BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)

P.O. BHEL Jhansi -284129

Information Technology

TENDER DOCUMENT

For

Factory wide Local Area Network Up-gradation
at
BHEL Jhansi

(Tender Enquiry No: JS/IT/WC/NET/14-15/001)

Issued To	**-**	
Bid Submission Date & Time	**-**	**On or before 20-May-2014 at 13:45 Hrs.**
Technical Bid Opening Date & Time	**-**	**20-May-2014 AT 14:00 Hrs.**

Table of Contents

Tender Notice

Ref. No.:
Date:

M/s

Dear Sir,

Subject: Factory wide Local Area Network Up-gradation at BHEL, Jhansi.

Sealed tenders are invited in two PART BID system i.e. Techno Commercial Bid Part – I and Price Bid Part – II.

Before preparing the bids, please see the details in various Annexure.

Please note that the sealed tenders will be received by us up to **13:45 Hrs. on 20-May-2014** along with the EMD of **Rs 2, 00,000** only. EMD and Techno Commercial Bid (PART-I) will be opened on the same day at **14:00 Hrs**. in the presence of such bidders and /or their authorized representatives who choose to be present. There shall not be any overwritten figures in document. All the cutting should be duly signed by the authorized person submitting the offer and should be rewritten in figures and words both.

BHEL reserves the right to accept or reject any or part of the tender without assigning any reason thereof.

Tender should be dropped in the tender box at the address mentioned below:

Tender Box
CISF Control Room/Office
Administrative Building BHEL
Jhansi (U.P.)-284129

With regards, for Bharat Heavy Electricals Ltd.

Ms. N S L Ekka
Sr. DGM (IT)
Information Technology
Telephone No: - (0510)-2412746
Email Id: - neelam@bheljhs.co.in

1. Requirement and Procurement process

1.1 Introduction

Bharat Heavy Electricals Ltd., Jhansi (A Govt. of India Undertaking) invites tenders from bidders who qualify as per criteria listed below. The tender is invited for supply of Network System both active and passive on **financial lease** for a period of 5 years for up-gradation of existing Cisco based 10 Gigabit backbone network system. The new hardware should meet the capacity required to meet the business growth during the next five years. The requirement is for industry standard, state-of-art computer system with associated software and accessories to run the applications on **24x7** (throughout the contract period) basis. All the hardware and software shall be highly resilient, high performing and certified for the latest version available.

The entire system is required on 5-year **financial lease** basis and if BHEL opts, the bidder shall undertake to provide maintenance support for two years after the expiry of the financial lease period of 5-year.

Total Price shall be for the complete scope as per technical specifications, inclusive of comprehensive onsite maintenance including repair/replacement of parts during the entire lease period, all taxes & duties, insurance, any other incidental charges, etc. Lease Period of five years shall start from the date of successful completion of installation and acceptance by BHEL.

1.2 Documents issued to the bidders

Following are the tender documents issued to the bidders.

1. Requirement and the Procurement process
2. Eligibility Criteria for bidders
3. Technical Terms and conditions
4. Commercial Terms and Conditions
5. Technical Specification (Requirement in the form of Check-list)
6. Format for declaring deviations (Annexure-A)
7. No Deviations Certificate (Annexure-B)
8. Acceptance to Participate in Reverse Auction(RA) (Annexure-C)
9. Non-disclosure agreement (Annexure-D)
10. Authorization by OEM (Annexure-E)
11. Annual turnover of Bidder (Annexure-F)
12. Major order received within stipulated Time(Annexure-G)
13. Price Format (Annexure-H)
14. Terms and Conditions of Reverse Auction (Annexure-I)
15. Minimum Qualifying requirements(Annexure-J)
16. Acceptance Test Procedure (ATP) Signoff Document (Annexure-M)

1.3 Amendment of bidding documents

BHEL may at its sole discretion amend the bidding documents at any time prior to the deadline for submission of bids. However in case of such amendment, the bid submission date may be extended at the discretion of BHEL.

Amendments made prior to submission of bid will be provided in the form of addenda / corrigendum to the bidding documents and will be posted on the BHEL Jhansi web site (**http://www.bheljhs.co.in, http://www.bhel.com**) in tender notification site.

1.4 Documents to be submitted along with the Bid

Following documents shall be submitted in the bid. The Bidder shall bear all costs associated with the preparation and submission of its bid and BHEL will in no case be responsible or liable for those costs.

The bid, all correspondence and documents related to the bid shall be in English.

Documents required for meeting the Eligibility Criteria of the bidder

Documents related to Technical and Commercial offer

Sr.	Documents	Reference
1	Acceptance of Technical Terms and Conditions	Clause-3 of Tender
2	Acceptance of Commercial Terms and Conditions	Clause-4 of Tender
3	Technical specification of the offered solution to be filled in the Check-list format issued as "technical specification" (Requirements) in the tender document.	Clause-5 of tender
4	Technical Brochures	
5	Other Documents to support the compliance	
6	Deviations, if any, as per BHEL's Format or "No-Deviations" Certificate	Annexure-A,B
7	Un-priced Commercial offer as per Price Format	Annexure-H
9	Certificates from respective OEMs of all items quoted, declaring support for a minimum period of seven years from the date of commissioning.	Annexure-E
10	Earnest Money Deposit (EMD) of Rs. **2,00,000**/-	
11	Tender fee of **Rs 1000**/- + VAT@14%= **Rs 1140**/-	
12	Authorization letter from OEM citing reference no of this tender.	Annexure-E
13	Non-Disclosure Agreement	Annexure-D
14	Terms and Conditions of Reverse Auction	Annexure-I
15	Qualifying Requirements	Annexure-J

Document to be submitted for the Price Bid

1	Price in the Price Format	Annexure-H

1.5 Late Bids

Any bid received by BHEL after the deadline for submission of bids will be summarily rejected and returned unopened to the bidder.

1.6 Evaluation of Bids

BHEL will evaluate the bids as follows;

Stage-I: Evaluation of Eligibility Criteria of bidder, Technical & Commercial Bids

These are mandatory requirements to be met by the Bidder.

The EMD would be opened on the tender opening date and if EMD is not furnished the offer will be duly rejected immediately. Commercial and Technical bid including Eligibility Criteria of the bidder shall be opened and evaluated for acceptability of Eligibility ,Technical offer, deviations and their acceptability, technical suitability, acceptance of technical and commercial terms.

BHEL's Tendering Committee will evaluate the Bid submitted by the Bidders. During the Evaluation of the bid, BHEL may ask for additional information / resources to validate the bid. These may include Supporting documents towards Eligibility Criteria , Technical documents / white papers from OEM or third party, references, demonstration of a proof of concept or solution, visit to OEM's lab or their clients reference site, etc. Though, offer of higher warranty/ configuration/ rating, than what is required as per tender Specifications may be accepted, no extra weight age or preference will be given for the same.

Failure to furnish all information as required or to submit a bid not substantially responsive to the bidding documents may result in rejection of the bid. If there are any deviations in the technical solution offered, without affecting the functional requirement, they shall be filled-in the Deviation format issued with the tender document and submitted along with the bid. In case of no deviations, "**No Deviation Certificate**" shall be submitted. The deviations from the tender specification shall be clearly indicated giving the reference of the specification, if any, as per format for declaring deviations. If deviation other than what is specified in the list is found, the bid will be liable for rejection. BHEL reserves the right to accept or reject any deviation.

Bids meeting BHEL's requirements as specified in tender document only will be considered for Stage-II evaluation of the Price Bid. BHEL reserves the right to go for **Reverse Auction** (RA) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. All bidders to give their acceptance for participation in RA. Non-acceptance to participate in RA may result in non-consideration of their bids, in case BHEL decides to go for RA. **Acceptance to participate in RA** is to be submitted as per **Annexure C**.

Stage -II: Evaluation of the Price Bid:

Prices of optional items, if quoted, shall not be considered for Price evaluation and comparison. The taxes shall be extra at actual.

BHEL reserves the right to conduct **RA** instead of opening the price bid. In case BHEL decides not to go for RA, submitted price bid will be opened.

After finalizing the techno-commercial offer, BHEL may open the Price Bid or conduct reverse auction (RA) process for arriving at lowest price offer. BHEL will claim depreciation as per provision of income-tax act.

Bidders clearing the Technical and Commercial evaluation will have their Price Bids considered. The total cost of the bid will be calculated as under:

1.6.1 Bidder shall quote the equal quarterly rental charges (including Principle repayment, tax, interest, Support Charges, etc.) for 5 years for Hardware, Software, other items in the requirement as per the Price Format issued with the tender document. L1 will be evaluated based on total of quarterly rental charges including taxes (as per price format).

1.6.2 The quarterly rental charges will be payable after the end of each quarter.

1.6.3 The bid having the lowest total cash outflow for 5 years will be considered as **L1**.

1.6.4 Bidder shall agree to provide AMC service for at least two years after the five year lease period. The AMC amount shall not be more than **10%** of the outright Purchase value. BHEL reserves the right to opt for continuation of maintenance support for the hardware and software at end of five year lease period by way of awarding AMC contract to bidder at the rate equal to maintenance charges paid per quarter during the original lease contract. The Technical terms of AMC shall be same that of maintenance support during the lease period. The payment for AMC will be made quarterly at the end of the each quarter.

1.6.5 BHEL Reserves the right to retain the hardware, software and other items supplied in this procurement at the end of the lease period on payment of Rs. 1/- (Rupee One only). If BHEL does not retain the equipment, the vendor shall dismantle all the equipment and move it away from BHEL's premises.

1.7 BHEL's Right to accept or Reject any or all Bids

BHEL reserves the full right to accept or reject any bid or to annul the bidding process and reject all bids at any time prior to Contract award, without thereby incurring any liability to the Bidders.

2. **Eligibility Criteria for Bidders**

Clause. No.	Description
2.1	The Bidder should be either OEM of Active Network Components who is willing to undertake total scope of work or an authorized system integrator of the active OEM having direct purchase and support agreement with OEM. **Bidder should submit Authorization certificate from OEM for this specific tender.**
2.2	The Bidder should have experience in executing Enterprise Networks. The Bidder should have successfully executed Enterprise Networks during the last 5 years in any one of the following: a. Three Enterprise Networks, each order value of not less than the 4 Crores on Lease Rental or 2.5 Crores on outright purchase basis, (Or) b. Two Enterprise Networks, each order value of not less than 5 Crores on Lease Rental or 3.5 Crores on outright purchase basis, (Or) c. One Enterprise Network order value of not less than 8 Crores on Lease Rental or 5 Crores on outright purchase basis. The executed work under considerations should be of total Solutions and Infrastructure Setup, which consists Fiber Optic laying, High End Chassis Switches, Distribution Switches along with Network Monitoring Systems. **Bidder should provide order copies of works executed.**
2.3	The Bidder should possess **ISO 9001** and **ISO 27001** certification. This certification should be current as on bid opening date. **Bidder should submit proof for this.**
2.4	The Bidder should have professionals with certifications from the OEM of the quoted products and also having experience of implementing / maintaining Enterprise Network Solution. **Bidder should submit the list of certified professionals available with them.**
2.5	The Bidder shall provide all the wired and wireless networking products of the same OEM. **Bidder should give declaration for this.**

2.6	The Bidder shall provide all the passive cabling components from single OEM. **Bidder should give declaration for this.**
2.7	The Bidder should submit a commitment letter from OEM to provide support for quoted network actives for a minimum period of 5 years. However, Bidder shall give commitment letter for additional two years support either through OEM or on their own.
2.8	OEM shall have Technical Assistance Center (TAC) operating in India. **Bidder should submit proof for this.**
2.9	The Bidder should not be under hold or delist or banned by any of BHEL Units as on bid opening date for Enterprise Network. Bidder should give declaration to this effect.

