation mode or energy efficient Ethernet 802.3az standard.	
		xiv) Switch should support stack bandwidth of at least 40 Gbps	
		xv) Required modules/cables for stacking to be provided.	
		xvi) The offered switch should support Ether channel/IEEE 802.3ad support	
		xvii) Should support IPv4 and IPv6 IP protocol from day one	
		xviii) Multidomain / multi-user Authentication should be supported	
		(xix) The uplink ports shall support 1000BaseLX, 1000BaseLH, 1000BaseSX, 1000BaseT, 10GBaseSR, 10GBaseLR, 10GBaseER transceivers	
2	Security	Switch should have an integrated Trusted Platform Module (TPM) for platform integrity and trusted boot process	
3	Performance & QoS Features	(i) Auto negotiating on all ports that automatically selects half- or full-duplex transmission mode to optimize bandwidth.	
		(ii) Per-port broadcast, multicast, and unicast storm control support	
		(iii) Port Mirroring, Port Trunking and 802.3ad Link Aggregation port trunks	
		(iv) IEEE 802.3x flow control for full-duplex mode ports.	
		(v) IEEE 802.1D Spanning Tree, IEEE 802.1W RSTP, IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)	
		(vi) Provision for loop avoidance in case of Unidirectional fiber.	
		(vii) Switch should be capable of detecting and disabling port(s) causing spanning tree Protocol loops	
		(viii) It should be possible to configure STP on a per VLAN basis.	

		(ix) IEEE 802.1Q VLAN, IGMP snooping, 802.1p Priority Queues	
		(x) IEEE 802.1p CoS and DSCP field classification	
		(xi) Strict priority queuing support, IGMP Filtering	
		(xii) Support for Granular Rate limiting	
4	Access Control Features	(i) Port security, IEEE 802.1x, ipv6 first hop security or equivalent,SPAN Or Equivalent and SSH.	
		(ii) Advanced Access Control Lists (ACL), enhanced TACACS+ and RADIUS authentication	
		(iii) 802.1x port-based authentication	
		(iv) SSHv2 and SNMPv3, DHCP snooping, IGMPv3 snooping, IGMP Filtering	
		(v) Spanning Tree Root Guard Support	
		(vi) Multilevel security on console access to prevent unauthorized access	
		(vii) MacSec-128/256 or overlay tunnels using standard Protocols like GRE	
5	VLAN Features	(i) 802.1Q Tagged VLAN and port based Vlan, cross stack ether-channel.	
		(ii) Dynamic VLAN Registration	
		(iii) Should supports IEEE 802.1Q trunk for inter switch links	
		(iv) Protocol support for addition, deletion, renaming of VLANs on a network-wide basis	
		(v) IEEE 802.1s, IEEE 802.1w and IEEE 802.1ae or overlay tunnels using standard Protocols like GRE	
		(vi) Protocol support for maintaining a separate spanning-tree instance for each VLAN	
6	Protocol and Traffic Features	(i) 8 egress Queues per port, Strict priority queuing, WRR/SRR/SDWRR/DWRR or equivalent, WTD or congestion management, Rate limiting	
		(ii) Multicast filtering per port	
		(iii) Traffic segmentation	
		(iv) Switch should support basic Layer 3 protocols such as OSPF or IS-IS, PBR, VRRP/HSRP etc	
		(v) Traffic classification should be based on user-definable application types: TOS, DSCP, Port based, IP address, TCP/UDP port number	
7	Management Features	(i) USB or RS-232 console port for management via a console terminal or PC	
		(ii) SNMP v1, v2, v3	
		(iii) Web-based management, Web GUI traffic monitoring	
		(iv) Web management. Should support Netflow or equivalent for traffic monitoring.	
		(v) CLI management support.	
		(vi) Layer 2/Layer3 trace route	
		(vii) TFTP, Four RMON groups (history, statistics, alarms, and events) support	
8	Switches Operating System	(i) All the LAN (Access, Distribution and Core Switches) Components must have same Operating system	
		(ii) Switches operating system must support providing better network analytics and network visibility to help finding the root cause of issues.	
		(iii) Switches Operating system must support telemetry of system information and real time monitoring to identify and automate the issues resolution.	
9	Operating temperature	32 to 104°F (0 to 40°C)	
10	Operating relative humidity	15% to 85%, noncondensing	
11	Mounting	Switch must be rack mountable. Rack mounting kits and accessories should be supplied.	
12	Cables & Accessories	All necessary cables - FC, India power cable (5A) & accessories should be supplied	

13	Support & Warranty	OEM's Premium 24x7 support for throughout the contract period should include remote and onsite support, labor, comprehensive warranty covers software update and upgrades.	
14	Compliance Standard	Switch shall conform to UL 60950-1, IEC 60950-1, CAN/CSA-C22.2 No. 60950-1, EN 60950-1 Standards.	
15	Feature from Day One	All the features asked above should be available from the day one and if any licenses to be added to achieve the same, those should be added as part of the proposals and BOM.	
16	Software Defined Campus Network	Proposed hardware should be capable of supporting SDN.	

<b>Item Name:</b>		<b>Access Switch -Type 5 (8 port NonPOE)</b>	
<b>Item Code</b>		<b>SW11</b>	
<b>Make &amp; Model</b>			
<b>S.No.</b>	<b>Criteria</b>	<b>Feature Description</b>	<b>Vendor Compliance</b>
1	General Requirements	(i) 8 gigabit Ethernet 10/100/1000Mbps	
		(ii) Uplink module supplied must be able to support 2 1G fiber and 2 1G copper uplinks or 2x1g/10g fiber.	
		(iii) Minimum 24 Gbps Switching bandwidth capacity.	
		(iv) Minimum Packet Forwarding Rate of 17 Mpps (based on 64-byte packet)	
		(v) Minimum 250 VLANs	
		(vi) Minimum 2GB Flash Memory and 2GB DRAM, Minimum 6MB of packet buffer memory	
		(vii) internal AC Power Supply, 100-240 V AC.	
		(viii) Switch should have support for Private Vlan,	
		(ix) Switch should have switch hibernation mode <b>or</b> energy efficient Ethernet 802.3az standard.	
		(x)The offered switch should support Ether channel/IEEE 802.3ad support	
		(xi)Multidomain / multi-user Authentication should be supported	
		(xii)The uplink ports shall support 1000BaseLX, 1000BaseLH, 1000BaseSX, 1000BaseT transceivers	
2	Security	Switch should have an integrated Trusted Platform Module (TPM) for platform integrity and trusted boot process	
3	Performance & QoS Features	(i) Up to eight egress queues per port and strict priority queuing so that the highest priority packets are serviced ahead of all other traffic.	
		(ii) IEEE 802.1D Spanning Tree, IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)	
4	Access Control Features	(i) 4 egress Queues per port, Strict priority queuing, WRR/SRR/SWRR/DWRR or equivalent, WTD or congestion management, Rate limiting.	
		(ii) Advanced Access Control Lists (ACL), enhanced TACACS+ and RADIUS authentication	
		(iii) SSHv2 and SNMPv3, DHCP snooping, IGMPv3	
		(iv) Spanning Tree Root Guard Support	
		(iv) Multilevel security on console access to prevent unauthorized access	
5	VLAN Features	(i) 802.1Q Tagged VLAN	
		(ii) Dynamic VLAN Registration	
		(iii) Should supports IEEE 802.1Q trunk for inter switch links	
		(iv) Protocol support for addition, deletion, renaming of VLANs on a network-wide basis	
		(v) IEEE 802.1s, IEEE 802.1w	
		(vi) IEEE 802.1p CoS and DSCP field classification	
		(vii) IEEE 802.1Q VLAN, IGMP snooping, 802.1p Priority Queues	
6	Protocol and Traffic Features	(i) 4 egress Queues per port, Strict priority queuing, WRR/SRR/SWRR/DWRR or equivalent, WTD or congestion management, Rate limiting.	
		(ii) Traffic segmentation	
		(iii)Should support IPv4 and IPv6 IP protocol from day one	

		(iv) Traffic classification should be based on user-definable application types: TOS, DSCP, Port based, IP address, TCP/UDP port number	
7	Management Features	(i) USB or RS-232 console port for management via a console terminal or PC	
		(ii) SNMP v1, v2, v3	
		(iii) Web-based management, Web GUI traffic monitoring	
		(iv) Web management. Should support Netflow or equivalent for traffic monitoring.	
		(v) CLI management support.	
		(vi) Layer 2/ Layer 3 trace route	
		(vii) TFTP, Four RMON groups (history, statistics, alarms, and events) support	
8	Operating temperature	32 to 104°F (0 to 40°C)	
9	Operating relative humidity	15% to 85%, noncondensing	
10	Mounting	Switch must be rack mountable. Rack mounting kits and accessories should be supplied.	
11	Cables & Accessories	All necessary cables - FC, India power cable (5A) & accessories should be supplied	
12	Support & Warranty	OEM's Premium 24x7 support for throughout the contract period should include remote and onsite support, labor, comprehensive warranty covers software update and upgrades.	
13	Compliance Standard	Switch shall conform to UL 60950-1, IEC 60950-1, CAN/CSA-C22.2 No. 60950-1, EN 60950-1 Standards.	
14	Feature from Day One	All the features asked above should be available from the day one and if any licenses to be added to achieve the same, those should be added as part of the proposals and BOM.	
15	Software Defined Campus Network	Proposed hardware should be capable of supporting SDN.	

<b>Item Name:</b>		<b>Access Switch -Type 6 (8 port POE)</b>	
<b>Item Code</b>		<b>SW12</b>	
<b>Make &amp; Model</b>			
<b>S.No</b>	<b>Criteria</b>	<b>Feature Description</b>	<b>Vendor Compliance</b>
1	General Requirements:	(i) 8 gigabit Ethernet 10/100/1000Mbps PoE+ Ports	
		(ii) Uplink module supplied must be able to support 2 1G fiber and 2 1G copper uplinks or 2x1g/10g fiber..	
		(iii) Minimum 24 Gbps Switching bandwidth capacity.	
		(iv) Minimum Packet Forwarding Rate of 17 Mpps (based on 64-byte packet)	
		(v) Minimum 250 VLANs	
		(vi) Minimum 2GB Flash Memory and 2GB DRAM, Minimum 6MB of packet buffer memory	
		(vii) internal AC Power Supply, 100-240 V AC.	
		(viii) Switch should have support for Private Vlan or equivalent	
		(ix) Switch should have switch hibernation mode or energy efficient Ethernet 802.3az standard.	
		(x) The uplink ports shall support 1000BaseLX, 1000BaseLH,1000BaseSX, 1000BaseT transceivers	
		(xi)The offered switch should support Ether channel/IEEE 802.3ad support	
		(xii)Multidomain / multi-user Authentication should be supported	
		(xiii) Full IEEE 802.3at (PoE+) with 240W PoE+ capability (30W power on all ports)	
2	Security	Switch should have an integrated Trusted Platform Module (TPM) for platform integrity and trusted boot process	
3	Performance & QoS Features	(i) Up to eight egress queues per port and strict priority queuing so that the highest priority packets are serviced ahead of all other traffic.	
		(ii) IEEE 802.1D Spanning Tree,IEEE 802.1s Multiple Spanning Tree Protocol (MSTP)	
4	Access Control Features	(i) 4 egress Queues per port, Strict priority queuing, WRR/SRR/SWRR/DWRR or equivalent, WTD or congestion management, Rate limiting.	
		(ii) Advanced Access Control Lists (ACL), enhanced TACACS+ and RADIUS authentication	
		(iii) SSHv2 and SNMPv3, DHCP snooping, IGMPv3	
		(iv) Spanning Tree Root Guard Support	
		(iv) Multilevel security on console access to prevent unauthorized access	
5	VLAN Features	(i) 802.1Q Tagged VLAN	
		(ii) Dynamic VLAN Registration	
		(iii) Should supports IEEE 802.1Q trunk for inter switch links.encapsulation on all inter-switch links	
		(iv) Protocol support for addition, deletion, renaming of VLANs on a network-wide basis	
		(v) IEEE 802.1s, IEEE 802.1w	
		(vi) IEEE 802.1p CoS and DSCP field classification	
		(vii) IEEE 802.1Q VLAN, IGMP snooping, 802.1p Priority Queues	
		(i) 4 egress Queues per port, Strict priority queuing, WRR/SRR/SWRR or equivalent, WTD or congestion management, Rate limiting.	
		(ii) Traffic segmentation	
		(iii) Should support IPv4 and IPv6 IP protocol from day one	

6	Protocol and Traffic Features	(iv) Traffic classification should be based on user-definable application types: TOS, DSCP, Port based, IP address, TCP/UDP port number	
7	Management Features	(i) RS-232 console port for management via a console terminal or PC	
		(ii) SNMP v1, v2, v3	
		(iii) Web-based management, Web GUI traffic monitoring	
		(iv) Web management. Should support Netflow or equivalent for traffic monitoring.	
		(v) CLI management support.	
		(vi) Layer 2/ Layer 3 trace route	
		(vii) TFTP, Four RMON groups (history, statistics, alarms, and events) support	
8	Operating temperature	32 to 104°F (0 to 40°C)	
9	Operating relative humidity	15% to 85%, noncondensing	
10	Mounting	Switch must be rack mountable. Rack mounting kits and accessories should be supplied.	
11	Cables & Accessories	All necessary cables - FC, India power cable (5A) & accessories should be supplied	
12	Support & Warranty	OEM's Premium 24x7 support for throughout the contract period should include remote and onsite support, labour, comprehensive warranty covers software update and upgrades.	
13	Compliance Standard	Switch shall conform to UL 60950-1, IEC 60950-1, CAN/CSA-C22.2 No. 60950-1, EN 60950-1 Standards.	
14	Feature from Day One	All the features asked above should be available from the day one and if any licenses to be added to achieve the same, those should be added as part of the proposals and BOM.	
15	Software Defined Campus Network	Proposed hardware should be capable of supporting SDN.	

<b>Item Name:</b>		<b>Wireless Controller</b>	
<b>Item Code</b>		<b>WLC01</b>	
<b>Make &amp; Model</b>			
<b>S.No</b>	<b>Category</b>	<b>Specifications</b>	<b>Vendor Compliance</b>
1	General Requirement	Wireless controller should support 250 AP and 5000 clients from day 1.	
2	Hardware	The controller shall support deployment flexibility without compromising any features	
		The controller shall support 5 Gbps tunneling capacity	
		The controller shall support 2x 10G/Multigigabit copper or 2x 10G/Multigigabit fiber. It should have redundant power supplies from day 1.	
		Wireless Controller shall support link aggregation and load sharing between Access Point to WLC links	
		The controller shall support hardware encrypted data plane between Access Point and Controller	
		The controller shall be proposed with complete feature set including licensed feature	
3	High Availability	High Availability mode shall support controller inline data plane mode <b>or</b> local switching mode/Mesh mode	
		High Availability mode shall allow geographically dispersed installation between Controllers	
		The controller failover shall not trigger client de-authentication and re- association	
		Heartbeat interval shall not be longer than 100msec	
		The controller shall support hot WLC software patching for fixing bugs	
		The controller shall support hot AP software patching for fixing bugs	
		The controller shall support new AP hardware without need for changing controller hardware. Necessary software update licenses if required shall be provided to BHEL at no additional cost	
		The controller shall support rolling AP upgrade.	
		The controller shall support new software/ patch upgrade without disturbing the production network.	
		The redundant Controller shall sync Access Point and Client Status, including DHCP IP lease status.	
		Access Point shall be able to proactively distributes Client connection before and after association and tracking client condition in real time using data packet RSSI	

4	Software	The controller shall support standard-based, secure AP-Controller data & control protocol. OEM to fix any known vulnerabilities associated with this protocol before deployment. A declaration on OEM letter head in this regard will be required	
		The controller shall support Inter-Controller Wireless Roaming	
		The controller shall maintains per-user Application usage and shall be able to export it for network analytic.	
		The controller shall support embedded GUI Management	
		The controller shall provide per-Client Connection Scoring and provide reasoning of Client Connection Score or equivalent statistic.	
		Should support IPv4 and IPv6 IP protocol from day one	
		The controller shall support Cellular offload using IPv6 tunneling to Mobile Core network	
5	RF management	The controller shall be able to support multiple RF Management profile per group of APs, including Transmit Power Control and Dynamic Channel Assignment on both <u>2.4GHz</u> and 5Ghz	
		The controller shall be able to identify and avoid interferers with network performance impact analysis report	
		The controller shall support optimized, automatic channel width (20~160Mhz) selection over 5GHz, 802.11ac , 802.11ax	
6	Application Recognition and Control	The controller shall support per-user and per-WLAN based application recognition and control that throttle usage by rate- limiting	
		The controller shall support new application signatures.	
7	BYOD & Security	The controller shall provide Device Profiling using multiple profiling methods to reduce false-detection or by using NAC Server.	
		The system shall provide secure onboarding service for both employee and guest based on standard-based security protocol Proposed system shall not use public cloud as user data repository or by using NAC Server.	
		The controller shall be able to embedded custom web portal page (HTML) to fully customize user experience without additional cost or extra box or by using NAC Server.	
		The controller shall provide rule-based rogue classification and automatically run rogue mitigation action	

		The controller shall be able to detect employee device connection to Rogue Access Point and contain it automatically. It should also support protection from Honeypot or Evil twin.	
		The Controller's image upgrade shall be done through secure, encrypted transport	
		The controller shall be able to provide unique pre-shared keys to the devices that do not support the 802.1x security protocol	
		The controller shall support identification & mitigation of threats.	
8	Network	The controller shall support mapping of specific VLANs to single SSID, depending on Access Point location and user	
9	Configuration	The controller shall support automatic VLAN assignment per SSID to load-balance user connection. assigned VLAN pool shall be same as number of available VLAN in the system	
		The controller shall support embedded best practice configuration profile and setup or through configuration wizards.	
10	Compliance Standard	WLC shall conform to UL 60950-1, IEC 60950-1, CAN/CSA-C22.2 No. 60950-1, EN 60950-1 Standards.	

<b>Item Name: Indoor access point</b>		
<b>Item Code : WLC03</b>		
<b>Make &amp; Model:</b>		
<b>S.No.</b>	<b>Specification</b>	<b>Vendor Compliance</b>
1	Access Points proposed must include radios for 2.4 GHz and 5 GHz with 802.11ac Wave 2, 802.11ax, WiFi6	
2	An access point must include a standard OEM provided Mounting brackets for mounting on Ceiling or Roof top.	
3	Access Point shall support Console port	
4	Should have RJ-45 auto-sensing multigig 1/2.5 Gbps LAN port.	
5	Access Point should have USB port for future requirement.	
6	Must have atleast Antenna Gain of 4 dBi in 5GHz and 3 dBi in 2.4 GHz	
7	Must support 4x4 MIMO for both radios interface bands (5Ghz and 2.4Ghz)	
8	Must Support minimum data rate of 2.4 Gbps on 5ghz and 400 mbps on 2.4 ghz.	
9	Must support minimum of 23dbm of transmit power in both 2.4Ghz and 5Ghz radios. And should follow the local regulatory Norms.	
10	Must support AP enforced load-balance between 2.4Ghz and 5Ghz band.	
11	Must incorporate radio resource management for power, channel and performance optimization	
12	Must have -96 dB or better Receiver Sensitivity.	
13	Must support Proactive Key Caching and/or other methods for Fast Secure Roaming.	
14	Must support Management Frame Protection.	
15	Should support locally-significant certificates on the APs using a Public Key Infrastructure (PKI).	
16	Access Points must support Hardware-based encrypted user data and management traffic between controller and Access point for better security.	
17	Must support the ability to serve clients and monitor the RF environment concurrently.	
18	Same model AP that serves clients must be able to be dedicated to monitoring the RF environment.	
19	Must be plenum-rated (UL2043).	
20	Must support 16 WLANs per AP for SSID deployment flexibility.	
21	Access Point Must continue serving clients when link to controller is down. It should also have option to authenticate user through Radius server directly from Access Point during link unavailability to controller.	
22	Must support telnet and/or SSH login to APs directly for troubleshooting flexibility.	
23	Must support Power over Ethernet and power injectors.	
24	802.11e and WMM	
25	Must support Reliable Multicast to Unicast conversion to maintain video quality at AP level	
26	Must support QoS and Video Call Admission Control capabilities.	
27	Access Point should 802.11 DFS certified	
28	Compliance standard UL 60950-1, CAN/CSA-C22.2 No. 60950-1, UL 2043, IEC 60950-1, EN 60950-1	
29	The access point should be Wi-Fi alliance certified for Wi-Fi6 and WPA3 security	



<b>Item Name: Outdoor access point</b>		
<b>Item Code : WLC04</b>		
<b>Make &amp; Model:</b>		
<b>S.No.</b>	<b>Specification</b>	<b>Vendor Compliance</b>
1	Must support 4x4 MIMO for 5GHz radio interface band and 2x2 MIMO for 2.4 GHz radio interface band. Access Points proposed must include radios for 2.4 GHz and 5 GHz with 802.11ac Wave 2, 802.11ax, WiFi6	
2	Access Point shall be able to support Multigigabit Ethernet, support up to 2.5 Gbps PHY speed using single Cat5e or above(Cat6, Cat6a, Cat7) cable	
3	Access Point shall be able to powered up using PoE (.af)	
4	Access Point shall have spectrum monitoring capabilities, WIPS and off channel RRM without compromising and using the client serving radios.	
5	Access Point should have Bluetooth5 radio to support use cases of location, asset tracking and analytics.	
6	Access Point should have 1x 100, 1000, 2500 Multigigabit Ethernet (RJ-45) – IEEE 802.3bz uplink, and and 1G SFP downlink port.	
7	AP must have standard RJ-45 console port	
8	support omni direction Antenna on each radios	
9	Must Support data rate upto 3 Gbps	
10	Must support minimum of 28 dbm of transmit power on 5Ghz radio and 25 dbm of transmit power on 2.4 Ghz radio . And should follow the local regulatory Norms.	
11	Must support AP enforced load-balance between 2.4Ghz and 5Ghz band.	
12	Must incorporate radio resource management for power, channel and performance optimization	
13	Must have -97 dB or better Receiver Sensitivity.	
14	Must support Proactive Key Caching and/or other methods for Fast Secure Roaming.	
15	Must support Management Frame Protection.	
16	Should support locally-significant certificates on the APs using a Public Key Infrastructure (PKI).	
17	Must support the ability to serve clients and monitor the RF environment concurrently.	
18	Same model AP that serves clients must be able to be dedicated to monitoring the RF environment.	
19	Must support 16 WLANs per AP for SSID deployment flexibility.	
20	Access Point Must continue serving clients when link to controller is down. It should also have option to authenticate user through Radius server directly from Access Point during link unavailability to controller.	
21	Must support telnet and/or SSH login to APs directly for troubleshooting flexibility.	
22	802.11e and WMM	
23	Must support QoS and Video Call Admission Control capabilities.	
24	Access point should be wifi 6 certified	
25	The Access point shall be IP67 or NEMA rated	
26	The Access point shall support operating temperature of -40 to 65°C	
27	The equipment shall support up to 100 MPH sustained winds & 165 MPH wind gusts.	



<b>Item Name: Network Admission Control (NAC)</b>		
<b>Item Code: NAC</b>		
<b>Make &amp; Model:</b>		
<b>S.No..</b>	<b>Features/Specifications</b>	<b>Vendor Compliance</b>
1	Solution should support a highly powerful and flexible attribute-based access control solution that combines authentication, authorization and accounting (AAA), NAC, BYOD, posture, profiling, guest management services and conditional elements on a single platform.	
2	It should allow to authenticate and authorize users and endpoints via wired, wireless and VPN with consistent policy throughout the enterprise and should support variety of authentication methods (802.1X, MAC auth, Web auth etc).	
3	The proposed solution should be scalable upto 10,000 devices from day one for AAA, Guest Management, Device Management/TACACS+ and Logging Features from day-1, Licenses would be required based on each Unit Mentioned as per BOM). Solution should support profiling and posture.	
4	Solution should Support EAP-FAST, PAP, MS-CHAPv1, MS-CHAPv2, EAP-GTC, EAP-TLS and PEAP-TLS Authentication Protocols	
5	Solution should support to enable administrators to centrally configure and manage profiler, posture, guest, authentication, and authorization services in a single web-based GUI console, greatly simplifying administration by providing consistency in managing all these services, when all services are enabled by licenses	
6	Solution should support the capability to assign services based on the assigned user role, group, and associated policy (job role, location, device type, and so on).	
7	Identity and access management. Solution should have capability to establish user identity, location, and access history, which can be used for compliance and reporting.	
8	Readymade Policies, ability for custom policy creation and enforcement	
9	Solution should support policy for Time Based and location based Access	
10	Policy creation tools: <ul style="list-style-type: none"> <li>• Pre-configured templates</li> <li>• Wizard based interface</li> <li>• LDAP browser for quick look-up of AD attributes</li> <li>• Policy simulation engine for testing policy integrity</li> </ul>	
11	Should Support Visibility into user identities and device types	
12	Guest user self-enrollment	
13	Support for WPA2 secure wireless and wired networks	
14	Workflow for user and device registration	
15	Access control lists – both statically defined filter-ID based enforcement, as well as dynamically downloaded ACLs.	
16	Role based administrative capabilities	

17	<p>The solution Must be an easy-to-deploy hardware platform that utilizes identity based policies to secure network access and includes an integrated set of capabilities bundled under one policy platform</p> <p>a. Built-in guest management and device/user onboarding  b. Web based management interface with Dashboard  c. Reporting and analysis with custom data filters  d. Data repository for user, device, transaction information  e. Rich policies using identity, device, health, or conditional elements  f. Deployment and implementation tools.</p>	
18	Solution must support Non 802.1x technology on assigned ports and 802.1x technology on open use ports day 1	
19	Solution should support Mac Address Bypass (MAB) and can further utilize identity of the endpoint to apply the proper rules for access. Mac Address Bypass is typically used for devices which do not support 802.1x from day 1	
20	Solution should have capability to grant authenticated users with access to specific segments of the network, or specific applications and services, or both, based on authentication results.	
21	Solution should support endpoint access to the network with the Endpoint Protection Service, which enables administrators to specify an endpoint and select an action - for example, move to a new VLAN, return to the original VLAN, or isolate the endpoint from the network entirely - all in a simple interface. This Feature will be required in future upgrades without adding additional Hardware.	
22	Solution should have automatic switch vlan provisions for end device based on pre-defined rule	
23	Solution should support user authentication performed against identity, user credentials, role based access control, or attribute based authentication (location, time, etc.)	
24	Solution should allow only authenticated and managed devices to connect to organisation network	
25	Solution should allow NAC credentials to be stored within a trusted protection module or other secured storage mechanism	
26	<p>Solution should support the following guest networking capabilities:</p> <p>a. automated provisioning of network login credentials  b. network access to certain hours of the day  c. secured profile control related to the application uses for guest users</p>	
27	Solution should provision guests notification of their login credentials by: email, SMS etc	
28	Provides complete guest lifecycle management by empowering sponsors to on-board guests	
29	<p>Solution should have capability to look at various elements when classifying the type of login session through which users access the internal network, including the following:</p> <ul style="list-style-type: none"> <li>•Client machine operating system and version</li> <li>•Group to which the user belongs</li> <li>•Condition evaluation results (based on applied dictionary attributes)</li> </ul>	
30	Should support full guest lifecycle management, whereby guest users can access the network for a limited time, either through administrator sponsorship or by self-signing via a guest portal. Allows administrators to customize portals and policies based on specific needs of the enterprise	
31	Proposed NAC Solution should be integrated with BHEL's existing SIEM	

32	Should support, Identity, source, sequences which defines the order in which the solution will look for user credentials in the different databases. Solution should support the following databases: a. Internal Users b. Internal Endpoints c. Active Directory d. LDAP e. RSA f. RADIUS Token Servers g. Certificate Authentication Profiles etc	
33	Must incorporate a complete set of tools for reporting (Audit trailing, customizable reporting and data export capabilities), analysis, and troubleshooting. Data from access transactions can be organized by customizable data elements and used to generate graphs, tables, and reports. Must correlate and organize user, authentication, and device information together	
34	Includes a built-in web console for monitoring, reporting, and troubleshooting to assist help-desk and network operators in quickly identifying and resolving issues. Offers comprehensive historical and real-time reporting for all services, logging of all activities, and real-time dashboard metrics of all users and endpoints connecting to the network.	
35	Solution should have the ability to generate reports in different formats such as: HTML or PDF, CSV etc	
36	Solution should support to generate real time and on demand reports	
37	Solution should be capable of Real-Time Monitoring, Management & event Collection	
38	Solution should support alert mechanism like email, sms etc	
39	Solution should be able to monitor, audit and tie incidents to a specific user	
40	Solution should have various inbuilt and customized dashboards like solution health dashboards, concurrent users, logged in users etc	
41	Solution should provide detailed Event co-relation and analysis and also should integrate with other major SIEM tools	
42	Must be able to join multiple Active Directory domains to facilitate 802.1x PEAP authentication.	
43	Must be able to issue certificates for BYOD devices using an inbuilt Certificate Authority.	
44	Support the following enforcement methods: a. VLAN steering via RADIUS IETF attributes and VSAs b. VLAN steering and port bouncing via SNMP	
45	Encryption of traffic to the wireless and wired network using protocols for 802.1X such as EAP-TLS, EAP-PEAP or EAP-MSCHAP.	
46	Must support Radius for users and TACACS+ for network devices for authentication. Must support RBAC for network devices.	
47	Multivendor equipment support	

<b>Item Name: Network Management System</b>		
<b>Item Code: NMS</b>		
<b>Make &amp; Model:</b>		
<b>S.No</b>	<b>Specification</b>	<b>Vendor Compliance</b>
<b>Administration and Security</b>		
1	The NMS should product integrate with LDAP/AD (Microsoft Active Directory) to perform authentication using security groups to allow for one username and password	
2	The NMS should integrate with TACACS or RADIUS based authentication sever to define user level access	
3	The NMS should have the ability to establish function-level, role-based permissions (e.g., who can use what functions of the product)	
4	The NMS should support user based roles with different management privileges	
5	Should have the ability to perform changes with a list of command lines (for example, cut-and-paste command line interface commands)	
6	The system shall support Single Sign-On( SSO) authentication	
7	The management system should have a Logging capability and Log Browser Utility should also be provided.	
8	Support of centralized password authentication including complex password acceptance , password dictionary support, Password Storage Encryption should be provided	
<b>Alarms/Event Management</b>		
9	NMS should have a centralized, robust Syslog management with filtering capability by severity, facility and device IP address.	
10	NMS should support Device monitoring and SNMP trap support	
11	NMS should list all events and have the capability to generate alarms.	
12	Must support customizable performance and interface thresholds alert management	
13	Must support historical alarm management.	
14	Must support alarm generation rule	
15	The NMS should provide the ability of fault suppression	
16	It should be possible to acknowledge multiple alarms. The timestamp and the user who acknowledged the alarm should be stored in the Management System.	
17	The Management System shall be able to categorize alarms, into different severity levels	
18	Alarm data retention: The retention of alarm data should be kept atleast 1 year	
19	Event history: Event shall be stored with timestamps	
20	Alarm burst protection / mitigation : The Management System should be able to handle a vast amount of alarms/events	
21	The system shall be able to identify the failed compute component and associate it to the relevant failure alarm.	
22	NMS shall be able report severity 0-7 syslog messages for all the devices	

23	The system shall permit the administrator to create faults of specific severity for new MIB notifications	
24	The management system shall provide an aggregated view of the alarms from multiple deployed instances	
	<b>API Support</b>	
25	The NMS product should support Inbound/Outbound Application Programming Interfaces (API's)	
26	Northbound and Southbound Interfaces, The Management System shall be able to forward alarms to other systems.	
27	The Management System should offer Standard based API's	
28	The Management System shall have the interfaces/integrations to third-party systems to provide the Fault and Performance Management facilities	
	<b>Architecture</b>	
29	NMS should be available as a physical or Virtual appliance including the licenses as per the unit wise requirement. All the required hardware, software and licenses are in bidders scope. NMS should be deployed centrally in Hyderabad and Haridwar data centres in high availability mode (Primary in Hyderabad and Secondary in Haridwar). Delegated Role based access to be provided to respective	
30	The NMS should support upto 50 concurrent client sessions/named users.	
31	The System must be run on latest Windows/ Linux platform	
32	The system should support integrated management of network devices, hosts. Besides, it should be able to analyze and manage interactions between IT resources, and support a unified monitoring policy, unified alarm policy and view management.	
33	The system should provide a one-page summary view of business operation.	
34	The system should support SNMP v1, v2, v2c and V3.	
35	The product should support IPFIX (NetFlow v10)	
36	The Management System shall support local authentication	
37	The NMS should support a CLI / GUI interface	
38	The product should support data collection across multiple management servers.	
39	The product should support distributed deployment architecture	
40	The product should support local and geographic redundancy.	
41	The product should have the ability to detect, configure, manage, troubleshoot and provide reporting for managed, connected devices and clients, which have IPv6 addressing only.	
42	Shall support concurrent multi-user access to the management system, enabling multiple read-write access to different areas of the management domain	
43	If the product supplied is available in VM, all necessary license and hardware to be provided	
	<b>Assurance</b>	
44	Management software should be able to monitor network's bandwidth and should be able to transfer to users as real time graphical data	

45	The format and type of traffic, the source of the traffic, the service which is using traffic, and destination of traffic should be listed based on source, the device that the traffic passing through, the service which is using to traffic and/or destination.	
46	Shall be able to monitor and analyze WAN traffic and to categorize based on source, destination, port, service, application and user. Also it should be able to transfer statistical datas graphically.	
47	The software should be configured for desired applications and protocols. It should be able to monitor the traffic of any desired application.	
	<b>Automated Deployment</b>	
48	NMS should support Automated configuration deployment and automated staging capability.	
49	The system shall be capable of pre-provisioning with base lined configuration & image	
	<b>Change and Compliance Management</b>	
50	The system should embed networking best practices to proactively identify suboptimal configuration settings such as peer not recognized, port duplex mismatch, VLAN, IPSLA, QoS, PBR, misconfigurations, and others?	
51	The product should come with pre-defined, out-of-the-box compliance reports	
52	The product should have the ability to log configuration changes and the associated users	
53	The product should have the ability to detect configuration changes via manual request	
54	The product should have the ability to detect configuration changes via real-time external events - Syslog messages	
55	It shall be possible to schedule network device configuration and software image upgrade changes	
56	The product shall have a provision to monitor the scheduled network device configuration and software image upgrade changes for failure	
57	The product shall have a provision to re-schedule the failed network device configuration and software image upgrade tasks.	
58	The product should allow for comparison of baselined device configurations with the current running configuration at defined intervals	
	<b>Configuration Management</b>	
59	Must support device configuration backup and restore feature	
60	Must support device configuration backup in manual or scheduled basis.	
61	Must support device configuration management in per device or batch mode operation.	
62	Must support device configuration comparison feature between two specified configures, and the configuration changes will be highlighted in different color.	
63	Must support software management.	
64	Should have the ability to compare configuration versions using a side-by-side, split-screen display to highlight differences between current captured configuration	
65	The tool should have the ability to highlight differences in textual configuration files	

66	Should have the ability to highlight differences in modeled configuration attributes (e.g., ACL, VLAN)	
67	Should have the ability to update individual configuration attributes (rather than uploading entire configuration files to update one attribute)	
68	Should have the ability to remediate a device back into compliance and roll back to a previously saved configuration by automatically prompting the user	
69	Should have the option to schedule a change to be executed during a planned maintenance activity window	
70	The product should have the ability to perform changes with scripts to handle more-complex configuration changes to network devices	
71	The product should have the ability to perform a textual configuration search using regular expression pattern matching	
72	The product should have the ability to store multiple versions of configurations	
73	The management system shall support the regional structure for the Configuration Management	
74	The management system shall support automatic configuration of Wi-Fi AP	
75	The NMS should support both wired and wireless access devices.	
	<b>Discovery</b>	
76	Must support discovery of devices through route table, arp table and network number.	
77	The system shall be IPv4 compliant	
78	The system shall be IPv6 compliant	
79	The Management System should be able to automatically discover the network elements as well as their current status and status change with no manual intervention using Different MIBs	
80	The management system shall use various mechanisms to monitor the managed devices	
	<b>Group Management</b>	
81	NMS should support Device management capability using device groups	
82	The NMS should have the ability to organize each device into a physical, location-specific group (device can only belong to that single group) for the purpose of change management, configuration updates and reporting	
83	The NMS should have the ability to organize devices into arbitrary logical groupings — for example, by organization, department, IT service (device can belong to multiple logical groups) — for the purposes of change management, configuration updates and reporting	
84	It shall be possible to group devices based on location, and to do so in the context of a hierarchy of location groups.	
85	The management system shall allow for aggregation of wireless APs into groups	
	<b>High Availability</b>	
86	The system must be capable of delivering 99.999% service availability.	

87	The NMS should Active/ Standby redundancy, also called High Availability(HA) for disaster recovery. Both local and geographic redundancy can be configured for HA deployments.	
88	The secondary server should be able to take over the role of Active within three minutes of the failure of the primary.	
	<b>Inventory Management</b>	
89	The product should have the ability to push/pull update software on network devices	
90	NMS should provide Interface inventory, display switch ports and connected device's IP addresses.	
91	NMS should support Device inventory displaying detailed hardware components of all managed devices	
92	The product should have the ability to create and manage custom/manual attributes per device (e.g., asset ID#, street address, state, etc.)	
93	The product should perform automatic proactive vulnerability discovery for the platforms it manages (i.e. PSIRT, bugs, hardware lifecycle management)	
94	The NMS should have the ability to search by hardware and software attributes	
	<b>Monitoring</b>	
95	The system should have a default monitoring policy. The system provides a recommended monitoring policy, which can be modified as required.	
96	The system should support replication of policies and apply replicated policies to other monitored objects to improve the deployment efficiency.	
97	The system should support formulation of resource policies in batches, that is, the system can add objects with the same monitoring policy in batches.	
98	The NMS should provide drill-down capability to quickly show different collection metrics	
99	The NMS should be able to collect data about bandwidth utilization, store it and present it via GUI.	
100	The management system shall support for QoS Profiles - Different Classes - Exceed, violate and conform statistics, Policing statistics, Classification statistics, Queuing statistics	
101	The management system shall be capable of monitoring the impact of QoS class on the application performance and support QoS configuration changes	
102	The product shall be capable of analyzing the network and report on network devices offering application visibility	
103	The product shall enable the user to create profiles for application visibility for varied features	
104	The product shall have an interface to search specific network devices/ interfaces & assess the application visibility of the device's interface	
105	The management system shall provide the user a means of viewing the status of the network in a summary view for both wired and wireless devices	
106	The product shall provide graphical indicators to the Key Performance Indexes (KPI) of monitored network devices and interfaces	

<b>Network Visualization</b>		
107	The system should support topology customization using devices and pictures provided by the system.	
108	The system should support nodes to be deployed using icons or symbols of devices. These icons and symbols are also available for resources and sub networks.	
109	The proposed system shall have ability to map network devices and locations based on geo coordinates (longitude and latitude)	
110	The system shall indicate the associated fault information of network devices on the discovered topology	
111	The network map of management system shall visually indicate the link status of associated devices	
112	The system shall indicate the end point information of the links in the network maps	
<b>Performance Management</b>		
113	The system should support component extensions such as traffic analysis, log monitoring, and script monitoring to facilitate integrated monitoring of the operation and maintenance of IT resources.	
114	The system should support the NetFlow and IPFIX protocols by using Flow technologies..	
115	The system should support viewing traffic based on multiple dimensions, such as applications, sources, purposes, and sessions.	
116	The system should provide complete traffic analysis functions, including real-time monitoring of network traffic, alarming for traffic overload, analyzing traffic	
117	The system should provide traffic flow direction analysis, monitors TCP sessions, and provides the matrix view for TCP sessions to present the statistics for traffic of all network nodes and sessions.	
118	The system must support historical port utilization and performance report for up to last 180 days	
119	The system should provide User-defined index such as the real-time connection and traffic of the network adapter, and the packet loss rate, utilization, and transmission rate of the network port.	
120	IP SLA data collection & processing : The Management System shall be able to collect IP SLA data from probes and store them and furthermore processing and presentation	
121	Jitter : The Management System shall be able to monitor jitter via IP sla or probe	
122	Delay: The Management System shall be able to monitor delay via IP sla or probe	
123	Latency : The Management System shall be able to monitor latency via IP sla or probe	
124	The product shall be capable of reporting various performance statistics such as CPU, Memory, Bandwidth, TopN statistics, threshold-based alarming etc.	
125	The product shall be able to monitor & report performance metrics for different QoS classes.	

126	The monitoring system shall provide for monitoring the performance indicators of WAN links	
127	The management system shall monitor Key Performance Indicators for virtual elements	
<b>Provisioning / Template Management</b>		
128	NMS should Support configuration device templates and should be able to push the templates to device groups.	
129	NMS should have the Ability to roll back to a last known good configuration,	
130	NMS shall perform all Security Gateway configuration tasks like NAT and VPN	
131	The NMS should support workflow based configuration templates.	
132	The Management System shall be able to apply templates to network elements groups with predefined alarm element, thresholds etc.	
<b>Reporting</b>		
133	The system should have various built-in report templates of multiple dimensions and angles, including resource report templates, analysis report templates, trend report templates, TOP N report templates, and fault report templates.	
134	The system must support creation, modification, deletion, online viewing, import, export, periodical generation of reports.	
135	The system should allow users to update or define new reports	
136	The management system shall show a variety of at least 20 reports with brief descriptions; ensure items below are represented: i. Show variety of "hours of operation" reporting/alerting; 6am-6pm, etc. ii. Detail the flexibility of designing custom reports. iii. What granularity options are there for reports; minute, hourly, daily, weekly, etc. iv. TopN reports; highest utilization, worst errors, most discards, etc. Combine In and Out data for Utilization, conversations, applications etc.	
137	Management system shall have the capability to export the graphical reports for key performance indicators that are monitored	
138	Proposed NMS should support multivendor equipment for Managing and Monitoring	
<b>Data Centre Networking</b>		
<b>S.No</b>	<b>Specification</b>	<b>Vendor Compliance</b>
1	Solution must be supplied with a Central management appliance and associated licenses for managing, monitoring and provisioning the Data Center Network from Day-1.	
2	Solution must provide a single GUI tool for centralized management system with role based access control.	
3	Solution shall come with an initial license for 25 managed network devices and has to be provided as per the unit wise requirement	
4	Solution shall provide management of fabric with VxLAN EVPN Architecture or VxLAN IS-IS Architecture.	

5	Solution shall be hardware or Virtual Based appliance or x86 based server from the OEM and must run in redundancy to provide high availability. Server provided shall have minimum configuration of 64 GB RAM, 500 GB hard drive, 64bit 4 CPU cores, 1G Ethernet port. All the required hardware, software and licenses are in bidders scope.	
6	Solution shall support VXLAN topology to enable the visibility in the Overlay and Underlay topologies.	
7	Solution shall provide dynamic, policy-based configuration for underlay, overlay, and interfaces.	
8	Solution shall provide Fabric Builder for easy underlay bring-up and deployment.	
9	Solution shall provide per-switch configuration deployment history of underlay, overlay, and interface configurations.	
10	Solution shall provide Overlay network provisioning for leaf and borders switches, including external connectivity.	
11	Solution must provide necessary report for compliance and audit.	
12	Solution must provide device inventory of the Fabric as well as current network topology of the fabric.	
13	Solution must integrate with VMware vCenter compute for topology view (virtual machines, vSwitch/DVS, port group, vNIC, VMNIC)	
14	Solution must provide OS management like upgrade/degrade of fabric (SPINE/Leaf).	
15	Solution shall provide troubleshooting capability up to port level on the entire fabric.	
16	Solution shall provide topology view showing VXLAN tunnel endpoint (VTEP) status and VXLAN Network Identifier (VNI) status on a per-switch basis.	
17	Solution shall provide topology, Endpoint Visibility and Network Health Monitoring.	
18	Solution shall enables integration with third-party or custom orchestration tools. shall supports orchestration through REST API.	
19	Solution shall provides views of configurations, events, and traffic.	
20	Solution shall provides detailed visibility into real-time and historical performance statistics of the fabric.	
21	Solution shall provides insight into port and bandwidth use, error count, traffic statistics, etc.	
22	Solution shall provides reports using predefined templates, including inventory, use, and health reports.	
23	Solution shall provides easy-to-schedule reports that can be exported or sent by email.	
24	Solution shall allow following network automation :- a. Patch deployment on switches b. Policy deployment c. OS Deployment d. Rollback e. Switch configuration f. Configuration Management	

<b>Item Name:</b>		<b>Next Generation Firewall (in HA) - Type-I (DC/DR)</b>	
<b>Item Code</b>		<b>FW01</b>	
<b>Make &amp; Model</b>			
<b>S.No.</b>	<b>Technical Specifications</b>	<b>Minimum Requirements</b>	<b>Vendor Compliance</b>
1	Industry Certifications and Evaluations	OEM should have TAC in India.	
2	Hardware Architecture	The appliance based security platform should be capable of providing firewall, application visibility & control, Malware Protection, IPS functionality & WAN load-balancing capability in a single appliance.	
		Should support atleast 5 virtual systems / domains from day 1. Each virtual domain shall act as an independent firewall with full features.	
		The appliance should support at least - a) 4 * 10G SFP ports. B) 8 * 1G / 10G Cu ports.	
		The appliance hardware should be a multicore CPU architecture with a hardened 64 bit operating system to support higher memory, and to protect & scale against dynamic latest security threats.	
		Firewall should have redundant Powersupply and FANs.	
3	Performance & Scalability	NG Firewall should support at least 10m concurrent sessions / connections.	
		NG Firewall should support at least 250,000 new sessions / connections per second.	
		Threat Protection Throughput (with Firewall, IPS, Application Control, Malware Protection & logging enabled) to be minimum 12 Gbps.	
4	High-Availability Features	Should come in a failover cluster of 2 firewall appliances. Should be capable of HA configuration in Active-Active / Active-Passive / Clustering mode.	
		Firewall should support Stateful Failover of Firewall and VPN Sessions (if any).	
intelligence 5	NGFWFirewall Features	Firewall should support creating access-rules with IPv4 & IPv6 objects simultaneously.	
		Firewall should support operating in routed & transparent mode.	
		Should support Static, RIP, OSPF, OSPFv3 and BGP routing protocols.	

	Firewall should support manual NAT and Auto-NAT, static nat, dynamic nat, dynamic pat.	
	Firewall should support Nat66 (IPv6-to-IPv6) / NPTv6, Nat 64 (IPv6-to-IPv4) & Nat46 (IPv4-to-IPv6) / Ipv4 over IPv6 functionality from day 1.	
	Firewall should support Multicast protocols like IGMP, PIM, etc.	
	Should support capability to limit bandwidth on basis of applications / groups, Networks / Geo-locations, Ports, etc.	
	Should be capable of dynamically tuning IDS/IPS sensors (e.g., selecting rules, configuring policies, updating policies, etc.) with minimal human intervention.	
	Should be capable of automatically providing the appropriate inspections and protections for traffic sent over non-standard communications ports.	
	Should be able to link Active Directory and/or LDAP usernames to IP addresses related to suspected security events.	
	Should be capable of detecting and blocking IPv6 attacks.	
	The solution must provide IP reputation feed that comprised of several regularly updated collections of poor reputation of IP addresses determined by the proposed security vendor.	
	Solution must support IP reputation intelligence feeds from in-house / third party and custom lists of IP addresses including a global blacklist.	
	Should support URL and DNS threat intelligence feeds to protect against threats.	
	NG-IPS must support atleast pre-built 10K signatures from Day-1 and support creating customized signature.	
	NGFW OEM must have its own threat intelligence analysis center and should use the global footprint of security deployments for more comprehensive network protection.	
	The detection engine should support capability of detecting and preventing a wide variety of threats (e.g., malware, network probes/reconnaissance, VoIP attacks, buffer overflows, P2P attacks, etc.).	
	Should be able to identify attacks based on Geo-location and define policy to block on the basis of Geo-location.	
	The detection engine should support the capability of detecting variants of known threats, as well as new threats.	
	Should block known network and application-layer vulnerability exploits.	

		Should be able to perform Anti-virus scans for HTTP, SMTP, IMAP, POP3, FTP, SMB traffic with configurable AV action such as allow, deny/block, monitor, etc.	
		Vendor should automatically push dynamic block list with latest threat data base on malicious IPs, URLs and Domains to the firewall policy as an additional protection service.	
		The solution must have the capability to create DOS prevention policy to prevent against DOS attacks on per zone / interface basis and ability to create and define DOS policy based on attacks like UDP Flood, ICMP Flood, SYN Flood, port scan, etc.	
		Solution should maintain a database containing a list of known botnet command and control (C&C) addresses which should be updated dynamically. This should not be based on a static database.	
6	Management	Dedicated appliances in failover mode (physical / virtual) to manage the complete functionality of the firewall & analyse firewall logs should be provided.	
		The manager & reporter/analyser will be hosted at DC & DR and will be used to manage all Type-1 & Type-2 firewall(s) and collect logs centrally. Role-based access to manage firewalls individually by Units & to view and analyse logs to be available. The proposed manager / log analyzer must support atleast 20 devices from Day-1.	
		The proposed reporter/analyser should be sufficiently sized (not less than 10TB usable storage) to store both analytic logs (6 months) and archive logs (1 yr).	
		Incase virtual appliance is provided, all associated hardware / software alongwith all necessary licenses should be provided by the supplier. The manager & reporter/analyzer should be separate appliances.	
		In addition, each NGFW appliance should be provided with an inbuilt storage of 400GB so that if external logging solution is not reachable, the device should hold the log till external log solution/link gets restored.	
		The manager, hosted at DC & DR, shall be able to deploy security patches, signatures, definition updates, firmware update / upgrades, etc. centrally to all Type-1 & Type-2 firewall(s), integrated with it.	
		The management platform must be accessible via a web-based interface/ client software.	
		The management platform must provide a highly customizable dashboard.	

		The management platform must be capable of role-based administration, enabling different sets of views and configuration capabilities for different administrators subsequent to their authentication.	
		Should support REST API for monitoring and config programmability	
		The reporter / analyzer must provide multiple report output types or formats, such as PDF and CSV.	
		The management platform (manager, reporter / analyzer) must support multiple mechanisms for issuing alerts (e.g., SNMP, e-mail, SYSLOG).	
		The management platform (reporter / analyzer) must provide robust reporting capabilities, including a selection of pre-defined reports and the ability for complete customization and generation of new reports.	
		The reporter / analyzer must provide risk reports like advanced malware and network attacks.	
		The management platform must include an integration mechanism, preferably in the form of open APIs and/or standard interfaces, to enable events and log data to be shared with external network and security management applications, such as Security Information and Event Managers (SIEMs), and log management tools.	
		Proposed solution must support Best Practice assessment licenses also to ensure BHEL NGFW's are configured with all the best practice Security Profiles and policies. Also must support policy optimization to provide details w.r.t "Unused Rules"; "Shadow policy".	
7	WAN load-balancing	The firewall appliance shall be loaded with WAN load-balancing capability, i.e., it should provide load-balancing among multiple MPLS WAN / Internet links so that when one ISP link goes down, firewall will route the traffic from the next available WAN /ISP gateway configured in the failover-cluster/group, and should also be able to distribute / load-balance WAN traffic among member ISPs / links in the failover-cluster/group.	
		Solution should support policy based and application based routing from day1. There should be option to prioritize and define the routing based on applications , subnets etc.	
		Should provide intelligent application-aware routing across the MPLS / ISP links, and customizable rules to configure network link priorities, like VoIP, cloud-based applications and custom application traffic. Should be able to configure link monitoring like availability, prioritize one ISP over another, etc., for making routing decisions.	

		<p>Should offer detailed reporting of application and WAN Link availability for business analytics , providing the administrator a holistic view of Network Performance:</p> <ul style="list-style-type: none"> <li>- Integrated links for Wan Load Balancing/sharing</li> <li>- Wan Link status Detection</li> <li>- Wan Seamless Failover</li> <li>- Wan link weightage/prioritization</li> </ul>	
		It shall use the available redundant MPLS links /ISP links to deliver better user experience to users.	
		Both the links to be simultaneously used to utilise the full available bandwidth based on the defined policies.	
8	Statutory Requirements	The supplied Next Generation Firewall (NGFW) appliance/OS should be EAL4/NDPP/NDcPP and ICSA certified.	
		Firewall OS CVE (Common Vulnerabilities and Exposures) must be available/disclosed on public web sites	
		Both Type-I & Type-II Firewalls, with all desired features / capabilities / components, should be on-premise solutions. The functionalities mentioned should also be available from Day-1.	
		All sizing parameters for the offered product shall be verifiable and available as publicly accessible document.	
9	Support	Back to back support from OEM shall be arranged for the entire contract period	
		24x7 OEM Support, NBD hardware support, firmware and other updates for the entire contract period.	

<b>Item Name:</b>		<b>Next Generation Firewall (in HA) - Type-II</b>	
<b>Item Code</b>		<b>FW02</b>	
<b>Make &amp; Model</b>			
<b>S.No</b>	<b>Technical Specifications</b>	<b>Minimum Requirements</b>	<b>Vendor Compliance</b>
1	Industry Certifications and Evaluations	OEM should have TAC in India.	
2	Hardware Architecture	The appliance based security platform should be capable of providing firewall, application visibility & control, Malware Protection, IPS functionality & WAN load-balancing capability in a single appliance.	
		Should support atleast 5 virtual systems / domains from day 1. Each virtual domain shall act as an independent firewall with full features.	
		The appliance should support at least - a) 2 * 10G SFP ports. b) 6 * 1G or 10G Cu ports.	
		The appliance hardware should be a multicore CPU architecture with a hardened 64 bit operating system to support higher memory, and to protect & scale against dynamic latest security threats.	
		Firewall should have redundant Powersupply and FANs.	
3	Performance & Scalability	NG Firewall should support at least 2m concurrent sessions / connections.	
		NG Firewall should support at least 50,000 new sessions / connections per second.	
		Threat Protection Throughput (with Firewall, IPS, Application Control, Malware Protection & logging enabled) to be minimum 3 Gbps.	
4	High-Availability Features	Should come in a failover cluster of 2 firewall appliances. Should be capable of HA configuration in Active-Active / Active-Passive / Clustering mode.	
		Firewall should support Stateful Failover of Firewall and VPN Sessions (if any).	
5	NGFWFirewall Features	Firewall should support creating access-rules with IPv4 & IPv6 objects simultaneously.	
		Firewall should support operating in routed & transparent mode.	
		Should support Static, RIP, OSPF, OSPFv3 and BGP routing protocols.	

	Firewall should support manual NAT and Auto-NAT, static nat, dynamic nat, dynamic pat.	
	Firewall should support Nat66 (IPv6-to-IPv6) / NPTv6, Nat 64 (IPv6-to-IPv4) & Nat46 (IPv4-to-IPv6) / Ipv4 over IPv6 functionality from day 1.	
	Firewall should support Multicast protocols like IGMP, PIM, etc.	
	Should support capability to limit bandwidth on basis of applications / groups, Networks / Geo-locations, Ports, etc.	
	Should be capable of dynamically tuning IDS/IPS sensors (e.g., selecting rules, configuring policies, updating policies, etc.) with minimal human intervention.	
	Should be capable of automatically providing the appropriate inspections and protections for traffic sent over non-standard communications ports.	
	Should be able to link Active Directory and/or LDAP usernames to IP addresses related to suspected security events.	
	Should be capable of detecting and blocking IPv6 attacks.	
	The solution must provide IP reputation feed that comprised of several regularly updated collections of poor reputation of IP addresses determined by the proposed security vendor.	
	Solution must support IP reputation intelligence feeds from in-house / third party and custom lists of IP addresses including a global blacklist.	
	Should support URL and DNS threat intelligence feeds to protect against threats.	
	NG-IPS must support atleast pre-built 10K signatures from Day-1 and support creating customized signature.	
	NGFW OEM must have its own threat intelligence analysis center and should use the global footprint of security deployments for more comprehensive network protection.	
	The detection engine should support capability of detecting and preventing a wide variety of threats (e.g., malware, network probes/reconnaissance, VoIP attacks, buffer overflows, P2P attacks, etc.).	
	Should be able to identify attacks based on Geo-location and define policy to block on the basis of Geo-location.	
	The detection engine should support the capability of detecting variants of known threats, as well as new threats.	
	Should block known network and application-layer vulnerability exploits.	

		Should be able to perform Anti-virus scans for HTTP, SMTP, IMAP, POP3, FTP, SMB traffic with configurable AV action such as allow, deny, reset, alert etc.	
		Vendor should automatically push dynamic block list with latest threat intelligence data base on malicious IPs, URLs and Domains to the firewall policy as an additional protection service.	
		The solution must have the capability to create DOS prevention policy to prevent against DOS attacks on per zone / interface basis and ability to create and define DOS policy based on attacks like UDP Flood, ICMP Flood, SYN Flood, port scan, etc.	
		Solution should maintain a database containing a list of known botnet command and control (C&C) addresses which should be updated dynamically. This should not be based on a static database.	
6	Management	Each Type-II NGFW will be centrally managed by and forward the logs to the manager & reporter/analyser, hosted at DC & DR, respectively. Each Type-II NGFW appliance should be provided with an inbuilt storage of 200GB so that if central logging solution is not reachable, the device should hold the log till central log solution/link gets restored.	
		Proposed solution must support Best Practice assessment licenses also to ensure BHEL NGFW's are configured with all the best practice Security Profiles and policies. Also must support policy optimization to provide details w.r.t "Unused Rules"; "Shadow policy".	
7	WAN load-balancing	The firewall appliance shall be loaded with WAN load-balancing capability, i.e., it should provide load-balancing among multiple MPLS WAN / Internet links so that when one ISP link goes down, firewall will route the traffic from the next available WAN /ISP gateway configured in the failover-cluster/group, and should also be able to distribute / load-balance WAN traffic among member ISPs / links in the failover-cluster/group.	
		Solution should support policy based and application based routing from day1. There should be option to prioritize and define the routing based on applications , subnets etc.	
		Should provide intelligent application-aware routing across the MPLS / ISP links, and customizable rules to configure network link priorities, like VoIP, cloud-based applications and custom application traffic. Should be able to configure link monitoring like availability, prioritize one ISP over another, etc., for making routing decisions.	

		<p>Should offer detailed reporting of application and WAN Link availability for business analytics , providing the administrator a holistic view of Network Performance:</p> <ul style="list-style-type: none"> <li>- Integrated links for Wan Load Balancing/sharing</li> <li>- Wan Link status Detection</li> <li>- Wan Seamless Failover</li> <li>- Wan link weightage/prioritization</li> </ul>	
		It shall use the available redundant MPLS links /ISP links to deliver better user experience to users.	
		Both the links to be simultaneously used to utilise the full available bandwidth based on the defined policies.	
8	Statutory Requirements	The supplied Next Generation Firewall (NGFW) appliance/OS should be EAL4/NDPP/NDcPP and ICSA certified.	
		Firewall OS CVE (Common Vulnerabilities and Exposures) must be available/disclosed on public web sites	
		All sizing parameters for the offered product shall be verifiable and available as publicly accessible document.	
9	Support	Back to back support from OEM shall be arranged for the entire contract period	
		24x7 OEM support, NBD support for hardware replacement, firmware and other updates for the entire contract period	

WALL MOUNT RACK (6U, 12U & 15U)															
	Make / Model														
S.No	Technical Specifications	Minimum Requirements	Vendor Compliance												
1	General Requirements	<ul style="list-style-type: none"> <li>Racks should be manufactured out of steel sheet punched, formed, welded and powder coated</li> <li>Rack should have 100% assured compatibility with all equipment's conforming to DIN 41494 (General Industrial Standard for equipment's) or Equivalent EIA /ISO / EN Standard</li> <li>Rack should have 2 No Adjustable, 19" verticals with Punched 9mm Square Hole and Universal 12.7mm-15.875mm-15.875mm alternating hole pattern offering greater mounting flexibility and maximizes usable mounting space</li> <li>The Racks should be 550mm in width and 600 in depth for Network application</li> </ul>													
2	Physical Specifications	<ul style="list-style-type: none"> <li>The Rack should have below dimension;</li> </ul> <table border="1"> <thead> <tr> <th>Height in MM</th> <th>Width in MM</th> <th>Depth in MM</th> </tr> </thead> <tbody> <tr> <td>347(6U)</td> <td>550</td> <td>600</td> </tr> <tr> <td>613(12U)</td> <td>550</td> <td>600</td> </tr> <tr> <td>749(15U)</td> <td>550</td> <td>600</td> </tr> </tbody> </table> <p>Standard for Rack configuration should be welded frame integrated with side panel and vented top cover.</p>	Height in MM	Width in MM	Depth in MM	347(6U)	550	600	613(12U)	550	600	749(15U)	550	600	
Height in MM	Width in MM	Depth in MM													
347(6U)	550	600													
613(12U)	550	600													
749(15U)	550	600													
3	Equipment Access & Installation	<ul style="list-style-type: none"> <li>The front door should open to allow easy access.</li> <li>Rack should have 1 Packet of mounting hardware, Pack of 20.</li> </ul>													
4	Material Requirements	<ul style="list-style-type: none"> <li>All weight bearing components should be made from steel with a thickness not less than 1mm</li> <li>All sheet metal parts should be Pre Treated and powder coated meeting ASTM Standard.</li> </ul>													
5	Grounding Requirements	<ul style="list-style-type: none"> <li>All enclosure components i.e. frame and door should be bonded together and to rack ground point</li> <li>OEM to provide rack ground point, Provision to further ground to Telecom Ground bus bar System</li> <li>Grounding and bonding as per UL Standards</li> <li>Manufacture should provide Horizontal OR vertical Ground bus bar for equipment Grounding as per Customer / Tender Requirement</li> </ul>													
6	Certifications, Environmental and Safety Requirements	<ul style="list-style-type: none"> <li>Racks should be manufactured by ISO9001:2015, ISO14001:2004 &amp; OHSAS18001:2007 Certified company and should have proper EHS Policy.</li> <li>Products must be UL Certified</li> <li>Manufacturer must certify that the products are RoHS Compliance</li> </ul>													

		<ul style="list-style-type: none"> <li>– Manufacturer must certify that the products are Comply DIN41494 and Equivalent EIA/ISO/EN /CEA Standard.</li> <li>– The rack should comply minimum of IP 20 rating for protection against touch, ingress of foreign bodies and ingress of water.</li> <li>– The enclosure should both protect the user from mechanical hazards and generally meet the requirements for a mechanical enclosure (stability, mechanical strength, aperture sizes, etc.) as defined in IEC 60950 Third Edition.</li> </ul>	
7	Ventilation and Thermal Management	<ul style="list-style-type: none"> <li>– The unit should have sufficient ventilation to provide adequate airflow required by the major Network manufacturers.</li> <li>– Provision to Fix Exhaust Fans / Fan Module on the top</li> </ul>	
8	Rack Power Distribution Units & Environmental monitoring	<ul style="list-style-type: none"> <li>– Rack should have 1 no. Power Distribution Units with 6No 5/15A Indian Round Pin with PDU Rating 3.6KVA</li> </ul>	
9	Cable Management	<ul style="list-style-type: none"> <li>– Rack should have 1 no. Horizontal Cable Organizer with plastic loops.</li> <li>– Rack should have provision for cable Entry and Exit from both top and bottom</li> </ul>	
10	Accessories	<p><u>Shelving</u></p> <p>Rack should have 1 no. Cantilever Shelf for mounting NON Rack mountable Equipment's.</p>	
11	Security	<ul style="list-style-type: none"> <li>– Rack should have Front Toughened Glass Door with lock and key</li> </ul>	
12	Delivery & Installation	<ul style="list-style-type: none"> <li>– The unit should be shipped fully assembled as one orderable Unit.</li> <li>– The manufacturer should offer an inside-delivery shipping option which includes reasonable delivery to the inside of the building and removal and disposal of shipping material and packaging.</li> </ul>	
13	Warranty and Support	<ul style="list-style-type: none"> <li>– The Products manufactured should provide warranty for 1 year from date of invoice, the warranty does not cover wrong Usage or miss-handling the products.</li> <li>– Electrical items such as Sockets, switches, fans etc. should have warranty for 1 year from date of installation.</li> <li>– For malfunction of any units/item in the rack, the support should be provided within the next business day.</li> <li>– Warranty claim will be attended with in 2 or 3 working days.</li> </ul>	

24U closed Network Rack			
	Make / Model		
S.No	Technical Specifications	Minimum Requirements	Vendor Compliance
1	General Requirements	<ul style="list-style-type: none"> <li>– Rack should have 100% assured compatibility with all equipment's conforming to DIN 41494 (General Industrial Standard for equipment's) or Equivalent EIA /ISO / EN Standard</li> <li>– The Racks should be 1169MM in height with 800mm width &amp; 800mm depth for Network application</li> </ul>	
2	Physical Specifications	<ul style="list-style-type: none"> <li>– The Rack unit supported by casters should support a static load of at least 350Kgs and by plinth/Levelers should support a static load of at least 750Kgs.</li> <li>– The Rack should have Front Flat Perforated Door and Dual Perforated Door at Rear</li> <li>– The Rack should have 2 no's of removable side panels with slam latch for fast access to cabling and equipment.</li> </ul>	
3	Equipment Access & Installation	<ul style="list-style-type: none"> <li>– The Rack should have 24U usable Space</li> <li>– The Rack should have 4 no's adjustable, 19" verticals with punched 9mm square hole and Universal 12.7mm-15.875mm-15.875mm alternating hole pattern offers greater mounting flexibility, with Numbered U positions,</li> <li>– The manufacturer should include mounting hardware for equipment fixing.</li> <li>– The front and rear doors should be easily detachable. And Easily Openable</li> <li>– OEM should include ganging kits for coupling racks</li> </ul>	
4	Material Requirements	<ul style="list-style-type: none"> <li>– All weight bearing components should be made from steel with a thickness not less than 1.6mm and other parts not less than 1mm</li> <li>– All sheet metal parts should be Pre Treated and powder coated meeting ASTM Standard.</li> </ul>	
5	Grounding Requirements	<ul style="list-style-type: none"> <li>– All enclosure components i.e. frame and door should be bonded together and to rack ground point</li> <li>– OEM to provide rack ground point, Provision to further ground to Telecom Ground bus bar System</li> <li>– Grounding and bonding as per UL Standards</li> <li>– Manufacture should provide Horizontal OR vertical Ground bus bar for equipment Grounding as per Customer / Tender Requirement</li> </ul>	
6	Certifications, Environmental and Safety Requirements	<ul style="list-style-type: none"> <li>– Racks should be manufactured by ISO9001:2008, ISO14001:2004 &amp; OHSAS18001:2007 Certified company and should have proper EHS Policy.</li> <li>– Products must be UL Certified</li> <li>– Manufacturer must certify that the products are RoHS Compliance</li> <li>– Manufacturer must certify that the products are Comply DIN41494 and Equivalent EIA/ISO/EN /CEA Standard.</li> </ul>	

		<ul style="list-style-type: none"> <li>– The rack should comply minimum of IP 20 rating for protection against touch, ingress of foreign bodies and ingress of water</li> <li>– The enclosure should both protect the user from mechanical hazards and generally meet the requirements for a mechanical enclosure (stability, mechanical strength, aperture sizes, etc.) as defined in IEC 60950 Third Edition.</li> </ul>																					
7	Ventilation and Thermal Management	<ul style="list-style-type: none"> <li>– The unit should have ventilated front and rear doors to provide adequate airflow required by the major server and Network manufacturers.</li> <li>– Provision to Fix Exhaust Fans / Fan Module on the top and doors</li> </ul>																					
8	Rack Power Distribution Units & Environmental monitoring	<table border="1"> <tr> <td>Type Of PDU</td> <td>Normal</td> </tr> <tr> <td>Phase</td> <td>1Phase</td> </tr> <tr> <td>Rating</td> <td>3.6</td> </tr> <tr> <td>Current</td> <td>16</td> </tr> <tr> <td>Type Of Out Let</td> <td>5/15A</td> </tr> <tr> <td>No Of Out let</td> <td>6</td> </tr> <tr> <td>PDU Mounting</td> <td>Horizontal</td> </tr> <tr> <td>Space Requirement</td> <td>2</td> </tr> <tr> <td>Out let level Switching</td> <td>Not Required</td> </tr> <tr> <td>Measurement</td> <td>Not Required</td> </tr> </table>	Type Of PDU	Normal	Phase	1Phase	Rating	3.6	Current	16	Type Of Out Let	5/15A	No Of Out let	6	PDU Mounting	Horizontal	Space Requirement	2	Out let level Switching	Not Required	Measurement	Not Required	
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Space Requirement	2																						
Out let level Switching	Not Required																						
Measurement	Not Required																						
9	Cable Management	<ul style="list-style-type: none"> <li>– Rack should have sufficient cable Management.</li> </ul>																					
10	Accessories	<p><u>Shelving</u></p> <p>The manufacturer should offer various fixed shelves with the ability to support up to 100 kg of non-rack mount equipment.</p>																					
11	Security	<ul style="list-style-type: none"> <li>– Rack should have single point/Three Point locking mechanism with Common/Unique Key</li> </ul>																					
12	Delivery & Installation	<ul style="list-style-type: none"> <li>– The unit should be shipped in CKD condition.</li> <li>– The manufacturer should offer an inside-delivery shipping option which includes reasonable delivery to the inside of the building and removal and disposal of shipping material and packaging.</li> </ul>																					
13	Warranty and Support	<ul style="list-style-type: none"> <li>– The Products manufactured should provide warranty for 1 year from date of invoice the warranty does not cover wrong Usage or miss-handling the products.</li> <li>– Electrical items such as Sockets, switches, fans etc. should have warranty for 1 year from date of installation.</li> <li>– For malfunction of any units/item in the rack, the support should be provided within the next business day.</li> <li>– Warranty claim will be attended with in 2 or 3 working days.</li> </ul>																					

42U Network Rack			
	Make / Model		
S.No	Technical Specifications	Minimum Requirements	Vendor Compliance
1	General Requirements	<ul style="list-style-type: none"> <li>– Rack should have 100% assured compatibility with all equipment's conforming to DIN 41494 (General Industrial Standard for equipment's) or Equivalent EIA /ISO / EN Standard</li> <li>– The Rack should be 2115mm in height, 800mm in width and 800mm in depth</li> </ul>	
2	Physical Specifications	<ul style="list-style-type: none"> <li>– Rack should support static load of 750 kgs on Casters and 1250kgs on levellers/plinth.</li> <li>– The Vendor should have a glass / perforated CONVEX front door / split rear Door</li> <li>– Rack should have 2 side panels and grounding and bonding accessories pre-installed by the manufacturer.</li> </ul>	
3	Equipment Access & Installation	<ul style="list-style-type: none"> <li>– The Rack should have 42U usable Space</li> <li>– The Rack should have 4No's adjustable, 19" verticals with punched 10mm square hole and Universal 12.7mm-15.875mm-15.875mm alternating hole pattern offers greater mounting flexibility, with numbered U positions</li> <li>– The OEM should include 20 No of Mounting hardware for equipment fixing.</li> <li>– The front and rear doors should be easily detachable. And easily Openable</li> <li>– The doors of the rack should be reversible such that it can be mounted on either side.</li> <li>– The rack should have side panels which can be removed without using tools, using easy finger latches for fast access to cabling and equipment.</li> <li>– Side panels should flush with the frame, so the overall width of the unit does not change with the side panels installed.</li> <li>– OEM should include ganging kits for coupling rack</li> </ul>	
4	Material Requirements	<ul style="list-style-type: none"> <li>– All weight bearing components should be made from steel with a thickness not less than 1.6 mm, 19" equipment mounting angle should be 2.0MM and other parts not less than 1mm</li> <li>– All sheet metal parts should be Pre Treated and powder coated meeting ASTM Standard.</li> </ul>	
5	Grounding Requirements	<ul style="list-style-type: none"> <li>– All enclosure components i.e. frame and door should be bonded together and to rack ground point</li> <li>– OEM to provide rack ground point, Provision to further ground to Telecom Ground bus bar System</li> <li>– Grounding and bonding as per UL Standards</li> <li>– Manufacture should provide Horizontal OR vertical Ground bus bar for equipment Grounding as per Customer / Tender Requirement</li> </ul>	

6	Certifications, Environmental and Safety Requirements	<ul style="list-style-type: none"> <li>- Racks should be manufactured by ISO9001:2008, ISO14001:2004 &amp; OHSAS18001:2007 Certified company and should have proper EHS Policy.</li> <li>- Products must be UL Certified</li> <li>- Manufacturer must certify that the products are RoHS Compliance</li> <li>- Manufacturer must certify that the products are Comply DIN41494 and Equivalent EIA/ISO/EN /CEA Standard</li> <li>- The rack should comply minimum of IP 20 rating for protection against touch, ingress of foreign bodies and ingress of water.</li> <li>- The enclosure should both protect the user from mechanical hazards and generally meet the requirements for a mechanical enclosure (stability, mechanical strength, aperture sizes, etc.) as defined in IEC 60950 Third Edition.</li> </ul>																					
7	Ventilation and Thermal Management	<ul style="list-style-type: none"> <li>- The unit should have ventilated front and rear doors to provide adequate airflow required by the major server and Network manufacturers.</li> <li>- Provision to Fix Exhaust Fans / Fan Module on the top and doors</li> </ul>																					
8	Rack Power Distribution Units & Environmental monitoring	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 60%;">Type Of PDU</td> <td>Normal</td> </tr> <tr> <td>Phase</td> <td>1Phase</td> </tr> <tr> <td>Rating</td> <td>7.3</td> </tr> <tr> <td>Current</td> <td>32</td> </tr> <tr> <td>Type Of Out Let</td> <td>5/15A</td> </tr> <tr> <td>No Of Out let</td> <td>12</td> </tr> <tr> <td>PDU Mounting</td> <td>Vertical</td> </tr> <tr> <td>Space Requirement</td> <td>0</td> </tr> <tr> <td>Out let level Switching</td> <td>Not Required</td> </tr> <tr> <td>Measurement</td> <td>Not Required</td> </tr> </table>	Type Of PDU	Normal	Phase	1Phase	Rating	7.3	Current	32	Type Of Out Let	5/15A	No Of Out let	12	PDU Mounting	Vertical	Space Requirement	0	Out let level Switching	Not Required	Measurement	Not Required	
Type Of PDU	Normal																						
Phase	1Phase																						
Rating	7.3																						
Current	32																						
Type Of Out Let	5/15A																						
No Of Out let	12																						
PDU Mounting	Vertical																						
Space Requirement	0																						
Out let level Switching	Not Required																						
Measurement	Not Required																						
9	Cable Management	<p><u>42U 800 width Racks</u></p> <ul style="list-style-type: none"> <li>- The manufacturer should supply 2 No finger type cable management with detachable door for management of Horizontal Cables</li> <li>- 2 No Loop type / Closed Type Cable Organizer for management of Horizontal and power cables</li> <li>- 2 No 300mm Cable basket for management of Vertical Cables</li> </ul>																					
10	Accessories	<ul style="list-style-type: none"> <li>- The manufacturer should offer shelves with the ability to support up to 100 kg of non-rack mount equipment.</li> </ul>																					
11	Security	<ul style="list-style-type: none"> <li>- Rack should be with swing handle locking with Unique / Common Key</li> <li>- Provision for Intelligent Locking / Digital locking / number locking feature which has provision to support IP based for future integration.</li> <li>- OEM should Ensure this without any modification on the Door</li> </ul>																					
12	Stabilization	<ul style="list-style-type: none"> <li>- The manufacturer should have optional stabilizer plate kit, consisting of a plate, and mounting hardware that can be attached to the enclosure frame, and that can be bolted to the floor.</li> </ul>																					

		<ul style="list-style-type: none"> <li>- The unit should have four adjustable leveling feet to help provide a stable base in the event of an uneven floor surface and to prevent rolling.</li> </ul>	
13	Delivery & Installation	<ul style="list-style-type: none"> <li>- The unit should be shipped fully assembled as one orderable Unit.</li> <li>- The manufacturer should offer an inside-delivery shipping option which includes reasonable delivery to the inside of the building and removal and disposal of shipping material and packaging.</li> </ul>	
14	Warranty and Support	<ul style="list-style-type: none"> <li>- The Products manufactured should provide warranty for 1 year from date of invoice the warranty does not cover wrong Usage or miss-handling the products.</li> <li>- Electrical items such as Sockets, switches, fans etc. should have warranty for 1 year from date of installation.</li> <li>- For malfunction of any units/item in the rack, the support should be provided within the next business day.</li> <li>- Warranty claim will be attended with in 2 or 3 working days.</li> </ul>	
15	Optional Accessories	<ul style="list-style-type: none"> <li>- LCD Console: The manufacturer should offer a 1U high, rack-mounted LCD monitor/keyboard drawer to maximize space in a data center environment.</li> <li>- Cooling: The manufacturer should offer roof-mounted fan trays, door mounted fan trays, monitoring devices, and standalone cooling units for maintaining a cool environment.</li> </ul>	