Note:

1. Certificates and evidences should be provided as a proof for all the above mentioned qualification criteria along with the techno commercial bid.
2. If the bidders do not fulfill any of the qualification criteria mentioned above, the offer will be rejected.

3. Technical Terms and Conditions

3.1 Scope of Work

Migration and Up gradation of existing 10Gbps backbone factory wide network on 5 year lease rental basis consisting of following:

3.1.1 Supply, installation, testing, commissioning and maintenance of networking, software and passives as per specified configuration including Inter VLAN routing, Multitrunk linking, network segregation, firewall configuration, separate security zones etc.

3.1.2 Supply, installation, testing and commissioning of network & security management systems.

3.1.3 LAN/WAN IP schemes proposal & configuration.

3.1.4 Integration of existing infrastructure (routers etc.) with the new setup.

3.1.5 Supply and installation of racks for mounting of network equipment & Computer Systems including dressing of cables in the racks using cable managers with Velcro.

3.1.6 Supply, laying, termination, testing and maintenance of Fiber Optic cable, UTP cable.

3.1.7 Replacing the existing Cat 5E cables to Cat 6 cables.

3.1.8 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.

3.1.9 Supply and installation of all passive components including I/O, Back boxes, Light Interconnect Units (LIUs), Patch panels, Patch cords, connectors etc required to complete the work on structured cabling concept.

3.1.10 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.

3.1.11 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.

3.1.12 Civil works required for OFC laying across Railway track inside the factory campus should be included in vendor's scope.

3.1.13 Training on Network administration at OEM/OEM certified center premises as well as on site, as per mutually agreed training plan.

3.1.14 Supply of all relevant documents/drawings/test certificates and manuals (two sets of Hardcopy as well as on CD).

3.1.15 Acceptance Testing based on mutually agreed ATP document.

3.1.16 Comprehensive maintenance of entire network equipment/passive including existing network passives which shall become the part of new network for entire 5 year lease period.

3.1.17 BHEL's involvement during each stage of implementation shall be ensured by the vendor.

3.1.18 Wherever possible, existing passive components such as fiber and copper can be reused.

3.1.19 Vendor should demonstrate the 10 gigabits network functioning as a system.

3.2 Installations and Commissioning

3.2.1 The vendor shall nominate a Project Manager who on behalf of the vendor shall coordinate and be responsible for all the activities related to execution of the order for establishing the network at BHEL. He shall act as an interface between the vendor and BHEL. The project manager shall:

- Carry out detailed site inspection
- Prepare Bill of Material for structured cabling system location wise.
- Suggest additional site preparation requirement to BHEL not a part of the order.
- Submit a complete layout plan for networking equipment and cabling system.
- Submit the detailed project schedule in consultation with BHEL.
- Monitor the progress vis-à-vis the project schedule.
- Coordinate for all required help and inputs necessary for the execution of the contract.
- Maintain logbook of the cabling work carried out.
- Submit a detailed drawing of cable layout, position of nodes, switches etc.
- Finalize the training requirement with the BHEL.
- Finalize the acceptance test procedure with the BHEL.

3.2.2 Any equipment, fitting, material, software or supplies which may not be specifically mentioned in the specifications but which are necessary for carrying out the contract works within the scope of the tender are to be provided for and rendered to by the vendor. Such items not quoted by the vendor, if found necessary during execution of the contract, shall have to be supplied at no extra charge by the vendor.

3.2.3 The vendor shall provide the following certificates along with the equipment at the time of supply:

- Certificate of newness of the equipment
- Test Certificate of the equipment/fiber/UTP
- Performance warranty certificate (**at least 15 years**) of the structured cabling from OEM
- The cabling system installed by the vendor shall meet the specifications as prescribed in ANSI/EIA/TIA, ISO 11081 standards and to that effect shall submit a certificate after the completion of the work that the work has been done as per standards.

3.2.4 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.

3.2.5 The vendor shall supply at least one licensed set of manuals for each equipment/software at no extra cost.

3.2.6 Migration from the current network setup to new network setup should be done such that the entire Network downtime should be less than 24 hours, where segmented

downtime also should be minimal and without affecting the operation and business continuity. The migration can be planned in phased manner to achieve the minimal downtime and business continuity. Migration process will include, but not limited to, migrating the network connectivity of users/desktop/links/servers/routers from the existing switches to the new core/distribution/access switches as per the design.

3.2.7 Any temporary make shift arrangement like shifting of switches, rerouting of Fiber and UTP, etc., which are required during migration work is in vendor's scope.

3.3 Documents to be submitted during Commissioning

On successful installation of the equipment and configuration of individual components and the solution as a whole, the Vendor shall submit the following documents as part of the commissioning

3.3.1 Newness certificate for all items.

3.3.2 Configuration detail for each active networking equipment.

3.3.3 Network diagrams/cabling scheme.

3.3.4 Security scheme for entire solution.

3.3.5 Performance Bank Guarantee.

3.3.6 Insurance documents for the entire item.

3.4 Acceptance Test Procedure

3.4.1 The vendor shall submit project completion report to BHEL once the network is established so that acceptance test can be carried out as per attached **Annexure-M**. All manuals, accessories etc. will be handed over by vendor to BHEL.

3.4.2 The vendor shall submit the acceptance test document to BHEL during the design phase itself and this document will include all the tests to be carried out on each hardware / software installed.

3.4.3 The vendor shall submit the detailed documentation of network including cabling layout, equipment location and bill of material etc. prior to start of the acceptance test. The vendor shall give all documents in computer format.

3.4.4 The acceptance test which involves running standard vendor tests and/or BHEL tests and the operations of the complete network will be for **10 days** after completion of installation. This will also include the testing of all the software quoted by the vendor.

3.4.5 All the software offered, shall be loaded completely and made functional in all respects before the start of the acceptance test by the vendor. Vendor shall demonstrate all the features of the equipment/software and show that equipment/software is performing as per specified configuration.

3.4.6 If any equipment fails during the acceptance test, it will be replaced by the vendor and the acceptance test on the replaced equipment shall be performed afresh.

3.5 Lease Agreement (LA)

Based on finalized terms and conditions, BHEL will consider signing of bi-partite Lease agreement ONLY with vendor after placement of LOI. **In case of a tri-partite agreement all the quarterly lease/rental payment bills raised by the financing agency should get routed/endorsed by vendor only.**

3.6 Training

Training of **minimum 4** BHEL personnel shall be part of the contract. During installation at BHEL, the associated BHEL engineers shall be guided on the configuration being made and usage. Advanced level training shall be provided by OEM / authorized training partner at OEM Place /OEM certified training center. BHEL will nominate engineers. BHEL team shall get training for minimum 10 (ten) working days at Jhansi. Training shall be focused on fundamentals of networking/security in general and supplied equipment in particular. It should be based on standard certification programmes of OEM's equipment.

The training should include the following areas:

- **Introduction to Networking Technologies**

  Course Objectives: - After the course the participant should be able to:

  - Classify devices and functions their layer in the OSI Model the purpose, use, structure and definitions of the layers of the OSI Model
  - Choose the appropriate data communications transmission method (serial/parallel) and explain how encapsulation and de-encapsulation works for that transmission method
  - Construct a point-to-point Ethernet LAN
  - Show the sequence of steps used by IP Protocol operations to determine address
  - Match issues related to increasing traffic on an Ethernet LAN to typical LAN environment
  - Solve Ethernet Networking issues using switched LAN technology
  - Identify the specific Ethernet Network Interface (for e.g., EO, EI) by which a packet is forwarded on an Ethernet LAN
  - Construct a Topology and network addressing scheme
  - Determine the type of transport protocol (TCP or UDP) and IP application used
  - Define the fundamental technologies involved in a WAN environment
  - Match the types of WAN media to their appropriate characteristics
  - Use the available configuration tools to establish connectivity to the appropriate network device in order to complete the initial device configuration

- **Interconnecting Network Devices**

  Course Objectives: - After the course the participant should be able to:

  - Configure a switch for basic operations
  - Configure and troubleshoot Virtual LANs (VLANs)
  - Configure and troubleshoot Routing Protocols like (RIP), Open Shortest Path First (OSPF) etc.
  - Configure IP Access List on router
  - Configure Serial Interfaces using PPP and High Level Data Link Control (HDLC) on router
  - Configure Frame Relay on routers
  - Configure DDR between two routers with Basic Rate Interface (BRI) or Primary Rate Interface (PRI) on Remote Access Router and a physical ISDN connection
  - Extend Switched Networks with VLANs
  - Determine IP Routes
  - Manage IP Traffic with Access Lists
  - Establish Serial Point-to-Point Connections
  - Establish Frame Relay Connections
  - Complete ISDN Calls

- **Implementing Multilayer Switched Networks**

  Course Objectives: - After the course the participant should be able to:

  - Deploy the required products and services that enable connectivity and traffic transport, given a network design that includes multilayer switching over various Ethernet Technologies
  - Implement the necessary services at each layer of the network to all users to obtain services in a working multilayer switched network
  - Control Network Traffic by implementing network policies on a multilayer switched network
  - Restore proper network operations through the use of devices and external management tools for multilayer switched network
  - Explain how service providers implement transparent LAN services and Ethernet over Multiprotocol Label Switching (MPLS) technology to deliver connectivity to the enterprise site
  - Configure VLANs and VTP
  - Implement Spanning Tree Protocol (STP)
  - Implement Multilayer Switching in the Network
  - Improve Availability on Multilayer Switched Network
  - Implement QoS in Multilayer Switched Network
  - Optimize and Secure Multilayer Switched Network

- **Internetwork Troubleshooting**

  Course Objectives: - After the course the participant should be able to:

  Interconnect End Systems using Routers and switches, administrate access to the network, and access to commands and applications that are used to discover baseline configuration information, students will establish a baseline, so that the topology and configuration is diagrammed and tabulated
  Use the principles of a layered model troubleshooting approach, students will determine and document a troubleshooting strategy so that internetwork problems can be detected and corrected consistently
  Use of commands and applications to resolve optimization and failure problems at the physical or data link layer so that the framed data moves from one end of a data link to another at the expected data error rate determined in the network baseline
  Use of commands and applications to resolve optimization and failure problems at the Network layer, so that the students can verify connectivity at Layer 3 and establish the routing tables show reachability to all expected network devices specified in the baseline, and traffic is flowing over the correct path detailed in the baseline
  Establish a baseline
  Determine an Effective Troubleshooting Strategy
  Resolve Problems at the Physical and Data Link Layers
  Resolve Problems at the Network Layer
  Resolve Problems at the Transport and Application Layers

- **Wireless LAN Fundamentals**
- **Security & Monitoring**
- **Network Management Solution**
- **Structure Cabling Solution**
- **OFC Solution**

3.6.1 Training at external certified training centers/ laboratories

Advanced Network Administration **Training for 2 persons** at the OEM's training centers in India. In case of outstation training, travel, boarding and lodging of trainees will be responsibility of BHEL. Note: - a) **BHEL has the right to select or reject the faculty depending on his/her credential performance.**

b) Training to be completed before the declaration of the system installation complete.

c) Complete training schedule, venue to be submitted within 15 days of order placement.

3.7 Special Clauses

3.7.1 Make, Model, Product No and Details of each Item must be mentioned clearly.

3.7.2 BHEL will not be responsible for any misinterpretation or wrong assumption by the vendor.

3.7.3 All the Items must be supplied in full and complete.

3.7.4 All components shall be rated for **24x7x365** operation.

3.7.5 The Vendor shall provide all other hardware and software items that are not explicitly mentioned herein, but are required by the Vendor to full-fill the intended specifications and to meet the functionality mentioned in the bid.

3.7.6 The indicated specification parameters are the minimum requirement and item with higher rating will be acceptable.

3.7.7 No item shall be offered whose end-of-sale has been declared by the OEM or has been declared to be under phase out.

3.7.8 Proper documentation, labeling and tagging shall be carried out for all the equipment's used in the entire landscape for easy management and maintenance.

3.7.9 The following documents shall be provided for all hardware, software and other equipment:

- User manual.
- Administrator manual.
- Complete documents for maintenance.
- Error Handling and troubleshooting manual.
- Source Code for scripts used.
- Documenting proof that all software Licenses are in the name of BHEL Jhansi only.
- Safety and Standard Operating Practices manuals.

3.8 Service Level Agreement (SLA)

3.8.1 Bidder shall be responsible for continuous and smooth operation of the LAN for the entire lease period.

3.8.2 Maintenance and services shall cover services, repairs and replacements necessary to keep the hardware and software in good working condition.

3.8.3 Bidder shall maintain sufficient spares, in BHEL Jhansi to ensure immediate attention in case of breakdown.

3.8.4 Uptime of 99.5% per month should be ensured for all the actives individually. Uptime is calculated on24x7 basis.

Uptime = ((Hours in the month - downtime hours) / Hours in the month) * 100

In case the uptime is less than 99.5% for a particular month, deduction will be calculated as per the following scheme and the amount will be deducted from the quarterly lease rental:

Deduction for the month for an item = (99.5 – uptime percentage)/100 × rental per month ×multiplication factor

Where, the multiplication factor is calculated by,

For uptime ≥ 99.5% multiplication factor = 0
For uptime ≥ 99.0% and <99.5% multiplication factor = 1
For uptime ≥ 98.5% and <99.0% multiplication factor = 2
For uptime ≥ 98.0% and <98.5% multiplication factor = 4
For uptime ≥ 95.0% and <98.0% multiplication factor = 8
For uptime < 95.0% multiplication factor = 16

3.8.5 If non availability of an item affects availability of other items, then all such items will also be treated as down for downtime calculation

3.8.6 If an item has less than 95% availability continuously for 3 months then it shall be replaced with a new item and uptime is to be ensured at more than 95%. If majority items are having availability less than 95% continuously for more than three months and not rectified, BHEL reserves the right to terminate part or entire contract.

3.9 Availability of Spares

Sufficient stock of critical spares shall be maintained at the site at all times to ensure the uptime.

3.10 Terms of Payment (TOP)

Lease period will start only after successful installation and commissioning of all hardware and software products as per the requirement and the issue of the commissioning certificate by BHEL. Quarterly lease rental charges (after deduction for any SLA non-conformance) become payable after the end of each quarter. Payment will made through the EFT Mode Only. Advance or prior to dispatch or LC payment terms will not be accepted and if quoted offer will be rejected.

Vendor shall submit following documents for processing the bills:

1	Invoice in triplicate.
2	SLA reports for the quarter (certified by the System Administrator of BHEL)

3.11 Warranty, Maintenance & Support

3.11.1 The vendor should be able to provide the support for quoted network actives technology and the equipment for a minimum period of 8 years. Vendor shall give commitment letter in this regard. Vendor shall warrant that spare parts of the equipment shall be available for minimum period of 8 years after completion of the acceptance test.

3.11.2 The vendor shall maintain the network after completion of 5 year lease period, if BHEL desires so, on the same scope, terms & conditions as during the lease period. The Annual Maintenance Charges subsequent to the lease rental period shall be quoted as a

percentage of total outright purchase value of each item.

3.11.3 The vendor shall keep the sufficient spares to keep the network downtime at minimum.

3.11.4 The vendor shall provide comprehensive maintenance support on 24x7 hours basis by one OEM certified and trained resident engineer posted at BHEL Jhansi without payment of extra charges for maintenance and upkeep of network. The Engineer shall be engineering degree holder with minimum two year experience in network maintenance and should hold OEM (network) certifications also.

The resident engineer:

3.11.4.1 Shall observe BHEL working hours and BHEL holidays. BHEL (general shift) working hours are 8AM to 4:45PM, 6 days a week. However the engineer shall always be available 24x7 hours on call basis in case of exigency.

3.11.4.2Maintenance during this period shall not be sub-contracted. The maintenance engineer posted at site shall be direct employees of the bidder.

3.11.4.3 Shall change the resident engineer only after seeking permission from BHEL and arranging for proper substitute.

3.11.4.4 Shall ensure network connectivity up to the desktop level.

3.11.4.5 Shall have their own vehicles for movements and shall have mobile phones accessible from BHEL landline/mobile phones.

3.11.4.6 Accommodation, boarding, transport and other logistics for the engineer is vendor's scope.

3.11.5 Comprehensive maintenance shall include the following :

3.11.5.1 Replacement of faulty equipment
3.11.5.2 Installation charges
3.11.5.3 Site inspection charges
3.11.5.4 Cost of Maintenance Engineer
3.11.5.5 Lease tax/right to use tax / any other statutory levies including service tax.
3.11.5.6 Keeping sufficient spares to maintain the specified uptime.
3.11.5.7 Shifting and installation of equipment from one location to another within BHEL campus without any extra cost to BHEL.

3.11.6 The vendor should fulfill all statutory and safety requirements for personnel engaged while executing the contract. If BHEL has to incur any expenditure due to non-compliance of the applicable statutory provisions, the same will be compensated by the Bidder

3.11.7 BHEL reserves the right to opt for continuation of maintenance support for the hardware and software at end of 5 year lease period by way of awarding AMC contract to bidder at the quarterly AMC charges quoted by bidder from 6th years onwards. Bidder shall agree to provide the AMC service for at least two years after the expiry of the 5 year lease period. The Technical terms of AMC shall be same that of maintenance support during the lease period. The payment for AMC will be made quarterly at the end of the each quarter.

3.12 The offline support shall have

3.12.1 24x7 National telephonic supports.

3.12.2 Access to raise technical assistance request at hardware vendors / supplier website.

3.13 New/ Better Up-gradable Software's

During the contract period of this rental agreement, if new / better software's (like NMS and firewall) are available and if desired by BHEL, the same shall be upgraded by the vendor without charging any additional cost to BHEL.

The above Terms and Conditions are accepted.

Date: - _____

(Signature and Seal of the Vendor)

4. Commercial Terms and Conditions

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.

4.1 General Instruction for Bidders

4.1.1 Tender documents will be available from **23-Apr-2014** on BHEL Jhansi web site. Tender can be downloaded from the site only. The tender fee of Rs.1000/-+Vat@14% should be deposited along with tender, in the form of Bankers Cheque / DD in favor of "**Bharat Heavy Electricals Limited**" payable at Jhansi. Tender Fee and EMD are to be submitted through separate Bankers Cheque / DD along with Techno-Commercial Bid.

4.1.2 Last date of submission is **13:45 Hrs on or before 20-May-2014** and Part-I (EMD, tender fee and Techno-Commercial) bid shall be opened on the same date at **14:00 Hrs.**

4.1.3 Earnest Money Deposit (EMD) for the tender is **Rs. 2, 00,000/-** (Rupees two lakh only).

4.2 Bidder to inform himself fully

4.2.1 The bidder shall closely peruse all the clauses, specifications, requirements and drawings, etc., indicated in the tender documents, before quoting. Should the bidder have any doubt about the meaning of any portion of the tender specifications or find discrepancies or omissions in the specifications or if the tender documents are found to be incomplete or require clarifications on any of the technical aspects, scope of work etc., he shall at once contact the official inviting the tender, for clarifications, before submission of the tender.

4.2.2 Bidders are advised to study all the tender documents carefully. 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. The specifications and terms and conditions shall be deemed to have been accepted unless otherwise specifically commented upon by the bidder in his offer.

4.3 Procedure for submission of bids

4.3.1 Tender should not be addressed to any Individual's name but only by designation to:

Sr. Dy. General Manager (IT)
CISF Control Room/Office
Administrative Building BHEL
Jhansi-284129

4.3.2 Bids should be free from CORRECTION AND ERASURES, Corrections if any, must be attested. All amounts shall be indicated both in words as well as in figures. Where there is difference between amount quoted in words and figures, amount quoted in words shall prevail.

4.3.3 Offers should be in ENGLISH and accompanied by detailed technical literature, catalogue and detailed dimensional drawings in ENGLISH or otherwise, the offers will not be considered.

4.3.4 The Bidders shall submit the offer in **TWO INNER ENVELOPES** as indicated below which shall be sealed in one outer envelope.

4.3.5 **Part-I: EMD & Techno-Commercial Bid**

Envelope I:

- This sealed envelope should contain the required EMD amount of **Rs. 2, 00,000/-** in favor of "**Bharat Heavy Electricals Limited**" payable at Jhansi. In the absence of submission of EMD, the offer will be summarily rejected.

- Tender fee in the form of Pay Order/ Bank Draft of **Rs. 1000/ -+Vat @14%** in favor of "**Bharat Heavy Electricals Limited**" payable at Jhansi, in case the tender has been downloaded from website. In the absence of submission of tender fee, the offer will be summarily rejected.

- This sealed envelope should contain all the copies of technical bid together with un-priced commercial bid. This envelope should be clearly marked "Part I - Technical and commercial bid", indicating Enquiry No., Due Date and Address & Reference of the Bidder.

- The bidder should offer only as per Specification. BHEL Jhansi reserves the right to accept or reject the technical offer. Price bids of only techno- commercially short listed vendors will be opened.

4.3.6 **Part-II: Price Bid**

Envelope II:

- This sealed envelope should contain price details. This envelope should be clearly marked "Part-II - Price bid", indicating Enquiry No., Due Date and Address & Reference of the Bidder. Prices shall be quoted in Indian Rupees only. Vendor has to give details of applicable taxes clearly. In case of any change in applicable duties till the time of delivery, new rates shall be calculated in line with changes. The changes in the tax rates will be applicable as per actual, subjected to documentary evidence.

- Price Bid should not contain any technical details and/or Commercial Terms &Conditions as the same are supposed to be contained in PART-I only so that the same can be evaluated before opening of Price Bid(s).

4.4 Procedure for opening of bids

4.4.1 Part-I (EMD, Tender Fee & Techno-Commercial Bid) shall be opened on the due date and time as specified in the Tender Notice, in the presence of bidders who may like to attend.

4.4.2 Price bid of technically suitable Bidders alone would be opened. The technically suitable Bidders would be informed about the tender opening date.

4.4.3 Clarifications if any required by BHEL for Technical evaluation would be sought from Bidders before opening of Part-II - price bid.

4.4.4 No correspondence shall be entertained from the bidders after the opening of Price bid(s).

4.4.5 Standard pre-printed conditions of the bidders attached to the offer will not be accepted and only those mentioned in the body of his offer will be considered.

4.4.6 Unsolicited bids shall not be entertained. Unsolicited revised Price Bids also, shall not be entertained at any stage of the tendering process and will lead to automatic disqualification of the party's bid.

4.4.7 Manufacturer's name, trade mark or patent no, if any should be specified.

4.4.8 Purchaser / lessee reserve the right to negotiate the tender, if required.

4.4.9 **No Literature, Pamphlets is to be enclosed. All such enclosures shall be considered as unread and also will not be considered as part of the quotation.**

4.4.10 BHEL reserves the right to go for a Reverse Auction (RA) instead of Opening the submitted sealed price bid, which will be decided after techno-commercial evaluation. Information and general terms and conditions governing RA are given below.

4.5 General Terms and Conditions of RA

Against this enquiry for the subject item/system with detailed scope of supply as per enquiry specifications, BHEL may resort to "**REVERSE AUCTION PROCEDURE**" i.e., ON LINE BIDDING ON INTERNET.

4.5.1 For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate. Terms and conditions are attached in **Annexure – I**.

4.5.2 Bidder to submit their acceptance to participate in Reverse Auction through by filling **Annexure-C**.

4.5.3 Any variation between the on-line bid value and the signed document will be considered as sabotaging the tender process and will invite disqualification of vendor to conduct business with BHEL as per prevailing procedure.