<b>Item Name:</b>		<b>6 KVA UPS</b>	
<b>Item Code</b>		UPS02	
<b>Make &amp; Model</b>			
<b>S.No</b>	<b>Specification</b>		<b>Compliance</b>
1.	Technology	True online double conversion technology UPS system with IGBT based rectifier / inverter	
2.	Capacity	6 KVA / 4.8 KW	
<b>3.</b>	<b>Input Parameters:</b>		
a.	Voltage	230 VAC, 1 Phase 3 Wire	
b.	Voltage Range	175 V to 300 VAC at full load, 120 to 300 VAC at 0 to 50 % load	
c.	Frequency	50 Hz ( 46 to 54 Hz )	
d.	Power Factor at rated load	0.99 at full load	
e.	Current Harmonic Distortion	Less than 10% at full load and nominal input voltage	
f.	OVCD	Required (builtin)	
g.	Isolation Transformer	Required (builtin) at input side	
<b>4.</b>	<b>Output Parameters:</b>		
a.	Voltage	220/230/240 VAC +/- 1%, 1 Phase	
b.	Frequency	50 Hz +/- 0.25 Hz (in Battery Mode) +/- 5% (in Sync)	
c.	THD v	< 3 % for Linear Load ; < 5 % for Non Linear Load	
d.	Overload rating	105 to 110 % for 3 min ; 111 to 130 % for 30 sec	
e.	Output waveform	Pure sinewave	
f.	Crest Factor	3 : 1	
g.	Power Factor	0.8 PF	
h.	Over all Efficiency	>= 90 %	
i.	Frequency Slew Rate	1 Hz / Sec	
<b>5.</b>	<b>Battery Parameters:</b>		
a.	Type of Battery Chemistry	SMF VRLA( Sealed Maintenance Free-Valve Regulated Lead Acid Battery)	
b.	Battery Container/Cover Material	Poly propylene container	
c.	Make	Exide / Amara Raja	
d.	End cell voltage	10.5 V per Battery	
e.	DC Voltage	240 VDC	
f.	Backup Time	240 minutes	
g.	VAH	min 24000 VAH	
h.	Battery Rack & Connectors	Powder coated battery rack / stand to be provided	
i.	Charger	Constant Current / Float Charging with Temperature Compensated	
j.	Charging Capacity	10 % of the Battery AH Capacity Mandatory	
h.	Transfer time	0 ms	
<b>6</b>	<b>Cables</b>		
a.	Input, Output Cable	3 Meters UPS cable from Power Point to UPS Shall Be provided as per OEM Recommended standard	
<b>7.</b>	<b>Other Features:</b>		

a.	Static Bypass	Inbuilt	
b.	Transfer time	< 4 ms in Sync Mode	
c.	Bypass parameter configurable via front panel	Required	
<b>8.</b>	<b>Other Features:</b>		
a.	LCD Display	Input Voltage, Frequency	
		Output Voltage, Frequency, Load level	
		Battery Voltage, Level in %	
		Fault Information	
		MIMIC Information	
b.	LED Indication	Bypass, Line, Battery and Fault	
c.	Protection	Input High / Low, Over Load, Short Circuit, Over Temperature, Battery Over Charge, Surge Protection, UPS Input MCB	
d.	Audible Alarm	Battery Mode, Low Battery, Fault, Over Load, Bypass Mode	
e.	Cold Start	Required	
f.	Auto Restart	Required	
g.	Intelligent Fan Operation	Required	
h.	Generator Compatibility	Required	
i.	Features should be available	CVCF, 200 / 208 VAC Output	
j.	Connections	Input & Output : Terminal	
k.	EPO	Required	
l.	Communication Port	RS 232, USB	
m.	SNMP	Provision should be available	
n.	Noise Level	< 58 dB at 1 meter distance	
o.	Operating Temperature	0 to 45 Deg C	
p.	Humidity	upto 95 %	
q.	Altitude	< 1000 meters	
r.	Test Report / Certificate	CE ( Safety : IEC / EN 62040-1 & EMI / EMC : IEC / EN 62040-2 )	
		The product quoted by the bidder should be BIS Certified for safety for proposed model with Inbuilt Isolation Transformer. BIS : IS 16242 Part 1 : 2014 (Manufacturing address of offered model should be in India - Refer Make in India policy )	
		PeP Certification For Proposed Model to be provided Mandatory	
		Performance test report from any Central Gov Lab / NABL Approved Lab	
		Manufacturer -> ISO 9001, ISO 14001, OEM Plant should have water & air pollution control clearance certificate from respective govt. agency. UPS OEM should have registered office in India from last 10 years (certificate of incorporation and Pollution Control clearance Certificate to be provided)	
<b>9</b>	<b>Warranty :</b>		

a.		5 years for Both UPS and Batteries should include repair or replacement	
b.		Batteries need to be replaced during 30th Month and 60th Month Mandatory	

<b>Item Name:</b>		<b>2 KVA UPS</b>	
<b>Item Code</b>		UPS01	
<b>Make &amp; Model</b>			
<b>S.No</b>	<b>Specification</b>		<b>Compliance</b>
1.	Technology	True online double conversion technology UPS system with IGBT based rectifier / inverter	
2.	Capacity	2 KVA / 1600 Watts	
<b>3.</b>	<b>Input Parameters:</b>		
a.	Voltage	230 VAC, 1 Phase 3 Wire	
b.	Voltage Range	175 V to 300 VAC at full load, 120 V to 300 VAC at 0 to 60 % load	
c.	Frequency	50 / 60 Hz ( 40 to 70 Hz )	
d.	Power Factor at rated load	>=0.99 at full load	
e.	Current Harmonic Distortion	Less than 10% at full load and nominal input voltage	
f.	OVCD	Required (builtin)	
g.	Isolation Transformer	Required (builtin) at input side	
<b>4.</b>	<b>Output Parameters:</b>		
a.	Voltage	220/230/240 VAC +/- 1%, 1 Phase	
b.	Frequency	50 Hz +/- 0.25 Hz (in Battery Mode) +/- 5% (in Sync)	
c.	THD v	< 3 % for Linear Load ; < 5 % for Non Linear Load	
d.	Overload rating	105 - 110% : 10 min 111 - 130% : 1min 131 - 150% : 3s	
e.	Output waveform	Pure sinewave	
f.	Crest Factor	3 : 1	
g.	Power Factor	0.8 PF	
h.	Over all Efficiency	> 85 %	
<b>5.</b>	<b>Battery Parameters:</b>		
a.	Type of Battery Chemistry	SMF VRLA( Sealed Maintenance Free-Valve Regulated Lead Acid Battery)	
b.	Battery Container/Cover Material	Poly propylene container	
c.	Make	Branded Reputed Made in India                      Manufactured Confirming to	
	End cell voltage	10.5 V per Battery	
d.			
e.	DC Voltage	72 or 96 VDC	
f.	Backup time	120 mins	
g.	VAH	min 5400 VAH	
h.	Battery Rack & Connectors	Powder coated battery rack / stand to be provided	
i.	Charger	Constant Current / Float Charging with Temperature Compensated	
j.	Charging Capacity	10 % of the Battery AH Capacity Mandatory	
h.	Transfer time	0 ms	
<b>6</b>	<b>Cables</b>		
a.	Input, Output Cable	3 Meters UPS cable from Power Point to UPS Shall Be provided as per OEM Recommended standard	
<b>6.</b>	<b>Other Features:</b>		
a.	Static Bypass	Inbuilt	
b.	Transfer time	< 4 ms in Sync Mode	
c.	Bypass parameter configurable via	Required	
7.	<b>Other Features:</b>		

a.	LCD Display	Input Voltage, Frequency	
		Output Voltage, Frequency, Load level	
		Battery Voltage, Level in %	
		Fault Information	
		MIMIC Information	
b.	Protection	Input High / Low, Over Load, Short Circuit, Over Temperature, Battery Over Charge, Surge Protection	
c.	Audible Alarm	Battery Mode, Low Battery, Fault, Over Load, Bypass Mode	
d.	Cold Start	Required	
e.	Auto Restart	Required	
f.	Intelligent Fan Operation	Required	
g.	Generator Compatibility	Required	
h.	Features should be available	ECO Mode, CVCF, 200 / 208 VAC Output	
i.	Connections	Input : Terminal ; Output : 6 Nos 6 A Indian Socket ; Battery : ANEN 2 Poles connector	
j.	Communication Port	RS 232 & USB	
k.	SNMP	Provision should be available	
l.	Noise Level	< 50 dB at 1 meter distance	
m.	Operating Temperature	0 to 40 Deg C	
n.	Humidity	upto 95 % RH Non Condensing	
o.	Altitude	< 1000 meters	
8	Test Report / Certificate	CE ( Safety : IEC / EN 62040-1 & EMI / EMC : IEC / EN 62040- 2 )	
		The product quoted by the bidder should be BIS Certified for safety for proposed model with Inbuilt Isolation Transformer. BIS : IS 16242 Part 1 : 2014 ( Manufacturing address of offered model should be in India - Refer Make in India policy )	
		PeP Certification For Proposed Model to be provided Mandatory	
		Performance test report from any Central Gov Lab / NABL Approved Lab	
		Manufacturer -> ISO 9001, ISO 14001, OEM Plant should have water & air pollution control clearance certificate from respective govt. agency. UPS OEM should have registered office in India from last 10 years (certificate of incorporation and Pollution Control clearance Certificate to be provided)	
9	Warranty :		
a.		5 years for Both UPS and Batteries should include repair or replacement	
b.		UPS batteries need to be replaced during 30th Month and 60th Month Mandatory	

**TECHNICAL SPECIFICATIONS OF PASSIVE COMPONENTS**

<b>INTRODUCTION:</b>	<b>Compliance</b>
In order to integrate the various departments and upcoming new workshops in BHEL, a plant wide data network (PWN) along with a State-of-the-Art Network Control Centre is envisaged.	
The proposed network shall be Convergence Ready Enterprise LAN based on open standards, Agile, Secure, scalable based on IPv4/ IPv6 dual-stack compliant TCP/IP Ethernet network on fiber optics backbone. For this, a TCP/IP based 1 Gigabit Ethernet LAN is proposed for plant wide networking. The architecture of plant wide networking shall be a machine and OS independent open system. The system architecture shall provide functionalities for seamless, real-time integration of automation and information systems, with production process, secured remote and web based information access. The network will be fully capable of supporting Mobility, virtualization, high-definition video, rich-media collaboration tools and cloud computing.	
<b>Scope of work</b>	
The broad scope of work of the successful bidder shall include, but not limited to the following:	
Design, manufacture, configure, testing at works, packaging, transportation, supply, storage, handling at site, installation, laying, erection, testing, integration, training, acceptance, commissioning of Ethernet networks and Network Control Centre, as applicable along with associated equipment's, hardware, software on a turnkey basis. Bidder shall provide all the latest hardware including networking equipment and software at the time of detailed engineering stage, which is proven. All related hardware/software shall be IPv4/IPv6 dual architecture.	
<b>Plant Wide Network (PWN):</b>	
2.1.1 Structured communication network comprising of Fiber Optics (FO) Cable, UTP for CAT6 & U/FTP for CAT6A or equivalent, switches, router, modem, light interface unit, patch panels, connectors, information outlets, intermediate junction boxes, racks, etc. for communication with servers/ PCs/ computers/ network printers and any other equipment as required.	
2.1.2 Two nos. of core switches shall be installed at two different locations. Both core switches shall be connected with each other using 6/12/24 core OFC cable (Anti Rodent Fiber cable) through GI/HDPE pipes via redundant path.	
2.1.3 Both core switches shall work in active-active mode connected over Optical Fiber link to form a virtual chassis.	
2.1.4 There shall be Distribution/Area switches at different locations. Each distribution switch shall be connected to both the core switches with 10Gbps single mode fiber via different route. Redundancy of network up to distribution switch level shall be taken care.	
2.1.5 Layer-2 managed switches shall be supplied at all edge switches level. All distribution and core switches shall be managed Layer-3 switch. All layer-2 edge switches shall have 10g uplink port. However, based on the requirement, 1G Lx / 10G LR modules shall be populated.	
2.1.6 All switches (irrespective of core, distribution and edge switches) shall support IEEE 802.3ad Link Aggregation Protocol. All necessary licenses required to enable the features/ functionality are required to be supplied along with networking/Security equipment.	
2.1.7 The star backbone between core & distribution switches shall be based on 10 Gbps Single Mode Fiber Optics cable. There shall be no cascading in the edge network.	
2.1.8 There shall be no duplication of network resources and for security requirement multiple VLANs can be created to separate different type of traffic. Exact VLAN details shall be worked out during engineering	

2.1.9 Necessary cables including power cable and accessories including earthing as may be required for smooth and reliable operation of networking equipment, servers and client PCs.	
<b>Scope of Work of Passive Components</b>	
3.0 Racks for mounting of network equipment and servers including dressing of cables with proper marking	
3.1. All Passive components including information outlet, patch panels, splicing enclosures, patch cords, connectors etc. required for completion of structured cabling. All the passive components namely cable, connectors, patch cord (UTP & Fiber), LIU, I/O, Faceplate etc shall be supplied of same make.	
3.2 All pipes & cable laying including termination, accessories including HDPE pipes, GI pipes, PVC conduits/channels, DP boxes, cable trays, supporting structures, clamps, route markers, identification tags, ferules etc. required for laying of cables.	
3.3 All cable laying inside and outside the buildings including any excavation work Storage of equipment in proper environment condition in identified space by BHEL Security of the material will be in scope of BHEL.	
3.4 Supply of all spares required during erection, testing, commissioning and warranty maintenance.	
3.5 Supply of all consumables required during erection, testing and successful commissioning of the project is in bidders scope	
3.6 Bidder shall supply all special tools, tackles, etc. required for erection, testing, commissioning and warranty maintenance of the system.	
3.7 Preparing/ making test plan & procedures and getting approval from purchaser/consultant	
3.8 Carrying out supplier's benchmark test, if any certification for passive networking components and guarantee for minimum five years from OEM. Minor civil works such as chipping/ cutting of floors for making grooves, making holes/ opening through walls, ceiling or floors, drilling of holes through steel structures and frames, grouting of frames, hooks on walls/ceiling etc. required for execution of work. After erection, surface shall be made good by plastering/painting to their original shape and finish. Bidder shall coordinate with the contractors of ED works building where main data center is envisaged and other area shop offices where second core switch and remaining area switches are planned to be installed, for PVC conduit laying and installation of other network equipment so that that civil work as mentioned above can be minimized. Bidder has to align the civil work along with construction of such buildings as per approved drawings. The best practices on Initial Cable Fill Ratio of 25% and Final Cable Fill Ratio of 50% must be followed by the installer. This is as recommended by ANSI/TIA-569-C Telecommunications Pathways and Spaces Standards 2012.	
<b>Recommended cabling practices For Copper</b>	
Avoid placing multiple cable bundles over each other, or over bundling the cables, as it leads to performance degradation of the cables below.	
Ensure that the copper cables are twisted together for canceling out Electromagnetic Interference (EMI) from the external sources that are not exposed even partially, as it results in EMI issues	
Preserve the same density of twists in the cable pairs till its termination for horizontal and backbone twistedpair cabling as applicable.	
Avoid using patch cables, which are used to connect data networking equipment to patch panels that are constructed using a solid core STP cable with stranded core RJ-45 connectors because this can cause failure of the individual cables over a period of time due to connector differences and core size (with no metal to metal connection between the blades of the connector and the core of the cable). Even though connectivity is initially established, the risk of failure increases due to the movement or flexing of cables and/or stress between the cable and connectors.	

<b>Recommended cabling practices For Fiber Cables</b>	
The following guidelines are recommended during the installation of fiber cables	
Avoid the following actions that can stress the cable:	
Pulling or stretching beyond the specified pulling load rate.	
Bending it beyond the specified bend radius.	
Creating tension in the suspension runs	
<b>A. PASSIVE COMPONENTS :</b>	
<b>1. CAT6 Components</b>	
a. CAT6 UTP Cable	
b. CAT6A F/UTP Cable or higher with cross seperator	
c. CAT6 Information Outlet	
d. CAT6A Information Outlet-Shielded	
e. Dual Face plate	
f. Quad Face plate	
g.24- Port Unloaded Patch panel	
h.48- Port Unloaded Patch panel	
i. CAT6 Patch chord 3Ft,7Ft.	
j. CAT6A Patch chord 3Ft,7Ft.	
<b>2. Fiber Components</b>	
2a. Single Mode OS2 Fiber 9/125 Outdoor Cable-6 Core,12 Core , 24 core Multitube	
2b. Multimode OM4 Fiber 50/125 Outdoor Cable-6 Core,12 Core, 24 core Multitube	
2c. 24 Port,48 Port Loaded Fiber LIU (Fully loaded Panels)	
2d. Fiber Patch chord LC-LC ,3Ft , 7Ft., 10 Ft (LSZH)	
<b>Structured Cabling for DATA System</b>	
<b>1.1 Scope</b>	
This document defines the cabling system and subsystem components to include cable, termination	
supporting hardware, and miscellany required to supply, and to install a complete cabling infrastructure supporting voice and video. The intent of this section is to provide pertinent information to allow the vendor to bid the labor, supervision, tooling, materials, and miscellaneous installation hardware and consumables to install a complete system. However, it is the responsibility of the vendor to propose any, and, all items required for a complete system whether or not it is identified in the specification, drawings and bill of material.	
<b>1.2 Applicable Documents:</b>	
<b>REFERENCE STANDARDS</b>	
Design, manufacture, test, and install data distribution systems per manufacturer’s requirements and in accordance with NFPA 70 (National Electric Code), state codes, local codes, requirements of authorities having jurisdiction, and particularly the following ANSI/TIA/EIA Standards.	
1) This Technical Specification and Associated Drawings	
ANSI/TIA/EIA/568.1-D, Addendum 1, Commercial Building Telecommunications Cabling Standard – 2018.	
ANSI/TIA/EIA 568.2-D, Copper Cabling Components Standard - 2018	
ANSI/TIA/EIA 568.3-D, Optical Fiber Cabling Components Standard - 2016	
ANSI/TIA/EIA-569-E, Commercial Building Standard for Telecommunications Pathways and Spaces	
ANSI/TIA/EIA-606-C, Administration Standard for the Telecommunications Infrastructure of Commercial Buildings	
ANSI/J-STD-607-D, Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications	

<b><i>The Contractor is responsible to determine and adhere to the most recent edition of these standards when developing their responses</i></b>	
<b>1.3 General</b>	
The function of the backbone wiring shall be to provide interconnections between telecommunications	
The backbone wiring shall consist of the transmission media, intermediate and main cross connects, and mechanical terminations for interconnection of telecommunications closets, equipment rooms and entrance facilities. The backbone wiring shall include transmission media in the building.	
The backbone wiring shall use the star topology wherein each telecommunications closet shall be wired to a main patch panel .	
One of the following types of cables shall be used for backbone wiring as defined in schedule of quantities.	
1. 100-ohm ( Impedence) Unshielded/Shielded four pair horizontal cable.	
2. 50/125um for OM4 optical fiber cable.	
3. 9/125 um optical fiber cables	
The contractor has to assure that cross talk coupling between individual, unshielded and shielded twisted-pairs shall not affect the transmission performance of multi-pair cables.	
<b><u>Bonding and Grounding Considerations</u></b>	
Bonding and Grounding system shall be an integral part of the telecommunications wiring system. In addition to helping protect personnel and equipment from hazardous voltages, the Bonding and grounding system shall reduce the effect of electromagnetic interference ((EMI) to and from the telecommunications	
<b><u>Special Points for Passive Components</u></b>	
<input type="checkbox"/> All Copper & fiber components should be from the same OEM.	
<input type="checkbox"/> All Passive Components should be RoHS (Restriction of Certain Hazardous Substances) complied. RoHS	
Compliant should clearly be mentioned on datasheets of each Passive Components (Copper).	
25 Year System Performance and Application Assurance Warranty on the tested Permanent Link plus the patch cords. Installers must comply with the tester settings and other requirements of the OEM by using a valid calibrated tester. Out of calibration testers must not be used.	
Cat 6A performance must be compliant to the ANSI/TIA Standards on the minimum length of Cat6A Permanent Links.	
<input type="checkbox"/> All Single Mode Patch cords and Pigtails should be made up of Bend Insensitive Fibers.	
<input type="checkbox"/> Copper & fiber components should be Make in India	
<input type="checkbox"/> All quoted Copper & fiber components part numbers should be available on OEM official web site	
<input type="checkbox"/> OEM should have a manufacturing presence with 30 Years in India. Proof of Incorporation should be provided	
<input type="checkbox"/> Only Premium Brand and No Class B Products should be quoted ( w.r.t. OEM having two product lines /brand under one company )	
<input type="checkbox"/> OEM should have manufacturing plant in India	

<b>Cat6 Copper Cabling system- Technical Specifications</b>	
<b>Standard Compliance</b>	<b>Compliance (Yes/No)</b>
The Category 6/Class UTP system shall comply with the following standards :ISO/IEC 11801-1:2017 EN 50173-1:2018 ANSI/TIA-568.2-D IEC 60603-7-4	
<b>The Category 6/ Class UTP system should support the following IEEE Ethernet applications</b>	
802.3e - 1BASE5	
802.3i - 10BASE-T	
802.3u - 100BASE-TX, 100BASE-T4	
802.3y - 100BASE-T2	
802.3z - 1000BASE-X	
802.3ab - 1000BASE-T	
802.3at - Power Over Ethernet Enhancement's (30 W)	
<b>Channel Performance</b>	
It is critical that guaranteed worst-case values are provided to ensure the SCS can support 1G transmission without risk. "Average value" or "Typical Value" is not acceptable as they do not account for lower performance channels. The proposed Category 6 UTP SCS, when configured as a worst-case 100 metre channel shall provide performance headroom over limits specified by Cat6	
The SCS must consist of individual components provided by the same manufacturer. "Mix and Match" products are not allowed as there is no guarantee that the overall channel will meet Category 6 Channel requirements if constructed with components from different vendors.	
The Category 6 cable and Category 6 channel components shall be manufactured by a single manufacturer. The manufacturer shall warrant the Category 6 channel cable, components, and applications for a period of 25 Years.	
The 25 Year System Performance and Application Assurance Warranty on the tested Permanent Link plus the patch cords provided by the same OEM. Installers must comply with the tester settings and other requirements of the OEM by using a valid calibrated tester. Out of calibration testers must not be used.	
Should support a minimum of 4 connector Channel with NEXT value as per the standard of ANSI/TIA-568.2-D	
Should support 2 / 4 connector Channel	
The Delay Skew on the 100 meter channel shall not exceed 45ns	
SCS must support patch cord lengths of 1 meter minimum and equipment cords of 1 mtr / 2meter minimum	
<b>Horizontal Cable, Cat6 UTP Cable</b>	
The Cable should meet ANSI/TIA-568.2-D Category 6 Specifications	
4-pair, Cat 6 U/UTP Cable, Channel performance up to 250 MHz or more, Category-6 U/UTP with ETL 4 connector channel test report as per ISO/IEC 11801, 23 AWG bare solid copper.	
Copper Clad Aluminum or any other combinations are not allowed.	
The weight of the cable box of 1000 Feet should not be less than 13.6kgs	
The nominal Jacket thickness should be 0.55mm	
The nominal Outside diameter should be 6.1mm	
The cable should support the installation temperature: 0 to 60° C	
It should support Operating temperature of -10 to 60 0 C	
Should be ETL verified to 2nd Edition EIA/TIA 568.2-D	
The LSZH Cable should support the following standard to qualify	
IEC 60332-3-22	
ISO/IEC 60754-2 Acidity	
ISO/IEC 61034-2 Smoke Density	

The cable and cordage shall be CAT6 LSZH UTP Cable & components that do not include internal or external shields, screened components or drain wires.	
Worst Case Cable Skew: <45nsec/100m at 250MHz, Characteristic Impedence: 100±15W @1-250MHz or as per ANSI/TIA-568.2-D, DC Resistance Max: 7.61 to 9.38 Ohms/100m, LSZH	
Insulation Material- Polyolefin, Separator Material-Polyolefin, PAIRS with Standard Color Code & length: 305 Mtrs. (1000 ft.).	
<b>Category 6 Information Outlets</b>	
All Category 6 outlets shall meet or exceed Category 6 transmission requirements for connecting hardware, as specified in TIA/EIA 568-B.C.2 Commercial Building Telecommunications Cabling Standard and ISO/IEC 11801:2002 Second Edition.	
The Category 6 outlets shall be backward compatible with Category 5E, 5 and 3 cords and cables.	
The Category 6 outlets shall be of a universal design supporting T568 A & B wiring.	
The Category 6 outlets shall be capable of being in a modular patching situation or as a modular telecommunication outlet (TO) supporting current 10BASE-T, Token Ring, 100 Mbps TP-PMD, 155 Mbps ATM, 622 Mbps ATM using parallel transmission schemes and evolving high-speed, high-bandwidth applications, including Ethernet, 1000BASE-T and 1.2 Gbps ATM.	
The Category 6 outlets shall be capable of being installed at either a 45j or a 90j angle in any modular faceplate, frame, or surface-mounted box avoiding the need for special faceplates.	
The Category 6 outlets shall have improved pair splitters and wider channel for enhanced conductor placement. The outlet shall also have a low-profile wire cap, which protects against contamination and secures the connection. Multicolored identification labels shall be available to assure accurate installation.	
Cat 6 UTP Jacks should be available in different colors for easy identification.	
The modular jack (RJ-45) shall be capable of being installed at either a 90 or a 45 degree angled in any modular faceplate, frame, or surface-mounted box avoiding the need for special faceplates.	
The Cat 6 Jack may have Low-profile rear protective strain relief cap, protects against contamination and secures the connection	
Fully supports the safe delivery of power over LANcabling described by IEEE 802.3bt (Type 2) and complies with the unmating under electrical loadrequirements prescribed by IEC 60512-99-002	
<b>General specifications:</b>	
a. Meets or exceeds the mechanical, electrical, and clearance specifications in FCC Rules and Regulations, Part 68, Subpart F	
b. Meet or exceed the Category 6 requirements in ISO/IEC 11801, CENELEC EN 50173, and TIA/EIA568B	
C. Certifications: UL Listed	
The 8-pin modular (RJ-45) jacks shall comply with IEC 60603-7-4.	
The information outlet shall have a Current Rating of 1.5 A at 20°C	
The information outlet will have insertion life of 750 cycles minimum.	
The information outlet must be able to accept termination of solid conductors with nominal diameter of between	
0.40 mm to 0.64 mm (26 to 22 AWG).	
The Outlets should support 1.5Amp current further to support the PoE and PoE+ applications	
<b>CAT6 Modular RJ45 Patch Cords</b>	
Category 6 Equipment cords (Length – 1mtr, 2mtr, 3 Mtrs, 5mtr & 10 mtr)	
Cords shall be equipped with 8-pin modular plugs on each end.	
All cords shall be round, and consist of copper conductors, tightly twisted into individual pairs.	
Nominal cordage diameter shall not exceed 5.9 - 6.2 mm	
Plugs shall be designed with an anti-snag latch to facilitate easy removal during move, add and change processes.	

The cordage shall be available in Low-Smoke, Zero Halogen (LSZH) compatibility.	
The LSZH version must comply with the following Fire Safety standards:	
IEC 60332-1	
ISO/IEC 60754-2: Acidity	
ISO/IEC 61034-2: Smoke Density	
UL /RoHS the Fire Safety/ Environmental tests listed above must be provided as part of the bid response.	
The cordage shall be UTP components that do not include internal or external shields, screened components or drain wires.	
The patch cords will have insertion life of 750 cycles minimum.	
The Patch cords shall be available in Stranded and solid core construction	
<b>24Port CAT6 Patch Panel</b>	
24-port, Modular Unshielded Twisted Pair, Category 6, TIA / EIA 568-C.2	
Should be straight in shape for better cable management	
Should include Cable management bar to protect the terminations	
Each port should be individually replaceable	
ETL/ UL certificate shall be provided.	
Should be compatible with downward and upward i.e, cat5e and Cat6a	
Should accept CAT6 UTP Information outlets	
Should be available in 24-port and 48-port configurations	
Labeling and identification for each port	
<b>Face Plates</b>	
Shall be Single Port/Dual Port (RJ45) or Quad square plate type	
The face plate should not have shutters as the spring shutter on the face plates malfunctions and causes operational issues in patch cords termination & also the face plate should be available 4 colors ( as optional).	
Dimensions should be square shaped (86x86mm )	
It shall provide 1-, 2-, or 4-ports in a flat design	
Shall have Write on labels in transparent plastic window along with the plate	
Should be compatible with both UTP and STP Information outlets and also compatible with Cat5e, Cat6 & Cat6A Information outlets	
<b>Warranty</b>	
Owner seeks warranty for the installed cable plant from the OEM equipment supplier. Bidder shall ensure that the OEM norms for supply, installation, testing and documentation as specified by the OEM supplier shall be adhered to, provided those are in line with TIA / EIA standards and Owner requirement specifications. The warranty shall be provided by the OEM vendor to Owner and shall be administered in India. The duration of the warranty shall be for a minimum of 25 Years and shall cover the system performance, application assurance and the costs of the supply of components and installation.	
<b>Cat6A Copper Cabling system- Technical Specifications</b>	
<b>Category 6A Foiled Cable</b>	
CAT6A specifications must be considered, Category 6A 4 pair or higher specs LSZH cable shall be compliant with ANSI/TIA-568.2-D	
The Category 6A F/UTP (Foiled Unshielded twisted Pair) cable shall be a rounded overall cable and 4 twisted pairs of 23 AWG solid bare copper insulated with polyolefin material.	
Shielded solution provides 100% guarantee from EMI. The Category6A F/UTP or higher specification cable (Foiled Unshielded Twisted Pair) cable shall be constructed with metallic shielded tape over each pair to avoid EMI interference impacting cable performance.	

The Category 6a F/UTP or equivalent or higher specification cable shall be available in (LSZH) Low Smoke Zero Halogen jacket, comply with IEC 60754-2, IEC61034-2 and IEC 60332-1 test method.	
ETL Witness report of Full Cat6A Channel/Performance Test should be enclosed.(4 connector channel)	
The manufacturer shall provides minimum Guaranteed Performance Specifications for 4-connection CAT6A F/UTP channel specified in document on electrical parameter - NEXT @ 3dB of guaranteed margin to Cat6A/Class EA industry standards.	
Shall guarantee significant channel margin over the entire swept frequency range, from 1 to 500 MHz.	
<b>The Category 6A cables shall meet or exceed the following characteristics:</b>	
The cable shall have a round cable jacket and shall features small cable nominal diameter O.D of not more than 7.6±0.5 mm	
Conductor: Solid Copper	
Conductor Size:23 AWG	
Insulator: Polyolefin	
Construction must be with Fluted Cross Member	
Jacket/ Sheath Type: LSZH (Low Smoke Zero Halogen)	
The LSZH Cable shall meet or exceed the Category 6A/Class EA attenuation and NEXT requirements in the latest ISO/IEC 11801, CENELEC EN 50173, ANSI/TIA-568 standards and IEEE 802.3 where applicable	
The cable shall be composed of solid copper conductors insulated with non-halogen high-density polyethylene and jacketed with a low smoke zero halogen compound.The solution shall fully comply with Local/National Codes and Regulations.	
"Category 6A Cable Specifications	
Category 6A F/UTP or Cable Specifications Nominal Outer Jacket OD 0.283 - 0.311 in (7.1 - 7.9 mm) Operating Temperature: -4°F to 140°F (-20°C to 60°C) Installation Temperature: 32°F to 140°F (0°C to 60°C) Conductor gauge: 23 AWG Jacket Material: Low Smoke Zero Halogen, Nominal Velocity of Propagation: 64-78%	
<b>Category 6A Information Outlets</b>	
Category6A Shielded Jack shall have electrical performance guaranteed to meet or exceed the channel specifications to ISO/IEC 11801 Class EA and ANSI/TIA-568.2-D Category 6A.	
Support network line speeds up to at least 10 gigabits per second	
All information outlets for 22-24 AWG copper cable shall: Use insulation displacement connectors (IDC)	
The modular jack (RJ-45) shall have crossing of straddling pair contacts enables efficient alien crosstalk reduction in the channel	
The modular jack (RJ-45) shall also have a low-profile rear protective strain relief cap, which protects against contamination and secures the connection.	
The modular jack (RJ-45) shall be capable of being installed at either a 90 or a 45 degree angled in any Starandard modular faceplate, frame, or surface-mounted box avoiding the need for special faceplates.	
The modular jack shall fully supports the safe delivery of power over LAN cabling described by IEEE 802.3bt (Type 4) and complies with the unmating under electrical load requirements prescribed by IEC 60512-99-002	
568A/B configuration	
Color options in jacks should be available.	
The jack should be UL certified.	
Material type: Die cast Zinc alloy housing or Polycarbonate	

Termination Contact Plating Nickel	
Minimum Plug Intersions 750times	
The 8-pin modular (RJ-45) jacks shall comply with IEC 60603-7 for both Cat6 and Cat6A.	
<b>CAT6A Modular RJ45 Patch Cords</b>	
Shielded Category 6A Equipment cords, Low Smoke Zero Halogen (Length – 1mtr, 2mtr, 3 Mtrs, 5mtr & 10 mtr)	
Cords shall be equipped with 8-pin modular plugs on each end.	
Nominal cordage diameter shall not exceed 7.24 mm.	
The patch cords shall incorporate an anti-snag feature that provides maximum protection from snagging during moves and re-arrangements.	
Cordage shall have a round overall cable geometry Shielded twisted in pairs with drain wire and 4 pairs of 24 AWG - 26 AWG Stranded/solid bare copper insulated with LSZH material	
The patch cords shall incorporate an anti-snag feature that provides maximum protection from snagging during moves and re-arrangements. Fully compatible with intelligent patch panels	
The LSZH version must comply with the following Fire Safety standards: ISO/IEC 60332-3-22/IEC 60332-1: Vertical Flame Spread	
ISO/IEC 60754-2: Acidity ISO/IEC 61034-2: Smoke Density	
3rd Party verification of the Fire Safety/ Environmental tests listed above must be provided as part of the bid response.	
Information Outlets support IEEE 802.3bt PoE of 55W for VoIP, IEEE 802.11ac Wi-fi, and IP cameras. Supplier to provide detailed test reports and third party approvals.	
The cordage shall be Shileded components that will include internal or external shields, screened components or drain wires.	
Patch Cord Jacket: The jacket of the patch cord must be LSZH	
Temperature range: -20°C to +60°C	
The patch cords will have insertion life of 750 cycles minimum	
<b>24 Port CAT6A Patch Panel</b>	
24-port, Modular Shielded , Category 6A, ANSI/TIA-568.2-D Standard	
Should be straight in shape for better cable management	
Should include Cable management bar to protect the terminations	
Each port should be individually replaceable	
ETL/ UL certificate shall be provided.	
Should be compatible with downward and upward i.e, cat5e and Cat6a	
Should accept Shielded CAT6A Information outlets	
Should be available in 24-port and 48-port configurations	
Labeling and identification for each port	
<b>Face Plates</b>	
Shall be Single Port/Dual Port (RJ45) or Quad square plate type	
The face plate should not have shutters as the spring shutter on the face plates malfunctions and causes operational issues in patch cords termination & also the face plate should be available 4 colors ( as optional).	
Dimensions should be square shaped (86x86mm )	
It shall provide 1-, 2-, or 4-ports in a flat design	
Shall have Write on labels in transparent plastic window along with the plate	
Should be compatible with both UTP and STP Information outlets and also compatible with Cat5e, Cat6 & Cat6A Information outlets	
<b>Warranty</b>	

<p>Owner seeks warranty for the installed cable plant from the OEM equipment supplier. Bidder shall ensure that the OEM norms for supply, installation, testing and documentation as specified by the OEM supplier shall be adhered to, provided those are in line with TIA / EIA standards and Owner requirement specifications. The warranty shall be provided by the OEM vendor to Owner and shall be administered in India. The duration of the warranty shall be for a minimum of 25 Years and shall cover the system performance, application assurance and the costs of the supply of components and installation.</p>	
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Single Mode OS2 Technical Specifications			
S No.	Details	Specification	Compliance
<b>Single Mode FO Cable- 6 &amp; 12Fiber</b>			
<b>General Specifications</b>			
1	Cable Type	Cable Type: Multiple Loose Tube,	
2	Construction Type	Armored, Gel-Free (Dry Core)	
	Loose Tube Construction	Multi tube, 6F Per tube max	
4	Cable Weight	Cable Weight 108 to 115 kg.km	
5	Diameter Over Jacket	Diameter Over Jacket 11.0 to 11.8 mm	
<b>Construction Materials</b>			
	Fiber Type Solution	Single Mode Fiber 9/125/250µm	
	Jacket Material	MDPE	
	Total Fiber Count in Loose tube	6	
	Armor Type	Corrugated steel	
	Jacket Color	Black	
	Jacket UV Resistance	UV stabilized	
	With or Without Rip cords	2	
<b>Physical Specifications</b>			
1	Max. Bending Radius (during installation)	20 X Overall diameter	
2	Max. Bending Radius (during full load)	10 X Overall diameter	
3	Max. Tensile Strength-Long Term	800N	
4	Max. Compression ((as per IEC 60794-1 E3)	44N/MM	
5	Mode field Diameter	9.0 µm	
6	Cladding Diameter	125.0 µm	
7	Coating Diameter (Colored)	245 +/-5.0 µm	
8	<b>Loose Tube/Tight Buffer</b>	Loose Tube	
9	No. of tubes	1 or 2	
10	Loose tube colors	Blue & Orange	
11	Fiber identification	Blue, Orange, Green, Brown, Grey, White	
12	Loose Tube filling	Water Swelable Threads ( Gel free )	
<b>Optical Specifications, Wavelength Specific</b>			
1	Standards Compliance	ITU-T G652 D or ITU-T G.657A1 Bend Insensitive	
2	Attenuation, maximum	Attenuation, maximum 0.34 dB/km @ 1310 nm 0.22 dB/km @ 1550nm	
3	Index of Refraction	1.467 @1310nm	
<b>24 &amp; 48 Core optical Fiber Armored Single-Mode OS2</b>			
<b>Single Mode FO Cable- 24 &amp; 48Fiber</b>			
<b>General Specifications</b>			
1	Cable Type	Stranded loose tube	
2	Construction Type	Armored, Gel-Free (Dry Core)	
	Loose Tube Construction	Multi tube, 6F Per tube max	
4	Cable Weight	Cable Weight 170 or above	
5	Diameter Over Jacket	Diameter Over Jacket 13mm to 15.0 mm (Max)	