4.5.4 BHEL reserves the right to negotiate with the L1 vendor of the Reverse Auction if needed.

4.6 Validity of Offer

Offer shall be kept valid for four months from the due date of Tender opening (Part-I), for Purchaser/lessee's acceptance.

4.7 Language and Corrections

4.7.1 The bidder shall quote the rates in English language and international numerals only. The metric system of units shall be used, for the purpose of tender.

4.7.2 Bidder shall fill the **ORIGINAL** tender documents downloaded from BHEL web site. All entries and signatures in the bid shall be in **BLUE INK only**. Each page of the bid shall be signed and stamped using official seal of the company by the bidder.

4.7.3 All entries shall be filled in neat and legible handwriting. No over-writings erasures and corrections are permitted and may render such bids liable for rejection.

4.7.4 However, if any cancellations, corrections and insertions are in the bid, the bidder shall duly attest the bidder.

4.8 Rejection of Bid and other Conditions

Any format not properly filled, partially filled or not filled will make the bid liable for rejection. 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 summarily.

4.8.1 Bidder may visit the site at BHEL, Jhansi between 9A.M. to 4 P.M. on working days before **18-May-2014.**

4.8.2 Any relevant information pertaining to this tender can be obtained only from:

Ms. N S L Ekka, Sr. DGM (IT)
Information Technology
Telephone No: - (0510)-2412746
Email: - neelam@bheljhs.co.in

4.8.3 **Canvassing in any way concerning this tender, wrong declaration, incorrect information, misleading or incorrect certifications, etc. shall be viewed seriously and suitable action will be taken as per company norms.**

4.8.4 The Purchaser reserves to itself, full rights for the following without assigning any reasons, Whatsoever:

- To reject any or all the bids.
- To increase or decrease the quantities.

4.8.5 The offer is liable to be rejected, if it is found after the Price Bid Opening that the Price Bid submitted by the bidder is different from the un-priced bid (**Annexure H**).

4.8.6 If the bidder deliberately gives wrong information in his bid, Purchaser reserves the right to reject such a bid at any stage or to cancel the Order/Contract, if awarded and forfeit the security deposit/Bank Guarantee.

4.8.7 If the Prices/Rates of one or more of the enquired equipment's have not been quoted, the offer is liable to be rejected.

4.9 Delivery Schedule

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

All the items (hardware & software) shall be supplied and successfully installed / commissioned as per scope of work in all respect within **120 days** (One Hundred and Twenty days) after date of issue of Letter of Intent. Failure in delivery or installation within **120 days** will entail Late Delivery Charges as per the LD clause of the contract. (LD will be based on contract value affected by the non-supply of delayed items) If the delivery is delayed due to reason not attributable to BHEL, BHEL reserves the right to go for alternative procurement at the risk and cost of the Vendor/ Lessor. **The project completion means acceptance of Total Project by BHEL as per the Acceptance test Procedure (ATP).**

4.10 Rates

Rates to be quoted are net F.O.R BHEL Jhansi (i.e., up to workplace) inclusive of freight, handling and packing charges, transit insurance, installation, regular insurance, and on-site comprehensive maintenance including spares at stipulated location during the entire contract/lease period and remain firm without any variation till the completion of the lease contract. However taxes like lease tax / VAT and service tax will be payable as per actual.

Rates are to be quoted as per Price Bid Format providing details of prevailing rates of taxes. Bidders, in their own interest, are requested to check up and indicate the different tax tariff like service tax etc. Taxes not mentioned by the bidder in their bid will not be entertained at later date. However, during the execution of the contract any increase or decrease in the above taxes/imposition of new taxes will be entertained against documentary proof.

4.11 Bank Charges

Unless otherwise specified, the Bank charges, if any, shall be to the account of Vendor/Lessor.

4.12 Liquidated damages (LD)

It is clearly understood among the parties to the contract the "Time is the essence of the contract". Therefore, the delivery of the goods specified in the purchase order should be made within the time prescribed. Where the seller supplies or dispatches the good, beyond the delivery period specified the purchaser will have no obligation to accept the good. If accepted liquidated damages at the rate **0.5%** of the value of goods delayed for each week or part thereof of delay subject to a maximum of **10%** of order value Will be levied. This penalty will be deducted from the first quarter rental charges, in case the penalty amount to be deducted is more than the first quarter rental charges, the same will be adjusted from the consecutive quarter.

4.12.1 Loading Factor for non-acceptance of LD Clause: Will attract maximum **10%** loading on the offer and accordingly proportionate percentage will be loaded for accepting lesser percentage of LD clause. Example: If the supplier has accepted for maximum of **2%** LD clause, then balance **8%** will be loaded for evaluating lowest bidder.

4.13 Inspection & Testing

Inspection and acceptance of the machine will be carried after installation of the machine at BHEL, Jhansi.

4.14 Security Deposit

Security Deposit shall be collected from the successful bidder. Depending on value of contract awarded the amount of Performance Security Deposit shall be as following:

Up to Rs 10 Lakhs	**10%**
Above Rs 10 Lakhs & up to Rs 50 Lakhs	Rs.1.0 Lakh + 7.5% of the amount exceeding Rs 10 Lakhs
Above 50 Lakhs	Rs. 4.0 Lakhs +5% of the amount exceeding Rs. 50 Lakhs.

Bidder shall submit the 'Performance Security Deposit' within 30 days of awarding of contract/ issue of Letter of Intent as following:

4.14.1 Cash (as permissible under the Income Tax Act).

4.14.2 Pay Order, Demand Draft drawn in favor of M/s "**Bharat Heavy Electricals Limited, JHANSI**" valid for the period as aforesaid.

4.14.3 Local Cheque of scheduled banks, subject to realization.

4.14.4 Securities available from Post Offices such as NSC, Kisan VikasPatras etc. (Certificates to be held in the name of bidder furnishing the security and duly pledged in favor of BHEL and discharged on the back)

4.14.5 Bank Guarantee from scheduled Banks/Public Financial Institutions as defined in Companies Act. The Bank Guarantee format should have the approval of BHEL.

4.14.6 Fixed Deposit Receipt (FDR) issued by Scheduled Banks/Public Financial Institutions as defined in Company's Act. The FDR should be in the name of bidder; A/C BHEL JHANSI duly discharged on the back.

4.14.7 The PSD can also be recovered at the rate of 10% from running bills. However in such cases at least 50% of the PSD should be deposited before the start of work and balance 50% may be recovered from running bills.

4.14.8 All deposits in the form of bank instruments shall be caused to be submitted preferably through the issuing bank only and deposited with the Finance Department of BHEL under receipt in duplicate with copy of receipt submitted to CDC.

4.14.9 The Performance Security Deposit shall not carry any interest.

4.14.10 Security deposit can also be recovered at the rate of 10% from the running bills. However in such cases at least 50% of the Security Deposit should be collected before start of the work and the balance 50% may be recovered from the running bills.

4.14.11 EMD of the successful bidder can be converted and adjusted against the security deposit.

4.14.12 Stamp duty applicable as per Indian Stamp Act 1899 is as follows:

Sr.	Performance Security Deposit	Stamp Duty Applicable
1.	Pay Order, Demand Draft, Local Cheque of scheduled banks	Rs 125/- per Rs.1000
2.	Securities available from Post Offices such as NSC, Kisan Vikas Patras etc and Fixed Deposit Receipt (FDR) issued by Scheduled Banks/Public Financial Institutions	Rs 70/- per Rs.1000
3.	Bank Guarantee from scheduled Banks/Public Financial Institutions	Rs.5/- per Rs.1000 limited to Rs.10,000/-

NOTE:-

a. Acceptance of Security Deposit against Sl. No. **(4.14.4)** and **(4.14.6)** above will be subject to hypothecation or endorsement on the documents in favor of BHEL. However, BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith.

b. Security Deposit shall be refunded to the vendor after successful completion of the work i.e., after completion of the lease period and compliance of all tender conditions after recoveries, if any.

4.15 Indemnity

Vendor/ Lessor shall fully indemnify and keep indemnified the Purchaser/Lessee against all claims which may be made in respect of the use of System/ Software/ Item(s)/ Services supplied/ rendered by the Vendor/ Lessor, for infringement of any rights protected by patent, registration of designs or trademarks and legality of the Software. However the Vendor/ Lessor will have no obligation for any claim or infringement arising from third party products not supplied in the order, modifications and technical information/ instructions advised by purchaser and use of products prohibited by product manuals.

All such claims in this regard will be settled as per Indian Laws.

In the event of any such claims being made against the Purchaser/ Lessee, Purchaser/Lessee will inform in writing to the Vendor/Lessor who shall at his own risk and cost either settle any such dispute or conduct any litigation that may arise there from.

4.16 Non-Disclosure Agreement (NDA)

Vendor shall, at all times, undertake to maintain complete confidentiality of all data, information, software, drawings & documents, etc. belonging to the Purchaser and also of the Systems, procedures, reports, input documents, manuals, results and any other company documents discussed and/or finalized during the course of execution of the order/contract.

The bidder shall sign a Non-Disclosure Agreement (NDA) with BHEL. By signing the NDA, the bidder agrees not to disclose any confidential information, business or proprietary, as covered by the agreement. The Performa for the Non-Disclosure Agreement is attached as **Annexure-D.**

4.17 Bidder to submit the declaration regarding not banned / blacklisted / guilty of fraud from a court-of-law on the letter head signed by the authorized person.

4.18 Bidder to submit the declaration regarding not banned / blacklisted / guilty of fraud from any unit/division of BHEL on the letter head signed by the authorized person.

4.19 Force Majeure

Vendor shall not be responsible for delay in delivery resulting from acts/events beyond his control provided notice of the happening of any such act/event is given by the Vendor to the Purchaser within 15 days from the date of its occurrence. Such acts/events shall include but not be limited to acts of God, war, floods, earthquakes, strikes, lockouts, epidemics, riots, fire or Governmental regulations superimposed after the date of order/contract.

4.20 Risk Purchase

Purchaser/ Lessee shall reserve the right to terminate the order/ contract and purchase from elsewhere at the risk and cost of the Vendor/ Lessor, either the whole or part of the Systems/ goods, which the Vendor/ Lessor has failed to deliver within the stipulated delivery period or if the same were not available, the best and the nearest available substitute(s) thereof. The Vendor/Lessor would be liable to compensate the Purchaser/ Lessee for any loss, which the Purchaser/ Lessee may sustain by reason of such purchase. This clause will be operated only after completion of delivery period including extended period with penalty.

4.21 Patents and Trademarks

Vendor shall at all times indemnify the Purchaser against all claims which may be made in respect of the Systems/goods supplied by the Vendor, for infringement of any right protected by patent, registration of designs or trademarks and legality of usage of items. In the event of any such claims being made against the Purchaser, Purchaser will inform the Vendor who shall at his own cost either settle any such dispute or conduct any litigation that may arise there from.

4.22 Sub-Contracting

Order/contract or any part thereof shall not be sub-contracted, assigned or otherwise transferred without prior written consent of the Purchaser.

4.23 Termination of the Contracts & Its Consequences

4.23.1 Purchaser 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 Vendor, or non-performance of the equipment/system below 95% continuously for more than 3 month, at the risk and cost of the Vendor/Lessor.

4.23.2 In case of the contract termination, Vendor will remove the equipment from Purchaser premises at his own risk and cost after due permission from BHEL.

4.23.3 Vendor shall continue the performance of the order/contract under all circumstances, to the extent not cancelled.

4.23.4 BHEL reserves the rights to cancel the contract in case the equipment and services are not found to be satisfactory.

4.23.5 Consequences: As soon as the contract is cancelled / terminated by BHEL, no payment will be payable to the Vendor.

4.24 Settlement of Disputes

4.24.1 Except as otherwise specifically provided in the Order/Contract, all disputes concerning questions of the facts arising under the Order/Contract, shall be decided by the Purchaser, subject to written appeal by the Vendor to the Purchaser, whose decision shall be final to the parties hereto.

4.24.2 Any disputes or differences shall be to the extent possible settled amicably between the parties hereto, failing which the disputed issues shall be settled through arbitration.

4.24.3 However, the Vendor shall continue to perform the Order/Contract, pending settlement of dispute(s).

4.25 Arbitration

In all cases of disputes emanating from and in references to this agreement the matter shall be referred to the arbitration. All disputes or differences between the parties will be resolved through arbitration **governed by Arbitration & Conciliation Act 1996 as amended from time to time. The venue of** arbitration shall be Jhansi.

4.26 Acceptance of Order

Letter of acceptance of the **LOI** (Letter of Intent) along with Security Deposit (**as per clause 4.14**) is to be submitted within two weeks of receipt of **LOI**.

4.27 Additional facility required in future on the Supplied Equipment

In case any additional facility is required on the supplied equipment / Services requiring upgrade the vendor shall provide the same at mutually agreed terms. BHEL also reserves the right to extend the contract after expiry of initial period.

4.28 Ethical Standard

Bidders are expected to observe the highest standard of ethics during the procurement and execution of this Contract. In pursuit of this policy, BHEL will reject a proposal for award if it determines that the Bidder being considered for award has engaged in corrupt or fraudulent practices in competing for the Contract. For the purposes of this provision, the terms set forth below are defined as follows:

4.28.1 **"*Corrupt practice*"** means the offering, giving, receiving, or soliciting of anything of value to influence the action in the procurement process or in Contract execution.

4.28.2 "***Fraudulent practice*"** means a misrepresentation of facts in order to influence a procurement process including collusive practices designed to establish bid prices at artificial, non-competitive levels to deprive the benefits of competition to BHEL.

By signing the Bid Forwarding Letter, the Bidder represents that for the software it supplies, it is the owner of the Intellectual Property Rights. Willful misrepresentation of these facts shall be considered a fraudulent practice without prejudice to other remedies that BHEL take.

4.29 Income Tax Depreciation

Depreciation for Income tax purpose will be claimed by BHEL as per rules and regulations.

4.30 Labor Laws

During installation supplier should abide by the labor laws and safety rules for their employees deployed for installation in BHEL Jhansi premises.

4.31 Confidentiality

Vendor shall, at all times, undertake to maintain complete confidentiality of all data, information, software, drawings & documents, etc. belonging to the Purchaser and also of the Systems, procedures, reports, input documents, manuals, results and any other company documents discussed and/or finalized during the course of execution of the order/contract.

4.32 Other Terms & Conditions

4.32.1 The Lessor also agrees and undertakes not to sell, loan out, gift away, hypothecate or pledge or create a charge or lien or any encumbrance on the Equipment leased under this agreement except for the charge created for the purpose of financing the purchase of the Equipment.

4.32.2 BHEL hereby agrees to make the site ready as per the agreed specifications, within the agreed timelines. Customer agrees that Vendor shall not be in any manner be liable for any delay arising out of Customer's failure to make the site ready within the stipulated period, including but not limited to levy of liquidated damages for any delay in performance of Services under the terms of this Agreement.

4.32.3 EMD Amount will be refunded to the unsuccessful bidder normally within 15 days of the acceptance of award of the contract by the successful bidder.

4.32.4 No interest will be payable on EMD Amount.

4.32.5 Every year original insurance policy will be submitted to BHEL till lease period expires.

The above Terms and Conditions are accepted.

Date: - _____

(Signature and Seal of the Vendor)

5. Technical Specification (Requirement)

5.1 INTRODUCTION

1. The existing Local Area Network (LAN) at BHEL Jhansi is a Network based on 10 Gbps Distribution switches. BHEL Jhansi requires upgrading their LAN to support the network expansion taken place in last 5 years:

- 3D drawing application
- Engineering Data Management System (Team Centre Engineering)
- Web server (Web sphere, Apache)
- MS office Share point (Intranet Portal)
- Oracle database and Application server
- Mail and internet (10 Mbps)
- MPLS (8Mbps)
- Corporate wide SAP
- **15 No. Surveillance Cameras** and **61 No. Biometric Machines** for attendance recording.
- Others
  The existing Hardware of LAN is not capable enough to provide requisite network bandwidth to take care of the above applications.

2. The existing LAN has outdated switches and need to upgrade to the latest technology switches which can provide fault free Data switching network.
3. The proposed data communication network shall be based on one Core Switch. It is proposed to install the central network equipment i.e., Core Switch in the ICC block, inside the Telephone Exchange Department.
4. The proposed Data communication network shall be having connectivity of 10Gbps between the Core switch and the Distribution switches.

5.2 CONCEPTUAL VIEW

At BHEL Jhansi, the Business Data Center is mainly located at INFORMATICS CENTRE and PCs, thin clients, workstations are spread across the plant. The LAN infrastructure shall have capacity to interconnect around 1500 nodes. Backbone speed shall be **10Gbps** and **1Gbps** shall be available at desktop level. The requirement is to seamlessly interconnect business server farms, workstations, thin clients, PCs and CNC machines etc. The network should provide the following features:

- Fail-Safe Operation
- Network traffic monitoring & Control
- Seamless desktop to backbone connectivity
- Comprehensive Network integrated services
- Campus wide network security
- VLAN, network segregation, network management
- Near 0% network downtime

The proposed infrastructure shall be on 10 Gbps backbone in the core and Gigabit Ethernet at desktop level. The networking solution shall be based on three tier architecture as described below:

Core Layer – Core switch is to be placed at Telephone Exchange Department. Existing Core switch is of **Cisco Catalyst 6509 E series Chassis**. As per the Cisco's End-of-Sale and End-of-Life Announcement it is still under their support therefore bidders can either opt for Up gradation of the Existing Cisco Core switch or can supply an all new Core switch with the specifications given under section **5.4** of **Specification of Core switch**.

Distribution Layer – At present Distribution switches are of **Cisco 4503** and **4506 series**. Cisco has already announced the **End-of-Sale** and **End-of-Life dates** therefore bidders have to provide the Distribution switches as per the specifications given under section **5.5** of **Specifications of Distribution switch**. L3 Distribution switches shall be placed in various departments/blocks. These distribution switches shall be connected to core switches with 10 Gbps connectivity. This type of arrangement has been planned to provide redundant path to all distribution switches. All distribution switches shall be connected to core switches through optical fiber. Optical fiber shall be Single mode, Armoured or Unarmoured based on distance and speed requirement. Distribution Switch should be capable to provide 10Gbps to some access switches and 1 Gbps connectivity to some Access switches in their respective departments/block through UTP cable or optic fiber cables depending upon the distance between the distribution and access switches.

Access Layer – Access switches shall be placed at various locations across the plant/offices and shall connect to distribution switches with either 1 Gbps or 10Gbps speed. Connectivity shall be through UTP or Optical Fiber based on distance. No media converter shall be used in whole implementation and wherever fiber connectivity is required, it shall terminate directly at switch having fiber transceivers. All UTP ports on access switches shall be 10/100/1000 Mbps. Desktops shall be connected to network through access switches.

If Copper uplinks are used from access to distribution, the links should be such that each switch should have 1Gbps connectivity. All the physical copper links from an access to distribution should form an ether channel between access and distribution for maximum availability of bandwidth.

Vendors are requested to refer to the distribution network diagrams for clarity on type and bandwidth of links between distribution and access locations.

Wi-Fi Access - The complete area of **Jayanti Bhawan** (as shown in Proposed Single Mode Fiber Connections at page no. **75**) is selected to be a Wi-Fi Zone in the existing Network Up gradation project. The Wi-Fi facility should be of advanced/latest technology with higher security features. Both the **wireless and wired** LAN Network Active Devices should be of the same manufacturer to enable seamless integration and ease of management through the NMS proposed by the vendor. The **wireless controller** should function as an authenticator for all AP's and clients. All the access ports should be **10/100/1000** mbps.

5.3 Bill of Quantities (BOQ)

5.3.1 **Bill of Quantities:** Following is the proposed number of Active Networking Products required for the Network Up gradation.

S. No	Item	Quantity
1	Core Switch	**1**
2	Distribution Switch	**5**
3	Access Switch	**63**
4	10 Gig LR Transceiver	**24**
5	1 Gig LX Transceiver	**190**
6	Wireless Controller	**1**
7	Wireless Access Point	**10**
8	Network Management Software for 100 Nodes	**1**
9	PCMCIA cards for Wireless Connectivity to Desktop	**90**
10	Firewall	**1**

Note: Quantities mentioned against **S. No**. **3, 4, 5, 7&9** are indicative figures only. Payments will be made based on actual.

5.4 Specifications of Core Switch (Quantity: **01** Number):

S. No.	Core Switch Specification	Compliance (Yes/No)	Remark
1.	**Core Switch Upgrade Specification**		
1.1	Existing Core Switch is Cisco Catalyst 6509 E (9 slots) with 7 Data slots and 2 Slots loaded with Supervisor		
1.2	**Existing Line cards have :**		
1.2.1	4 Ports 10 Gig line card with 4 quantity of 10 Gig * 10 GIG Base LR transceivers.		
1.2.2	24 ports of 1 Gig Fiber line card with 2 quantity of 1 Gig of Single mode transceivers.		
1.2.3	Network Analysis module.		
1.2.4	Redundant Supervisor with single supervisor providing 720 Gbps of throughput.		
1.2.5	48 ports of 10/100/1000 Mbps line card.		
1.2.6	Redundant Power supply with Redundant Fan.		
1.3	After Upgrade, Existing 10 Gig line card (4 ports with 4 ports of single mode transceivers) and both the existing Supervisor should be kept as cold stand by).		
1.3.1	**Bidder Needs to Provide :**		
1.3.2	Redundant Supervisor / management module/Switching Fabric.		
1.3.3	A single supervisor should provide at least 2 Tera byte per second of switching throughput. In the Event of failure of a supervisor, redundant supervisor should provide at least 2 Tb /Second switching throughput.		
1.3.4	In case of management module is separate then Switching fabric/redundant supervisor, then management module should be redundant.		
1.3.5	Single Supervisor should provide uplink interface (at least 2 *10 Gig and 2 * 1 Gig)		
1.3.6	Redundant supervisor should provide uplink interface (at least 2 *10 Gig and 2 * 1 Gig)		
1.4	**Interface Requirement**		
1.4.1	16 Ports of 10 Gig Line cards with 8 quantity of Fiber transceiver's of Single mode. Existing 10 Gig line card (4 ports and 4 transceivers) would be kept as a cold stand by.		
2.	**New Core Switch Specification**		
2.1	Core Switch should be chassis based and should have at least 7 slots of I/O module.		
2.2	Redundant Supervisor / management module/Switching Fabric.		
2.3	A single supervisor should provide at least 2 Tera byte per second of		

	switching throughput. In the Event of failure of a supervisor, redundant supervisor should provide at least 2 Tb /Second throughput.		
2.4	In case of management module is separate then Switching fabric/redundant supervisor, then management module should be redundant.		
2.5	**Interface Requirement :**		
2.5.1	16 Ports of 10 Gig Line cards with 8 quantity of Fiber transceivers of Single mode. Existing 10 Gig line card (4 ports & 4 transceivers) would be kept as a cold stand by.		
2.5.2	48 ports of 10/100/1000 Mbps in a single dedicated Line card		
2.5.3	24 ports of SFP ports in a single dedicated line cards with single mode Fiber transceivers.		
2.5.4	Network Analysis module as a Line card.		
2.5.6	4 Ports of 10 Gig in a single dedicated line cards with 4 Quantity of Single mode transceivers (would be kept as cold stand by)		
2.5.7	2 Ports of 10 Gig and 2 ports of 1 GIG ports residing at switching fabric or in a dedicated separate line card.		
2.5.8	2 Ports of 10 Gig and 2 ports of 1 GIG ports residing at redundant switching fabric or in a dedicated separate line card.		
2.5.9	Redundant Switching Fabric with a single switching fabric providing 720 Gbps throughput or more (would be kept as cold stand by)		
2.5.10	Redundant Power supply with Redundant Fan.		