<b>Construction Materials</b>			
	Fiber Type Solution	Single Mode Fiber 9/125/250µm	
	Jacket Material	HDPE	
	Total Fiber Count	24 or 48	
	Armor Type	Corrugated steel	
	Jacket Color	Black	
	Jacket UV Resistance	UV stabilized	
	With or without Rip cords	2	
<b>Physical Specifications</b>			
1	Max. Bending Radius (during installation)	20 X Overall diameter	
2	Max. Bending Radius (during full load)	10 X Overall diameter	
3	Max. Tensile Strength-Long Term	800N	
4	Max. Tensile Strength-Short Term	2700N	
5	Max. Compression ((as per IEC 60794-1 E3)	440N/CM	
6	Mode field Diameter	9.0 µm	
7	Cladding Diameter	125.0 µm	
8	Coating Diameter (Colored)	245 +/-5.0 µm	
9	<b>Loose Tube/Tight Buffer</b>	Loose Tube	
10	No. of tubes	4tubes/6Fibers each for 24Fiber Multitube FO for 48Fiber 8tubes/6Fibers	
11	Loose tube colors	Blue,Orange,Green,Brown,Slate,White,Red & Black	
12	Fiber identification	Blue, Orange, Green, Brown, Grey, White	
13	Loose Tube filling	Water Swelable Threads ( Gel free )	
<b>Optical Specifications, Wavelength Specific</b>			
14	Standards Compliance	ITU-T G652 D & ITU-T G.657A1 Bend Insensitive	
15	Attenuation, maximum	Attenuation, maximum 0.34 dB/km @ 1310 nm 0.22 dB/km @ 1550nm	
17	<b>RoHS Compliant</b>		
<b>Commercial Standards</b>			
18	EN 50173; ISO/IEC 11801		
19	ITU-T G652 D or ITU-T G.657.A1		
21	RoHS 2011/65/EU	RoHS	
<b>Rack Mounted Fiber Optic Patch Panel specifications (LIU) Fully loaded</b>			
	<b>Fiber optic patch panel</b>	<b>FMS Fiber Optic Termination/Splice Panel, 1U, 19 in,</b>	
	Height	1 U, 1.75 inches	
	6 Fiber LIU should consists	3 duplex SM/MM LC couplers/6 Pigtails and splice tray	
	24 Fiber LIU should consists		
	48 Fiber LIU should consists	24 duplex SM/MM LC couplers/6 Pigtails and splice tray	
		tray loaded for 24 Fiber LIU	
	All the panels should be 1U	Should be expandable upto 48F in 1U configuration	

	Splice Tray	Should be part of the LIU, should be able to Splice	
		12/24 Cores Splice Tray should be from the same	
	Color of Fiber Shelf	Black	
	Enclosure Material type	CRCA, Powder coated	
	Cable Management	Fiber guides, radius controls and secure ties should be provided	
	Pigtail Type	LC-Style, Simplex, 1.5 mtr length preloaded	
	Operating temperature	-25 Degree C to +70 Degree C	
	<b>Durability &amp; Colour</b>		
	MM LC connectors	Aqua as per Industry standard	
	Insertion Loss, Maximum for MM OM4	0.3dB	
	Return Loss Minimum for MM OM4	20dB	
	<b>SM LC connectors</b>	Yellow, as per Industry standard	
	Insertion Loss, Maximum for SM	0.3dB	
	Return Loss Minimum for SM	45 dB and better	
	Dimensions	Dimensions 1.75in x 19in x 10.03 - 12.59in	
	ROHS Compliant	OEM Certificate to be provided for ROHS	
	Warranty	25Years Bandwidth Based Warranty from OEM	
<b>Cable assemblies - Fiber Patch Cords</b>			
<b>Single Mode OFC Patch Cords 9/125 Micron</b>			
1	Type of connectors	SC or LC LSOH Jacket - Reduces toxic / corrosive	
2	Length	Minimum 1 or 3 meters	
3	Polishing	100% Factory polished and tested, must be Made	
4	Insertion Loss	Insertion Loss 0.2dB	
5	Attenuation	Attenuation as per ANSI/TIA Standards	
6	Standards	ROHS Compliant	
7	Jacket colour	Industry Standard Colour - OS2-Yellow, OM4-	
8	Make and Type	SC to LC Duplex Fiber Optic Patch Cord 9/125	
9	Cable Sheath	LSZH	
10	Cable Diameter	1.6mm	
11	Ferrule	Ceramic	
12	Buffer	Tight buffered	
13	Temperature Range	-40 Degree C to +85 Degree C	
14	Buffer Diameter:	900µm	
15	Primary Coating :	245µm	
16	Strength Member:	Aramid Yarn	
17	Jacket Material:	All Fiber Optic Patch Cords - irrespective of the type of fiber optic connectors and SM or MM, Jacket of Fiber Patch Cords must be LSOH, IEC 61034-1 & 2, IEC-60332-3-22, IEC60754-1 & 2	
<b>Singlemode LC to LC, Fiber Patch Cord, 1.6 mm Duplex, Low Smoke Zero Halogen (LSZH)</b>			
1	Type of connectors	SC or LC LSOH Jacket	
		LC/UPC to LC/UPC	
2	Length	Minimum 1 meters or 3 mtrs	

3	Fiber type	G.652.D   G.657.A1, Single Mode	
4	Insertion Loss	0.34dB Maximum	
5	Return Loss	Return Loss -50db or better	
6	Standards	ROHS Compliant	
7	Jacket colour	Industry Standard Colour SM-Yellow	
8	Make and Type	SC to LC Duplex Fiber Optic Patch Cord 9/125	
9	Cable Sheath	LSZH	
10	Cable Diameter	1.6mm	
11	Ferrule	Zirconia	
12	Buffer	Tight buffered	
13	Temperature Range	.-20 Degree C to +60 Degree C	
14	Buffer Diameter:	900µm	
15	Primary Coating :	245µm	
16	Strength Member:	Aramid Yarn	
17	Jacket Material/Flame test method	IEC 60332-1-2, IEC 60332-3, IEC 60754-2, IEC	

Optical Multi-Mode (OM4) Technical Specifications			Compliance (Yes/No)
S.No.	Details	Specification	
<b>6/12 Fiber Outdoor Unitube Single Sheathed Armoured, FRLSZH 50/125µm OM4 Type</b>			
1	Cable Feature	Cable Feature: 6Fiber/12Fiber Multimode OM4Multitube Dry core Single sheath Armoured Fiber Optic Cable, FRLSZH	
<b>Contruction type</b>			
2	Number of elements	6 & 12 core	
3	Fibre/Tube Identification :	Colour coded	
4	Fibre protection(Tubes) :	Polybutylene Terephthalate (PBT)	
5	Central Strength Member:	Central Strength Member Fibre Reinforced Plastic(FRP)/ ECCS armouring and the strength members (Two Steel Wires).	
6	Water Blocking :	Dry Core, Water blocking yarn	
7	Armouring :	Corrugated Steel Tape Armour (ECCS Tape) Thickness > 0.15mm	
8	Sheath :	FR LSZH	
<b>Dimensions and Mass</b>			
9	Overall Cable (Nominal) :	13mm or higher	
10	Mass (Nominal) :	170 kg/km (Nominal) or higher	
<b>Standards</b>			
11	EN 50173; ISO/IEC 11801, ANSI/TIA-568-C.3, Telcordia GR-409	Standards: EN 50173; ISO/IEC 1 11801, ANSI/TIA-568.3-D, Telcordia GR-4093	
<b>Machanical characteristics</b>			
12	Min. Bending Radius (short term)	20D ; D is OD	
13	Min. Bending Radius (long term)	10D	
14	Max. Tensile Strength-Short Term	2700N	
15	Max. Crush Resistance-Short Term	4400N/10CM	
16	Operating Temperature range	-20°C -+70°C	
<b>Optical characteristics</b>			
17	Core Diameter	50 + 2.5 µm	
18	Cladding Diameter :	125 + 1.0 µm	
19	Coating	250um	
<b>Technical Specifications</b>			
19	Max. Attenuation;		
	At 850 nm :	2.7 dB/km	
	At 1300 nm	0.7 dB/km	
20	Max. Link Length for 10GB/s		
	At 850 nm (10GB-SR & SW)	550Meters	
	At 1300 nm (10GB-LX4)	300Meters	
<b>24 core Outdoor Loose Tube Armoured 50/125µm OM4 Type Optical Cable</b>			
1	Cable Feature	24C Multimode OM4 50/125micron Multitube Dry Tube FRLSZH sheath	

	<b>Construction type</b>		
2	Number of elements	4	
3	Fibre/Tube Identification :	Colour coded	
4	Fibre protection(Tubes) :	Polybutylene Terephthalate (PBT)	
5	Central Strength Member:	Fibre Reinforced Plastic(FRP)	
6	Water Blocking :	Dry Core	
7	Armouring :	Corrugated Steel Tape Armour (ECCS Tape) Thickness > 0.150 mm	
8	Sheath :	UV Stabilised	
	<b>Dimensions and Mass</b>		
9	Overall Cable (Nominal) :	Minimum 13mm or higher	
10	Mass (Nominal) :	Minimum 190kg/km or higher	
	<b>Standards</b>		
11	EN 50173; ISO/IEC 11801, ANSI/TIA-568-C.3, Telcordia GR-409	Standards: EN 50173; ISO/IEC 1 11801, ANSI/TIA-568.3-D, Telcordia GR-4093	
	<b>Mechanical characteristics</b>		
12	Min. Bending Radius (short term)	20D ; D is OD	
13	Min. Bending Radius (long term)	10D	
14	Max. Tensile Strength-Short Term	2700N or better	
15	Max. Crush Resistance-Short Term	440N/CM	
16	Operating Temperature range	-20°C -+70°C	
	<b>Optical characteristics</b>		
17	Core Diameter	50 + 2.5 µm	
18	Cladding Diameter :	125 + 1.0 µm	
19	Coating	250um	
	<b>Technical Specifications</b>		
19	Max. Attenuation;		
	At 850 nm :	2.7 - 3.0dB/km	
	At 1300 nm	0.7 - 1.5dB/km	
	Cabled Fiber Attenuation @850nm	3.0 dB/Km (Max)	
	Cabled Fiber Attenuation @1300nm	1.0 dB/Km (Max)	
	<b>Fiber optic patch panel</b>	<b>FMS Fiber Optic Termination/Splice Panel, 1U, 19 in, 24 LC/UPC, Fully Loaded Fiber Panel</b>	
	Height	1 U, 1.75 inches	
	6 Fiber LIU should consists	3 duplex MM LC couplers/6 Pigtails and splice tray loaded for 6 Fiber	
	24 Fiber LIU should consists	12 duplex MM LC couplers/24 Pigtails and splice tray loaded for 24 Fiber LIU	
	48 Fiber LIU should consists	24 duplex MM LC couplers/24 Pigtails and splice tray loaded for 24 Fiber LIU	
	All the panels should be 1U	Should be expandable upto 48F in 1U configuration	
	Splice Tray	Should be part of the LIU, should be able to Splice 12/24 Cores.	

		Should have 2nos of 24Fiber Splice trays for 48Fiber	
		Tray should be from the same OEM	
	Color of Fiber Shelf	Black	
	Enclosure Material type	CRCA, Powder coated	
	Cable Management	Fiber guides, radius controls and secure ties should be provided	
	Pigtail Type	LC-Style, Simplex, 1.5 mtr length	
	Operating temperature	-25 Degree C to +70 Degree C	
	<b>Durability &amp; Colour</b>		
	<b>MM LC connectors</b>	As per Industry standard	
	Insertion Loss, Maximum for MM OM4	0.3dB	
	Return Loss Minimum for MM OM4	20dB	
	<b>SM LC connectors</b>		
	Insertion Loss, Maximum for SM	0.3dB	
	Return Loss Minimum for SM	-55db or better	
	Dimensions	1.75in x 19in x 12.59in	
	ROHS Compliant	OEM Certificate to be provided for ROHS compliant	
	Warranty	25Years Bandwidth Based Warranty from OEM	
<b>Multimode OM4 LC to LC, Fiber Patch Cord, 1.6 mm Duplex, Low Smoke Zero Halogen (LSZH)</b>			
1	Type of connectors	SC or LC LSOH Jacket - Reduces toxic / corrosive LC/UPC to LC/UPC	
2	Length	Minimum 1 meters or 3 mtrs	
3	Polishing	100% Factory polished and tested	
4	Insertion Loss	Less than 0.24dB Maximum	
5	Return Loss	27dB minimum	
6	Standards	ROHS Compliant	
7	Jacket colour	Industry Standard Colour OM4	
8	Make and Type	SC to LC Duplex Fiber Optic Patch Cord 50/125 Micron	
9	Cable Sheath	LSZH	
10	Cable Diameter	1.6mm	
11	Ferrule	Zirconia	
12	Buffer	Tight buffered	
13	Temperature Range	.-20 Degree C to +60 Degree C	
14	Buffer Diameter:	900µm	
15	Primary Coating :	245µm	
16	Strength Member:	Aramid Yarn	
17	Jacket Material/Flame test method	Jacket Material/Flame test method IEC 60332-3	

**Annexure-VII(A)**

<b>Bill of Material (BoM) for Group-A Items</b>			
<b>S.No.</b>	<b>ITEM Code</b>	<b>Item Description</b>	<b>Total</b>
1	SW01	LAN Core Switch	9
2	SW02	Data Centre Core Switch	6
3	SW03	Data Center Access Switch -Type 1 (Fiber)	30
4	SW04	Data Center Access Switch -Type 2 (Copper)	33
5	SW05	LAN Distribution Switch - Type 1 (16 port)	30
6	SW06	LAN Distribution Switch - Type 2 (24 port)	50
7	SW07	Access Switch -Type 1 (48 port NonPOE)	353
8	SW08	Access Switch -Type 2 (48 port POE)	143
9	SW09	Access Switch -Type 3 (24 port NonPOE)	480
10	SW10	Access Switch -Type 4 (24 port POE)	460
11	SW11	Access Switch -Type 5 (8 port NonPOE)	174
12	SW12	Access Switch -Type 6 (8 port POE)	228
13	WL01	Wireless Controller	13
14	WL02	Wireless Controller Licenses	469
15	WL03	Indoor Access Point	336
16	WL04	Outdoor Access Point	173
17	NAC01	NAC Licenses	20900
18	NAC02	NAC Hardware	9
19	NMS01	NMS Licenses	2596
20	NMS02	NMS Hardware	2
21	FM01	40G SM Fiber Module	130
22	FM02	40G MM Fiber Module	92
23	FM03	10G SM Fiber Module	616
24	FM04	10G MM Fiber Module	424
25	FM05	1G SM Fiber Module	554
26	FM06	1G MM Fiber Module	175
27	FM07	1G UTP Transceivers	902

28	FW01	Firewall -Type 1	5
29	FW02	Firewall -Type 2	6
30	UPS01	2 KVA UPS	243
31	UPS02	6 KVA UPS	51

**Note:** Quantities mentioned are indicative only and are subject to change based on actual requirement at the time of placement of order.

**Annexure-VII(B)**

<b>Bill of Material (BoM) for Group-B Items</b>			
<b>S.No.</b>	<b>ITEM Code</b>	<b>Item Description</b>	<b>Total</b>
1	P-01	CAT6 U/UTP LSZH Cable, 305 Meter	358
2	P-02	Single Port Face Plate without shutter - Square Type	1238
3	P-03	Dual Port Face Plate without shutter - Square Type	725
4	P-04	Quad Face Plate without shutter - - Square Type	110
5	P-05	Cat 6 U / UTP Information Outlet	4478
6	P-06	24 Port loaded UTP Jack Panel 1U Height Straight with rear cable manager	828
7	P-07	24 Port Unloaded Patch Panel -1U Heigh Straight with rear cable manager	228
8	P-08	Cat 6 U / UTP Patch Cord, (1Mtr)	1635
9	P-09	Cat 6 U / UTP Patch Cord, (2 Mtr)	2255
10	P-10	Cat 6 U / UTP Patch Cord, (0.5M)	6015
11	P-11	RJ 45 Unshielded Connector (Termination Plug)	2210
12	P-12	RJ 45 Shielded Connector (Termination Plug)	1300
13	P-13	Cat 6 U / UTP Patch Cord, (5 Mtr)	1160
14	P-14	F/UTP Cat-6 LSZH Cable, 305 Meter	18
15	P-15	CAT6A U/FTP Cable, 500Meter, LSZH (500 mtr reel)	69
16	P-16	Single Port Face Plate without shutter - Square Type	150
17	P-17	Dual Port Face Plate without shutter - Square Type	90
18	P-18	Cat 6A Shielded Information Outlet	280
19	P-19	CAT6A 24 Port Unloaded Patch Panel - Straight with rear cable manager	31
20	P-20	Cat 6A Patch Cord, (1Mtr) LSZH	180
21	P-21	Cat 6A Patch Cord, (2Mtr) LSZH	330
22	P-22	CAT6A 24 Port loaded Patch Panel, Shielded - Straight,with rear coble manager	150
23	P-23	Single Mode, OS2, 6Core, Outside Plant, Armor, Outdoor Stranded Loose Tube Cable	64350

24	P-24	Single Mode, OS2, 12Core, Outside Plant, Armor, Outdoor Stranded Loose Tube Cable	27100
25	P-25	Single Mode, OS2 ,24 Core, Outside Plant, Stranded Loose Tube, Metallic Armored	500
26	P-26	Single Mode, OS2, 48 Core, Outside Plant,Stranded Loose Tube, Metallic Armored	15550
27	P-27	12 Port loaded LIU with OS2 Modular Cassettes/Adaptor Plate with pigtails, splice trays and accessories ( LC Connector )	201
28	P-28	24 Port LIU with OS2 Modular Cassettes/Adaptor Plate with pigtails, splice trays and accessories ( LC Connector )	162
29	P-29	48 Port LIU with OS2 Modular Cassettes/Adaptor Plate, pigtails, splice trays and accessories ( LC Connector )	34
30	P-30	Single Mode, OS2, LC - LC Duplex Fiber Patch Cord – 2 mm Duplex, Riser, yellow jacket, 10 ft (3 Mtr)	702
31	P-31	Single Mode, OS2, LC - LC Duplex Fiber Patch Cord – 2 mm Duplex, Riser, yellow jacket, 15 ft (5 Mtr)	505
32	P-32	Single Mode, OS2, SC - LC Duplex Fiber Patch Cord – 2 mm Duplex, Riser, yellow jacket, 10 ft (3 Mtr)	100
33	P-33	Single Mode, OS2, SC - LC Duplex Fiber Patch Cord – 2 mm Duplex, Riser, yellow jacket, 15 ft (5 Mtr)	73
34	P-34	Singlemode OS2 pigtail - LC type	1300
35	P-35	6 Core, Outside Plant, Multi Mode, OM4, Gel Free, Stranded Loose Tube, Mettalic Armored,	6250
36	P-36	6 Core, Indoor Unarmored, Multi Mode, OM4, Gel Free, Stranded Loose Tube,	440
37	P-37	12 Core, Outside Plant, Multi Mode, OM4, Gel Free, Stranded Loose Tube, Mettalic Armored,	7500
38	P-38	12 Port Loaded Fiber LIU for Multimode Mode with OM4 Modular Cassettes/Adaptor Plate with Pigtails, Splice kit / Splice Trays and Accessories	132
39	P-39	24 Port Loaded Fiber LIU for Multimode Mode with OM4 Modular Cassettes/Adaptor Plate with Pigtails, Splice kit / Splice Trays	39
40	P-40	Multimode OM4 LC to LC, Fiber Patch Cord, 2 mm Duplex, Riser, aqua jacket, 10 ft (3Mtr)	400

41	P-41	Multimode OM4 LC to LC, Fiber Patch Cord, 2 mm Duplex, Riser, aqua jacket, 15 ft (5Mtr)	133
42	P-42	Multimode OM4 SC to LC, Fiber Patch Cord, 2 mm Duplex, Riser, aqua jacket, 10 ft (3Mtr)	66
43	P-43	Multimode OM4 SC to LC, Fiber Patch Cord, 2 mm Duplex, Riser, aqua jacket, 15 ft (5Mtr)	206
44	P-44	Testing of all the Copper Ports Penta Scanning by using DTX 1800 or latest Calibrated Tool	4900
45	P-45	Testing of all the Fiber Cores by using OLTS by using Latest Calibrated Tool	2228
46	P-46	Standard Racks with Accessories - 6U, with (Accessories) PDU, Fan, Horizontal Cable Manager and Mounting Hardware	121
47	P-47	Standard Racks with Accessories - 12U, , with (Accessories) PDU, Fan, Horizontal Cable Manager and Mounting Hardware	326
48	P-48	Standard Racks with Accessories - 15U , with (Accessories) PDU, Fan, Horizontal Cable Manager and Mounting Hardware	26
49	P-49	Standard Racks with Accessories - 24U, , with (Accessories) PDU, Fan, Horizontal Cable Manager and Mounting Hardware	37
50	P-50	Standard Racks with Accessories - 800 x 800/1000, 42U, - Perforated doors metal, 1Ph, 230V, 32A, Zero U standard Vertical rack mount power distribution unit with 12 X Indian Round Pin 5/15A, (Inlet Plug Not Installed, Recommended IEC30932A 2P +E), 16A MCB X 2 Circuits- PDU Rating 7.3KVA/Bottom feed- 3Mt/ Black, Horizontal Cable Manager	15
51	P-51	50 x 50 mm GI Raceway with Cover Threaded Rods Flats	1666
52	P-52	100 x 50 mm GI Raceway with Anchor Bolts & Nuts	167
53	P-53	200 x 50 mm GI Raceway with Cover	167
54	P-54	25 mm PVC conduit with the accessories	2600
55	P-55	50 mm PVC Channel with the accessories	800
56	P-56	1" PVC conduit with the accessories	1100
57	P-57	1.25" PVC conduit with the accessories	4500
58	P-58	25 mm casing & capping with the accessories	1320
59	P-59	32 mm casing & capping with the accessories	1200
60	P-60	1" casing & capping with the accessories	1000
61	P-61	1.25" casing & capping with the accessories	1000

62	P-62	1.5" casing & capping with the accessories	100
63	P-63	25 mm HDPE PLB Pipe with the accessories	42000
64	P-64	40 mm HDPE PLB Pipe with the accessories	14000
65	P-65	50 mm HDPE PLB Pipe with the accessories	9000
66	P-66	80 mm HDPE PLB Pipe with the accessories	4000
67	P-67	100 cm depth x 30 cm width Soft Soil Trenching in meters	22100
68	P-68	100 cm depth x 30 cm width Hard Soil Trenching in meters	6900
69	P-69	Construction of Chambers 100 cm dia x 100 cm depth for joining the OFC cables	50
70	P-70	Installation of Readymade concrete chambers for joining the OFC cables	70
71	P-71	Splice Enclosure - 48F	40
72	P-72	Splice Enclosure - 24F	20
73	P-73	Splice Enclosure - 12F	20
74	P-74	25 mm GI Pipes with the accessories	150
75	P-75	40 mm GI Pipes with the accessories	150
76	P-76	MS 25 mm	3200
77	P-77	50 mm GI Pipes with the accessories	1100
78	P-78	Road Cutting & refilling with Concrete as per the standards of Customer	3500
79	P-79	Road Cutting & refilling with Asphalt / Bitumen as per the standards of Customer	3300
80	P-80	Wall Chipping for the Raceway Installation	2000
81	P-81	Core Cutting for the Conduit Installation	200
82	P-82	1RU Fiber Optic Enclosure 4x12F Cassette Capacity MPO/LC- Unloaded sliding Drawer	105
83	P-83	12 Port MPO-LC ModLink Cassette, Duplex LC, OM4 50µm Multimode, Low Loss	97
84	P-84	12 Port MPO-LC ModLink Cassette, Duplex LC, OS2 9µm Singlemode, Low Loss	97
85	P-85	4RU Fiber Optic Enclosure 24x24F Cassette Capacity MPO/LC- Unloaded sliding Drawer	8

86	P-86	24 Port MPO-LC ModLink Cassette, Duplex LC, OM4 50µm Multimode, Low Loss	65
87	P-87	24 Port MPO-LC ModLink Cassette, Duplex LC, OS2 9µm Singlemode, Low Loss	65
88	P-88	Blank plates	280
89	P-89	12Core MTP-MTP Cable assembly Polarity B Female to female OM4 50/125m - 25 mts	45
90	P-90	12Core MTP-MTP Cable assembly Polarity B Female to female OM4 50/125m - 15 mts	52
91	P-91	12Core MTP-MTP Cable assembly Polarity B Female to female OS2 9/125m - 25 mts	45
92	P-92	12Core MTP-MTP Cable assembly Polarity B Female to female OS2 9/125m - 15 mts	52
93	P-93	12Core MTP-MTP Cable assembly Polarity B Female to female OM4 50/125m - 8 mts	32
94	P-94	12Core MTP-MTP Cable assembly Polarity B Female to female OS2 9/125m - 8 mts	32
95	P-95	LC-LC OM4 Duplex LSZH Patch Cords 3m	832
96	P-96	LC-LC OM4 Duplex LSZH Patch Cords 5m	386
97	P-97	LC-LC OS2 Duplex LSZH Patch Cords 3m	880
98	P-98	LC-LC OS2 Duplex LSZH Patch Cords 5m	482
99	P-99	Cat 6A U/FTP LS0H Cable, Violet - 500m	7220
100	P-100	Cat 24 Port Patch Panel, Unloaded UTP or Shielded - 1U	141
101	P-101	Cat 6A Jack RJ45 568A/B Shielded	2556
102	P-102	Single Position Blank Module	1128
103	P-103	Cat 6A Patch Cord 568A/B Shielded, LS0H - 3m	1442
104	P-104	Cat 6A Patch Cord 568A/B Shielded, LS0H - 8m	644

**Note:** Quantities mentioned are indicative only and are subject to change based on actual requirement at the time of placement of order.

**NETWORK RC UNIT WISE REQUIREMENTS**

Sl no	Item Code	Item Description	UOM	Corporate Office	Corporate R&D	EDN Bangalore	EMRP	FSIP Jagadishpur	Haridwar	Bhopal	HERP Varanasi	HPEP	HPVP	Industry Sector	International Operation	Goindwal	Jhansi	Thirumayam	PSER	PSSR	PSWR	Ranipet	Rudrapur	SBD Bangalore	Trichy	ROD HQ	Total Qty
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**Annexure-VIII(A)**

**ACTIVE COMPONENTS**

1	SW01	LAN Core Switch	EA	0	0	0			2	2		2	0				1		0			0			2		9
2	SW02	Data Centre Core Switch	EA	0		2	0		2	0		2	0						0			0					6
3	SW03	Data Center Access Switch - Type 1 (Fiber)	EA	4		4	0		7	0		12	0						0	1		2					30
4	SW04	Data Center Access Switch - Type 2 (Copper)	EA	0	1	6	0		11	0		8	0				2		0			2		1	2		33
5	SW05	LAN Distribution Switch - Type 1 (16 port)	EA	0		0	0		15	0		7	0			3	1		0			4					30
6	SW06	LAN Distribution Switch - Type 2 (24 port)	EA	0	8	10	0		3	12		4	4				1		0	1		0			7		50
7	SW07	Access Switch -Type 1 (48 port NonPOE)	EA	59	10	26	1	2	66	95	2	13	4			15			6			1	50	3			353
8	SW08	Access Switch -Type 2 (48 port POE)	EA	0	7	5	0		39	0		61	0						0			0			31		143
9	SW09	Access Switch -Type 3 (24 port NonPOE)	EA	3	8	83	4	6	32	210	6	0	5			10	50		4	12		3	30	3	9	2	480
10	SW10	Access Switch -Type 4 (24 port POE)	EA	3	15	10	0		73	0		33	0					20				0	1		305		460
11	SW11	Access Switch -Type 5 (8 port NonPOE)	EA	0		0	6		9	40	4	17	33			2			8	10		30	10	5			174
12	SW12	Access Switch -Type 6 (8 port POE)	EA	0		15	0		21	40		39	2			20	20		0			5	5		60	1	228
13	WL01	Wireless Controller	EA	4		0	0		2	2		2	0						0			0	1		1		13
14	WL02	Wireless Controller Licenses	EA	85		0	0		115	30		170	0	1					0			0	18		50		469
15	WL03	Indoor Access Point	EA	85		0	1		40	20	1	86	0	13	1		30		0	10	5	6	16		20	2	336
16	WL04	Outdoor Access Point	EA	0		0	0		75	10		64	0						0			2	2		20		173
17	NAC01	NAC Licenses	EA	0	400	2200	0		3300	4500		4000	0						0			0			6500		20900
18	NAC02	NAC Hardware	EA	0	1	0	0		2	2		2	0						0			0			2		9
19	NMS01	NMS Licenses	EA	170	55	200	0	17	410	500	13	500	100			1	50		0			130		450			2596
20	NMS02	NMS Hardware	EA	0		0	0		1	0		1	0						0			0					2
21	FM01	40G SM Fiber Module	EA	0		25	0		21	10		52	0						0			0			22		130
22	FM02	40G MM Fiber Module	EA	8		5	0		31	0		48	0						0			0					92
23	FM03	10G SM Fiber Module	EA	0	60	100	0		58	60		200	8			4	30		0			16	4	6	70		616
24	FM04	10G MM Fiber Module	EA	322		20	0		30				0						12			40					424
25	FM05	1G SM Fiber Module	EA	0		25	0		193	0		120	38			20	30		0			120	8				554
26	FM06	1G MM Fiber Module	EA	0		25	0	16	26	0		80	0						8			20					175
27	FM07	1G UTP Transceivers	EA	0	30	25	0		159	500			0					20		0		0		18	150		902
28	FW01	Firewall -Type 1	EA	1		0	0		2	0		2	0						0			0					5
29	FW02	Firewall -Type 2	EA	1	1	1	0		0	1			0						0			1			1		6
30	UPS01	2 KVA UPS	EA	0		30	0		149	12		20	16				5		0			0			11		243
31	UPS02	6 KVA UPS	EA	0		10	0		18	0		13	4				5		0			0	1				51
32		L1 Engineer	EA		1			1	1	2		3					1	1				3			2		15
33		L2 Engineer	EA			1			1	1		1	1				1	1	1			1	1		1	1	12
34		Network Assistant	EA		1	2			1	2		1		1			1		1			2			4		16

**Annexure-VIII(B)**

**PASSIVE COMPONENTS**

1	P-01	CAT6 U/UTP LSZH Cable, 305 Meter	Reel		20	10	2		147	50	3	100	10			8			8			0					358
2	P-02	Single Port Face Plate without shutter - Square Type	Nos		48	500	0		370	70		100	50			100			0			0					1238
3	P-03	Dual Port Face Plate without shutter - Square Type	Nos			250	0		75	50		200	50			50			0	50		0					725
4	P-04	Quad Face Plate without shutter - Square Type	Nos			0	0		0	0		100	10						0			0					110
5	P-05	Cat 6 U / UTP Information Outlet	Nos		48	500	0		1120	2000		400	110			200			100			0					4478
6	P-06	24 Port loaded UTP Jack Panel 1U Height Straight with rear cable manager	Nos		2	300	0		0	400		100	10						16			0					828
7	P-07	24 Port Unloaded Patch Panel - 1U Height Straight with rear cable manager	Nos			150	0		38	0		40	0						0			0					228

**NETWORK RC UNIT WISE REQUIREMENTS**

SI no	Item Code	Item Description	UOM	Corporate Office	Corporate R&D	EDN Bangalore	EMRP	FSIP Jagadishpur	Haridwar	Bhopal	HERP Varanasi	HPEP	HPVP	Industry Sector	International Operation	Goindwal	Jhansi	Thirumayam	PSER	PSSR	PSWR	Ranipet	Rudrapur	SBD Bangalore	Trichy	ROD HQ	Total Qty
8	P-08	Cat 6 U / UTP Patch Cord, (1Mtr)	Nos			100	0		520	500		400	50			25			0			0		30		10	1635
9	P-09	Cat 6 U / UTP Patch Cord, (2 Mtr)	Nos		400	150	0		520	500		400	50			25			200			0				10	2255
10	P-10	Cat 6 U / UTP Patch Cord, (0.5M)	Nos			100	0		0	5500			400			15			0			0					6015
11	P-11	RJ 45 Unshielded Connector (Termination Plug)	Nos			10	100		500	1000			0			100			500			0					2210
12	P-12	RJ 45 Shielded Connector (Termination Plug)	Nos			0	0		100	1000			200						0			0					1300
13	P-13	Cat 6 U / UTP Patch Cord, (5 Mtr)	Nos			300	0		100	550			100			10			100			0					1160
14	P-14	F/UTP Cat-6 LSZH Cable, 305 Meter	Reel			5	0		10	0			0			3			0			0					18
15	P-15	CAT6A U/FTP Cable, 500Meter, LSZH (500 mtr reel)	Reel			15	0		13	20		20	0						0	1		0					69
16	P-16	Single Port Face Plate without shutter - Square Type	Nos			150	0		0	0			0						0			0					150
17	P-17	Dual Port Face Plate without shutter - Square Type	Nos				0		40	0		50	0						0			0					90
18	P-18	Cat 6A Shielded Information Outlet	Nos				0		80	0		200	0						0			0					280
19	P-19	CAT6A 24 Port Unloaded Patch Panel - Straight with rear cable manager	Nos				0		11	0		20	0						0			0					31
20	P-20	Cat 6A Patch Cord, (1Mtr) LSZH	Nos			50	0		80	0		50	0						0			0					180
21	P-21	Cat 6A Patch Cord, (2Mtr) LSZH	Nos			150	0		80	0		50	0						0	50		0					330
22	P-22	CAT6A 24 Port loaded Patch Panel, Shielded - Straight,with rear coble manager	Nos			150	0		0	0			0						0			0					150
23	P-23	Single Mode, OS2, 6Core, Outside Plant, Armor, Outdoor Stranded Loose Tube Cable	Mtr		2000	0	0		1300	50000		11050	0						0			0					64350
24	P-24	Single Mode, OS2, 12Core, Outside Plant, Armor, Outdoor Stranded Loose Tube Cable	Mtr			9000	0		0	4000		12100	2000						0			0					27100
25	P-25	Single Mode, OS2, 24 Core, Outside Plant, Stranded Loose Tube, Metallic Armored	Mtr			500	0		0	0			0						0			0					500
26	P-26	Single Mode, OS2, 48 Core, Outside Plant,Stranded Loose Tube, Metallic Armored	Mtr			250	0		4800	0		10500	0						0			0					15550
27	P-27	12 Port loaded LIU with OS2 Modular Cassettes/Adaptor Plate with pigtails, splice trays and accessories ( LC Connector )	Nos			20	0		15	70		86	0				10		0			0					201
28	P-28	24 Port LIU with OS2 Modular Cassettes/Adaptor Plate with pigtails, splice trays and accessories ( LC Connector )	Nos			16	0		0	36		100	5				5		0			0					162
29	P-29	48 Port LIU with OS2 Modular Cassettes/Adaptor Plate, pigtails, splice trays and accessories ( LC Connector )	Nos			2	0		12	0		20	0						0			0					34
30	P-30	Single Mode, OS2, LC - LC Duplex Fiber Patch Cord – 2 mm Duplex, Riser, yellow jacket, 10 ft (3 Mtr)	Nos		72	130	0		0	200		300	0						0			0					702

**NETWORK RC UNIT WISE REQUIREMENTS**

SI no	Item Code	Item Description	UOM	Corporate Office	Corporate R&D	EDN Bangalore	EMRP	FSIP Jagadishpur	Haridwar	Bhopal	HERP Varanasi	HPEP	HPVP	Industry Sector	International Operation	Goindwal	Jhansi	Thirumayam	PSER	PSSR	PSWR	Ranipet	Rudrapur	SBD Bangalore	Trichy	ROD HQ	Total Qty
31	P-31	Single Mode, OS2, LC - LC Duplex Fiber Patch Cord – 2 mm Duplex, Riser, yellow jacket, 15 ft (5 Mtr)	Nos			30	0		55	20		300	100						0			0					505
32	P-32	Single Mode, OS2, SC - LC Duplex Fiber Patch Cord – 2 mm Duplex, Riser, yellow jacket, 10 ft (3 Mtr)	Nos			100	0		0	0			0						0			0					100
33	P-33	Single Mode, OS2, SC - LC Duplex Fiber Patch Cord – 2 mm Duplex, Riser, yellow jacket, 15 ft (5 Mtr)	Nos			30	0		43	0			0						0			0					73
34	P-34	Singlemode OS2 pigtail - LC type	Nos			1000	0		0	200			100						0			0					1300
35	P-35	6 Core, Outside Plant, Multi Mode, OM4, Gel Free, Stranded Loose Tube, Metallic Armored,	Mtr			0	0	3000	3250	0			0						0			0					6250
36	P-36	6 Core, Indoor Unarmored, Multi Mode, OM4, Gel Free, Stranded Loose Tube,	Mtr			0	0		440	0			0						0			0					440
37	P-37	12 Core, Outside Plant, Multi Mode, OM4, Gel Free, Stranded Loose Tube, Metallic Armored,	Mtr			7500	0		0	0			0						0			0					7500
38	P-38	12 Port Loaded Fiber LIU for Multimode Mode with OM4 Modular Cassettes/Adaptor Plate with Pigtailed, Splice kit / Splice Trays and Accessories	Nos			70	0	12	50	0			0						0			0					132
39	P-39	24 Port Loaded Fiber LIU for Multimode Mode with OM4 Modular Cassettes/Adaptor Plate with Pigtailed, Splice kit / Splice Trays	Nos			35	0		4	0			0						0			0					39
40	P-40	Multimode OM4 LC to LC, Fiber Patch Cord, 2 mm Duplex, Riser, aqua jacket, 10 ft (3Mtr)	Nos			400	0		0	0			0						0			0					400
41	P-41	Multimode OM4 LC to LC, Fiber Patch Cord, 2 mm Duplex, Riser, aqua jacket, 15 ft (5Mtr)	Nos			30	0		103	0			0						0			0					133
42	P-42	Multimode OM4 SC to LC, Fiber Patch Cord, 2 mm Duplex, Riser, aqua jacket, 10 ft (3Mtr)	Nos			50	0	16	0	0			0						0			0					66
43	P-43	Multimode OM4 SC to LC, Fiber Patch Cord, 2 mm Duplex, Riser, aqua jacket, 15 ft (5Mtr)	Nos			30	0		176	0			0						0			0					206
44	P-44	Testing of all the Copper Ports Penta Scanning by using DTX 1800 or latest Calibrated Tool	Port		100	2000	0		600	0			2200	0					0			0					4900
45	P-45	Testing of all the Fiber Cores by using OLTs by using Latest Calibrated Tool	Core		72	1000	0		456	0			700	0					0			0					2228
46	P-46	Standard Racks with Accessories - 6U, with (Accessories) PDU, Fan, Horizontal Cable Manager and Mounting Hardware	Nos			6	0		0	80	4	10	5			6	10		0			0					121