5.5 Specifications of Distribution Switch (Quantity: **05** Number):

Sr. No	Specifications	Compliance (Yes / No)	Remarks
1	**Architecture**		
1.1	Distribution switch should be chassis based or fixed configuration and should have following configuration		
1.2	24 SFP+ Ports (supporting both 1 GIG and 10 GIG transceivers)		
1.3	Switch should have future expansion capability of 24 SFP+ Ports (supporting both 1 gig and 10 Gig Transceivers)		
1.4	Switch should have at least 480 Gbps of switching capacity		
1.5	Dual Internal Redundant power supplies with Dual Redundant Fans.		
1.6	One USB Port for out of band management		
1.7	Should have Layer 3 features - OSPF, RIP and also IPv6 compliant.		
1.8	50 VLANs support		
1.9	Switch should have internal flash memory to hold two latest operating system of the switch.		
1.10	Bidder needs to mention the size of flash memory and latest operating system size.		

5.6 Specifications of Access Switch (Quantity: **63** Number**):**

Sr. No	Specifications	Compliance (Yes / No)	Remarks
1	**Architecture**		
1.1	Access Switch should have fixed configuration		
1.2	Switch should have fixed 24 Ports of 10/100/1000 Mbps		
1.3	Switch should have 2 ports for 1 GIG uplinks		
1.4	Switch should have internal flash memory to hold two latest operating system of the switch.		
1.5	Bidder needs to mention the size of flash memory and latest operating system size.		
1.6	52 Gbps Switching bandwidth		
1.7	50 VLANs support		
1.8	USB Port for out of band management.		
1.9	Access Switch /Distribution and core switch (upgrade or new) should be from the same OEM		
1.10	Configuration through the CLI, console, Telnet, SSH and Web Management		
1.11	FTP, TFTP, and Secure FTP support		
1.12	Network Time Protocol (NTP) or equivalent support		
1.13	Switch should support IPv4 & IPv6 from day1.		
1.14	Dynamic Host Configuration Protocol (DHCP) client and Relay		
1.15	The Warranty shall be offered directly from the switch OEM.		

5.7 Specifications of WAN Controller (Quantity: **01** Number**):**

Sr. No	Specifications	Compliance (Yes / No)	Remarks
WLAN Controller			
1	**WLAN Controller Architecture**		
1.1	WLAN controller should be purpose build hardware or an appliance.		
1.2	WLAN Controller should support up to 1000 Access points in a single 1 RU chassis.		
1.3	WLAN controller must have at least 4 x 10Gbps of uplink interfaces and should have 40 Gbps of wireless throughput.		
1.4	WLAN Controller must support at least 4K VLANs		
1.5	Must not require a separate controller for Wireless Intrusion Prevention Access Points.		

1.6	Must support both 1+1 and N+1 redundancy models.		
1.7	Must have feature for stateful failover of Access Points		
1.8	Must support redundant power supplies and redundant Fan		
1.9	Must support an ability to dynamically adjust channel and power settings based on the RF environment.		
1.10	Radio coverage algorithm must allow adjacent APs to operate on different channels, in order to maximize available bandwidth and avoid interference		
1.11	Must have Automatic 802.11 interference detection, identification, classification, and mitigation. Classification should support a dynamically updatable signature library		
1.12	Must support coverage hole detection and correction that can be adjusted on a per WLAN basis.		
1.13	Must support RF Management with 40 MHz channels with 802.11n.		
1.14	WLC Should support configuring interface with IPv6 address		
1.15	WLC should support L2 and L3 roaming of IPv6 clients		
1.16	WLC should support First hop security features in IPv6 network like Router Advertisement guard, DHCPv6 guard.		
1.17	WLC should support IPv6 Access List in hardware to provide line-rate performance		
1.18	Controller performance must remain the same if encryption is on or off for wireless SSIDs.		
1.19	Should support ability to adjust Delivery Traffic Indicator Message (DTIM) to improve performance for latency sensitive applications.		
1.20	Should adhere to the strictest level of security standards, including 802.11i Wi-Fi Protected Access 2 (WPA2), WPA, Wired Equivalent Privacy (WEP), 802.1X with multiple Extensible Authentication Protocol (EAP) types, including Protected EAP (PEAP), EAP with Transport Layer Security (EAP-TLS), EAP with Tunneled TLS (EAP-TTLS),RFC 4347		
1.21	Should support Management frame protection for the authentication of 802.11 management frames by the wireless network infrastructure.		
1.22	The Controller should support a capability to shun / block WLAN client in collaboration with wired IPS on detecting malicious client traffic.		
1.23	Controller should have rogue AP detection, classification and automatic		

	containment feature		
1.24	Controller should have Deep Packet Inspection for Layer 4-7 traffic for user for all traffic across the network to analyses information about applications usage		
1.25	To deliver optimal bandwidth usage, reliable multicast must use single session between AP and Wireless Controller.		

5.8 Specifications of Wireless Access Point (Quantity: **10** Number):

Sr. No	Specifications	Compliance (Yes / No)	Remarks
Wireless Access Point			
1	**Wireless Access Point Architecture**		
1.1	In case bidder proposed a solution based out on 802.11 n series access point (450 Mbps) then they need to meet the below specification and provide 3 access points (450*3 =1350 Mbps or 1.35 gbps) instead of 1 access point of 802.11 ac.		
1.2	Access Points proposed must include radios for 2.4 GHz and 5 GHz with 802.11 ac Wave 1 or 802.11 n		
1.3	Must have a robust design for durability, without visible vents		
1.4	Must include dual band antennas to support both the 2.4GHz and 5GHz operations simultaneously from single antenna		
1.5	Must support 3x3 or 4 X 4 multiple-input multiple-output (MIMO) with three spatial streams		
1.6	Must support simultaneous 802.11n on both the 2.4 GHz and 5 GHz radios.		
1.7	Must support 802.11ac Wave 1 on the integrated 5-GHz radio		
1.8	Must support data rates upto 450Mbps and 1.3 Gbps on 802.11ac.		
1.9	Must support upto 23dbm of transmit power in both 2.4Ghz and 5Ghz radios.		
1.10	The Wireless AP should have the technology to improve downlink performance to all mobile devices including one-, two-, and three spatial stream devices on 802.11n and 802.11ac. The technology should work without requiring feedback from clients and should work with all existing 802.11 clients.		
1.11	Should support configuring the access point as network connected sensor to access any network location covered by the access point to get real-time Spectrum analysis data.		

1.12	Must support AP enforced load-balance between 2.4Ghz and 5Ghz band.		
1.13	Must incorporate radio resource management for power, channel, coverage hole detection and performance optimization		

5.9 Specifications of NMS Wired and Wireless Network (Quantity: **01** Number):

Sr. No	Specifications	Compliance (Yes / No)	Remarks
1	**Specifications**		
1.1	The network management platform shall provide a single integrated solution for comprehensive lifecycle management of the wired/wireless access, campus, and branch networks, and rich visibility into end-user connectivity and application performance assurance issues.		
1.2	The platform shall deliver application-level visibility through the normalization and correlation of rich performance instrumentation data to help ensure application delivery and an optimal end-user experience.		
1.3	The platform shall be based on lifecycle processes that would align with the product functionality clearly describing the phases like design, deploy, operate, report and administer.		
1.4	The management utility shall help enable regulatory compliance analysis and reporting against PCI DSS standards.		
1.5	The management utility shall have deep integration with the secure access mechanism like 802.1x authentication, posture and profiling to provide visibility across security and policy-related problems, presenting a complete view of client access issues with a clear path to solving them.		
1.6	The utility shall simplify and automate many of the day-to-day tasks associated with maintaining and managing the end-to-end network infrastructure from a single pane of glass thereby reducing the need for multiple tools, and lowering operating expenses and training costs.		
1.7	The platform would deliver all of the existing wireless capabilities for RF management, user access visibility, reporting, and troubleshooting along with wired lifecycle functions such as discovery, inventory, configuration and image management, automated deployment, compliance reporting, integrated best		

	practices, and reporting.		
1.8	The design functionality shall facilitate creation of templates used for monitoring key network resources, devices, and attributes. Default templates and best practice designs are provided for quick out-of-the-box implementation automating the work required to use OEM validated designs and best practices.		
1.9	The management infrastructure shall provide continuous compliance and auditing capabilities to help IT organizations monitor and assess their network and device configuration for out-of-policy configuration, discrepancies, and security and risk vulnerabilities.		
1.10	The platform should have flexible virtual machine and physical appliance solution that would provide cost-effective, easy-to-install options for small to global enterprise-class networks.		
1.11	The management utility shall have Role-based access control provides flexibility to segment the network into one or more virtual domains controlled by a single Infrastructure platform. These Virtual domains shall help deploy both large, multisite networks and managed services.		
1.12	The management software should come with 100 device license. The device can be categorized as wired or wireless.		
1.13	The management hardware should be provided to deploy 100 device license and future upgradable to 500 device license		
1.14	In cased Wired and Wireless OEM are different then bidder needs to provide separate management software and hardware for wired and wireless solution.		

5.10 Specifications of Firewall (Quantity: **01** Number**):**

Sr. No	Specifications	Compliance (Yes / No)	Remarks
1	**Specifications**		
1.1	The FW should integrate with multiple full-featured, high-performance security services, including application-aware firewall, SSL and IPsec VPN, IPS with Global Correlation.		
1.2	Firewall performance (Large packets) 2.8 Gbps with multiprotocol performance of atleast 1.5gbps and IPS performance upto 800 mbps.		
1.3	The firewall appliance should be capable of providing Firewall, VPN & IPS Services with dedicated inbuilt hardware for VPN and IPS Acceleration.		
1.4	Should have a 64Bit Multi-Core Processor and Should have 8 GE ports from day 1 and have scalability to have additional 6 x 10/100/1000mbps interface or 2 or more SFP based interfaces for future expansion.		
1.5	The Firewall should have 10 GB or more memory and 8 GB flash memory		
1.6	The Firewall should support virtual firewalls which will have its own control plane and data plane hence this can be used to connect any extranet		
1.7	Firewall connection per second upto 28000 and concurrent session upto 600000 sessions		
1.8	Should have support for redundant power supply		
1.9	Support for SSL based clientless VPN upto 2000 or more		
1.10	The FW should support a comprehensive command line interface (CLI), verbose syslog, and Simple Network Management Protocol (SNMP).		
1.11	Firewall and VPN Active/Standby failover services should be supported without any additional licenses		
1.12	Should support Botnet Filter		
1.13	Should support checking of incoming and outgoing connections against a dynamic database of known bad domain names and IP addresses, and then logs any suspicious activity.		
1.14	Should support L3 and L2 Firewall		
1.15	Firewall should support Web based (HTTP and HTTPS) configuration, and management		
1.16	Firewall should support Command Line Interface using console, Telnet and SSH		
1.17	Should be managed using a centralized management system		
1.18	Should support Syslog server logging		
1.19	Should support stateful inspection capabilities enable deep packet inspection for services that embed IP addressing information in the		

	user data packet or that open secondary channels on dynamically assigned ports		
1.20	Should support full-featured stateful inspection firewall with enhanced application inspection capabilities. Basic application inspection support for all major protocols. Enhanced inspection for HTTP, FTP, Instant Messenger, File Sharing, SIP, H.323, SCCP, SMTP, ESMPT, DNS, RPC, CIFS, MSRPC, and NETBIOS. With the enhanced application inspection features, it should be possible to exercise a great deal of control over the behavior of network communications using those protocols. For example, with SIP inspection, you can utilize regular expressions (REGEX) to deny SIP-based VOIP communications with certain addresses or countries.		
1.21	The FW should support Modular Policy Framework which provides a powerful, highly flexible framework for defining flow- or class-based policies, enabling administrators to identify a network flow or class based on different conditions, and then apply a set of customizable services to each flow or class		
1.22	The FW should deliver per-flow, policy-based QoS services, with support for LLQ and Traffic Policing for prioritizing latency-sensitive network traffic and limiting bandwidth usage of administrator-specified applications		
1.23	The FW should support site-to-site vpn as well as Remote access vpn on the same appliance		
1.24	Should have the ability to integrate with either on premises web-security or cloud based web security services		
1.25	Should support stateful failover of dynamic routing protocols like OSPF		
1.26	The device should be able to act as a Certificate Authority by itself		