**NETWORK RC UNIT WISE REQUIREMENTS**

SI no	Item Code	Item Description	UOM	Corporate Office	Corporate R&D	EDN Bangalore	EMRP	FSIP Jagadishpur	Haridwar	Bhopal	HERP Varanasi	HPEP	HPVP	Industry Sector	International Operation	Goindwal	Jhansi	Thirumayam	PSER	PSSR	PSWR	Ranipet	Rudrapur	SBD Bangalore	Trichy	ROD HQ	Total Qty
47	P-47	Standard Racks with Accessories - 12U , with (Accessories) PDU, Fan, Horizontal Cable Manager and Mounting Hardware	Nos			30	0		28	260		3	0				5		0			0					326
48	P-48	Standard Racks with Accessories - 15U , with (Accessories) PDU, Fan, Horizontal Cable Manager and Mounting Hardware	Nos			10	0		0	10		6	0						0			0					26
49	P-49	Standard Racks with Accessories - 24U , with (Accessories) PDU, Fan, Horizontal Cable Manager and Mounting Hardware	Nos			15	0		10	12			0						0			0					37
50	P-50	Standard Racks with Accessories - 800 x 800/1000, 42U, - Perforated doors metal, 1Ph, 230V, 32A, Zero U standard Vertical rack mount power distribution unit with 12 X Indian Round Pin 5/15A, (Inlet Plug Not Installed, Recommended IEC30932A 2P +E), 16A MCB X 2 Circuits- PDU Rating 7.3KVA/Bottom feed- 3M/ Black, Horizontal Cable Manager	Nos			3	0		6	2		4	0						0			0					15
51	P-51	50 x 50 mm GI Raceway with Cover Threaded Rods Flats	Mtr				0		0	0		1666	0						0			0					1666
52	P-52	100 x 50 mm GI Raceway with Anchor Bolts & Nuts	Mtr				0		0	0		167	0						0			0					167
53	P-53	200 x 50 mm GI Raceway with Cover	Mtr				0		0	0		167	0						0			0					167
54	P-54	25 mm PVC conduit with the accessories	Mtr				0		0	1000		1600	0						0			0					2600
55	P-55	50 mm PVC Channel with the accessories	Mtr				0		0	0		800	0						0			0					800
56	P-56	1" PVC conduit with the accessories	Mtr				0		1000	0			100						0			0					1100
57	P-57	1.25" PVC conduit with the accessories	Mtr				0		4500	0			0						0			0					4500
58	P-58	25 mm casing & capping with the accessories	Mtr				0		0	1000		320	0						0			0					1320
59	P-59	32 mm casing & capping with the accessories	Mtr				0		0	1000		200	0						0			0					1200
60	P-60	1" casing & capping with the accessories	Mtr				0		1000	0			0						0			0					1000
61	P-61	1.25" casing & capping with the accessories	Mtr				0		1000	0			0						0			0					1000
62	P-62	1.5" casing & capping with the accessories	Mtr				0		0	0			100						0			0					100
63	P-63	25 mm HDPE PLB Pipe with the accessories	Mtr		2000		0		0	35000		5000	0						0			0					42000
64	P-64	40 mm HDPE PLB Pipe with the accessories	Mtr				0		0	10000		4000	0						0			0					14000
65	P-65	50 mm HDPE PLB Pipe with the accessories	Mtr				0	2800	2200	0		4000	0						0			0					9000
66	P-66	80 mm HDPE PLB Pipe with the accessories	Mtr				0		0	0		4000	0						0			0					4000
67	P-67	100 cm depth x 30 cm width Soft Soil Trenching in meters	Mtr		2000		0	2000	1100	7000		10000	0						0			0					22100
68	P-68	100 cm depth x 30 cm width Hard Soil Trenching in meters	Mtr				0	800	1100	3000		2000	0						0			0					6900

**NETWORK RC UNIT WISE REQUIREMENTS**

SI no	Item Code	Item Description	UOM	Corporate Office	Corporate R&D	EDN Bangalore	EMRP	FSIP Jagadishpur	Haridwar	Bhopal	HERP Varanasi	HPEP	HPVP	Industry Sector	International Operation	Goindwal	Jhansi	Thirumayam	PSER	PSSR	PSWR	Ranipet	Rudrapur	SBD Bangalore	Trichy	ROD HQ	Total Qty
69	P-69	Construction of Chambers 100 cm dia x 100 cm depth for joining the OFC cables	Mtr						0	0		50	0						0			0					50
70	P-70	Installation of Readymade concrete chambers for joining the OFC cables	Mtr						0	20		50	0						0			0					70
71	P-71	Splice Enclosure - 48F	Nos						0	0		40	0						0			0					40
72	P-72	Splice Enclosure - 24F	Nos						0	20			0						0			0					20
73	P-73	Splice Enclosure - 12F	Nos						0	20			0						0			0					20
74	P-74	25 mm GI Pipes with the accessories	Mtr						0	0		150	0						0			0					150
75	P-75	40 mm GI Pipes with the accessories	Mtr						0	0		150	0						0			0					150
76	P-76	MS 25 mm	Mtr						3200	0			0						0			0					3200
77	P-77	50 mm GI Pipes with the accessories	Mtr						0	1000		100	0						0			0					1100
78	P-78	Road Cutting & refilling with Concrete as per the standards of Customer	Mtr					200	2200	1000		100	0						0			0					3500
79	P-79	Road Cutting & refilling with Asphalt / Bitumen as per the standards of Customer	Mtr						2200	1000		100	0						0			0					3300
80	P-80	Wall Chipping for the Raceway Installation	CM						0	0		2000	0						0			0					2000
81	P-81	Core Cutting for the Conduit Installation	Nos						0	0		200	0						0			0					200
82	P-82	1RU Fiber Optic Enclosure 4x12F Cassette Capacity MPO/LC- Unloaded sliding Drawer	Each						47	0		58	0						0			0					105
83	P-83	12 Port MPO-LC ModLink Cassette, Duplex LC, OM4 50µm Multimode, Low Loss	Each						43	0		54	0						0			0					97
84	P-84	12 Port MPO-LC ModLink Cassette, Duplex LC, OS2 9µm Singlemode, Low Loss	Each						43	0		54	0						0			0					97
85	P-85	4RU Fiber Optic Enclosure 24x24F Cassette Capacity MPO/LC- Unloaded sliding Drawer	Each						4	0		4	0						0			0					8
86	P-86	24 Port MPO-LC ModLink Cassette, Duplex LC, OM4 50µm Multimode, Low Loss	Each						30	0		35	0						0			0					65
87	P-87	24 Port MPO-LC ModLink Cassette, Duplex LC, OS2 9µm Singlemode, Low Loss	Each						30	0		35	0						0			0					65
88	P-88	Blank plates	Each						134	0		146	0						0			0					280
89	P-89	12Core MTP-MTP Cable assembly Polarity B Female to female OM4 50/125m - 25 mts	Each						18	0		27	0						0			0					45
90	P-90	12Core MTP-MTP Cable assembly Polarity B Female to female OM4 50/125m - 15 mts	Each						25	0		27	0						0			0					52
91	P-91	12Core MTP-MTP Cable assembly Polarity B Female to female OS2 9/125m - 25 mts	Each						18	0		27	0						0			0					45
92	P-92	12Core MTP-MTP Cable assembly Polarity B Female to female OS2 9/125m - 15 mts	Each						25	0		27	0						0			0					52

**NETWORK RC UNIT WISE REQUIREMENTS**

SI no	Item Code	Item Description	UOM	Corporate Office	Corporate R&D	EDN Bangalore	EMRP	FSIP Jagadishpur	Haridwar	Bhopal	HERP Varanasi	HPEP	HPVP	Industry Sector	International Operation	Goindwal	Jhansi	Thirumayam	PSER	PSSR	PSWR	Ranipet	Rudrapur	SBD Bangalore	Trichy	ROD HQ	Total Qty
93	P-93	12Core MTP-MTP Cable assembly Polarity B Female to female OM4 50/125m - 8 mts	Each						16	0		16	0						0			0					32
94	P-94	12Core MTP-MTP Cable assembly Polarity B Female to female OS2 9/125m - 8 mts	Each						16	0		16	0						0			0					32
95	P-95	LC-LC OM4 Duplex LSZH Patch Cords 3m	Each						434	0		398	0						0			0					832
96	P-96	LC-LC OM4 Duplex LSZH Patch Cords 5m	Each						124	0		262	0						0			0					386
97	P-97	LC-LC OS2 Duplex LSZH Patch Cords 3m	Each						454	0		426	0						0			0					880
98	P-98	LC-LC OS2 Duplex LSZH Patch Cords 5m	Each						164	0		318	0						0			0					482
99	P-99	Cat 6A U/FTP LSOH Cable, Violet - 500m	Each						7200	0		20	0						0			0					7220
100	P-100	Cat 24 Port Patch Panel, Unloaded UTP or Shielded - 1U	Each						60	0		81	0						0			0					141
101	P-101	Cat 6A Jack RJ45 568A/B Shielded	Each						960	0		1296	0						0			0					2256
102	P-102	Single Position Blank Module	Each						480	0		648	0						0			0					1128
103	P-103	Cat 6A Patch Cord 568A/B Shielded, LSOH - 3m	Each						619	0		823	0						0			0					1442
104	P-104	Cat 6A Patch Cord 568A/B Shielded, LSOH - 8m	Each						280	0		364	0						0			0					644

**Note:**

- 1) RE charges (Refer Resident Engineer sheet) and 5 year warranty charges are included in Maintenance Charges
- 2) The insurance (transit & onsite) charges for 5 years is included in 'Incidental' charges.

**MUTUAL NON-DISCLOSURE AGREEMENT**

This Agreement (“*Agreement*”) is made and executed on [.....<sup>th</sup>] day of [.....] 2023 (“*Effective Date*”) by and between :

**Bharat Heavy Electricals Ltd.(BHEL)**, a Public Sector Organization having its principal place of business at BHEL House, Siri Fort, New Delhi - 110049

And

[ M/s XX ], an existing Company under the Companies Act,1956/2013 / Partnership Firm, having its registered office at -----, (“*The Bidder*”).

WHEREAS in order to pursue the mutual business purpose of this particular project as specified in Bid document for IT Hardware Rate Contract on Lease basis across BHEL at more than 100 locations for a period of FIVE years, **BHEL** and the Bidder have an interest in participating in discussions wherein either Party might share information with the other that the disclosing Party considers to be proprietary and confidential to itself (“*Confidential Information*”);

**SCOPE OF CONFIDENTIAL INFORMATION**

WHEREAS the Parties agree that Confidential Information of a Party might include, but not be limited to that Party’s:

“**Confidential Information**” means any data or information that is proprietary to the Disclosing Party and not generally known to the public, whether in tangible or intangible form, in whatever medium provided, whether unmodified or modified, whenever and however disclosed, including, but not limited to:

business plans, methods, practices and, personnel customer or supplier lists;

any scientific or technical information, inventions, designs, processes, methods, products, improvement, patent applications, and other proprietary rights; or

specifications, drawings, sketches, models, samples, tools, computer programs, technical information, or other related information;

any concepts, reports, data, know-how, works-in-progress, designs, development tools, specifications, computer software, source code, object code, flow charts, databases, inventions, information and trade secrets;

any other information that should reasonably be recognized as confidential information of the Disclosing Party;

And any information generated by the Receiving Party or by its Representatives that contains, reflects, or is derived from any of the foregoing.

Notwithstanding the above, the Parties agree that information shall not be deemed Confidential Information and the Recipient shall have no obligation to hold in confidence such information, where such information:

is already lawfully known to the Recipient, having been disclosed to the Recipient by a third party without such third party having an obligation of confidentiality to the disclosing Party prior to receiving the Confidential Information from the Disclosing Party;

OR

is or becomes publicly known through no wrongful act or failure to act by the Recipient

, its employees, officers, directors, or agents being inconsistent with its obligation under this agreement;

OR

is independently developed by the Recipient without violation of the terms of this Agreement, as evidenced by the Receiving Party's records, and without reference to any Confidential Information disclosed hereunder;

OR

is approved for release (and only to the extent so approved) by the disclosing Party;

OR

is disclosed pursuant to the lawful requirement of a court or governmental agency or where required by operation of law, although the requirements of clause ..... hereof shall apply prior to any disclosure being made.

**OBLIGATIONS:**

Either Party may disclose Confidential Information to the other Party in confidence provided that the disclosing Party identifies such information as proprietary and confidential either by marking it, in the case of written materials, or, in the case of information that is disclosed orally or written materials that are not marked, by notifying the other Party of the proprietary and confidential nature of the information, such notification to be done orally, by e-mail or written correspondence, or via other means of communication as might be appropriate.

The Recipient shall prevent unauthorized use, dissemination or publication thereof, and same degree of caution / care as it uses to protect its own information of a similar confidential nature.

A receiving party will comply with all applicable laws in respect to subject matter or disclosure as contemplated herein.

When informed of the proprietary and confidential nature of Confidential Information that has been disclosed by the other Party, the receiving Party ("Recipient") shall refrain from disclosing such Confidential Information to any contractor or other third party without prior, written approval from the disclosing Party and shall protect such Confidential Information from inadvertent disclosure to a third party using the same care and diligence that the Recipient uses to protect its own proprietary and confidential information, but in no case less than reasonable care. The Recipient shall ensure that each of its employees, officers, directors, or agents who has access to Confidential Information disclosed under this Agreement is informed of its proprietary and confidential nature and is required to abide by the terms of this Agreement. The Recipient of Confidential Information disclosed under this Agreement shall promptly notify the disclosing Party of any disclosure of such Confidential Information in violation of this Agreement or other legal process requiring production or disclosure of said Confidential Information.

The Recipient agrees to use the Confidential Information solely in connection with the current or contemplated business relationship between the parties and not for any purpose other than as authorized by this Agreement, without the prior written consent of an authorized representative of the Disclosing Party. No other right or license, whether expressed or implied, in the Confidential Information is granted to the Receiving Party. Title to the Confidential Information will remain solely with the Disclosing Party. All use of Confidential Information by the Recipient Party shall be for the benefit of the Disclosing Party and any modifications and improvements thereof by the Recipient shall be the sole property of the Disclosing Party.

All Confidential Information disclosed under this Agreement shall be and remain the property of the disclosing Party and nothing contained in this Agreement shall be construed as granting or conferring any rights to such Confidential Information on the other Party.

Recipient Party shall immediately return and redeliver to Disclosing Party all tangible material embodying any Confidential Information provided hereunder and all notes, summaries, memoranda, drawings, manuals, records, excerpts or derivative information deriving therefrom, and all other documents or materials ("Notes") (and all copies of any of the foregoing, including "copies" that have been converted to computerized media in the form of image, data, word processing, or other types of files either manually or by image capture) based on or including any Confidential Information, in whatever form of storage or retrieval, upon the earlier of :

The completion or termination of the dealings between the parties contemplated hereunder;  
the termination of this Agreement;

or

at such time as the Disclosing Party may so request; provided however that the Receiving Party may retain such of its documents as is necessary to enable it to comply with its reasonable document retention policies. Alternatively, the Recipient, with the written consent of the Disclosing Party may (or in the case of Notes, at the Receiving Party's option) immediately destroy any of the foregoing embodying Confidential Information (or the reasonably non recoverable data erasure of computerized data) and, upon request, certify in writing such destruction by an authorized officer of the Receiving Party supervising the destruction).

#### **TERM and TERMINATIONS:**

This Agreement shall continue for .....years from the Effective Date or until terminated by either party by giving thirty (30) days written notice to the other party. Notwithstanding such termination, the confidentiality obligations of each party concerning the Confidential Information disclosed hereunder shall survive for a period of

..... years following the expiration or earlier termination of this Agreement;

The Parties agree that the disclosing Party will suffer irreparable injury if its Confidential Information is made public, released to a third party, or otherwise disclosed in breach of this Agreement and that the disclosing Party shall be entitled to obtain injunctive relief against a threatened breach or continuation of any such breach and, in the event of such breach, an award of actual and exemplary damages from any court of competent jurisdiction.

#### **WARRANTIES AND DISCLAIMER:**

Recipient may pass confidential information to its Affiliates on a 'need to know basis' to the extent necessary to carry out the Business Purpose and hereby warrants that these Affiliates will abide by all the terms and conditions of the agreement dated .....

No other warranties are made by either party under this agreement. Confidential information is provided "as is" with no warranty as to its accuracy or completeness.

Each party recognises and agrees that nothing in this agreement will be construed as granting any rights to the recipient, by license or otherwise, to any o disclosing party's confidential information.

#### **GOVERNING LAW, COURT JURISDICTION & DISPUTE RESOLUTION:**

This Agreement is governed by and will be construed in accordance with the laws of India and the parties hereby consent to the jurisdiction of Courts and/or Forums situated at Delhi;

If any dispute arises between the parties hereto during the subsistence or thereafter, in connection with or arising out of this Agreement, the parties shall make best efforts to resolve the dispute amicably between themselves. In the event that all aforesaid efforts to resolve the dispute are not successful, the parties agree to resolve the dispute through arbitration in accordance with Arbitration and Conciliation Act, 1996 by a Sole Arbitrator. The reference of dispute to Arbitration and appointment of Arbitrator shall be as per clause

..... of Contract dated ..... The seat for arbitration shall be Delhi. The proceedings shall be in the English language

**MISCELLANEOUS:**

The terms of this Agreement shall not be construed to limit either Party's right to develop independently or acquire products without use of the other Party's Confidential Information. The disclosing party acknowledges that the Recipient may currently or in the future be developing information internally, or receiving information from other parties, that is similar to the Confidential Information. Nothing in this Agreement will prohibit the Recipient from developing or having developed for it products, concepts, systems or techniques that are similar to or compete with the products, concepts, systems or techniques contemplated by or embodied in the Confidential Information provided that the Recipient does not violate any of its obligations under this Agreement in connection with such development.

The parties agree that neither party will be under any legal obligation of any kind whatsoever with respect to a Transaction by virtue of this Agreement, except for the matters specifically agreed to herein. Nothing in this Agreement shall be construed to constitute an agency, partnership, joint venture, or other similar relationship between the Parties.

Neither Party will, without prior approval of the other Party, make any public announcement of or otherwise disclose the existence or the terms of this Agreement.

This Agreement contains the entire agreement between the Parties and in no way creates an obligation for either Party to disclose information to the other Party or to enter into any other agreement.

This Agreement shall remain in effect during the contract period from the Effective Date unless otherwise terminated by either Party giving notice to the other of its desire to terminate this Agreement. The requirement to protect Confidential Information disclosed under this Agreement shall survive termination of this Agreement.

**IN WITNESS WHEREOF:**

**FOR AND ON BEHALF OF**

BHARAT HEAVY ELECTRICALS LTD.

**FOR AND ON BEHALF OF**

\_\_\_\_\_

Signature:

Name:

Designation:

Date:

Signature:

Name:

Designation:

Date:

**Witness**

1.

2.

**Witness**

1.

2.

**FINANCE LEASE CUM HIRE PURCHASE AGREEMENT (TRIPARTITE)**

THIS FINANCE LEASE AGREEMENT **executed on this day.....of, (\_dd / \_mm/ \_yyyy)** at [place].

**BETWEEN**

**[Name of the Company]**, a Company incorporated under the Companies Act, 1956, having its Registered Office at **[Address of the company]** represented \_\_\_\_\_ herein after called the **LESSOR** (which expression shall, unless repugnant to the subject or context thereof include its successors and assigns) of the first part.

**AND**

**BHARAT HEAVY ELECTRICALS LIMITED** a Company incorporated under the Companies Act, 1956, having its Registered office at BHEL house, Siri Fort, New Delhi 110049, through one of its units at **[Name of the Unit]**, represented by its competent authorities' Sri. **[Name and designation]** hereafter called **the LESSEE** (which expression shall unless repugnant to the subject or context thereof include its successors and assigns) of the second part.

**AND**

**[Name of the vendor]** a Firm incorporated / a Company incorporated under the Indian Partnership Act 1932 / Companies Act, 1956 having its Registered Office at **[address of the vendor]** represented by ....., Mr. (Name) hereinafter called **the VENDOR** (which expression shall unless repugnant to the subject or context thereof include its successors and assigns of the third part.

Whereas Vendor has submitted bid against the tender No ..... and stood as lowest bidder(L1). Vendor has informed to Lessee that he has tie-up with Lessor for supply of equipment. Accordingly, this Tripartite Agreement is entering between Lessee, Lessor and Vendor.

Whereas the **LESSEE** has placed a purchase order no. **[PO No.]** Dated **[dd] / [mm]/ [yyyy] on vendor** as mentioned in scope of work (Annexure-II of NIT) for Five (05) Years on Financial Lease Basis. Further Lessee shall place purchase order on Lessor for supply of Equipment. Such equipment shall be supplied by Vendor to Lessee.

Whereas, the **LESSOR** and the **VENDOR** through this Agreement have impliedly entered into a business arrangement for leasing out the Equipment more fully described in Schedule A to the **LESSEE** on certain terms and conditions mentioned in this Agreement.

And whereas the **LESSOR** has offered to purchase from the **VENDOR**, the said equipment more fully described in **Schedule A** hereto (herein after referred to as the Equipment) at the acquisition cost specified in **Schedule A** to this Agreement for leasing the same

to **LESSEE** upon the terms and conditions contained herein.

And whereas the **LESSEE** has offered to take on lease the Equipment so purchased by the **LESSOR**, and the **LESSOR** has agreed to lease out the Equipment to the **LESSEE** upon the terms and condition contained herein.

And whereas the **VENDOR** has agreed to supply the Equipment purchased by the **LESSOR** and install the Equipment in the premises of the **LESSEE** at desired places and provide maintenance services to the **LESSEE** subject to the terms and conditions of this agreement.

## 1. DEFINITIONS

In this agreement, unless context otherwise so requires, the following expressions shall have the following meanings viz:

### 1.1. Agreement

Shall mean this Tripartite Agreement.

### 1.2. Clause

Shall mean clause of this agreement and accordingly the word Sub-Clause shall mean Sub-Clause of a clause of this agreement.

### 1.3. Commencement Date

Shall mean the date of installation of this Equipment/ Migration as mentioned in the Order [PO No.] dated [dd]/ [mm]/ [yyyy] and as confirmed by the **LESSEE** to the **LESSOR** by signing an Acceptance Certificate in the form of Schedule D to this Agreement and inserting the Acceptance Date.

### 1.4. Equipment

Shall mean all the articles and things described in **Schedule - A** to this Agreement purchased by the **LESSOR** through **VENDOR** and leased to the **LESSEE** and includes any individual items contained in the Equipment and all alterations, replacements and / or additions to the Equipment or any item or part thereof during the period of this Agreement.

Provided that where there is more than one item of Equipment, the lease hereunder shall be deemed to be of each such of Equipment individually and the provisions of this agreement shall be applicable independently to each such item of Equipment individually, whether or not such item of Equipment be of same or similar description or use, or is to be placed at the same location.

### 1.5. Lease Period

Shall mean five years from the Acceptance Date specified in the Acceptance

Certificate which is cancelable by the **LESSEE** or the **LESSOR** only as provided herein.

#### **1.6. Rental**

Shall mean the lease rental to be paid by the **LESSEE** to the **LESSOR** as mentioned in **Schedule – B** of this Agreement.

Shall mean the maintenance fee payable by the **LESSEE** to the **VENDOR** as specified in **Schedule – C** of this Agreement.

#### **1.7. Schedule**

Shall mean the schedule or schedules, which may now or from time to time be incorporated hereunder as an integral part of this agreement.

#### **1.8. Lease**

Shall mean a contract which conveys the right to control the use of the Equipment for the agreed lease period by the **LESSOR** to the **LESSEE** in exchange for the contract price as per Ind AS-116 (Indian Accounting Standard 116) issued by the Institute of Chartered Accountants Of India).

#### **1.9. Commissioning**

SUPPLY, INSTALLATION & MAINTENANCE OF NETWORK ITEMS AS MENTIONED IN SCOPE of NIT Document, that form part of the Purchase Order No [PO No.] Dated [dd]/ [mm]/ [yyyy].

### **2. BASIC TERMS OF LEASE**

**2.1.** The **LESSEE** will avail Income Tax Depreciation since all the risks and rewards incidental to ownership is transferred to the **LESSEE** as per AS-17 issued by ICAI.

The supply of the Equipment to the **LESSEE** is on the basis of finance lease rentals. The purchase orders issued by **LESSOR** on the **VENDOR** will be the effective purchase order for this transaction to establish the ownership of the Equipment and **LESSOR** will be the sole and full owner of the Equipment. **LESSEE's** only rights to the Equipment are as a lessee under this Agreement. **LESSEE** shall hold the Equipment as lessee and shall not contest Lessor's sole and exclusive ownership of the Equipment.

Equipment may not be moved to a location outside India. If **LESSEE** wishes to move Equipment from the location specified in Schedule A to another of **LESSEE's** business locations in India, **LESSEE** must first give notice to **LESSOR**. Lessor's prior consent to such a move is required but may not be unreasonably withheld, delayed or conditioned as long as the Equipment remains in **LESSEE's** possession and control.

- 2.2. If **LESSOR** has not already done so, then upon execution of this Agreement, **LESSOR**, agrees to release confirmed regular Purchase Order for the Equipment as defined in **Schedule A** in favor of the **VENDOR**.
- 2.3. After purchase of the Equipment by the **LESSOR**, the **VENDOR** will ensure delivery, installation and commissioning of the Equipment at the **LESSEE's** premises located at **[Place]** as per the Purchase Order No **[PO No.]** dated **[dd]/[mm]/[yyyy]**
- 2.4. The entire risk, cost or any outgoing pertaining to the delivery and installation of the Equipment shall be borne by the **VENDOR**. **LESSOR** will have no obligation to pay the purchase price for the Equipment until the **LESSEE** has confirmed the due delivery and installation of the Equipment by signing the Acceptance Certificate attached as **Schedule D**.
- 2.5. The **LESSOR** hereby gives on lease and the **LESSEE** hereby takes on lease the Equipment for the Lease Period subject to the terms of this Agreement.
- 2.6. All the terms and conditions mentioned in the NIT shall form an integral part of this Agreement.

NOW THEREFORE THIS AGREEMENT WITNESSETH THAT for and in consideration of the mutual covenants and conditions hereafter set forth, the parties hereto agree as follows: -

### 3. LESSEE'S CONFIRMATION

Upon receiving delivery, installation and commissioning of the Equipment from the **VENDOR**, the **LESSEE** will certify that the Equipment are as per specifications provided by the **LESSEE** to the **VENDOR** by signing the Acceptance Certificate in the form of **Schedule D**.

The **LESSOR** agrees to pay the Purchase Price for the Equipment to the **VENDOR** immediately after the **LESSEE** signs the Acceptance Certificate and gives it to the **VENDOR** as per Schedule D.

### 4. LESSOR'S RIGHT TO LEASE

The **LESSOR** guarantees that upon paying the purchase price for the Equipment to the **VENDOR**, the **LESSOR** has the right to lease the Equipment to the **LESSEE** under this Agreement.

### 5. LESSOR'S COVENANTS

The **LESSOR** hereby covenants that they undertake to comply with the terms and conditions stipulated in the Purchase Order no. **[PO No.] Dated [dd]/[mm]/[yyyy]** placed by the **LESSEE on the Vendor**, which will form part and parcel of this Agreement. Except as provided under the clause 22 of this agreement, in the event of any conflict between the terms of this Agreement and the terms of the Purchase Order

Number [**PO No.**], the Purchase Order No. dt. shall prevail.

The **LESSOR** shall not divert the equipment after purchase or acquisition of the Equipment to any third party. The **LESSOR under any circumstances** shall not disturb the possession of the equipment with the **LESSEE**, during the currency of the agreement subject to clauses 7, 18 and 19 of this Agreement. Lessor shall not lien, attach, hypothecate, and mortgage, etc., any of the equipment which is in possession with the **LESSEE**.

## **6. LESSEE'S COVENANTS**

### **6.1. LESSEE NOT TO CONVERT THE PROPERTY, ALLOW FIXING OF NAME PLATE OF LESSOR**

**LESSEE** shall not in any way impair the identifiability, ascertainability, severability and re-deliverability of the Equipment during the currency of the Lease period. **LESSEE** will allow affixing of nameplate or other perishable mark on the Equipment identifying the leased Equipment covered in **Schedule A** and not to allow or permit the same to be removed or defaced during the currency of the Lease period.

### **6.2. LESSEE TO MAKE PROPER USE OF THE EQUIPMENT**

**LESSEE** shall use and operate the Equipment carefully in the same way as would have been the case with the **LESSEE'S** own Equipment. **LESSEE** must at all times operate and **VENDOR** shall maintain the Equipment in good working order, repair, condition and appearance. The maintenance and upkeep of the equipment is sole responsibility of Vendor and in case of any default for whatsoever reason, vendor shall take the complete responsibility and replace/repair the equipment within such time mentioned in Service Level Agreement (SLA).

## **7. INSPECTION BY THE LESSOR**

The **LESSEE** shall permit the **LESSOR** or any person authorized by the **LESSOR** at all reasonable times (immediately in case of an emergency) to inspect, view and examine the state and condition of the Equipment and for that purpose permit the **LESSOR** or any person authorized by the **LESSOR** to enter the premises where the Equipment is used or stored. The **LESSOR** shall give One Week Notice for any such inspection / examination. Provided further, the **LESSOR** hereby agrees that no such inspection or examination of the state and condition of the Equipment will be made within a period of less than three months from the date of the previous inspection / examination. The **LESSOR** hereby permits immediate inspections/examinations of the state and condition of the Equipment, in case of any emergency, only twice a year.

## **8. INSURANCE**

**8.1.** The **VENDOR** shall keep the Equipment insured with an insurer acceptable to **LESSOR** which covers against all risks loss up to its full replacement value. **VENDOR** must promptly produce evidence of current insurance policies and of payment of premiums whenever reasonably requested by **LESSOR**.

**8.2.** In the event of failure on the part of the **VENDOR** to maintain the insurance required under clause 8.1 or to pay the insurance premium as above, the Vendor agrees that the **LESSOR** may purchase such insurance itself or pay the insurance premiums as above and shall forthwith on receipt of a notice of demand from the **LESSOR** reimburse all sums so paid by **LESSOR** together with interest. On receipt of demand notice from **LESSOR** to the **LESSEE**, the **LESSEE** may pay the insurance premium amount from the payments due and payable to the **VENDOR**.

**8.3.** An item of Equipment suffers a Casualty Loss, if the Equipment is lost, destroyed, stolen or damaged beyond repair. If a Casualty Loss occurs **LESSEE** must promptly notify **LESSOR** within 30 days from the date of knowledge of occurrence of such Casualty Loss to the **LESSEE** or on or by the next Rent payment date whichever is later

In support of filing of insurance claim by the **Lessor/vendor** with respect to any casualty loss of the Equipment or part of the Equipment mentioned above, the following documents may be provided by the **LESSEE** to the Insurance Company:

- a. Letter of the **LESSEE** confirming happening of the Casualty Loss.
- b. Copy of the Complaint filed by **LESSEE/VENDOR** before the Police Authorities regarding Casualty Loss.
- c. FIR Copy or Non-traceable Certificate issued by the respective Police Authorities in case of stolen/Theft Equipment.

In the event of occurrence of any Casualty Loss irrespective of the status of the insurance claim filed against such casualty loss, the **LESSOR** shall replace / substitute Equipment, to the **LESSEE** within **EIGHT (8)** weeks from the date of occurrence of such Casualty Loss.

Substitute Equipment means a substantially equivalent or better item of hardware or software having equal or greater capabilities and equal or greater fair market value manufactured or licensed by the same manufacturer or licensor as the item of hardware or software which it is to replace under this Agreement. **LESSEE** acknowledges and agrees that Substitute Equipment is **LESSOR's** property.

Notwithstanding anything contained herein, the **VENDOR/LESSOR** shall be fully responsible for all renewal of insurance of equipment from time to time. If the claim(s) amount is rejected by insurance company for whatsoever reason, the **LESSEE** will not be responsible and shall not be liable to pay such amount.

## **9. DISCLAIMER OF ANY WARRANTY**

**9.1.** The **LESSOR** has not at any time made nor does it hereby make any representation or warranty whatsoever with respect to the

merchantability, quality, conditions or durability of the Equipment;

**9.2.** All Equipment will be used for business purposes only and for the purpose for which it is designed;

**9.3.** The **VENDOR** hereby confirms that it makes and accepts all representation or warranty whatsoever with respect to the merchantability, quality, conditions or durability of the Equipment.

## **10. VENDOR'S COVENANTS**

The **VENDOR** hereby covenant that they undertake to comply with the terms and conditions stipulated in the Purchase Order **No. [PO No.]** Dated **[dd]/[mm]/[yyyy]** issued by the **LESSEE** which form a part and parcel of this agreement

## **11. Liability towards quality of the equipment:**

Both the **LESSOR** and the **VENDOR** hereby accepts liabilities on any account pertaining to the quality of the Equipment leased to the **LESSEE**. The liability towards the **LESSEE** is restricted to the value of the contract of the items supplied by the **VENDOR WITH THE SUPPORT OF LESSOR**.

## **12. MAINTENANCE**

Maintenance services shall cover services, repairs, replacement and required Resident Engineers necessary to keep the Equipment in good working condition and use of the Equipment by the **LESSEE**. The **VENDOR** shall be responsible for the continuous and smooth operation of the Equipment for the entire lease period as mentioned below for a consideration, which is incorporated as a part of equipment as in **Schedule A** and the Maintenance Charges as in the **Schedule C** to be paid by **LESSEE** to the **VENDOR**.

Maintenance service shall cover services, repairs and replacements necessary to keep the equipment in good working order during the contract period. Preventive maintenance, wherever required, should be carried out to keep the equipment in good working condition. Maintenance shall include, but not limited to, all plastic and/or rubber parts, adapters. UPS batteries are to be replaced as and when required (found defective) during the contract period. All UPS batteries should be mandatorily replaced in the last quarter of contract period.

Maintenance charges shall also cover Resident Engineer charges and 5-year warranty charges of the equipment.

Bidder shall be responsible for running the Equipment at the uptime as per details given below:

The bidder shall ensure that the following SLA parameters are met.

The vendor shall maintain the overall uptime to minimum 99% on quarterly basis during the lease period.

A deduction from the overall quarterly charges shall be made at the rate of 1% for each 1% fall of uptime from 99%, e.g. if the uptime is 98%, one percent of quarterly rental for the particular quarter shall be deducted. The calculation for uptime shall be made on quarterly basis. The downtime calculation shall be based on 24x7 hours.

There shall be no downtime due to mutually agreed scheduled maintenance of equipment or due to power outage.

Downtime of network shall be the period (in hours) during which expected connectivity is not available on the network or part of network. The downtime factors for calculation of the penalty shall be as follows:

SI No	Category	Equipment Covered	Downtime Factor
1	A	Core Switch, Data Centre Core Switch, Data Centre Access Switch, LAN Distribution Switch, Wireless LAN Controller, Firewall, NAC	10
2	B	NMS, Access Switches, Indoor Access Point, Outdoor access point, UPS	6

#### Downtime calculation

Downtime calculation will be applicable for non-availability of Network services arising due to malfunctioning of switches, UPS, wireless network components etc.

#### Example of Downtime Calculation

Penalty will be calculated as indicated below:

Equipment down	-	Distribution switch
Downtime (in Hours)	-	Y
Quarterly maintenance value for the equipment (Rs)	-	A
Acceptable downtime per quarter (in Hours)	-	$24 * 30 * 3 * 1\% = X$
Downtime factor	-	F
Penalty (Rs)	-	$(A * F * (Y - X)) / (3 * 30 * 24)$

Penalty will be limited to maximum quarterly maintenance value for the equipment.

There shall be no downtime due to mutually agreed scheduled maintenance of equipment or due to power outage.

In situations where equipment needs to be repaired/replaced and the same model is not available in the market, the Vendor shall repair/ replace the faulty Equipment immediately of equivalent or higher model considering the compatibility of equipment.

If the uptime for equipment/system falls below 95% continuously for 3 months, the system/equipment shall have to be replaced by the Bidder within 30 days without any extra charge.

**Penalty for absence of Resident Engineer (RE):**

The bidder shall arrange for substitution for RE on leave or absence. At any point of time, the number of RE(s) deployed in a particular location shall be maintained. In case the same is not maintained, then a penalty @₹500/- per day per RE, for every absent RE, shall be levied on the bidder.

This penalty will be deducted from the total quarterly maintenance charges as per order.

The total deduction due to downtime, and absence of RE, per quarter for each location against a particular order will be limited to the 25% of the total quarterly charges for that location as per the order.

**13. IMPOSTS, TAXES AND OTHER CHARGES**

**LESSEE** agrees that the lease created under this Agreement is a net lease and that **LESSEE** will pay all tax costs connected with the lease, such as GST. Any fresh levies/ duties/taxes imposed by Govt. subsequent to the date of Purchase Order shall be borne by the **LESSEE**.

If **LESSEE** is required by any law or regulation to make any deduction or withholding with respect to any amount payable under this Agreement, **LESSEE** shall recover such amounts at applicable rates and pay the net amount to the **LESSOR / VENDOR**. Necessary tax declaration forms shall be provided by the **LESSEE** to the **LESSOR**.

Valid documents and compliances regarding taxes and duties for availing Input Tax Credit if any should be furnished by the **VENDOR/ LESSOR** to the **LESSEE**. If any relevant documents are not furnished to the **LESSEE** to avail Input Tax Credit, the same will not be paid to the **LESSOR /VENDOR** as the case may be. Due to defaults of the **LESSOR / VENDOR**, if any imposts / penalty / Incremental duty / interest are charged, it should not be passed on to the **LESSEE**.

For the purposes of this clause VAT means any value added tax, any goods and services tax or any like tax (including any interest, fines and penalties) payable on the sale of goods or provision of services in India or in any state in India.

**14. CONSIDERATION FOR THE LEASE - LEASE RENTALS AND MAINTENANCE FEE**

The **LESSEE** will pay the Rentals to the **LESSOR** and the Maintenance Fee to the **VENDOR** in accordance with Schedule B and C.

**15. OBLIGATION TO PAY LEASE RENTALS AND MAINTENANCE FEE**

Unless provided otherwise, the **LESSEE** shall pay the Lease Rentals regularly and punctually.

The VENDOR agrees that that the LESSEE can exercise any of the rights under this Agreement or Purchase Order Number [PO No.] to make deductions against or otherwise withhold payment of lease rentals or any amount due by the LESSEE to the LESSOR in circumstances contemplated under provisions of this contract.