5.11 Specifications of Passive Supply Components:

Sl.No.	Part Std.	Job Description	Unit	Qty As per Survey
A. Supply of Fiber Components				
1		6-core Outside Plant Cable -ECSS Armored, Loose-tube, Gel-filled, 9/125 SM OS2	Mtrs.	17400
2		Black, 12F, 1U, LC SM, with Pigtail, loaded with Splice tray & Couplers & Splice Protectors	Nos.	38
3		Black, 24F, 1U, LC SM, with Pigtail, loaded with Splice tray & Couplers & Splice Protectors	Nos.	11
4		LC-LC Style Singlemode Duplex Patch Cord, 3 Meter	Nos.	90
B. Supply of UTP Components				
1		Cat 6 UTP Jack with bend limiting boot For User End	Nos.	1190
2		1-port British-style shuttered faceplate, WHITE	Nos.	1190
3		Cat6 SL Series Patch Cords - 4 Feet-Blue	Nos.	1190
4		Cat6 SL Series Patch Cords - 7 Feet-Blue	Nos.	1190
5		24-port unloaded Modular Straight Jack Panel for SL series, 1U	Nos.	63
6		Cat 6 UTP Jack with bend limiting boot For Rack End	Nos.	1190
7		4-pair, Cat6 UTP Cable, roll of 305m Average of 75mtrs.	Box	293
C. Supply of HDPE/PVC Pipes				
1	Local Supply	3x3 Pvc Gang Box	Nos.	1190
2	ISI	25mm PVC Conduit/Casing/Flexible with accessories	Mtrs.	1700
3	ISI	32mm PVC Conduit/Casing/Flexible with accessories	Mtrs.	6000
4	ISI	38/40mm PVC Conduit/Casing/Flexible with accessories	Mtrs.	1550
5	ISI	32mm HDPE Pipe With Rope	Mtrs.	15000
6	ISI	32mm GI Pipe	Mtrs.	1000

Note: All the Quantities are indicative figures only. Payments will be made based on actuals.

5.12 Specifications of Passive Racks Supply:

Sl.No.	Job Description	Unit	Qty As per Survey
1	**RACK 600W /AL/ 42U/800 H/d 60*50 A/U EXTRUSIONS WITH 80MMH STRONG STEEL END FRAME EMBEDED AT TOP AND BOTTOM WITH CABLE ENTRY FROM TOP AND BOTTOM PANEL, PROVISION 19" MTG ANGLES WITH UNIQUE 'U' MARKING. TOTAL MODULAR STRUCTURE with DOOR STEEL 600W 42U PRFFUL,PERFORATED WITH HEX PERFORATION**	Nos.	**2**
a	DOOR STEEL 600W 42U PRFFUL,PERFORATED WITH HEX PERFORATION	Nos.	4
b	CASTOR MED DTY FT BRAKE 100 KG	Nos.	2
c	FAN HOUSING UNIT	Nos.	2
d	FANS 90 CFM 230 VAC	Nos.	8
e	PDU VERTICAL 5X15AMP WITH 10 SOCKET (Flat & Round pin)	Nos.	4
f	EARTHING KIT	Nos.	2
2	**RACK 600W / AL/ 27U/800 WITH FRONT GLASS DOOR & REAR DOOR 27U**	Nos.	**1**
a	CASTOR MED DTY FT BRAKE 100 KG	Nos.	1
b	FANS 90 CFM (**C**ubic **F**eet per **M**inute) 230 VAC	Nos.	4
c	PDU VERTICAL 5X15AMP WITH 10 SOCKET (Flat & Round pin)	Nos.	2
d	TRAY FAN , 1U 4 FAN POSITION	Nos.	1
e	EARTHING KIT	Nos.	1
3	**FLEXIBOX 15U/500 1 SECTION - ASSEMBLED**	Nos.	**38**
a	FANS 90 CFM 230 VAC	Nos.	38
b	PDU HORIZONTAL 5AMP WITH 6 SOCKET	Nos.	38
4	**1U Wire manager**	Nos.	**63**
5	**Mounting hardware (Pkt of 20)**	Nos.	**50**

Note: All the Quantities are indicative figures only. Payments will be made based on actuals.

5.13 Specifications of UTP & Fiber Services:

S.No.	Description	Quantity	Unit
A	**UTP Service**		
1	UTP cable pulling in PVC Conduit/ Casing on the wall / ceiling / column, etc. as required	89365	Mtr.
2	Ferulling& Continuity Testing of UTP Node For Both End	1190	No.
3	Laying Of 40/38mm Pvc Pipe /Casing/Flexible	1550	Mtr.
4	Laying Of 32mm Pvc Pipe /Casing/Flexible	6000	Mtr.
5	Laying Of 25 mm Pvc Pipe /Casing/Flexible	1700	Mtr.
6	Installation & Termination of Jack Panels & Cable Manager with dressing	63	No.
7	Installation & Termination of Information Outlet at one end	1190	No.
8	Installation & Fixing of Face Plate/Gang Box	2380	No.
9	Penta Scanning Testing of UTP Node	1190	No.
10	Certification of Passive Network	1	No.
11	Integration and Documentation charges for Copper network	1	No.
B	**Fiber Service**		
1	Laying of HDPE pipe (for Fiber optic cable) in ground including excavation of soft soil, sand cushioning, protective covering and refilling the trench in soft Soil	15000	Mtr.
2	Laying of GI pipe (for Fiber optic cable) in ground including excavation of all types of hard soil, sand cushioning, protective covering and refilling the trench including cutting of roads and making the roads, etc as required	1000	Mtr.
3	Fixing of GI/HDPE pipe with the accessories on the surface of wall / ceiling / column, etc. with clamps, saddles, screws, etc as required.	500	Mtr.
4	Fiber optic cabling pulling in HDPE/GI Pipe	12750	Mtr.
5	Fiber optic cabling pulling in HDPE pipe on the Existing Cable Tray Up to Ground Level Around 30mtr.	5500	Mtr.
6	Installation of Racks	41	No.
7	Fiber Optic Pigtails splicing	90	No.
8	LIU Installation	49	No.
9	Testing and Certification charges for Fiber Pigtails	90	No.
10	Supply & Fixing of Route Markers	300	No.
11	Integration and Documentation charges for Fiber network	1	No.
12	Project Management Charges	1	No.

Note: All the Quantities are indicative figures only. Payments will be made based on actuals.

5.14 Network Racks

Network racks of various sizes shall be required for various new locations. Racks of some old locations shall also be replaced due to size constraints. Specifications are as given below:

5.14.1 42 U Network Rack

1	Make	APW/RITTAL
2	Mounting	Floor Standing
3	Dimensions	Dimensions (Width X Depth) - 800 x 1000 mm, **42U** Height
4	Doors	Lockable front door of toughened tinted glass & lockable vented rear door of steel
5	Side Panels	Side Panels vented with Slam Latches and Key Locks
6	Top & Bottom Covers	Top & Bottom Covers with cable entry gland plates and cut outs. Removable and vented top cover for allowing heat conduction with provision for mounting fan housing unit and cable entry provision from rear side. The top cover should have provision for mounting a fan Housing unit for hosting the fans
7	Stationary Shelves	3 No. of Stationary Shelves
8	Equipment Mounting Angles	One pair of Equipment Mounting Angles to provide 19" mounting positions
9	Cooling Fans	Min. 4 Nos. of Cooling Fans (230VAC, 90 CFM) in top mounted Fan Housing Unit
10	Mounting Hardware	Captive Mounting Hardware (10 Pkts)
11	Power Distribution	Min. Two independent & redundant vertical or horizontal power strips each containing 10 Nos. of 5/15A power sockets, a fuse, indicator lamp and 15A Switch
12	Castors	4 castors with foot operated brakes
13	Earthing Kit	Copper earthing kit (bars, straps, continuity kit, etc)
14	Cable Management accessories	Two horizontal, two vertical cable managers. Cable entry - Bottom and Top

5.14.2 27 U Network Rack

1	Make	APW/RITTAL
2	Mounting	Floor Standing
3	Dimensions	Dimensions (Width X Depth) - **600 x 800** mm, **27U** Height
4	Doors	Lockable front door of toughened tinted glass & lockable vented rear door of steel
5	Side Panels	Side Panels vented with Slam Latches and Key Locks
6	Top & Bottom Covers	Top & Bottom Covers with cable entry gland plates and cut outs. Removable and vented top cover for allowing heat conduction with provision for mounting fan housing unit and cable entry provision from rear side. The top cover should have provision for mounting a fan Housing unit for hosting the fans
7	Stationary Shelves	2 No. of Stationary Shelves
8	Equipment Mounting Angles	One pair of Equipment Mounting Angles to provide 19" mounting positions
9	Cooling Fans	Min. 4 Nos. of Cooling Fans (230VAC, 90 CFM) in top mounted Fan Housing Unit
10	Mounting Hardware	Captive Mounting Hardware (5 Pkts)
11	Power Distribution	Min. Two independent & redundant vertical or horizontal power strips each containing 5 Nos. of 5/15A power sockets, a fuse, indicator lamp and 15A Switch
12	Castors	4 castors with foot operated brakes
13	Earthing Kit	Copper earthing kit (bars, straps, continuity kit, etc)
14	Cable Management accessories	Two horizontal, two vertical cable managers & two vertical Cable Channels with cabling loops. Cable entry - Bottom and Top

5.14.315 U Network Rack

1	Make	APW/RITTAL
2	Mounting	Wall Mounting
3	Dimensions	Dimensions (Width X Depth) - **600 x 500** mm, **15U** Height
4	Doors	Lockable front door of toughened tinted glass
5	Top & Bottom Covers	Sealed cable entrance with access holes with gland plates top and bottom
6	Equipment Mounting Angles	One pair of Equipment Mounting Angles to provide 19" mounting positions
7	Cooling Fans	Min. 2 Nos. of Cooling Fans in top mounted position
8	Mounting Hardware	Captive Mounting Hardware (2 Pkts)
9	Power Distribution	Min. One horizontal power strip containing 5 Nos. of 5A power sockets, a fuse, indicator lamp and 5A Switch
10	Cable Management accessories	Two horizontal cable managers

5.15 STRUCTURED CABLING SOLUTION

- The vendor should quote the OEM's first level of product.
- All Copper and Fiber Products should comply with REACH – EU Regulation 1907/2006(EC) concerning the Registration, Evaluation, Authorization and Restriction of Chemicals
- The structured cabling solution shall be from **TE/ Systimax / Panduit / R&M**.
- All passive cabling shall be from single OEM.
- There should be 5 year product warranty and 25 year extended performance Warranty/Application Assurance for end -to-end channel.
- All Copper and Fiber Components produced under Environmental protection, based on the EN ISO140001 standard
- For Core to distribution fiber links, 6 core fiber is to be laid and all 6 cores to be terminated.
- For Distribution to access fiber links, 6 core fiber is to be laid and 6 cores to be terminated.
- **All UTP Cabling shall be of Category 6 type or higher.**
- All Single Mode optical fiber shall be of OS2 Standard.
- End to end numbering of structured cabling including patch cord in the rack.
- The vendor shall label all cables and cords, LIUs, jack panels, SMBs etc. according to industry standards
- Racks to be dressed every 3 months or on demand for the entire contract period.
- The vendor shall install all passive components through a certified system integrator of cabling OEM.
- Existing Cat5/Cat5e cables are to be changed with Cat 6 cables. All the passive components required for this are to be replaced.
- New passive network shall integrate with existing passive network. Existing fiber segments shall be terminated again. BoM required for the same has been provisioned in new solution. Existing Cat 6 UTP shall be used without any change. Wherever, racks are being changed, some UTP points may need to be terminated again by the vendor as per actual material and labour.
- The vendor shall use the existing trenches, conduit for cabling wherever possible.
- The cabling system installed by the vendor shall meet the specifications as prescribed in **ANSI/EIA/TIA**, **ISO 11081** standards and to that effect shall submit a certificate after the completion of the work that the work has been done as per standards.
- Completeness of the configuration for the working network must be ensured by the vendor.