## **16. PAYMENTS OF RENTALS AND ARREARS IN RENTALS**

- 16.1.** Rental and Maintenance Fee accounts are calculated quarterly in arrears. The **LESSOR** will raise the bills on the **LESSEE** on a quarterly basis on the Lease rental amount and the **VENDOR** will raise the bills on the **LESSEE** on a quarterly basis on the Maintenance Fee amount (as appropriate).
- 16.2.** The amounts payable by the **LESSEE** under clause 16.1 with respect to each quarter during the Lease Period are specified in Schedules B and C respectively. The first such bill of the Site (as specified in the **Schedule B and C**) will be raised on completion of first calendar quarter from the date of the certificate of acceptance for the site on pro rata basis. Subsequent bills will be raised on completion of each calendar quarter from the date of the first bill. The final bill will be on the pro rata basis on the left-over days of the last calendar quarter.
- 16.3.** **LESSEE** reserves the right to retain the equipment at the end of the lease period by making a terminal payment of ₹1.00 per Work / Purchase Order. On such payment of ₹1/- to the LESSOR, the ownership shall be transferred to the LESSEE and thereafter the LESSEE shall be the owner of the equipment(s) automatically. Lessor shall not have objection for transfer of ownership to lessee and the LESSOR shall not have any claim(s) over the equipment(s). On payment of Rs 1.00( Rupee One) by lessee the ownership will be automatically transferred to Lessee .
- 16.4.** In case **LESSEE** decides not to retain the Equipment, dismantling and removing the Equipment from the premises of the **LESSEE** shall be at the LESSOR/Vendor's cost.

## **17. Breach of contract, Remedies and Termination**

- 17.1.** In case of breach of contract such as non-compliance to supply, install, configure, SLA parameters, unsatisfactory service etc. LESSEE reserves the right to terminate the contract in full or part and LESSEE **shall recover 10% of the contract value**. The recovery shall be done from security instruments like performance bank guarantee available with LESSEE for this contract, the balance amount shall be recovered from other financial remedies (i.e. available bills of the contractor, retention amount, etc. with LESSEE) or legal remedies be pursued.
- 17.2.** VENDOR and/or LESSOR shall continue the performance of the contract under all circumstances to the extent not cancelled.
- 17.3.** The balance scope shall be got done independently without Risk & Cost of

the failed supplier/ contractor.

- 17.4. Further, levy of liquidated damages, debarment, termination, de-scoping, short-closure, etc., shall be applied as per provisions of the contract.

## **18. REDELIVERY OF THE EQUIPMENT BY THE LESSEE ON TERMINATION**

- 18.1 Upon termination of this Agreement as defined herein above during the currency of this agreement, the **LESSEE** shall, on its own without demand forthwith handover the Equipment to the **LESSOR**, in 'as is where is' condition.

- 18.2 In the event this Agreement is terminated due to reasons attributable to **LESSOR** or **VENDOR**, the **LESSOR** shall not have the right to demand the redelivery of the equipment by the **LESSEE**.

In case LESSEE informs LESSOR/ VENDOR to remove the equipment from LESSEE's premises and the Lessor / Vendor fails to remove or re-possess the Equipment within 30 days from the date of intimation at their risk and own cost, then in such cases, the Lessor / Vendor shall pay to the Lessee 3% per week of the contract value towards retention charges/ground rent. If the Lessor / Vendor fails to remove or repossess the Equipment within 60 days from the date of intimation, the Equipment will be sold by the Lessee at the risk and cost of the Lessor / Vendor and the retention charges/ground rent will be adjusted by the Lessee from out of the sale proceeds and remaining amount after adjusting all the dues will be returned to the Lessor / Vendor, if any. The Lessee shall not be liable for any claims over the Equipment for such Sale Proceeds after 60 days from the date of intimation

## **19. LESSOR'S RIGHTS AND LESSEE'S OBLIGATION ON TERMINATION**

### **19.1. RE-POSSESSION OF THE EQUIPMENT BY THE LESSOR AND HIS RIGHTS FOR THAT PURPOSE**

If **LESSOR** is entitled to repossess Equipment pursuant to Clause 17 of this Agreement and without prejudice to the rights of the **LESSEE**, the **LESSOR** shall remove or repossess the Equipment and for that purpose by itself, its servants or agents, enter upon any land, buildings or premises where the Equipment is situated or is reasonably believed by the **LESSOR** to be situated for the time being and for such entry. But this clause cannot be invoked if there is a default on the part of the **VENDOR / LESSOR** as per the terms and conditions of the contract.

## **20. ALL INDEMNITIES TO SURVIVE THE AGREEMENT**

All indemnities and covenants as contained in Clause 4, 5, 6 and 27 under

this agreement shall survive the termination of the Agreement or expiry of the lease as the case may be.

## **21. GENERAL CONDITIONS**

### **21.1. Service of Notices**

Any notice issued by the parties hereto shall be in writing and sent by Registered Post Acknowledgement Due, speed post, email to the other party to the address first above written.

### **21.2. Time to be Essence of this Agreement:**

Time shall be the essence of this Agreement for all the three contracting parties in so far as it relates to the observance or performance of all or any of its obligations including payment of any sum hereunder.

### **21.3. Waiver or Remission not to have precedent value over Demands or Notices Waived.**

The failure of the **LESSOR** to insist upon the punctual performance of any of the obligations of the **LESSEE** hereunder, or the failure of the **LESSOR** to exercise any right or remedy available to the **LESSOR**, under this Agreement or any failure of the **LESSOR** to require payment from or by the **LESSEE**, when due of any sum owing hereunder, or any extension of credit or any forbearance on the part of the **LESSOR** shall not constitute a waiver by the **LESSOR** of any subsequent or continuing default by the **LESSEE** under this Agreement nor shall the same prejudice affect or restrict the rights and powers of the **LESSOR** hereunder.

The failure of the **LESSEE** to insist upon the punctual performance of any of the obligations of the **VENDOR** or **LESSOR** hereunder or the failure of the **LESSEE** to exercise any right or remedy available to **LESSEE** under this Agreement or any failure of the **LESSEE** to require any contractual obligations or any forbearance on the part of the **LESSEE** shall not constitute a waiver by the **LESSEE** nor shall the same prejudice or affect or restrict the rights and powers of the **LESSEE** hereunder.

### **21.4. Agreement to be sole and Exclusive**

This Agreement between the parties hereto shall be capable of variation in writing by a Note of Amendment signed by and on behalf of the **LESSOR**, the **VENDOR** and the **LESSEE**.

If any provision of this Agreement is prohibited by or invalid under any law, that provision will be ineffective only to the extent of the prohibition or invalidity. The remainder of the affected provision and all other provisions of this Agreement are unaffected by the invalidity and the parties shall continue with the obligations entered in this Agreement unless and otherwise the invalid provision affects the whole object of this Agreement.

#### **21.5. INTEREST CLAUSE:**

**“No interest shall be payable by BHEL on earnest money or security deposit or any money(s) due to the Lessor and Vendor by BHEL.”**

#### **21.6. LIMITATION OF LIABILITY:**

Except as provided otherwise in the Contract and except for willful misconduct or gross negligence, neither Party shall be liable to the other Party for loss of use of any Works, loss of profit, loss of any contract or any other indirect or consequential loss or damage which may be suffered by the other Party in connection with the Contract. Neither party's liability for any direct damages resulting from its performance or failure to perform hereunder shall exceed the total contract price.

However, that this limitation shall not apply to the cost of repairing or replacing defective equipment by the Lessor/vendor, or to any obligation of the Lessor and Vendor to indemnify the Lessee with respect to Intellectual Property Rights or Under any other provisions of the Contract which expressly impose a greater liability or in cases of fraud, willful misconduct or illegal or unlawful acts.

#### **21.7. LABOUR LAWS**

The Vendor shall ensure abidance of all the labour laws especially including Contract Labour (R&A) Act 1970, Payment of wages Act 1936, Employees Compensation Act 1923, Factories Act, 1948, Minimum Wages Act 1948, Payment of Bonus Act 1965, Payment of Gratuity Act 1972, ESI Act, 1948, Provident Fund Misc. Prov. Act 1952, Child Labour (Prohibition & Regulation) Amendment Act, 2016 and all other applicable Laws as amended from time to time w.r.t. to its employees/agents placed at BHEL premises for performing its contractual obligations or part thereof.

The VENDOR at its own costs shall provide adequate training, safety gadgets, instruments, dress etc. to its employees/agents placed at LESSEE's premises for performing its contractual obligations or part thereof.

The LESSEE instructions as issued from time to time in regard to working hours, wages, leave, holidays, bonus, health, etc. shall be abided by the Vendor and its employees/agents in letter and spirit.

The Vendor shall obtain License from the Competent Authority if he engages 20 (twenty) or more workmen in LESSEE's premises under Contract Labour (Regulation and Abolition) Act, 1970. The VENDOR shall submit a valid Contract Labour License to LESSEE on or before the date of commencement of contract.

The Vendor shall attend all inspections notified/conducted by the personnel

department, Labour department, P.F. authorities, Factory Inspectors, ESI inspectors or any other such authorities under the Act, failing which appropriate action shall be initiated.

Non-compliance of provisions under any Acts/Rule/instructions/guidelines shall make the Lessor and vendor liable for penal action including termination of contract.

#### **21.8. FORCE MAJEURE:**

If at any time during the continuance of this agreement, the performance in whole or in part by either party or any obligations under the Contract shall be prevented or delayed by reason of any war, hostilities, act of public enemy, civil commotion, sabotage, fire, floods, explosions, epidemics, quarantine restrictions and Acts of God (hereinafter referred to as 'Events') and provided notice of the happening of any of the above mentioned Events duly certified concerned authorities by either party to the other within Fifteen (15) days from the date of occurrence.

Neither party shall be held liable or responsible to the other party nor be deemed to have defaulted under or breached this Agreement for failure or delay in fulfilling or performing any obligation under this Agreement when such failure or delay is caused by or results from causes beyond the reasonable control of the affected party due to occurrence of the said events.

Due to said events if the equipment's are damaged or destroyed, LESSOR or VENDOR shall replace the equipment's within 4 weeks from the date of occurrence of event. LESSEE shall not be responsible for any loss caused to other party due to the said events. In case the force majeure event continues even after 4 weeks of occurrence of the force majeure event, LESSOR or VENDOR may seek time extension and shall replace the equipment after a mutually agreed time by LESSEE, failing which penalty will be levied as per clause 12 of this agreement.

#### **21.9. Interpretation of Words**

Words importing the plural shall, except where the context otherwise requires, include the singular and vice-versa. Clauses including headings shall not control the otherwise clear meaning of the text within the relevant clause, but such heading may be used to clarify the intention in case the same is not clear.

**21.10.** This lease transaction shall be considered as finance lease in terms of Accounting Standard -116 of ICAI.

## **22. ARBITRATION**

### **ARBITRATION & CONCILIATION CLAUSE:**

The Parties agree that if at any time (whether before, during or after the arbitral

or judicial proceedings), any Disputes (which term shall mean and include any dispute, difference, question or disagreement arising in connection with construction, meaning, operation, effect, interpretation or breach of the agreement, contract or the Memorandum of Understanding arises (delete whichever is inapplicable), which the Parties are unable to settle mutually), arise inter-se the Parties, the same may, be referred by either party to Conciliation to be conducted through Independent Experts Committee to be appointed by competent authority of BHEL from the BHEL Panel of Conciliators.

The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof.

Except as provided elsewhere in this Agreement, in case amicable settlement is not reached between the parties, in respect of any dispute or difference, arising out of the Agreement formation, breach, termination, validity or execution of the contract ; or the respective rights and liabilities of the parties ; or , in relation to interpretation of any provision of Agreement ; or , in any manner touching upon the Agreement, then , any party to this Agreement may , by a notice to the other party refer such dispute or difference to the Sole Arbitration of an arbitrator appointed by head of the BHEL unit issuing the purchase order/LOI/Contract. The language of arbitration shall be English.

The Arbitrator shall pass a reasoned award and the award of the Arbitrator shall be final and binding upon the parties.

Subject as aforesaid, the provisions of Arbitration and Conciliation Act 1996 (India) or statutory modifications or re-enactments thereof and the rules made thereunder as in force from time to time shall apply to the arbitration proceedings under this clause.

The seat of arbitration shall be the place of the ordering location of BHEL.-The cost of arbitration shall be borne as per the award of the Arbitrator.

Subject to the arbitration in terms of above clause, the Courts at the place of the ordering location of BHEL shall have exclusive jurisdiction over matters arising out or in connection with this Contract

Notwithstanding the existence or any dispute or differences and /or reference for the arbitration, the VENDOR shall proceed with and continue without hindrance the performance of its obligations under this Contract with due diligence and expedition in a professional manner except where the Contract has been terminated by either Party in terms of this Contract.

**In case of contract with Public Sector Enterprise (PSE) or a Government Department, the following shall be applicable:**

"In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract(s) between Central Public Sector Enterprises (CPSEs/ Port Trusts inter se and also between CPSEs and Government Departments/Organizations (excluding disputes concerning Railways, Income Tax, Customs & Excise Departments), such dispute or difference

shall be taken up by either party for resolution through AMRCD as mentioned in DPE OM No. 05/0003/2019-FTS-10937 dated 14th December, 2022 as amended from time to time.

### **23. LAW GOVERNING THE CONTRACT AND COURT JURISDICTION**

The Agreement shall be governed by the Law for the time being in force in the Republic of India. Subject to clause 22 of this contract, the Civil Court having the original territorial jurisdiction over the Location from where **purchase order/LOI/Contract** is released for the required equipment shall alone have exclusive jurisdiction in regard to all matters in respect of the Agreement.

### **24. INFORMATION SECURITY REQUIREMENTS**

The vendor/service engineer should abide by ISMS policies of BHEL.

### **25. GENERAL**

It is confirmed that the authorized signatories of all the three body corporate are authorized by their respective competent authority to execute this tripartite lease agreement and affix the common seal, where applicable.

This tripartite agreement is prepared in triplicate and each contracting party will retain one original for their records and reference.

### **26. INDEMNITY**

Vendor shall defend, indemnify and hold harmless Lessee from and against any and all Third Party claims and liabilities (including, without limitation, reasonable attorneys' fees and costs), regardless of the form of action, arising out of or in connection with a claim that the Equipment supplied, installed and Leased to Lessee, when used within the scope of this Agreement, infringes, violates or misappropriates a valid third party patent, copyright or other proprietary right, Civil, Criminal or any other action.

### **27. Infringement Claim:**

The term Infringement Claim means any claim that the manufacture, use, offer to sell, sale, Lease or other exploitation of any Product infringes, misappropriates or otherwise violates any patent right, copyright, trademark right, trade dress right or other intellectual property right of any Third Party in any jurisdiction worldwide, use by Lessee of the Product in connection with or in combination with any hardware, software, network system, network protocol, products, equipment, material, content, information or data not supplied, installed by the by lessor and vendor.

### **28. Indemnification Demand to Defend:**

If Lessee makes a demand for Lessor and / or Vendor to defend an Infringement Claim made against Lessee, Lessor and / or Vendor shall indemnify, defend and hold

harmless Lessee from, against and in respect of any and all Losses arising out of or relating to such Infringement Claim and, in the case of Losses that involve obligations in the nature of an injunction, shall secure for Lessee the right to continue exploiting the applicable Product or shall provide non-infringing specifications for a new Product and secure the right to continue to exploit any remaining inventory of the existing Product. Once Lessee makes a demand for Lessor and / or Vendor to defend an Infringement Claim, Lessee may defend against the Infringement Claim in any manner it reasonably may deem appropriate unless and until Lessor and / or Vendor assumes control of such defense. If Lessor and / or Vendor assumes the defense of the Infringement Claim, Lessor and / or Vendor must do so using counsel that is reasonably acceptable to Lessee. Lessee shall reasonably cooperate with Lessor and / or Vendor, at Lessor and / or Vendor expense, in the defense or settlement of any such Infringement Claim and shall provide access to its records and personnel as reasonably requested by Lessor and / or Vendor for the purpose thereof. If Lessor and / or Vendor refuses or fails to assume or maintain control of any such Infringement Claim, Lessee's right to indemnification pursuant to this Section shall not be adversely affected by virtue of Lessee assuming or continuing the defense thereof.

## **29. Further Assurances**

The parties agree to promptly execute and deliver to each other such further documents and take such further action as any party to this Agreement reasonably requires in order to more effectively carry out the intent and purpose of this Agreement.

## **30. Export Compliance**

The Equipment subject to this Agreement may be subject to United States, Indian and other government export control laws and regulations. The parties each undertake to comply with all such laws and regulations.

- 31.** In case LESSEE has to pay any amount to any agency under any statutory notice from PF, ESI, GST authorities or attachment order from Court of law received by LESSEE in respect of the dues of VENDOR/LESSOR available with LESSEE for default of VENDOR/LESSOR. Notwithstanding such payment made by the LESSEE against statutory notice or court order from the dues of LESSOR/VENDOR available with LESSEE the VENDOR shall proceed with and continue without hindrance the performance of its obligations under this Contract.

IN WITNESS THEREOF the parties hereto have caused these presents to be executed in triplicate on the day, month and year first above written at [Place].

The LESSEE, LESSOR and the VENDOR hereby affix their respective Common Seals to this document in acceptance of the terms and conditions herein contained.

**LESSOR AUTHORISED SIGNATORIES**

1. Name/s: -----

Designation: -----

Address: -----

2. Name/s: -----

Designation: -----

Address: -----

**LESSEE AUTHORISED SIGNATORIES**

1 Name/s: -----

Designation: -----

Address: -----

2. Name/s: -----

Designation: -----

Address: -----

**VENDOR AUTHORISED SIGNATORIES**

1 Name/s: -----

Designation: -----

Address: -----

2. Name/s: -----

Designation: -----

Address: -----

**WITNESSES**

1 Name/s: -----

Designation: -----

Address: -----

2. Name/s: -----

Designation: -----

Address: -----



## SCHEDULE B - LEASE RENTAL PAYMENTS

**Pricing Expiration Date:** [specify]

**LESSOR** is not obliged to purchase the Equipment if the Acceptance Date occurs on or after the Pricing Expiration Date.

**Rental Due Dates:**

Rentals will be payable on a quarterly in arrears basis with a single Rental installment payable per quarter.

Sl.No	Rental Period		Invoice Date	Quarterly Rental Charges
	From	To		
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				

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**SCHEDULE C - MAINTENANCE CHARGE PAYMENTS**

**Maintenance fee Due Dates:**

Maintenance fee will be payable on a quarterly in arrears basis with a single maintenance fee payable per quarter.

Sl.No	Rental Period		Invoice Date	Quarterly Maintenance Charges
	From	To		
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
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**SCHEDULE D: ACCEPTANCE CERTIFICATE**

[Name] (“**LESSOR**”) and Bharat Heavy Electricals Limited (“**LESSEE**”) are parties to this Agreement.

All capitalized terms used in this Acceptance Certificate without definition have the meanings given to them in the Agreement.

**1 Lease Acceptance**

**LESSEE** acknowledges that the Equipment described in Schedule I has been:

- a. Delivered to the Equipment Location specified in Schedule A, inspected by **LESSEE** and found to be in good operating order and condition, and has been accepted by **LESSEE** under the lease created under this Agreement on the Acceptance Date specified below; and
  
- b. The Commissioning and installation of the Equipment by the **VENDOR** has been completed to **LESSEE**'s satisfaction on the Acceptance Date specified below.

**2 Acceptance Date**

The Acceptance Date is \_\_\_\_\_.

You:

Signed for and on behalf of **LESSEE** by:

\_\_\_\_\_

\_\_\_\_\_

Bidder Name:

PREBID QUERIES

S No	Pg No	Clause No	Existing Clause	Query/ Suggestions	Justification
1					
2					
3					
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28					
29					



(Attachment to Enquiry No. XXXXXXXXXXXX Due on Date XX.XX.XXXX for submission by 11.00 hrs to open from 14.00 hrs.)		
<b>INSTRUCTIONS TO BIDDER (ITB)</b>		
<b>NOTE: Bidder to confirm in affirmative by typing "YES" or "Applicable Data" in the response column. Deviations, if any shall be recorded in deviations/comments column (Separate sheet can be attached if needed). Non deviatable clauses are indicated as "NON DEVIATABLE".</b>		
Sl. No.	DETAILED TERMS & CONDITIONS	BIDDER RESPONSE (YES/NO) / DEVIATIONS / COMMENT
<b>1</b>	<b>SCOPE OF SUPPLY:</b>	
	Signed & Sealed offers are invited for the Scope of Supply of goods or services or both as detailed in the enquiry. Relevant enclosures/supporting documents / catalogue, if any shall be enclosed to the technical offer.	
<b>2</b>	<b>DEFINITIONS</b>	
A	'The Buyer' means BHEL-HPEP, Ramachandrapuram, Hyderabad-502 032 of Bharat Heavy Electricals Limited (A Govt. of India Undertaking) incorporated under the companies Act having its registered office at BHEL House, Siri fort, New Delhi-110049, India and shall be deemed to include its successors and assigns. It may also be referred to as BHEL.	
B	'The Bidder' means the persons, firm, company or organization on whom the Purchase order is placed and shall be deemed to include the bidder's successors, representatives, heirs, executors and administrator as the case may be. It may also be referred to as Contractor, supplier or bidder.	
C	'Contract' shall mean and include the Purchase order incorporating various documents viz., Notice Inviting Tender (NIT), Offer, Letter Of Intent/Acceptance (LOI/LOA), Instruction to Bidders (ITB) and Special Conditions of Contract (SCC), specifications, inspection/quality plan, schedule of prices and quantities, drawings, if any, enclosed by Bidder/ provided by the Buyer or his authorized nominee and the samples or patterns if any to be provided under the provision of the contract. In case of any inconsistency or contradiction between any of the documents, the order of precedence shall be Purchase Order, LOI/LOA followed by Minutes Of Meeting (MOM), NIT, SCC, ITB.	
D	'Parties to the contract' shall mean the bidder and the buyer as named in the main body of the Purchase Order.	
E	'Goods/Material' shall include Works and Services which are incidental or consequential to supply.	
<b>3</b>	<b>GENERAL INSTRUCTIONS:</b>	
A	Mode of submission of offer shall be as indicated in SCC	<b>Non Deviatable</b>
B	The quotation should be neatly typed and free from over writing/ erasures. Any correction or addition must be authenticated. The offer including annexures and brochures should be submitted in English / Hindi. All Pages of Techno Commercial Bids (Main Pages), ITB, SCC should be signed and Stamped. If there is a conflict in case of bilingual submission, the submission in English will be final. Prices shall be quoted both in figures and words. In case of any discrepancy in value, the prices quoted in words shall be considered for evaluation and establishing L1 Status. Any discount / revised offer / bids submitted by a bidder on his own shall be considered, provided it is received on or before the due date and time of offer / bid submission (Part-1). Conditional discounts shall not be considered for evaluation of tenders.	<b>Non Deviatable</b>
C	Incomplete offers are liable for rejection.	<b>Non Deviatable</b>
D	Bidders to please note that the Terms & conditions contained in this document and SCC are to be read fully before submission of quotations.	<b>Non Deviatable</b>
E	Bidders are advised to comply with ITB and SCC, should there be any deviations (where deviations are permitted), it shall be entered in the deviation column. BHEL reserves the right to reject such offers or load the bid suitably for evaluation.	<b>Non Deviatable</b>
F	Offers shall be submitted directly, only by the bidder or by their authorized representative / agent and the offer should be in line with the regulatory guidelines (i.e. A valid Agency agreement between principal bidder and agent / representative shall be attached and the agreement shall cover the scope of services rendered by Agent, Agency Commission and any other information called for as per the regulatory guidelines). OEM / Mill details shall be provided if bidder is not a manufacturer. Bid envelopes shall bear the name of Bidder. In case of submission through authorized representative/agent, the name of representative/agent should also be mentioned apart from bidder name.	<b>Non Deviatable</b>
G	Offer received after the specified time and date of submission will be rejected. No further correspondence shall be entertained.	<b>Non Deviatable</b>
H	Unsolicited offers will not be considered.	<b>Non Deviatable</b>
<b>4</b>	<b>OTHER PARTICULARS (Please indicate applicable data)</b>	
A	Name of the Bid currency (freely tradable foreign currency for imports and Indian Rupees for indigenous purchase).	
B	Name of the Port of loading and Port of Discharge (applicable to imports).	



<b>5</b>	<b>BID SUBMISSION PROCEDURE FOR CONVENTIONAL TENDER:</b>	
<b>A</b>	<b>For Single Part Bids:</b>	
	The complete bid shall be submitted in a single sealed cover superscribing the Tender number and due date, addressed to Sr DGM/CMM, Vendor Complex, BHEL, Hyderabad and sent by appropriate mode to above address or dropped in tender box located at vendor complex on or before the specified time and date of submission of offers, preferably in the bidder's envelope. E- mail bids shall be sent to mail ID <a href="mailto:pricebid_hyd@bhel.in">pricebid_hyd@bhel.in</a> only as an attachment.	<b>Non Debatable</b>
<b>B.</b>	<b>For two-Part Bids:</b>	
<b>i</b>	<p>The offer is to be submitted in two parts viz.,</p> <p>Techno-commercial Bid - (Part-I), with all technical specification &amp; scope including bill of material etc., Earnest Money Deposit (EMD)(wherever applicable) and unpriced bid with all applicable Commercial Terms and Conditions, rates of agency commission, duties, taxes and other charges, Signed and Stamped ITB and SCC, <u>except the price</u>, shall be kept in a separate sealed cover, superscribing enquiry No. (Techno-Commercial Bid) and due date</p> <p>AND</p> <p>Price Bid (Part-II), containing ONLY the price (including agency commission, if any) and the applicable duties/taxes/other charges shall be kept in a separate sealed cover superscribing Enquiry no. (Price bid) &amp; due date.</p> <p>Both the above covers (Part –I &amp; II) shall be kept in a Third cover superscribing Enquiry no. &amp; due date.</p> <p>Bidder can also submit offer through email. Technical offer to be submitted to mail ID <a href="mailto:technicalbid_hyd@bhel.in">technicalbid_hyd@bhel.in</a>, and price bid to be submitted to mail ID <a href="mailto:pricebid_hyd@bhel.in">pricebid_hyd@bhel.in</a> only as an attachment. Interchanging the information in the mails may lead to rejection of the offer. Bidder shall have no claim on e-mail offers sent to any other e-mail ID.</p> <p>In case of e-mail offers, the mail subject should contain Enquiry Number, Due date and Bidder name. Bidder address including contact details shall be mentioned in the content of the mail. Without these details, the offer is liable for rejection.</p> <p>All techno commercial terms &amp; conditions mutually agreed prior to price bid opening shall prevail and supersede any terms and conditions specified otherwise in price bid.</p>	<b>Non Debatable</b>
<b>ii</b>	The bidders whose bids are techno commercially not accepted will be informed and EMD shall be returned wherever submitted.	
<b>iii</b>	Bidders will be allowed to submit the impact on their quoted prices due to changes in technical scope, specifications, and commercial terms/conditions as specified in NIT which in the opinion of BHEL , warrant changes in prices.	<b>Non Debatable</b>
<b>C</b>	Bids shall be opened on due time and date in the presence of bidders who may like to be present. Only one representative of each bidder shall be permitted to attend the bid opening. Only the price bids of bidder (in case of two part bid) whose techno commercial bids are accepted will be opened later on a specified date.	<b>Non Debatable</b>
<b>6</b>	<b>DELIVERY TERMS</b>	
<b>A</b>	<b>Indigenous Purchase</b>	
	<p>a. Terms of Delivery for dispatches to BHEL Hyderabad (HPEP) shall be FOR Destination.</p> <p>b. Terms of Delivery for Direct Dispatch (DD) items shall be Ex Works.</p> <p>i. In case specified in SCC that insurance is in customer/BHEL scope, price quoted shall include Freight charges up to Destination.</p> <p>ii. Otherwise, price quoted shall include Freight and Insurance upto Destination. However, beneficiary for insurance shall be BHEL.</p>	
<b>B.</b>	<b>Imports</b>	
	The goods shall be delivered on FCA capital airport basis in case of freight by Air and CIP basis in case of freight by Sea.	
<b>7</b>	<b>Documentation for Payment</b>	
<b>A</b>	<b>Indigenous Purchase</b>	
	<p>Following documents shall be submitted immediately on dispatch of material to BHEL HPEP / Site</p> <p>a. Original Tax Invoice (Refer ITB clause no 11 for Tax Compliance)</p> <p>b. Packing List - clearly showing number of packages, gross weight and net weight.</p> <p>c. Test/Warranty/Guarantee certificates, O&amp;M Manual (If specified in SCC)</p> <p>d. Insurance intimation/declaration certificate</p> <p>e. Pre-dispatch Inspection report /Third Party Inspection Certificates.</p> <p>f. Consignee copy of LR signed &amp; stamped by Customer/Site representative for DD Items</p> <p>g. e-waybill</p> <p>h. Any other documents as specified in SCC.</p> <p>Softcopies of the above documents shall be uploaded in Pradan portal <a href="https://hpep.bhel.com/mm">https://hpep.bhel.com/mm</a> immediately after dispatch of the material.</p>	<b>Non Debatable</b>

<p><b>B Imports</b></p> <p>i) Bidder shall inform BHEL the readiness of material along with packing details 30 days in advance from the date of delivery. For Hazardous cargo/DG cargo, supplier must provide the following documents prior to handing over shipment to freight forwarder, wherever freight is in BHEL scope:</p> <ol style="list-style-type: none"><li>1. Valid MSDS</li><li>2. DGD certificate with appropriate UN numbers.</li><li>3. Labelling and marking on DG cargo along with photo of packaging.</li><li>4. Self-declaration for consignment</li><li>5. Packaging Certificate as per DG Standards</li><li>6. TSA Approved Truckers details to be provided to forwarder at the time of shipment</li></ol> <p>In addition to the above, supplier should ensure to comply all IATA DG regulations, if any new requirement is added in future.</p> <p>ii). Bidder shall also upload the soft copy of the dispatch documents consisting of BL / AWB, Invoice, delivery note, packing list, country of origin &amp; Test certificates and other documents as specifically indicated in the SCC in PRADAN Portal (<a href="https://hpep.bhel.com/mm">https://hpep.bhel.com/mm</a>) within Five days from the B/L date for sea shipment and One day from AWB date for Air shipment and sent to email ids: mssea@bhel.in, msair@bhel.in, cmmfe@bhel.in.</p> <p>iii) AWB/BL must contain the information of BHEL GST no., and PAN no.</p> <p><b>iv) Air Shipments:</b> Bidder shall ensure the following</p> <ol style="list-style-type: none"><li>a) Port of discharge -- Mumbai/Chennai/Hyderabad (as indicated in SCC).</li><li>b) Consignee shall be BHEL, Hyderabad. Material shall be air freighted through cargo mode only and not through Courier.</li><li>c) Upon handing over the cargo to the forwarder, bidder shall ensure the acknowledgement receipt with wordings "Cargo handed over in sound condition for Air freighting". Note: Warehouse receipt will not be considered for penalty calculations.</li><li>d) In case of CIF/ shipments, bidder shall also inform BHEL the information about discharge port agent details and cargo arrival information within one day from the date of Shipment.</li><li>e) Following dimensions of single package may be noted.<ol style="list-style-type: none"><li>i). Maximum dimension of the cargo(ODC) -- 125" x 88" x 63"</li><li>ii). Maximum weight of the cargo -- 3.5 MT.</li></ol>If any package dimension or weight exceeds the above set limits, it will be treated as Over Dimension Cargo (ODC) or Over Weight Cargo and bidder shall inform BHEL 30 days in advance to the delivery date to enable BHEL to finalize the freight forwarder.</li><li>f). If package falls under Hazardous category, bidder shall communicate BHEL 30 days in advance period with document support.</li></ol> <p><b>v) Sea Shipments:-</b> bidder shall ensure the following</p> <ol style="list-style-type: none"><li>a). Port of discharge -- Nhavaseva/Mumbai/Chennai.</li><li>b). Place of Delivery / Final Destination for CIP shipments - Nhavaseva CFS / Chennai CFS.</li><li>c). In case of FOB shipments, bidder shall handover the material to BHEL nominated forwarder and obtain the cargo receipt.</li><li>d). If the material cannot be containerized in 20 or 40 GP containers, an advance information of 30 days prior to the delivery date shall be communicated to BHEL for necessary arrangements and finalisation of freight forwarder.</li><li>e). <b>For CIP shipments</b><ol style="list-style-type: none"><li>1. In case of FCL shipments, Detention free period must be 14 days.</li><li>2. Bidder shall also inform BHEL the information about discharge port agent details and cargo arrival information within 5 days from the date of Shipment.</li><li>3. No charges for the services rendered till place of destination will be payable by BHEL. In case liner / forwarder insist for charges, not in the scope of BHEL, the same will be adjusted from bidder account.</li><li>4. In case of CIF shipments -- Bidder must select a forwarder/liner whose discharge port published tariff for THC and other services is available. Any charges over and above the published tariff will not be borne by BHEL or will be adjusted from the bidder's bill.</li><li>5. bidder must insure the cargo for 110% of material value including the freight amount.</li></ol></li><li>(vi). Recovery charges for non-submission of documents: - Bidder shall submit all the required documents to BHEL as prescribed in the Purchase order and NIT.</li></ol> <p>If BHEL incurs any charges such as Penalty, demurrage, container detention, wharfage, storage, Ground rent etc., due to non - compliance / non - submission of documents prescribed in Purchase Order/ NIT/Letter of credit, the same shall be recovered from the bidder as under:</p> <ol style="list-style-type: none"><li>1. EUROPE/USA/Black Sea/ Far East/Middle East/South East sector</li></ol> <p><b>A. For FOB Sea Consignments:-</b></p> <p>Penalty for late submission / negotiation of documents beyond 14 days shall be as under:</p>
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Sl. no	Period (From Date of Bill of Lading)	Recoverable Charges		Recoverable Charges per day per container	
		LCL Break per day	per week/ bulk cargo	20FT Container	40FT Container
i	Upto 14th day	Nil		Nil	Nil
ii	15th day onward	USD 10		USD 110	USD 200

**B. For CIP Sea Shipments: -**  
Bidder shall provide rates for detention charges after free period at the time of offer itself in case of engagement of 20FT Container and 40FT category. In case of late presentation of documents to the bank recovery will be effected from the Bidder as per the rates quoted by the Bidder at the time of offer in this regard.  
In case of Break bulk cargo and LCL, Demurrage charges shall be recovered at the rate of USD 1 per Ton per day and storage charges at the rate of USD 10 per week respectively shall be charged as late presentation charges.

(vii) Description of items in invoice, packing list, BL / AWB or LR shall be same as PO item description. Bidders shall ensure that invoice shall contain PAN nos. of both bidder and BHEL along with other tax related numbers. BHEL PAN AAACB4146P and BHEL TAN HYDB00086C Any other additional documents sought by the statutory authorities, the same shall be produced by the bidder on priority basis.

(viii) Bidder shall provide package details including number of packages, gross weight, net weight etc.

(ix) The bidder shall provide the following documents at the time of submission of offer:  
a) No Business Connection in India declaration issued by the bidder as per the format specified. (or)  
b) (i) No Permanent Establishment in India declaration issued by the bidder as per the format specified.  
(ii) Tax Residence Certificate issued by the bidder's tax authorities.  
(iii) Form 10F, as attached in Annexure V, to be issued by the bidder.  
c) In case the bidder has a Business Connection in India as per Section 9 of Income Tax Act or significant economic presence in India as per rule 11 UD of IT Act or Permanent Establishment in India as per Article 5 of Double Taxation Avoidance Agreement between India and the bidder's country, the bidder shall provide a withholding tax order issued by the Indian Income Tax authority for recovery of applicable tax.

<b>8</b>	<b>Delivery Schedule</b>		
	The tendered goods shall be delivered within the period stipulated in NIT/ SCC as accepted. Inordinate delay/early supply are liable for rejection/ Hold on payment.		<b>Non Deviatable</b>
<b>9</b>	<b>Pricing Terms</b>		
	Quoted price shall be inclusive of Packing & Forwarding and shall remain firm and valid during the execution of PO. Offers with PVC will be rejected outright except in cases where specifically called for in the SCC.		<b>Non Deviatable</b>
<b>10</b>	<b>PRICE VALIDITY :</b>		
	Unless otherwise specified, offer shall be valid for a period of 90 days from the date of bid opening (Technical bid /part-I in case of two part bid). However the prices quoted for spare parts of the Main equipment shall be kept valid for a period as specified in SCC.		<b>Non Deviatable</b>
<b>11</b>	<b>Taxes &amp; Duties (RATE TO BE INDICATED by the bidder against the space provided )</b>		



<p>A</p>	<p><b>Indigenous Purchase</b></p> <p>i) Only valid GST registered bidders will be considered for the tender. The GSTIN of the bidder should be clearly mentioned in the offer.</p> <p>ii) If bidder is exempted from GST registration under any provision of the GST Law, a declaration with due supporting documents should be furnished for considering the offer.</p> <p>iii) Bidder to quote the applicable taxes in the following manner:          - Harmonized System of Nomenclature (HSN) of Goods          - Services Accounting Code(SAC) of Services.          - IGST/CGST/SGST/UTGST: Rate of Tax to be quoted as extra in % against the space provided</p> <p>iv) Bidders to ensure correct applicability of IGST/CGST/SGST/UTGST based on the Inter / Intra state movement of goods/services.</p> <p>v) In case Bidder has opted for GST Composition Scheme, the same may be stated explicitly both in their technical and price bids. An undertaking to the effect that any change in the status of the bidder will be intimated.</p> <p>vi) Any other taxes &amp; duties not covered anywhere above may be indicated separately.</p> <p><b>Taxes deducted at source:</b>          - TDS as per the extant statutes shall be deducted.          - In case bidder does not provide PAN details, higher rate of tax shall be deducted as per the Act.          - Concessional certificates, if any, should be provided well in time for lower deduction of tax.</p>		<p><b>Non Deviatable</b></p>
	<p><b>Terms &amp; Conditions to be complied</b></p> <p>1. All invoices (incl. Credit Notes, Debit Notes) to contain BHEL HPEP GSTIN ie 36AAACB4146P1ZG. Invoices submitted should be in the format as specified under GST Law. All details as mentioned in Invoice Rules including Dealer GST registration number (GSTIN), invoice number with date of issue, quantity, rate, value, taxes with nomenclature – CGST, SGST, UGST, IGST mentioned separately, HSN Code / SAC Code etc.</p> <p>2. Reimbursement of GST amount will be made only upon completion of the following:          i. Bidder declaring such invoice in their GSTR-1 Return/ IFF          ii. Receipt of Goods or Services and Submission of Tax invoice by BHEL          iii. The tax invoice is reflected in the GSTR2B of BHEL, HPEP (buyer). Payment of GST will be made only if it is matching with data uploaded by the Bidder in GST portal.</p> <p>3. In case of discrepancy in the data uploaded by the bidder in the GSTN portal vis-a-vis the tax invoice or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit. The same would be available in PRADAN Portal for the bidder's information. Bidder has to rectify the data discrepancy in the GSTN portal or issue credit note or debit note (details also to be uploaded in GSTN portal) for the shortages or rejections in the supplies or additional claims for processing of such invoices.</p> <p>4. In cases where invoice details have been uploaded by the bidder but failed to remit the GST amount to GST Department within stipulated time, then GST on the invoices in default will be recovered from the bidder along with the applicable interest.</p> <p>5. In case GST credit is delayed/denied to BHEL due to non/delayed receipt of goods and/or tax invoice or expiry of timeline prescribed in GST law for availing such ITC, or any other reasons not attributable to BHEL, such GST amount will be recoverable from bidder along with interest levied/leviable on BHEL.</p> <p>6. GST TDS deducted as per GST Act, is uploaded in GSTN portal along GSTR7. Bidders can directly download the GST TDS Certificate from the GSTN Portal.</p> <p>7. Bidders to note that Rules &amp; Regulations pertaining to E-way bill system are to be strictly adhered to, as and when notified by Govt. authorities.</p> <p>8. Vendors who fall under the E-Invoice regulations, i.e., having an annual turnover of Rs. 10 crores (<b>Rs 5 crore w.e.f 01.08.2023</b>) in the previous year shall issue e-invoice in line with Rule 48(4) of CGST Rules failing which GST amount will not be reimbursed to the vendor even if the other requirements are fulfilled.</p> <p>9. In case the vendor is exempted by the GST department under the Rule 48(4) of CGST Rules from issuing E-invoice, a declaration as prescribed in the Notification 17/2022 - Central Tax dated 01-08-2022 shall be provided on the invoice.</p> <p>10. Vendors who do not fall under the E-Invoice regulations, i.e., whose annual turnover is less than Rs. 10 crores (<b>Rs 5 crore w.e.f 01.08.2023</b>) in the previous year have to give an undertaking indemnifying BHEL that the vendor is not falling under the E-invoice requirement category and that in case of any breach of this E-invoicing requirement, the vendor indemnifies BHEL of any consequences that may arise due to such a breach.</p> <p>11. No GST shall be levied on liquidated damages / penalty.</p>		
<p>B.</p>	<p><b>Foreign Purchase ( Imports )</b></p>		



	<p>The offered price shall be inclusive of all the Taxes and duties as applicable in country of export / country of dispatch for the quoted price.  Taxes deducted at source:  a. In case of goods or services subject to Income tax in India, such tax as per the extant statute shall be recovered.  b. In case bidder does not provide necessary documents for beneficial taxation (Refer clause 7-B-(ix) a-c of ITB), the TDS deduction shall be at the maximum percentage stipulated as per the provisions of Income Tax Act.</p>		<p><b>Non Deviatable</b></p>
<p><b>12 Payment Terms: Unless otherwise specified in SCC, following shall be the terms of Payment.</b></p>			
<p>A</p>	<p><b>Indigenous:</b>  a. Micro &amp; Small Enterprises (MSEs) - 100% Direct EFT payment within 45 days  b. Medium Enterprises - 100% Direct EFT payment within 60 days  c. Non MSME Bidders - 100% direct EFT Payment within 90 Days  Note  A. Above due date is reckoned from the date of Receipt of material or 15 days from the date of submission of complete set of documents as per PO whichever is later. Payment will be made on acceptance of Material.  B. MSEs (covered under MSME Act) need to register and renew periodically and update the same with BHEL  C. The taxes that are reimbursed are limited to applicable taxes as on the Purchase Order delivery date or the amount actually paid whichever is less.  D. Adherence to the above time schedule of payment is contingent upon Bidder complying with GST provisions and availment of Input Tax Credit by BHEL before the date of payment.  E. In case of packaged items, 10% of supply value will be retained till completion of total supplies.  F. Bidders to comply with <b>clause 11</b> on GST requirements  G. MSE benefits are not applicable to Traders/Wholesalers registered as MSEs</p>		
<p>B</p>	<p><b>Imports:</b>  i) 100% payment (less Indian Agency Commission, if any) shall be through Wire Transfer with a credit period of 60 days - Cash Against Documents (CAD)  ii) In case Bidder opts for Letter of Credit payment, the LC Usance period shall be 90 days with respective bank charges to respective accounts and loading of 0.50%  iii) Indian Agency commission if payable and so specified in the Purchase order shall be paid in Indian Rupees, considering the SBI TT selling exchange rate, as on the date of payment after successful completion of the contract.</p>		
<p>C</p>	<p><b>Conditions for LC:</b>  a. LC validity period will be 90 days and for any extension, applicable charges will be to bidder's account.  b. LC will be opened after successful completion of pre dispatch inspection prior to the scheduled / agreed delivery date. LC will be opened within 15 bank working days from the date of request.</p>		<p><b>Non Deviatable</b></p>
<p>D</p>	<p><b>Conditions for both Indigenous &amp; Foreign Bidders:</b>  a. In case Bidders insist for lesser Credit period and BHEL accepts, a loading of 0.60% for every 15 days reduction will be applicable.  b. In case PBG as required is not furnished, Payment will be released deducting the BG amount, which will be paid after expiry of warranty period against submission of supplementary claim.  c. Payment does not imply in any respect whatsoever a waiver of Buyer's right to performance of the Order. Buyer is entitled to set off claimable debts against claimable liabilities with the bidder by means of a setoff Note.</p>		<p><b>Non Deviatable</b></p>
<p>E</p>	<p>Wherever EMD is applicable, the EMD will be paid back to unsuccessful bidders within fifteen days after award of the contract. Successful bidder's EMD will be retained till submission of Performance Bank Guarantee (PBG).  Tender Fee wherever applicable is not refundable.  No interest shall be payable by BHEL on earnest money or security deposit or any money due to the contractor by BHEL.</p>		<p><b>Non Deviatable</b></p>

13	<p><b>Penalty clause:</b></p> <p>In the event of delay in supply /part-supply of goods, Penalty as detailed below is leviable</p> <p>a. Penalty of 0.5% per week or part there of shall be levied, limited to a max of 10% (ten percent) of delayed portion value / order value (as specified in SCC).</p> <p>b. Penalty applicable for delay in documentation is as per SCC.</p> <p>c. Date Reckoned for Penalty</p> <ul style="list-style-type: none"> <li>- Indigenous Orders with delivery terms FOR HPEP: C Note date.</li> <li>- Indigenous Orders (Others): Date of e-waybill.</li> <li>- Imports: For CIP/CIF Orders: IGM date</li> <li>- Imports: For FOB Orders: AWB / BL date</li> <li>- Imports: For FCA/Ex Work Orders: Date of acknowledgement from Freight Forwarder.</li> </ul> <p>d. In case of Deviation to above Penalty clause, loading applicable to the extent to which not agreed by Bidder.</p> <p>e. Timelines as mentioned in the Annexure 1 will be considered for reckoning delivery.</p> <p>Penalty amount so determined along with applicable GST (for Indigenous orders) thereon shall be recovered.</p> <p>Imposition, recovery or settlement of this penalty shall not affect BHEL's right to performance, compensation and termination of the order.</p>		
14	<p><b>Excess materials</b> supplied beyond tolerance limit as specified in PO will not be paid and bidder may raise credit note for the excess/unaccepted material as per GST law.</p>		<p><b>Non Deviatable</b></p>
15	<p><b>Rejected materials</b>, if any, shall be collected by the bidder within 90 days of such communication to the bidder. Beyond this period the bidder forfeits their right to the materials.</p>		<p><b>Non Deviatable</b></p>
16	<p><b>Guarantee / Warranty Period:</b></p> <p>Wherever required, and so provided in the specifications/SCC/Purchase Order, the bidder shall guarantee that the goods supplied shall comply with the specifications laid down, for materials, workmanship and performance.</p> <p>a. Guarantee period shall be 12 months from the date of commissioning or 18 months from the date of supply whichever is earlier.</p> <p>b. In case erection &amp; commissioning is involved, guarantee period shall be 12 months from the date of commissioning.</p> <p>c. In case of equipment bought as a package which are intended to be incorporated in installations or systems, the guarantee period shall be 12 months from the date of commissioning of such equipment.</p> <p>The guarantee period shall be extended by the period during which the goods are not in compliance. If the delivery is found to be non-complaint, bidder shall replace, repair or re-execute the as requested by BHEL. If the bidder defaults on his obligations, buyer has the right to proceed to replace, repair or re-execute at the bidder's expense. A guarantee period as described above shall apply afresh to replaced, repaired or re-executed parts of a delivery.</p> <p><b>Loading for deviation:</b></p> <p>In case warranty specified in SCC is over and above the period mentioned in b &amp; c above; loading will be 1% per annum for the deviation in warranty end period, on the contract value. Expected commissioning period is as indicated in SCC.</p>		<p><b>Non Deviatable</b></p>
17	<p><b>PERFORMANCE BANK GUARANTEE (PBG) (Applicable in case mentioned in SCC)</b></p> <p>In case enquiry specifically spells out PBG requirement, PBG is to be submitted by Bidder in requisite format as per Annexure VII.</p> <p>Further detailing on PBG as specified in SCC.</p> <p>The PBG shall be for the performance of the goods and shall remain binding notwithstanding such variations, alterations or extensions of item as may be made, give, conceded or agreed to between the Bidder and BHEL under these Terms and conditions or otherwise.</p>		<p><b>Non Deviatable</b></p>
<p><b>NOTE: Deviations (Commercial as well as Technical) from the tender specifications and conditions are generally not acceptable. However, deviation if any, shall be brought out clearly with proper justification in the offer. The deviation, if considered by BHEL, shall be loaded for comparison, while evaluating the offer. If a bidder unconditionally withdraws any deviation before price bid opening, the same shall not be loaded. Loading criteria in respect of major commercial conditions where deviations if any are accepted shall be as per clause No.18. The Bidders may specifically note the following.</b></p>			
18	<p><b>Evaluation and Loading Criteria:</b></p>		

	<p>i) Evaluation Currency for this tender shall be "INR".</p> <p>ii) Evaluation of prices shall be done item-wise unless otherwise specified in the SCC.</p> <p>iii) Evaluation shall be on the basis of delivered cost, i.e. "Total Cost to BHEL" w.r.t the finalized technical scope and commercial conditions (after considering incidence of applicable taxes and duties and loading).</p> <p>iv) In the course of evaluation, if more than one Bidder happens to occupy L1 status, effective L1 will be decided by soliciting discounts from the respective L1 Bidders. In case more than one Bidder happens to occupy the L1 status even after soliciting discounts, the L1 Bidder shall be decided by a toss/draw of lots, in the presence of the respective L1 Bidders or their representatives. Ranking will be done accordingly. BHEL decision in such situations shall be final and binding.</p> <p><b>INDIGENOUS</b></p> <p>a. Bidder shall ensure to indicate the applicable taxes against each line item, failing which the same will be considered as inclusive/NIL.</p> <p>b. Ex-works offers received (as against FOR Destination mentioned in enquiry) shall be loaded by 2% of Ex-works value.</p> <p>c. GST and any other charges quoted will be added to the base price. However, in case input credit is available for GST (SGST, CGST/IGST), the same shall be excluded for arriving at "Total Cost to BHEL"</p> <p><b>IMPORTS</b></p> <p>For evaluation of offers in foreign currency, exchange rate (TT selling rate of State Bank of India) as on the date of bid opening (Part-I, in case of two-part bids) shall be considered. If the relevant day happens to be a bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken.</p> <p>In case of foreign Bidders, the quoted CIP price shall be loaded by the following factors to arrive at "Total Cost to BHEL":</p> <ul style="list-style-type: none"> <li>- Import duty as applicable on the date of Part-I bid opening.</li> <li>- Loading will be as per the table below</li> </ul> <table border="1"> <thead> <tr> <th></th> <th>Ex Works</th> <th>FOB/FC A</th> <th>CIF/CFR</th> <th>CIP</th> </tr> </thead> <tbody> <tr> <td>Foreign Inland freight and insurance</td> <td>2%</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Marine freight and marine insurance</td> <td>3%</td> <td>3%</td> <td></td> <td></td> </tr> <tr> <td>Destination Port handling charges</td> <td>0.50%</td> <td>0.50%</td> <td>0.50%</td> <td></td> </tr> <tr> <td>clearing charges &amp; inland freight and insurance</td> <td>2%</td> <td>2%</td> <td>2%</td> <td>2%</td> </tr> </tbody> </table> <p>COMMON LOADING FOR IMPORTS &amp; INDIGENOUS that will be added for arriving the "Total Cost to BHEL"</p> <ul style="list-style-type: none"> <li>A. Loading on Deviated Penalty clause shall be 10% or to the extent to which the bidder has opted for deviation.</li> <li>B. Loading for payment terms as per clause 12 of ITB</li> <li>C. Loading for deviation in Warranty &amp; PBG as per clause 16,17.</li> </ul>		Ex Works	FOB/FC A	CIF/CFR	CIP	Foreign Inland freight and insurance	2%				Marine freight and marine insurance	3%	3%			Destination Port handling charges	0.50%	0.50%	0.50%		clearing charges & inland freight and insurance	2%	2%	2%	2%
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19	Procurement directly from the manufacturers/ suppliers shall be preferred. However, no agent shall be allowed to represent more than one manufacturer/ supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer/ supplier or the manufacturer / supplier could bid directly but not both. In case bids are received from both from the manufacturer/ supplier and the agent, bid received from the agent shall be ignored.																									
20	<b>RIGHT OF REJECTION /NON- PLACEMENT OF PO:</b> BHEL reserves the right to accept or reject any or all bid/s in full or part without assigning any reason whatsoever.																									
21	<b>INTEGRITY PACT</b> Bidders shall have to enter into Integrity Pact with BHEL as per Annexure VI - for Tender value of rupees two crores and above and shall be signed by the authorized signatory along with the offer, failing which Bidder's offer will be rejected.																									
22	<b>Public Procurement</b>																									
A	<b>Make in India</b> For this Procurement, the local content to categorize a bidder as a Class I local bidder / Class II local bidder / Non-Local bidder and purchase preference to Class I local bidder, is as defined in Public Procurement (Preference to Make in India) order No P-45021/2/2017-PP(BE-II) dated 04-06-2020 issued by DPIIT as amended from time to time. Proforma for self-certification for minimum local content and auditor's certification is given in Annexure III.																									
B	Any Bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with competent authority. GOI website <a href="https://www.mea.gov.in/">https://www.mea.gov.in/</a> to be referred for latest details of competent authority and exemptions . Proforma for self-certification for compliance is given in Annexure IV.																									
C	<b>Startups:</b> For Start-ups duly registered with DPIIT (Copy of certificate to be provided), condition of prior turnover and prior experience in Public Procurement may be relaxed subject to meeting of Quality and Technical Specifications. Startups are exempt from paying EMD.																									
23	<b>Benefits earmarked for Purchase from Micro &amp; Small Enterprises (MSEs) – Indigenous Purchase</b>																									
A	All Micro and Small Enterprises (MSEs) as defined in MSE Procurement Policy are exempt from Paying EMD. NSIC/UDYAM registered bidders shall submit NSIC/UDYAM Certificate along with bid documents. Date to be reckoned for determining the deemed validity will be the last date of Technical bid submission. Non- submission of such document will lead to consideration of their bid, at par with other bidders and MSE status of such bidders shall be shifted to Non- MSE Category till the bidder submits these documents.																									



<b>B</b>	In tender, MSEs quoting price within price band of L1+15% shall also be allowed to supply a portion of requirement by bringing down their price to L1 price in a situation where L1 price is from someone other than a MSE and such MSE shall be allowed to supply at least 25% of total tendered value. In case of more than one such MSE, the supply shall be shared proportionately. Out of these 25% minimum 3% shall be earmarked for MSEs owned by women and 6.25% for MSEs owned by SC/STs who submit the relevant documents.
<b>C</b>	If an enterprise falling under MSME category as defined in the Act, graduates to a higher category from its original category or beyond the purview of the Act, it shall continue to avail all non-tax benefits of its original category notified by the Ministry of Micro, Small and Medium Enterprise for a period of three years from the date of such graduation to the higher category.
<b>D</b>	BHEL HPEP is registered with RXIL (TReDS) platform. MSME bidders are requested to get registered with RXIL (TReDS) platform to avail the facility as per the GOI guidelines.
<b>24</b>	Inspection Measuring and Test Equipment (IMTE) used by the Bidder/ Contractor or sub-contractor shall be calibrated, maintained and controlled. Calibration shall be valid and IMTE maintained in sound condition during usage.
<b>25</b>	ISO-9001, ISO14001 & OHSMS 45001 shall be complied.
<b>26</b>	If BHEL registered supplier is not quoting against this NIT, supplier shall send regret letter positively with valid reasons for not participating. Repeated lack of response on the part of supplier may lead to deletion of such registered supplier from BHEL's approved supplier's list as per BHEL SEARP Guidelines.
<b>27</b>	<b>Risk Purchase clause:</b> In case bidder fails/delays to supply whole or part of the ordered items or supplies defective items or fails to fulfil any other terms and conditions given in Purchase Order/Contract, BHEL has the right to terminate the order/contract or withdraw balance scope of work/supply and make the purchase of such material / services from elsewhere at the risk and cost of the defaulted bidder. The bidder is liable for the additional expenditure / difference in Cost, if any, including consequential losses which BHEL may sustain by reason of risk purchase in addition to the applicable LD as per the order/contract. Non-performance of contract attracts penal provisions in line with BHEL guidelines for Suspension of Business Dealings (SBD).
<b>28</b>	Any other terms and conditions of the bidder attached / referred against the tender enquiry will not be considered.
<b>29</b>	All drawings, patterns and tools supplied by BHEL or made at BHEL's expense are BHEL's property. These cannot be used or referred to any other party and must be used only in the execution of BHEL's orders.
<b>30</b>	Any amount payable by the bidder under any of the conditions of this contract shall be liable to be adjusted against any amount payable to the bidder under any other work / contract awarded by BHEL HPEP or any other BHEL Units. This is without prejudice to any other action as may be deemed fit by BHEL.
<b>31</b>	The bids of the bidders who are on the banned list and also the bids of the bidders, who engage the services of the banned firms, will be rejected. The list of firms banned by BHEL is available on BHEL web site: <a href="http://www.bhel.com">www.bhel.com</a>
<b>32</b>	<b>Ordering and confirmation of order</b>  The bidder shall send the order acceptance within one week from the date of LOI/Purchase order or such other period as specified/agreed by the Buyer. Buyer reserves the right to revoke the order placed if the order confirmation differs from the original order placed. Buyer shall be legally bound, only if agreed for any deviation explicitly in writing. The acceptance of deliverables or supplies by Buyer as well as payments made in this regard shall not imply acceptance of any deviations. The Purchase order will be deemed to have been accepted if no communication to the contrary is received within one week (or the time limit as specified /agreed by the Buyer) from the date of P.O. Buyer, is at liberty to send signed P.O. through electronic media such as e-mail and the receipt of which shall be treated as receipt of order.
<b>33</b>	<b>Execution</b>  The whole contract is to be executed in the most workman like manner, substantial and approved as per the contracted terms.
<b>34</b>	<b>Progress Report</b>  The bidder shall render such report as to the progress of work and in such form as may be called for by the Buyer from time to time. The submission and acceptance of such reports shall not prejudice the rights of the buyer in any manner. Bidder shall communicate to BHEL immediately, the change of address, ownership, contact person(s), the mobile numbers and e-mail of the dealing person concerned. Milestones shall be periodically updated by bidder through PRADAN Portal ( <a href="https://hpep.bhel.com/mm/">https://hpep.bhel.com/mm/</a> ). Non updation will adversely affect service rating of bidder performance.
<b>35</b>	<b>Non-disclosure Obligations</b>

	<p>Drawings, technical documents or other technical information received by one party shall not without the consent of the other party, be used for any other purpose than that for which they were provided. They may not, without the consent of the submitting party, otherwise be used or copied, reproduced, transmitted or communicated to third parties. All information and data contained in general product documentation, whether in electronic or any other form, are confidential and binding only to the extent that they are by reference expressly included in the contract.</p> <p>The bidder shall, as per agreed date/s but not later than the date of delivery, provide free of charge any information and/or drawings which are necessary to permit the Buyer to erect, commission, operate and maintain the product. Such information and drawings shall be supplied as specified in technical specification.</p> <p>All intellectual properties, including designs, drawings and product information etc. exchanged during the formation and execution of the contract shall continue to be the property of the submitting party.</p> <p>The bidder shall provide Buyer with all information pertaining to the delivery in so far as it could be of importance to Buyer. The bidder shall not reveal confidential information to its own employees not involved with the tender/contract and its execution and delivery or to third parties, unless Buyer has agreed to this in writing beforehand. The bidder shall not be entitled to use the Buyer's name in advertisements and other commercial publications including website without prior written permission from Buyer.</p> <p>In the event of violation of the confidentiality as agreed, BHEL will take legal action as deemed fit. Non-disclosure agreement to be entered as per <b>Annexure- II</b> wherever applicable.</p>
<b>36</b>	<b>Inspection and Testing</b>
<b>A</b>	The goods and stores shall be manufactured by approved quality system and each part/component may be inspected and tested by the Buyer prior to shipment and shall comply with relevant requirements. Buyer has the right to inspect at any stage during manufacture/ delivery.
<b>B</b>	<p>Buyer or his authorized representative shall be entitled at all reasonable times during execution to inspect, examine and test at the bidder's premises the material and workmanship of all stores to be supplied under the contract, and if the part of the stores are being manufactured at other premises, the bidder shall obtain for buyer or his authorized representative permission to inspect, examine and test as if the said stores are being manufactured at the bidder's premises. Such inspection, examination and testing, if made shall not release the bidder from any obligation under the contract.</p> <p>For indigenous bidders all costs related to first inspection request shall be borne by the buyer and the cost of subsequent inspections due to non-readiness of material/rework/ rejections shall be borne by the bidder. In case of imports all inspection charges including third party inspections if any shall be borne by the bidder. The cost of inspection staff/third party specified by the Buyer shall be borne by bidder unless otherwise specifically agreed. If the contract provides for tests on the premises of the bidder or any of his sub-contractor/s, bidder shall be responsible to provide such assistance, labor, materials, electricity, fuels, stores, apparatus, instruments as may be required and as may be reasonably demanded to carry out such tests efficiently. Cost of any type test or such other special tests shall be borne by the bidder unless otherwise specifically agreed in the contract. The Bidder shall give the authorized representative of the buyer reasonable notice in writing of the date on and the place at which any stores will be ready for inspection/ testing as provided in the Contract. Annexure – I, may strictly be complied with for the time lines. Any delay in submission of the documents by the bidder will not alter the delivery date.</p>
<b>37</b>	<b>Quality and Condition of the Deliverables</b>
	The bidder shall be responsible for compliance with applicable technical, safety, quality, environmental requirements and other regulations in relation to products, packaging and raw and ancillary materials.
<b>38</b>	<b>Packaging and Dispatch</b>
	<p>The bidder shall package the deliverables safely and carefully and pack them suitably in all respects considering the peculiarity of the material for normal safe transport by sea/air/rail/road to its destination suitably protected against loss, damage, corrosion in transit and the effect or tropical salt laden atmosphere. The packages shall be provided with fixtures/hooks and sling marks as may be required for easy and safe handling by mechanical means. Special packaging conditions/ environmental conditions as defined in the NIT shall be fully complied.</p> <p>Each package must be marked with consignee name, address, P.O. number, Package Number, gross weight &amp; net weight, dimensions (Lx B x H) and bidder's name. The packing shall allow for easy removal and checking of goods on receipt and comply with carrier's conditions of packing or established trade practices. Packing list for goods inside each package with P.O. item No. &amp; quantity must also be fixed securely outside the box to indicate the contents. If any consignment needs special handling instruction, the same shall be clearly marked with standard symbols/instructions. Hazardous material should be notified as such and their packing, transportation and other protection must conform to relevant regulations.</p>
<b>39</b>	<b>Contract variations; Increase or decrease in the scope of supply</b>
	<p>Buyer may vary the contracted scope during execution due to exigencies of project requirement.</p> <p>If the bidder is of the opinion that the variation has an effect on the agreed price or delivery period, Buyer shall be informed of this immediately in writing along with technical details, and in the event of additional work, submit a quotation with regards to the price and period involved, as well as the effect this additional work will have on the other work to be performed by the bidder. Wherever unit rates are available in the contract, the same shall be applied to such additional work. The bidder shall not perform additional work before buyer has issued written instructions/amendment to the purchase order to that effect. The work which the bidder should have or could have anticipated in terms of delivering the service (s) and functionality (ies) as described in this agreement should be executed by the bidder without any price implication.</p> <p>In case of no change in the scope / technical specifications, bidder shall endeavor to keep the material ready and intimate the same to BHEL within the contractual delivery date, failing which, the delay if any will be attributed to supplier, and any upward price variation thereof for delivery at a later date is not admissible.</p>
<b>40</b>	<b>Rejected/Short shipments/ warranty/guarantee replacements</b>
	In case of any short shipment during initial supply which is subsequently dispatched by the bidder or any guarantee / warranty replacements shall be dispatched on "DDP-Delivered duty paid BHEL stores" basis for imported items and "FOR-BHEL Stores/designated destination" basis for indigenous items.
<b>41</b>	<b>Export Administration Regulations</b>
	If a delivery includes such technology and / or supply that is subjected to the export regulations the bidder shall obtain due permissions, approvals, license etc.
<b>42</b>	<b>Force Majeure</b>

	<p>The bidder shall not be considered in default if delay occurs due to causes beyond their control such as Acts of God, Natural calamities, Fire, Frost, Flood, Civil War, civil commotion, riot, Government Restrictions.</p> <p>Only those causes that have duration of more than seven days shall be considered cause of force majeure. Notification to this effect duly certified by local chamber of commerce/statutory authorities with supporting documents shall be given by the bidder to BHEL by registered letter/courier service immediately without loss of time.</p> <p>In the event of delay due to such causes the delivery schedule shall be extended for a length of time equal to the period of Force Majeure or at the option of BHEL the order may be cancelled. Such cancellation would be without any liability whatsoever on the part of BHEL.</p> <p>In the event of such cancellation the bidder shall refund any amount advanced or paid to the bidder by BHEL and deliver back any material issued to him by BHEL and release facilities, if any provided by BHEL.</p>
<b>43</b>	<b>Non-waiver of Defaults</b>
	If any individual provision of the contract is invalid, the other provisions shall not be affected.
<b>44</b>	<b>Settlement of Disputes</b>
	<p>Except as otherwise specifically provided in the contract, all disputes concerning questions of the facts arising under the contract, shall be decided by the Buyer, subject to written appeal by the bidder to the buyer, whose decision shall be final.</p> <p>Any disputes of differences shall to the extent possible be settled amicably between the parties thereto, failing which the disputed issues shall be settled through arbitration</p> <p>The bidder shall continue to perform the contract, pending settlement of disputes(s).</p>
<b>45</b>	<b>Conciliation clause</b>
	<p>CONCILIATION CLAUSE FOR CONDUCTING CONCILIATION PROCEEDINGS UNDER THE BHEL CONCILIATION SCHEME, 2018: The Parties agree that if at any time (whether before, during or after the arbitral or judicial proceedings), any Disputes (which term shall mean and include any dispute, difference, question or disagreement arising in connection with construction, meaning, operation, effect, interpretation or breach of the agreement, contract or the Memorandum of Understanding, penalty deduction, time extension), which the Parties are unable to settle mutually, arise inter-se the Parties, the same may, be referred by either party to Conciliation to be conducted through Independent Experts Committee to be appointed by competent authority of BHEL from the BHEL Panel of Conciliators.</p> <p>The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof and as provided in Procedure in <a href="http://www.bhel.com/index.php/story_details?story=2454">http://www.bhel.com/index.php/story_details?story=2454</a> . The Procedure together with its Formats will be treated as if the same is part and parcel hereof and shall be as effectual as if set out herein in this ITB</p>
<b>46</b>	<b>ARBITRATION (WITH SOLE ARBITRATOR)</b>
	<p>Except as provided elsewhere in this Contract, in case amicable settlement is not reached between the Parties, in respect of any dispute or difference; arising out of the formation, breach, termination, penalty deduction, validity or execution of the Contract; time extension, or, the respective rights and liabilities of the Parties; or, in relation to interpretation of any provision of the Contract; or, in any manner touching upon the Contract, then, either Party may, by a notice in writing to the other Party refer such dispute or difference to the sole arbitration . Sole arbitrator to be appointed by Head of the Unit - BHEL , HPEP .</p> <p>The Arbitrator shall pass a reasoned award and the award of the Arbitrator shall be final and binding upon the Parties.</p> <p>Subject as aforesaid, the provisions of Arbitration and Conciliation Act 1996 (India) or statutory modifications or re-enactments thereof and the rules made thereunder and for the time being in force shall apply to the arbitration proceedings under this clause. The seat of arbitration shall be Sangareddy / Hyderabad, Telangana. The language of arbitration shall be English and the documents shall be submitted in English.</p> <p>The cost of arbitration shall initially be borne equally by the Parties subject to the final apportionment of the cost of the arbitration in the award of the Arbitrator.</p> <p>Subject to the arbitration in terms of clause 45, the courts at Sangareddy, Telangana State shall have exclusive jurisdiction over any matter arising out of or in connection with this contract.</p> <p>Notwithstanding the existence or any dispute or differences and/or reference for the arbitration, the Contractor shall proceed with and continue without hindrance the performance of its obligations under this Contract with due diligence and expedition in a professional manner except where the Contract has been terminated by either Party in terms of this Contract.</p>
	<b>ARBITRATION FOR CONTRACT WITH PUBLIC SECTOR ENTERPRISE (PSE) OR A GOVERNMENT DEPARTMENT</b>
	<p>In the event of any dispute or difference relating to the interpretation and application of the provisions of commercial contract(s) between Central Public Sector Enterprises (CPSEs/ Port Trusts inter se and also between CPSEs and Government Departments/Organizations (excluding disputes concerning Railways, Income Tax, Customs &amp; Excise Departments), such dispute or difference shall be taken up by either party for resolution through AMRCD as mentioned in DPE 0M No 4(1)/2013-DPE(GM/FTS 1835 dated 22-05-2018</p>
<b>47</b>	<b>Applicable Laws and jurisdiction of Courts</b>
	This agreement shall be construed and interpreted in accordance with the laws of India and shall have exclusive jurisdiction of Sangareddy/Hyderabad courts, Telangana, India.
<b>48</b>	<b>BHEL-Fraud prevention policy shall be adhered to.</b>
	<p>The Bidder along with its associate/ Collaborators/ Sub-contractors/ sub-bidders/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention policy displayed on BHEL Website <a href="http://www.bhel.com">http://www.bhel.com</a> and shall immediately bring to the notice of BHEL management about any fraud or suspected fraud as soon as it comes to their notice.</p> <p>List of nodal officers is hosted on BHEL Hyderabad website <a href="https://hpep.bhel.com/">https://hpep.bhel.com/</a>.</p>
<b>49</b>	<b>Suspected Cartel Formation</b>
	<p>The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case , the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies / guidelines .</p>
<b>50</b>	<b>Conflict of Interest:</b>
	<p>"A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests. The bidder found to have a conflict of interest shall be disqualified. A bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if:</p>



- a) they have controlling partner (s) in common; or  
b) they receive or have received any direct or indirect subsidy/ financial stake from any of them; or  
c) they have the same legal representative/agent for purposes of this bid; or  
d) they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; or  
e) Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ Assemblies from. one bidding manufacturer in more than one bid; or  
f) In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorize only one agent/dealer. There can be only one bid from the following:  
1. The principal manufacturer directly or through one Indian agent on his behalf; and  
2. Indian/foreign agent on behalf of only one principal; or  
g) A Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid; or  
h) In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidders must proactively declare such sister/ common business/ management units in same/ similar line of business. "

Note: Purchase officer has to fill Annexure-I while sending enquiry

**( Attachment to Enquiry No. XXXXXXXXXX Due on Date XX.XX.XXXX**

**Special Conditions of Contract ( SCC )**

Rev 01

Sl.No	ITB Clause No.	Clause	Available Options	BHEL requirements	Bidder response
1	3	Mode of Submission	Conventional / E-Procurement		
2	5	Type of Bid	Single part / Two Part / Three Part		
3	6	Indigenous purchase - Destination	BHEL, RCPuram, Hyderabad / Site		
4			Destination in case of Site		
		Mode of Shipment	Air / Sea		
5		Imports purchase - Destination	Mumbai / Navasheva / Hyderabad / Others		
6		Freight	Customer / BHEL / Vendor		
7		Insurance	Customer / BHEL / Vendor		
8			<b>Basic Custom Duty</b>	Project Imports/ Concessional Duty / Merit Duty / Nil / Others Duty Structure	
9	9	Price validity	_____ days		
		Optional Spares price validity	_____ Months / years from the date of _____		
10	8	Delivery Period	_____ weeks / _____ Months ( Staggered delivery to be detailed )		
11	18	Evaluation basis	Itemwise / Total		
12	Others	Quantity Split	Splittable / Non-Splittable		
13			(Tabulation for splitting to be detailed )		
14	9	Price Variation Clouser (PVC)	Applicable / Not applicable		
15	12	Payments Terms	Inland Letter of Credit (ILC) In case Bidder opts for ILC Payment, the LC Usance period shall be 120 days with all charges to bidder's account and loading of 0.50%. Note : Wherever it is felt commercially prudent to include Inland Letter of Credit (ILC) payment term, a separate note, before publishing tender, with proper justification for inclusion of ILC payment terms to be concurred by Head of Finance and approved by Product/Functional Head (not less than GM).		
16		Tender cost	Applicable / Not applicable		
17		Earnest Money Deposit (EMD)	_____% of tender value / Not applicable		
18		E & C Supervision Charges	Applicable / Not applicable		
19			If applicable , max 2% of Total contract value .		
20		Bank Guarantee against milestone payment	(If envisaged to be detailed with % )		
21		Others	Contract execution Bank Guarantee	_____% of PO Value to be submitted after receipt of PO / Not Applicable	
22	17	Performance Bank Guarantee			
	7	Additional documentation for payment	Test / Warranty / Guaranty / O&M Manual etc.,		
24	13	Max Penalty applicable on	Delayed portion / Order value		
25	Others	Contract Specific Penalty Clause	including Documentation delay , Performance , E&C etc., to be detailed , considering Project , Unit , Set , etc.,		
26	16	Guarantee / Warranty Period	Applicable Clause a/b/c		
27		Contract Specific Guarantee / Warranty Period	Specific period if any to be detailed		
28	Others	Expected commissioning period	_____ months from the date of supply		
29	48	Detailed Billing Breakup (BBU)	Applicable / Not applicable		
30			(If applicable , Bidder shall provide detailed billing break-up in respect of the major items/components (stipulated in the tender) as part of offer .)		
31	Others	Customer approval of vendor	Applicable / Not applicable		
32		Drawing approval	Applicable / Not applicable		
33		QAP approval	Applicable / Not applicable		
34	36	Inspection by	BHEL / BHEL TPI / Vendor TPI / Customer		
35	Others	Financial / Commercial PQC	Applicable / Not applicable		
36			if Applicable to be detailed		

Note:

Special Conditions of Contract (SCC) shall be got approved by the Checklist approving authority, for all tenders.

**INTEGRITY PACT****Between**

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

**and**

\_\_\_\_\_ (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

**Preamble**

The Principal intends to award, under laid-down organizational procedures, contract/s for \_\_\_\_\_

\_\_\_\_\_ (hereinafter referred to as "Contract"). The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint panel of Independent External Monitor(s) (IEMs), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

**Section 1- Commitments of the Principal**

- 1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -
  - 1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
  - 1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
  - 1.1.3 The Principal will exclude from the process all known prejudiced persons.
- 1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

**Section 2 - Commitments of the Bidder(s)/ Contractor(s)**

- 2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. The Bidder(s)/ Contractor(s) commits himself to observe the following principles during participation in the tender process and during the contract execution.



**Section 5 - Previous Transgression**

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 (three) years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- 5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason or action can be taken as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

**Section 6 - Equal treatment of all Bidder (s)/ Contractor (s) / Sub-contractor (s)**

- 6.1 The Principal will enter into Integrity Pacts with identical conditions as this Integrity Pact with all Bidders and Contractors.
- 6.2 In case of Sub-contracting, the Principal Contractor shall take the responsibility of the adoption of Integrity Pact by the Sub-contractor(s) and ensure that all Sub-contractors also sign the Integrity Pact.
- 6.3 The Principal will disqualify from the tender process all Bidders who do not sign this Integrity Pact or violate its provisions.

**Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors**

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

**Section 8 -Independent External Monitor(s)**

- 8.1 The Principal appoints competent and credible panel of Independent External Monitor (s) (IEMs) for this Integrity Pact. The task of the IEMs is to review independently and objectively, whether and to what extent the parties comply with the obligations under this Integrity Pact.
- 8.2 The IEMs are not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The IEMs shall be provided access to all documents/ records pertaining to the Contract, for which a complaint or issue is raised before them as and when warranted. However, the documents/records/information having National Security implications and those documents which have been classified as Secret/Top Secret are not to be disclosed.
- 8.4 The Principal will provide to the IEMs sufficient information about all meetings among the parties related to the Contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the IEMs the option to participate in such meetings.

*Bhaskar B*  
 SH BANI  
 उपायुक्त/सीएमएम - क्रय  
 Dy. Manager / CMM - Purchase  
 आयुक्त.स.एच.ई.ए. विभाग 32, BHEL - HPER, HYD-32

- 8.5 The advisory role of IEMs is envisaged as that of a friend, philosopher and guide. The advice of IEMs would not be legally binding and it is restricted to resolving issues raised by a Bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some Bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.
- 8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process or during execution of Contract, the matter should be examined by the full panel of IEMs jointly, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.
- 8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to the CMD, BHEL at the earliest. They may also send their report directly to the CVO, in case of suspicion of serious irregularities requiring legal/ administrative action. Only in case of very serious issue having a specific, verifiable Vigilance angle, the matter should be reported directly to the Commission. IEMs will tender their advice on the complaints within 30 days.
- 8.8 The CMD, BHEL shall decide the compensation to be paid to the IEMs and its terms and conditions.
- 8.9 IEMs should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the Principal should be looked into by the CVO of the Principal.
- 8.10 If the IEMs have reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code / Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the IEMs may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.11 After award of work, the IEMs shall look into any issue relating to execution of Contract, if specifically raised before them. As an illustrative example, if a Contractor who has been awarded the Contract, during the execution of Contract, raises issue of delayed payment etc. before the IEMs, the same shall be examined by the panel of IEMs. Issues like warranty/ guarantee etc. shall be outside the purview of IEMs.
- 8.12 However, the IEMs may suggest systemic improvements to the management of the Principal, if considered necessary, to bring about transparency, equity and fairness in the system of procurement.
- 8.13 The word 'Monitor' would include both singular and plural.

#### Section 9 - Pact Duration

- 9.1 This Integrity Pact shall be operative from the date this Integrity Pact is signed by both the parties till the final completion of contract for successful Bidder, and for all other Bidders 6 months after the Contract has been awarded. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.
- 9.2 If any claim is made/ lodged during currency of this Integrity Pact, the same shall be binding and continue to be valid despite the lapse of this Pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

  
 D. K. BASINI  
 Dy. Manager / CMM - Purchase  
 बी.एस.पी.ए. कार्यालय, इलाका 32, BHEL-HREP HYD-32



**Clause on IP in the tender**

**Integrity Pact (IP)**

- (a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

SI	IEM	Email
1.	Shri Otem Dai, IAS (Retd.)	<a href="mailto:iem1@bhel.in">iem1@bhel.in</a>
2.	Shri Bishwamitra Pandey, IRAS (Retd.)	<a href="mailto:iem2@bhel.in">iem2@bhel.in</a>
3.	Shri Mukesh Mittal, IRS (Retd.)	<a href="mailto:iem3@bhel.in">iem3@bhel.in</a>

- (b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/ three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.
- (c) Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to any of the above IEM(s). All correspondence with the IEMs shall be done through email only.

**Note:**

No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are provided below:

Details of contact person(s):

(1)  
Name: Bikas Basini  
Deptt: CMM Purchase  
Address: BHEL Hyderabad.  
Phone: (Landline/ Mobile)  
040-23184601  
Email: bikasbasini@bhel.in  
Fax: \_\_\_\_\_

(2)  
Name: T. Venkateswara Rao  
Deptt: CMM-Purchase  
Address: BHEL Hyderabad.  
Phone: (Landline/ Mobile)  
040-23182379  
Email: rao.tv@bhel.in  
Fax: \_\_\_\_\_

# Guidelines for Reverse Auction – 2021

Doc. No. AA:SSP:RA:05  
Dated: 08.03.2021

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## 1.0 Scope

This document describes the guidelines to be followed by each Unit/ Division/ Region for conducting Reverse Auction (RA) for procurement of material/ works/ services. These guidelines will be applicable for all purchases/ contracts to be awarded under Purchase/ Works policy and the RA shall follow the philosophy of English Reverse (No ties). Based on these guidelines, Units/ Divisions/ Regions (hereinafter referred as 'units') may issue their own Departmental Procedures without changing the intent and spirit of the guidelines contained in this document. These guidelines will supersede earlier guidelines issued vide AA:SSP:RA:04 dated 04.03.2020.

English Reverse (No ties) is a type of auction where the starting price and bid decrement are announced before start of online reverse auction. The interested bidders can thereupon start bidding in an iterative process wherein the lowest bidder at any given moment can be displaced by an even lower bid of a competing bidder, within a given time frame. The bidding is with reference to the current lowest bid in the reverse auction. All bidders will see the current lowest quoted price and their rank. The term 'No ties' is used since more than one bidder cannot give an identical price, at a given instant, during the reverse auction. In other words, there shall never be a tie in the bids.

## 2.0 Intent of Reverse Auction

To derive maximum benefit in cost savings through competitive bidding.

## 3.0 Upfront declaration in NIT

Wherever it is felt that procurement may be done through Reverse Auction, the bids shall be invited in two parts/ three parts or single part bid (Price Bid) where Techno-Commercial MoU already exists. Wherever, the evaluation is done for individual line item, separate sealed envelope price bid for each line item shall be taken.

Decision to go for RA would be taken before floating of the tender. In case it is decided to go for RA, same shall be declared upfront in NIT by inserting the following **clause**:

*"BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on [www.bhel.com](http://www.bhel.com)) for this tender. RA shall be conducted among the techno-*

## Guidelines for Reverse Auction – 2021

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*commercially qualified bidders.*

*Price bids of all techno-commercially qualified bidders shall be opened and same shall be considered for RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.”*

### 4.0 Aspects to be considered for RA

Following aspects may be considered by the competent authority (empowered to approve the ordering) to decide before floating of the tender if RA is to be conducted for that particular tender:

- a) Number of techno-commercially qualified bidders in previous tender for same/ similar class of item
- b) Price volatility of the item(s) under consideration
- c) Past purchase experience of similar item(s)
- d) Tender Value of the item(s) under procurement
- e) Any other aspect which may be specific to tender

Note: Decision to go for RA or not will be on case to case basis with recorded reasons.

### 5.0 RA Committee

Purchase/ Tender committee, if already in place, shall also act as RA committee. Purchase representative will be the convener. In case Purchase/ Tender committee has not been formed, the Product Manager/ MM Head/ Department Head, shall constitute RA committee consisting of representatives (*rank as per DoP of tender/ negotiation committee*) from departments of Engineering/ Indenter/ User, Purchase and Finance. This committee will work for a specific tender. The role of RA committee shall be as below:

- To vet the comparative statement comprising sealed envelope price bids received, MSE status, qualification against Public Procurement (Preference to Make in India), Order 2017 (PPP-MII, Order 2017) of all techno-commercially qualified bidders, loading etc. before sending it to the service provider for RA.
- To decide and record the 'Start-Price' and 'Bid Decrement'.
- To observe the RA process and declare RA as successful.

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## 6.0 Business rules for RA

Model Business rules (annexure I) and other annexures II to VI are attached. MM shall prepare and fill in the required details in the annexures at appropriate places like:

- Enquiry/ Request for Quotation (RFQ) number
- Name and Addresses of the bidders
- Items description, quantities/ weight, Specification
- Date and time of opening and closing of RA
- Extension conditions
- Loading Criteria/ Formulae
- Foreign Exchange (FE) rates for evaluation
- Taxes & Duties
- Freight & Insurance
- Bidders' training, if required, etc.

The calculation sheet e.g. excel sheet (which will help to arrive at 'Total Cost to BHEL') which is communicated to respective bidders of RA, will be prepared by MM and vetted by Finance. This calculation sheet will be finalized based on the evaluation criteria specified in the NIT and will be same based on which sealed envelope price bids have been evaluated.

MM shall issue a mandate (annexure II) to the service provider covering business rules etc. and inform about event, calculation sheet etc. to all techno-commercially accepted bidders.

## 7.0 Role of Service Provider

- Acknowledge the receipt of mandate from BHEL.
- Contact the bidders, provide business rules and train them, as required.
- Get the process compliance form (annexure III) signed by all the participating bidders before RA event.
- Conduct the event as per the contract and business rules.
- Submit the Login Reports, Results, History sheet and authorized final bid from the bidders.
- To obtain price breakup from successful bidder and submit the same to BHEL.

## 8.0 Start price for RA shall be lowest of sealed envelope price bid.

Note: Wherever more than one lowest sealed envelope price bids are identical, RA committee shall declare the start price by reducing the lowest sealed envelope price bid by maximum of one decrement.

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## 9.0 Witnessing Auction

Access to witness the RA shall be available to the concerned officials of BHEL (Indenter/ Finance Officials/ Purchase Officials), nominated by Head MM/ Purchase/ Contracts.

## 10.0 Reverse Auction Process

10.1 Reverse Auction will be conducted if two or more bidders are techno-commercially qualified. In case of two or three qualified bidders, there shall be no elimination of H1 bidder (whose quote is highest in sealed envelope price bid). In case of four qualified bidders, the H1 bidder shall be eliminated whereas in case of five qualified bidders, H1 & H2 bidders shall be eliminated. However, in case of six or more qualified bidders are available, RA would be conducted amongst first 50% of the bidders arranged in the order of prices from lowest to highest. Number of bidders eligible for participating in RA would be rounded off to next higher integer value if number of qualified bidders is odd (e.g. if 7 bids are qualified, then RA will be conducted amongst lowest four bidders). However, there will be no elimination of qualified bidders who are MSE or qualifying under PPP-MII, Order 2017, [provided their bids are within their respective margin of purchase preference {presently 15% for MSEs and 20% for PPP-MII, or as amended from time to time}](#).

In case of multiple H1 bidders, all H1 bidders ([except](#) MSEs and bidders qualifying under PPP-MII, Order 2017, [who are within the margin of purchase preference](#)) shall be removed provided minimum two bidders remain in fray, else no H1 removal.

10.2 The lowest bidder in sealed envelope price bid shall be shown as current L1 automatically by the system. System shall have the provision to indicate this bid as current L1 for further bidding. This price can be displaced by an even lower bid of a competing bidder.

If the start price is lower than the lowest sealed envelope price bid (in line with clause 8.0), on acceptance of such start price by any bidder this bid would be indicated as current L1 for further bidding. However, if no bidder accepts the start price, RA shall be treated as cancelled for the respective line item(s) and the tender shall be processed accordingly.

In case of no further bidding, RA will be deemed to have been successful with current L1 bidder. During RA, all bidders will see their rank and current L1 price on the screen. Once the RA is done, the ranking status would be based on the last quoted price of the bidder(s) irrespective of the quote received in RA or sealed envelope price bid.

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- 10.3 No bidder shall be allowed to lower its bid below the current L1 by more than 5 decrements at one go.

### 11.0 Processing of case after RA

- 11.1 Wherever the evaluation is done on total cost basis, after Reverse Auction, prices of individual line items shall be reduced on pro-rata basis.
- 11.2 In case of splitting requirement, bidders who were removed from participation in RA may also be considered for counter offer if the pre-stated (NIT) numbers of suppliers do not accept the counter offer. However, principle of splitting to N-1 bidder shall be maintained in line with extant Purchase Policy/ Work Policy.
- 11.3 Reasonability of rates received through RA to be ascertained as per extant Policy provisions.

### 12.0 Payment to the Service Provider

Payment shall be made as per the agreed terms of the Framework Agreement with the service provider based on the mandate issued and service provider's invoice certified by the respective MM. If the RA event is conducted as per the mandate given by BHEL and agreed procedure, payment shall be made to the service provider irrespective of the auction outcome.

### 13.0 Others

- 13.1 If RA is being conducted for multiple line items and L1 is to be decided for individual items, number of items in single screen be restricted to 10 (ten) to avoid scrolling by the bidders.
- 13.2 In case of enquiry through e-Procurement, the sealed electronic price bid (e-bid) is to be treated as sealed envelope price bid.
- 13.3 BHEL will inform bidders the details of service provider who will provide business rules, all necessary training and assistance before commencement of online bidding.
- 13.4 Bidders will be advised to read the 'Business Rules' indicating details of RA event carefully, before reverse auction event.
- 13.5 Model annexures are enclosed. However, to suit specific requirement of the Units changes in the annexures may be done with the approval of respective MM Head of Unit. Such changes shall specifically be communicated to the service provider before the RA event.

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## Business Rules for Reverse Auction

### Annexure – I

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This has reference to tender no **{tender number....date...}**. BHEL shall finalise the Rates for the supply of *{item name}* through Reverse Auction mode. BHEL has made arrangement with M/s. *{Service provider}*, who shall be BHEL's authorized service provider for the same. Bidders should go through the instructions given below and submit acceptance of the same.

The technical & commercial terms are as per (a) BHEL Tender Enq. No. {...} dated {...}, (b) Bidders' technical & commercial bid (in case of two part bid) and (c) subsequent correspondences between BHEL and the bidders, if any.

#### **1. Procedure of Reverse Auctioning**

- i. Price bids of all techno-commercially qualified bidders shall be opened.
- ii. **Reverse Auction:** The 'bid decrement' will be decided by BHEL.
- iii. The lowest bidder in sealed envelope price bid shall be shown as current L1 automatically by the system and no acceptance of that price is required. System shall have the provision to indicate this bid as current L1.
- iv. Bidders by offering a minimum bid decrement or the multiples thereof can displace a standing lowest bid and become "L1" and this continues as an iterative process. However, no bidder shall be allowed to lower its bid below the current L1 by more than 5 decrements at one go.
- v. After the completion of the reverse auction, the Closing Price shall be available for further processing.
- vi. Wherever the evaluation is done on total cost basis, after Reverse Auction, prices of individual line items shall be reduced on pro-rata basis.

**2. Schedule for reverse auction:** The Reverse Auction is tentatively scheduled on *{date}*: *;**{start time}*: *;**{Close Time}*: *}*.

**3. Auction extension time:** If a bidder places a bid in the last {...} minutes of closing of the Reverse Auction and if that bid gets accepted, then the auction's duration shall get extended automatically for another {...} minutes,

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## Business Rules for Reverse Auction

### Annexure – I

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for the entire auction (i.e. for all the items in the auction), from the time that bid comes in. Please note that the auto-extension will take place only if a bid comes in those last {...} minutes and if that bid gets accepted as the lowest bid. If the bid does not get accepted as the lowest bid, the auto-extension will not take place even if that bid might have come in the last {...} minutes. In case, there is no bid in the last {...} minutes of closing of Reverse Auction, the auction shall get closed automatically without any extension. However, bidders are advised not to wait till the last minute or last few seconds to enter their bid during the auto-extension period to avoid complications related with internet connectivity, network problems, system crash down, power failure, etc.

The above process will continue till completion of Reverse Auction.

Complaints/ Grievances, if any, regarding denial of service or any related issue should be given in writing thru e-mail/ fax to M/s. {Service provider} with a copy to BHEL within 15 minutes prior to initial closing time of Reverse Auction.

4. **Bid price:** The Bidder has to quote the {...} Price inclusive of Packing & Forwarding charges, all the routine & type tests as per tender scope, taxes, duties, freight and insurance as specified in tender document, including loading (if indicated by BHEL due to deviations in technical/ commercial terms) for the Items specified. Details are as shown in Excel Sheet for calculation of total cost to BHEL (To be specified by Unit as per NIT conditions).
5. **Bidding currency and unit of measurement:** Bidding will be conducted in *Indian Rupees per Unit* of the material as per the specifications {...}

In case of foreign currency bids, exchange rate (TT selling rate of State Bank of India) as on scheduled date of tender opening (Part-I bid) shall be considered for conversion in Indian Rupees. If the relevant day happens to be a Bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken.

6. **Validity of bids:** Price shall be valid for {... days} from the date of reverse auction. These shall not be subjected to any change whatsoever.

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### Business Rules for Reverse Auction

### Annexure – I

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7. **Lowest bid of a bidder:** In case the bidder submits more than one bid, the lowest bid at the end of Reverse Auction will be considered as the bidder's final offer to execute the work.
  8. Unique user IDs shall be used by bidders during bidding process. All bids made from the Login ID given to the bidders will be deemed to have been made by the bidders/ bidders' company.
  9. **Post auction procedure:** BHEL will proceed with the Lowest Bid in the Reverse Auction for further processing.
  10. Any commercial/ technical loading shall be separately intimated to respective bidders prior to RA. The excel sheet provided in this regard shall cover all these aspects. Commercial/ technical loading if any, shall be added by the respective bidder in its price during Reverse Auction. Modalities of loading & de-loading shall be separately intimated to the bidders. The responsibility for correctness of total cost to BHEL shall lie with the bidders.
  11. Reverse auction shall be conducted by BHEL (through M/s {Service Provider}), on pre-specified date, while the bidders shall be quoting from their own offices/ place of their choice. Internet connectivity shall have to be ensured by bidders themselves.

During the RA process if a bidder is not able to bid and requests for extension of time by FAX/ email/ phone then time extension of additional 15 minutes will be given by the service provider provided such requests come before 5 minutes of auction closing time. However, only one such request per bidder can be entertained.

In order to ward-off contingent situation of connectivity failure bidders are requested to make all the necessary arrangements/ alternatives whatever required so that they are able to circumvent such situation and still be able to participate in the reverse auction successfully. Failure of power or loss of connectivity at the premises of bidders during the Reverse auction cannot be the cause for not participating in the reverse auction. On account of this, the time for the auction cannot be extended and neither BHEL nor M/s. {Service provider} is responsible for such eventualities.

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## Business Rules for Reverse Auction

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- 12.** Proxy bids: Proxy bidding feature is a pro-bidder feature to safe guard the bidder's interest of any internet failure or to avoid last minute rush. The proxy feature allows bidders to place an automated bid in the system directly in an auction and bid without having to enter a new amount each time a competing bidder submits a new offer. The bid amount that a bidder enters is the minimum that the bidder is willing to offer. Here the software bids on behalf of the bidder. This obviates the need for the bidder participating in the bidding process until the proxy bid amount is decrementally reached by other bidders. When proxy bid amount is reached, the bidder (who has submitted the proxy bid) has an option to start participating in the bidding process.

The proxy amount is the minimum amount that the bidder is willing to offer. During the course of bidding, the bidder cannot delete or change the amount of a proxy bid.

Bids are submitted in decrements (decreasing bid amounts). The application automates proxy bidding by processing proxy bids automatically, according to the decrement that the auction originator originally established when creating the auction, submitting offers to the next bid decrement each time a competing bidder bids, regardless of the fact whether the competing bids are submitted as proxy or standard bids. However, it may please be noted that if a manual bid and proxy bid are submitted at the same instant manual bid will be recognized as the L1 at that instant.

In case of more than one proxy bid, the system shall bid till it crosses the threshold value of 'each lowest proxy bid' and thereafter allow the competition to decide the final L1 price.

Proxy bids are fed into the system directly by the respective bidders. As such this information is privy only to the respective bidder(s).

- 13.** Bidders are advised to get fully trained and clear all their doubts such as refreshing of Screen, quantity being auctioned, tender value being auctioned etc from M/s {Service provider}.
- 14.** M/s. {Service provider}, shall arrange to demonstrate/ train the bidder or bidder's nominated person(s), without any cost to bidders. M/s. {Service provider}, shall also explain the bidders, all the business rules related to the
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## Guidelines for Reverse Auction – 2021

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### Business Rules for Reverse Auction

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Reverse Auction. Bidders are required to submit their acceptance to the terms/ conditions/ modalities before participating in the Reverse Auction in the process compliance form as enclosed. Without this, the bidder will not be eligible to participate in the event.

15. Successful bidder shall be required to submit the final prices (L1) in prescribed format (Annexure – VI) for price breakup, quoted during the Reverse Auction, duly signed and stamped as token of acceptance without any new condition (other than those already agreed to before start of auction), after the completion of auction to M/s. {Service provider} besides BHEL within two working days of Auction without fail.
16. Any variation between the final bid value and that in the confirmatory signed price breakup document will be considered as tampering the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings (as available on [www.bhel.com](http://www.bhel.com)).
17. Bidders' bid will be taken as an offer to execute the work/ supplies the item as per enquiry no. {...} dt. {...}. Bids once made by the bidder, cannot be cancelled/ withdrawn and bidder shall be bound to execute the work as mentioned above at bidder's final bid price. Should bidder back out and not execute the contract as per the rates quoted, BHEL shall take action as per extant guidelines for suspension of business dealings (as available on [www.bhel.com](http://www.bhel.com)).
18. Bidders shall be able to view the following on their screen along with the necessary fields during Reverse Auction:
  - a. Leading (Running Lowest) Bid in the Auction (only total price of package)
  - b. Bid Placed by the bidder
  - c. Start Price
  - d. Decrement value
  - e. Rank of their own bid during bidding as well as at the close of auction.
19. BHEL's decision on award of contract shall be final and binding on all the Bidders.
20. BHEL reserves the right to extend, reschedule or cancel the Reverse Auction process at any time, before ordering, without assigning any reason, with

## Guidelines for Reverse Auction – 2021

Doc. No. AA:SSP:RA:05  
Dated: 08.03.2021

### Business Rules for Reverse Auction

### Annexure – I

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intimation to bidders.

21. BHEL shall not have any liability to bidders for any interruption or delay in access to the site irrespective of the cause. In such cases, the decision of BHEL shall be binding on the bidders.
22. Other terms and conditions shall be as per bidder's techno-commercial offers and other correspondences, if any, till date.
23. If there is any clash between this business document and the FAQ available, if any, in the website of M/s. {Service provider}, the terms & conditions given in this business document will supersede the information contained in the FAQs. Any changes made by BHEL/ service provider (due to unforeseen contingencies) after the first posting shall be deemed to have been accepted if the bidder continues to access the portal after that time.
24. Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action as per extant BHEL guidelines for suspension of business dealings (as available on [www.bhel.com](http://www.bhel.com)), shall be initiated by BHEL.

## Guidelines for Reverse Auction – 2021

Doc. No. AA:SSP:RA:05  
Dated: 08.03.2021

### Mandate to Service Provider

### Annexure – II

**Ref :**

To,

M/s. {Service provider}

Sub: Providing of Services for Reverse Auction.

Ref: No {...} date {...}

**Date :**

Dear Sir,

Please conduct Reverse Auction as per the following details:

- **Scope:** Auction event management with training of BHEL and its bidders.
  - Seek process compliance form from all the bidders provided by BHEL before start of RA event. In case of postponement of event to some other date, ensure acknowledgement from each bidder.
  - Price: Rs. {.....}/- . No other duties, Taxes, levies etc. except service tax @ {.....}% shall be payable for conducting reverse auction. This price is firm.
  - Payment Terms: 100% payment after successful completion of Auction.
  - Start Price: L1 as per the CST (Comparative statement) of the envelope sealed bid shall be marked as L1 automatically by the system at the start of the auction, provided the L1 bidder participates in the RA by submitting the process compliance form. In case the Process Compliance form is not submitted by the L1 bidder, still its price has to be mapped as start price of RA for further bidding in RA.
- Wherever there are more than one L1 in CST, the start price shall be the L1 price reduced by one decrement and the same shall be accepted by the interested bidder(s) for start of RA process.
- Completion of Auction Process: The auction process shall be deemed to have been successfully completed on receipt and acceptance of final report including hard copy/ email of the final bid with price break up, duly signed by the successful bidder who has participated in the reverse auction. The bill shall be submitted along with the completion report to the undersigned.
  - Business Rules of the Reverse Auction are as per Annexure – I.
  - The list of bidders with their contact details is given in Annexure – IV. and the details of the item (s) to be Reverse Auctioned are as per Annexure – V.
  - Please acknowledge receipt of this letter order and also confirm that final report (duly signed and stamped by M/s. {Service provider}) including hard copy/ email of the final bid with breakup of prices duly signed by the successful bidder (duly endorsed by M/s. {Service provider}) shall be submitted within **four** working days of conclusion of auction.

**Yours sincerely,**

(for and on behalf of BHEL)

## Guidelines for Reverse Auction – 2021

Doc. No. AA:SSP:RA:05  
Dated: 08.03.2021

### Mandate to Service Provider

### Annexure – II

**Note:**

If the event has been conducted as per mandate, you shall be paid irrespective of RA outcome.

<b>Buyer Name</b>	<ul style="list-style-type: none"><li>- Name of BHEL Unit</li><li>- Full postal address</li><li>- Fax:</li><li>- Phone:</li><li>- Email:</li><li>- Contact person name:</li><li>- Phone:</li><li>-</li></ul>
<b>Auction to be conducted by</b>	<ul style="list-style-type: none"><li>- Name of Service provider</li><li>- Full postal address</li><li>- Fax:</li><li>- Phone:</li><li>- Email:</li><li>- Contact person name:</li><li>- Phone:</li><li>-</li></ul>
<b>Date of Auction</b>	<ul style="list-style-type: none"><li>- Date of Auction</li><li>- Reverse auction time:</li><li>- Auction website:</li><li>-</li></ul>
<b>Documents Attached: (To be sent to the bidders)</b>	<ol style="list-style-type: none"><li>1) Business rules for Reverse Auction (<u>Annexure-I</u>)</li><li>2) Process Compliance Form (<u>Annexure-III</u>)</li><li>3) Details of item (s) to be Reverse Auctioned (<u>Annexure-V</u>)</li><li>4) Post RA Price confirmation by bidder (<u>Annexure-VI</u>)</li></ol>

## Guidelines for Reverse Auction – 2021

Doc. No. AA:SSP:RA:05  
Dated: 08.03.2021

### Process Compliance Form

### Annexure – III

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**(The bidders are required to print this on their company's letterhead and sign, stamp before RA)**

To

- M/s. {Service provider}
- Postal address}

**Sub: Agreement to the Process related Terms and Conditions**

Dear Sir,

This has reference to the Terms & Conditions for the Reverse Auction mentioned in the RFQ document for {Items} against BHEL enquiry/ RFQ no.{.....} dt. {.....}  
This letter is to confirm that:

- 1) The undersigned is authorized official/ representative of the company to participate in RA and to sign the related documents.
- 2) We have studied the Reverse Auction guidelines (as available on www.bhel.com), and the Business rules governing the Reverse Auction as mentioned in your letter and confirm our agreement to them.
- 3) We also confirm that we have taken the training on the auction tool and have understood the functionality of the same thoroughly.
- 4) We also confirm that, in case we become L1 bidder, we will FAX/ email the price confirmation & break up of our quoted price as per Annexure - VI within **two** working days (of BHEL) after completion of RA event, besides sending the same by registered post/ courier both to M/s. BHEL and M/s. {Service provider.}

We, hereby confirm that we will honor the Bids placed by us during the auction process.

With regards

Signature with company seal

Name –

Company / Organization

Designation within Company / Organization

Address of Company / Organization

- **Sign this document and FAX/ email it to M/s {Service provider} at {.....} prior to start of the Event.**

## Guidelines for Reverse Auction – 2021

Doc. No. AA:SSP:RA:05

Dated: 08.03.2021

### List of bidders and their address/ contact person details

#### Annexure – IV

---

<b>Sl. No.</b>	<b>Address</b>	<b>Contact Person</b>
1	<ul style="list-style-type: none"><li>- Name of bidder</li><li>- Full postal address</li><li>- Fax:</li><li>- Phone:</li><li>- Email:</li></ul>	<ul style="list-style-type: none"><li>- Contact person name:</li><li>- Phone:</li><li>- Email:</li></ul>
2		
3		
..		
..		

# Guidelines for Reverse Auction – 2021

Doc. No. AA:SSP:RA:05  
Dated: 08.03.2021

## Details of item (s) for Reverse Auction

Annexure – V

---

1. *{Details of items including quantity, specification, Enquiry no. & date*

- 1.
- 2.
- ..
- ..
- ..
- }

## Guidelines for Reverse Auction – 2021

Doc. No. AA:SSP:RA:05  
Dated: 08.03.2021

**RA price confirmation and breakup**  
**(To be submitted by L1 bidder after completion of RA)**

**Annexure – VI**

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**To**

- M/s. Service provider
- Postal address

CC: M/s BHEL  
{Unit-  
Address-}

Sub: **Final price quoted during Reverse Auction and price breakup**

Dear Sir,

We confirm that we have quoted.

**Rs. {\_\_\_ in value & in words \_\_\_\_\_} for item(s) covered under tender enquiry  
No. {...} dt. {...}**

Total price of the items covered under above cited enquiries is inclusive of {Packing & forwarding, GST, E.D., C.S.T., freight and insurance charges up to {.....} District, {.....} State and Type Test Charges etc., (exclusive of service tax), other as per NIT}

as our final landed prices as quoted during the Reverse Auction conducted today {date} which will be valid for a period of {\_\_\_ in nos. & in words \_\_\_} days.

The price break-up is as given below.

Total

=====  
- Rs. **in value & in words**  
=====

Yours sincerely,

For \_\_\_\_\_

**Name:**  
**Company:**  
**Date:**  
**Seal:**



HY/ FIN/CM/ 2017-18

DATE: 08/06/2017


**BANK ACCOUNT DATA FOR RTGS/NEFT MODE OF PAYMENT**

1. Party Code

2. Option : RTGS/NEFT

**3. Beneficiary Details:**

A) Name of Beneficiary : BHARAT HEAVY ELECTRICALS LIMITED  
B) Address : RAMACHANDRAPURAM, HYDERABAD- 502032.  
C) Bank Name : STATE BANK OF INDIA  
D) BRANCH NAME : BHELTOWNSHIP, HYDERABAD- 502032.  
E) Account No. : 62048154115  
F) Account type : Current A/c  
G) Bank IFSC Code : SBIN0020075  
H) Bank MICR Code : 500002370

Signature of Party :   
Name : (D.SRINIVASA RAO)  
Designation : Sr. Accounts Officer/Cash Mgmt.

डी. श्रीनिवास राव  
D. SRINIVASA RAO  
जूनियर लेखा अधिकारी / वित्त एवम लेखा  
अधीक्षक / Finance & Accounts  
की.एच.ई.एल. हैदराबाद BHEL, HYD-32

**TO WHOM SO EVER IT MAY CONCERN**

*Certified that the above particulars are found to be correct and matching with our records in respect of the above Beneficiary. This account is utilized for the purpose of collections through **RTGS /NEFT** only and the account is not having a valid **Cheque Facility**.*

(Signature of the Bank Manager)  
Seal of Bank:



## PROFORMA OF CONTRACT EXECUTION BANK GUARANTEE (CEBG)

In consideration of the Bharat Heavy Electricals Limited<sup>1</sup> (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at \_\_\_\_\_ through its Unit at \_\_\_\_\_ (name of the Unit) having agreed to exempt (Name of the Vendor / Contractor / Supplier) having its registered office at \_\_\_\_\_<sup>2</sup> (hereinafter called the said Contractor which term includes supplier), from demand under the terms and conditions of the Contract reference No. \_\_\_\_\_ dated \_\_\_\_\_<sup>3</sup> valued at ₹ \_\_\_\_\_<sup>4</sup> ( Rupees \_\_\_\_\_<sup>4</sup> only) (hereinafter called the said Contract) of Security Deposit for the due fulfilment by the said contractor of the terms and conditions contained in the said Contract, on production of a Bank Guarantee for ₹ \_\_\_\_\_<sup>5</sup> (Rupees \_\_\_\_\_<sup>5</sup> only), we \_\_\_\_\_ (indicate the name and address of the Bank) having its Head Office at \_\_\_\_\_ (address of the head Office) (hereinafter referred to as the Bank) at the request of \_\_\_\_\_ [Contractor(s)] do hereby undertake to pay to the Employer an amount not exceeding ₹ \_\_\_\_\_ in the event of any breach by the said Contractor(s) of any of the terms and conditions contained in the said Contract.

We, \_\_\_\_\_ (indicate the name of the Bank), do hereby undertake to pay the amounts due and payable under this guarantee without any demur, merely on a demand from the Employer. Any such demand made on the bank, shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding ₹ \_\_\_\_\_.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Contractor(s) in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this guarantee shall be a valid discharge of our liability for payment hereunder and the Contractor(s) shall have no claim against us for making such payment.

We, further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claim satisfied or discharged or till \_\_\_\_\_<sup>6</sup> office/Department/Division of Bharat Heavy Electricals Limited certifies that the terms and conditions of the said Contract have been fully and properly carried out by the said contractor(s) and also including the satisfactory performance of the equipment during guarantee period and accordingly discharges this guarantee. Unless a demand or claim under this guarantee is made on us in writing on or before the \_\_\_\_\_<sup>7</sup>, we shall be discharged from all the liability under this guarantee thereafter.

We, \_\_\_\_\_ (indicate the name of the bank) further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our 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* any of the powers exercisable by the Employer against the said contractor(s) and to forbear or enforce any of the terms and conditions relating to the said Contract and we shall not be relieved from our liability by any 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 Employer or any indulgence by the Employer to the said contractor(s) or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor(s).

We, \_\_\_\_\_ BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed \_\_\_\_\_<sup>8</sup>
- b) This Guarantee shall be valid up to \_\_\_\_\_<sup>9</sup>
- c) Unless the Bank is served a written claim or demand on or before \_\_\_\_\_<sup>10</sup> all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, \_\_\_\_\_ (indicate the name of the bank) \_\_\_\_\_ lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Date \_\_\_\_\_ Day of \_\_\_\_\_  
for \_\_\_\_\_ (indicate the name of the bank) \_\_\_\_\_

(Signature of Authorised signatory)

\* This date to be indicated should not be earlier than 60 days after the date contemplated under the contract.

<sup>1</sup> NAME AND ADDRESS OF THE EMPLOYER. i.e. Bharat Heavy Electricals Limited

<sup>2</sup> NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

<sup>3</sup> DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

<sup>4</sup> PROJECT/SUPPLY DETAILS

<sup>5</sup> BG AMOUNT IN FIGURES AND WORDS

<sup>6</sup> VALIDITY DATE

<sup>7</sup> DATE OF EXPIRY OF CLAIM PERIOD

<sup>8</sup> BG AMOUNT IN FIGURES AND WORDS.

<sup>9</sup> VALIDITY DATE

<sup>10</sup> DATE OF EXPIRY OF CLAIM PERIOD

## PROFORMA OF PERFORMANCE BANK GUARANTEE

Bank Guarantee No:

Date:

To  
NAME  
& ADDRESSES OF **THE** BENEFICIARY

Dear Sirs,

In consideration of the Bharat Heavy Electricals Limited <sup>1</sup> (hereinafter referred to as the 'Employer' which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns) incorporated under the Companies Act, 1956 and having its registered office at \_\_\_\_\_ through its Unit at \_\_\_\_\_ (name of the Unit) having awarded to ( Name of the Vendor / Contractor / Supplier) having its registered office at \_\_\_\_\_ <sup>2</sup> hereinafter referred to as the 'Contractor/Supplier', which expression shall unless repugnant to the context or meaning thereof, include its successors and permitted assigns), a contract Ref No \_\_\_\_\_ dated \_\_\_\_\_ <sup>3</sup> valued at ₹ \_\_\_\_\_ <sup>4</sup> ( Rupees \_\_\_\_\_ )/FC \_\_\_\_\_ (in words \_\_\_\_\_ ) for \_\_\_\_\_ <sup>5</sup> (hereinafter called the 'Contract') and the Contractor having agreed to provide a Contract Performance Guarantee, equivalent to \_\_\_\_ % ( \_\_\_\_ Percent) of the said value of the Contract to the Employer for the faithful performance of the Contract,

we, \_\_\_\_\_, (hereinafter referred to as the Bank), having registered/Head office at \_\_\_\_\_ and inter alia a branch at \_\_\_\_\_ being the Guarantor under this Guarantee, hereby, irrevocably and unconditionally undertake to forthwith and immediately pay to the Employer a maximum amount ₹ \_\_\_\_\_ (Rupees \_\_\_\_\_) only without any demur, immediately on a demand from the Employer, .

Any such demand made on the Bank shall be conclusive as regards the amount due and payable by the Bank under this guarantee. However, our liability under this guarantee shall be restricted to an amount not exceeding ₹ \_\_\_\_\_.

We undertake to pay to the Employer any money so demanded notwithstanding any dispute or disputes raised by the Contractor/ Supplier in any suit or proceeding pending before any Court or Tribunal relating thereto our liability under this present being absolute and unequivocal.

The payment so made by us under this Guarantee shall be a valid discharge of our liability for payment thereunder and the contractors/supplier shall have no claim against us for making such payment.

We the \_\_\_\_\_ bank further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said Contract and that it shall continue to be enforceable till all the dues of the Employer under or by virtue of the said Contract have been fully paid and its claims satisfied or discharged. We \_\_\_\_\_ BANK further agree with the Employer that the Employer shall have the fullest liberty without our consent and without affecting in any manner our obligations hereunder to vary any of the terms and conditions of the said Contract or to extend time of performance by the said Contractor/Supplier from time to time or to postpone for any time or from time to time any of the powers exercisable by the Employer against the said Contractor/Supplier and to forbear 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/Supplier or for any forbearance, act or omission on the part of the Employer or any indulgence by the Employer to the said Contractor/Supplier or by any such matter or thing whatsoever which under the law relating to sureties would but for this provision have effect of so relieving us.

The Bank also agrees that the Employer at 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 the Employer may have in relation to the Contractor's liabilities.

This Guarantee shall remain in force up to and including \_\_\_\_\_<sup>6</sup> and shall be extended from time to time for such period as may be desired by Employer.

This Guarantee shall not be determined or affected by liquidation or winding up, dissolution or change of constitution or insolvency of the Contractor/Supplier but shall in all respects and for all purposes be binding and operative until payment of all money payable to the Employer in terms thereof.

Unless a demand or claim under this guarantee is made on us in writing on or before the \_\_\_\_\_<sup>7</sup> we shall be discharged from all liabilities under this guarantee thereafter.

We, \_\_\_\_\_ BANK lastly undertake not to revoke this guarantee during its currency except with the previous consent of the Employer in writing.

Notwithstanding anything to the contrary contained hereinabove:

- a) The liability of the Bank under this Guarantee shall not exceed \_\_\_\_\_<sup>8</sup>
- b) This Guarantee shall be valid up to \_\_\_\_\_<sup>9</sup>
- c) Unless the Bank is served a written claim or demand on or before \_\_\_\_\_<sup>10</sup> all rights under this guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities under this guarantee irrespective of whether or not the original bank guarantee is returned to the Bank.

We, Bank, have power to issue this Guarantee under Jaw and the undersigned as a duly authorized person has full powers to sign this Guarantee on behalf of the Bank.

For and on behalf of  
(Name of the Bank)

Dated \_\_\_\_\_.

Place of Issue \_\_\_\_\_.

<sup>1</sup> NAME AND ADDRESS OF THE EMPLOYER. i.e. Bharat Heavy Electricals Limited

<sup>2</sup> NAME AND ADDRESS OF THE VENDOR /CONTRACTOR / SUPPLIER.

<sup>3</sup> DETAILS ABOUT THE NOTICE OF AWARD/CONTRACT REFERENCE

<sup>4</sup> PROJECT/SUPPLY DETAILS

<sup>5</sup> BG AMOUNT IN FIGURES AND WORDS

<sup>6</sup> VALIDITY DATE

<sup>7</sup> DATE OF EXPIRY OF CLAIM PERIOD

<sup>8</sup> BG AMOUNT IN FIGURES AND WORDS.

<sup>9</sup> VALIDITY DATE

<sup>10</sup> DATE OF EXPIRY OF CLAIM PERIOD

## **LIST OF CONSORTIUM BANKS:(OMI-219)**

1. STATE BANK OF INDIA
2. ABN AMRO BANK N.V.
3. BANK OF BARODA
4. CANARA BANK
5. CITI BANK N.A.
6. CORPORATION BANK
7. DEUTSCHE BANK
8. HDFC BANK LTD.,
9. THE HONGKONG AND SHANGHAI BANKING CORPORATION LTD.
10. ICICI BANK LTD.
11. IDBI LTD.
12. PUNJAB NATIONAL BANK
13. STANDARD CHARTERED BANK
14. STATE BANK OF TRAVANCORE
15. STATE BANK OF HYDERABAD
16. SYNDICATE BANK.
17. ALLAHABAD BANK
18. ANDHRA BANK
19. BANK OF INDIA
20. BANK OF MAHARASTRA
21. CENTRAL BANK OF INDIA
22. DENA BANK
23. INDIAN BANK
24. INDIAN OVERSEAS BANK
25. ORIENTAL BANK OF COMMERCE
26. PUNJAB & SIND BANK
27. UCO BANK
28. UNION BANK OF INDIA
29. UNITED BANK OF INDIA
30. VIJAYA BANK
31. STATE BANK OF BIKANER & JAIPUR
32. STATE BANK OF INDORE (MERGED WITH SBI)
33. STATE BANK OF MYSORE
34. STATE BANK OF SAURASTRA