- The actual quantities of various passive items (UTP /fiber/ Pipes/ digging/ labour) shall depend upon their actual consumption at the time of installation. **Payment for these items shall be done on actual.**
- Most of the LAN locations are within the BHEL factory campus and BHEL property. OFC paths will be dictated by BHEL.
- Outdoor fiber cabling will be laid by vendor along the finalized route between the buildings. The laying work covers road-cutting wherever needed, digging the trenches (100cm deep X 30cm wide), laying of cable inside the HDPE pipe with nylon rope preloaded which will enable the smooth pulling, covering with bricks and sand, filling the trenches with excavated soil/sand and finishing. Hume pipes shall be used at road crossings only. Wherever the roads are cut, these have to be cemented. Care is to be taken for providing smooth curved pipe with acceptable radius at the bends as per standards. The entire outdoor fiber cabling should be done through HDPE pipes.
- Inside the building/manufacturing blocks, the fiber cable shall be laid inside the PVC conduit/MS pipe. Bending radius shall be as per standards. Route inside the building shall be mutually decided by BHEL and vendor.
- Vendor shall observe the bending radius and pulling strength requirements for both UTP and fiber.
- The vendor shall be responsible for removing and replacing all ceiling/floor tiles (in case of suspended ceiling/raised floor) required for installation of the wiring. Any damage to tiles shall be made good by the vendor.
- At all stages, there shall be flexibility for future expandability.
- The information outlet shall be surface mounted with single or dual sockets. All the new connections shall be provided with dual sockets.
- In some of the cases, the data cable must be running along with the power cable. The vendor must ensure that there is only acceptable level of interferences in such cases.
- Any opening made in the existing / new racks as well as in LIUs for cable entry shall be closed to control damages by rodents.
- The scope of work shall also include removal of old LAN infrastructure including horizontal cabling on all floors where new nodes are replacing old network nodes.
- The selected bidder needs to do comprehensive site survey in coordination with BHEL officer to analyze the actual requirement of passive component and to plan the installation strategy.
- The selected bidder shall be responsible to provide within scope of work all facilities like transportation, tool kits, testing equipment’s etc., which is necessary for successful installation, implementation and testing.

Specifications are as follows:

Cat 6 UTP		
1	Cat 6	Should meet minimum Category 6 requirements
2	Type of Conductors	4 Pair 23 AWG Conductors
3	Frequency	Characterized to 250 MHz
4	Standards	TIA/EIA 568B, ISO Class E 11801-2002
5	Impedance	The cable should have 100ohm impedance and data transmission frequencies up to 450MHz.
6	Gigabit Requirements	Should meet or exceed Gigabit Ethernet Requirements at 100 meters
Cat 6a 4-Pair UTP Patch Cord - 33 Feet		
1	Cat 6a	Should meet minimum Category 6a requirements and extend the frequency to 500 MHz
2	Length	33 Feet
3	Boots	Should include snagless
4	Standards	Should meet or exceed TIA/EIA 568B, ISO Category 6a Performance Requirements
5	Gigabit Requirements	Should meet or exceed 10Gigabit Ethernet Requirements at 100 meters
Cat 6 Dual Face Plate with RJ45 I/O and Surface Mount Box		
1	Cat 6	Should meet minimum Category 6 requirements
2	Dust Cover	Should have integrated dust cover
3	Strain Relief	Should provide strain relief for terminated cables
4	Standards	Should meet or exceed TIA/EIA 568B, ISO Category 6 Performance Requirements
5	Gigabit Requirements	Should meet or exceed Gigabit Ethernet Requirements at 100 meters
24 Port Cat 6 UTP Straight Jack Panel Unloaded		
1	RJ45 I/O Compatibility	Should be compatible with RJ45 I/Os (ordered separately), Should be able to accept 24 I/Os
2	Dimension	19" Width, 1U Height
3	Labels	Should include labels and clear label covers
24 Port Cat 6 UTP Angled Jack Panel Unloaded		
1	RJ45 I/O Compatibility	Should be compatible with RJ45 I/Os (ordered separately), Should be able to accept 24 I/Os
2	Dimension	19" Width, 1U Height
3	Labels	Should include labels and clear label covers
Cat 6 RJ45 Information Outlet		
1	Cat 6	Should meet minimum Category 6 requirements
2	Compatibility	Should be compatible with 24 port jack panel (ordered separately)
3	Standards	Should meet or exceed TIA/EIA 568B, ISO Category 6 Performance Requirements

4	Construction	The Category 6 Outlets should be of single metal piece design without any PCB to support the IDC / Contacts.
5	Terminations Technology	Should have IDC to hold conductor without using any tool for termination of cable.
6	Gigabit Requirements	Should meet or exceed Gigabit Ethernet Requirements at 100 meters
7	Certification	Should be certified by third party like 3P or Delta or GHMT.
Cat 6 4-Pair UTP Patch Cord - 3 Feet		
1	Cat 6	Should meet minimum Category 6 requirements
2	Length	3 Feet
3	Boots	Should include snagless
4	Standards	Should meet or exceed TIA/EIA 568B, ISO Category 6 Performance Requirements
5	Gigabit Requirements	Should meet or exceed Gigabit Ethernet Requirements at 100 meters
Cat 6 4-Pair UTP Patch Cord - 7 Feet		
1	Cat 6	Should meet minimum Category 6 requirements
2	Length	7 Feet
3	Boots	Should include snagless
4	Standards	Should meet or exceed TIA/EIA 568B, ISO Category 6 Performance Requirements
5	Gigabit Requirements	Should meet or exceed Gigabit Ethernet Requirements at 100 meters
1U 19" 24 port Rack Mount loaded LIU (Fully Loaded-LC)		
1	Rack Mount	Should be 19" rack mounted with 1U height, Rubber grommets shall be provided at the cable entry points, for tight sealing.
2	Couplers	Should be complete with LC Duplex Couplers, etc for terminating 12 core SM Fiber
3	Type	Fiber management rings, Cable Strain Relief, Sliding Drawer
4	Labeling	Adhesive labeling for easy port identification
1U 19" 12 port Rack Mount loaded LIU (Fully Loaded-LC)		
1	Rack Mount	Should be 19" rack mounted 12 port with 1U height, Rubber grommets shall be provided at the cable entry points, for tight sealing.
2	Compatibility with Adapter Plates	Should be complete with LC Duplex Couplers, etc. for terminating 6 core SM Fiber
3	Type	Fiber management rings, Cable Strain Relief, Sliding Drawer
4	Labeling	Adhesive labeling for easy port identification
Single mode pigtails		
1	Type	LC/SC pigtail with min 1 mtrs buffered fiber
2	connecter	Should be complete with LC connectors for terminating 9/125 Single mode fiber
Suitable Fiber Patch cords for Switch connectivity from LIU		
1	Type of	Duplex SC /LC on one side and Duplex LC/SC connector on

	connectors	other side.
2	Length	Minimum 3 meters
3	Polishing	Factory polished and tested
4	Insertion Loss	Less than 0.5dB per patch cord
5	Type of Fiber	9/125 Micron Single Mode
6	Compatibility	The patch cord fiber and connectors should be compatible to make the connectivity from LIU to the vendor given switch port.
Suitable 10 meter SC to SC Fiber Patch cords for Switch Interconnection from Rack to Rack		
1	Type of connectors	Duplex SC /LC on one side and Duplex LC/SC connector on other side.
2	Length	Minimum 10 meters
3	Polishing	Factory polished and tested
4	Insertion Loss	Less than 0.5dB per patch cord
5	Type of Fiber	9/125 Micron Single Mode
6	Compatibility	The patch cord fiber and connectors should be compatible to make the connectivity from LIU to the vendor given switch port.

Pipes & Other Specs

1. 1” PVC Pipe, Medium Strength. ISI Mark
2. 1 $^{1/4}$” PVC Pipe, Medium Strength, ISI Mark
3. 1 $^{1/2}$” PVC Pipe, Medium Strength, ISI Mark
4. 1” MS Pipe, Medium Strength, ISI Mark, Minimum Wall Thickness 1.6mm
5. 1 $^{1/4}$” MS Pipe, Medium Strength, ISI Mark, Minimum Wall Thickness 1.6mm
6. 1 $^{1/2}$” MS Pipe, Medium Strength, ISI Mark, Minimum Wall Thickness 1.6mm
7. 1” GI Pipe, Grade B, ISI Mark
8. 2” HDPE Pipe with nylon rope pre-loaded for smooth and easy pulling of fiber cable through the pipe.
9. Cable Route Marker (at every 20 meters) with round/rectangle shape, “ IC FIBER OPTIC CABLE” imprinted on it. Cast Iron Make. Total Height: 2 Feet (one foot above ground and one foot below ground), with proper grouting

Annexure - A

Deviation in Technical Specification

Ref: BHEL's Tender No. JS/IT/WC/NET/14-15/001 Dated: _____

Table No	Sr. No.	Item / Parameter	Specification	Deviation	Alternate solution

Date: _____

(Vendor's Signature with seal)

Annexure - B

No Deviation Certificate

(To be given on bidder's letter head)

To,

Informatics Centre,

Bharat Heavy Electricals Limited,

Jhansi, Uttar Pradesh, India-284129

Subject: No Deviation Certificate

Ref: BHEL's Tender No. JS/IT/WC/NET/14-15/001 Dated: _____

It is certified that the offered solution vide tender No. JS/IT/WC/NET/14-15/001 in response to BHEL's enquiry mentioned under reference has no Technical deviation with the requirement of BHEL, Jhansi given vide the Tender Technical Specification (Requirement).

Date: _____ (**Vendor's Signature with seal**)

Annexure-C

Acceptance to Participate in Reverse Auction (RA)

Sl	Description		Vendor's Confirmation/ Comments
	As per **Clause 4.5**) acceptance for participation in Reverse Auction(RA). **Yes**/ **No** tobe indicated		
	Company Full address:-		
	Name of the person for participating reverse auction:		
	Landline Number:	Fax Number:	
	Mobile Number:		
	Pan No.	TIN No.	
	CST No.	Ser.Tax No.	

Date: _____ **(Vendor's Signature with seal)**

Annexure-D

	Bharat Heavy Electricals Ltd. Jhansi	**Doc. No. : ISMS-04-JS-013**
		Rev. No. : 01
	THIRD PARTY NON-DISCOSURE AGREEMENT	**Date of Issue : 30-SEP-08**
		Page 58 of 84

THIRD PARTY NON-DISCLOSURE AGREEMENT

I, _____, on behalf of the _____ (Name of Company), acknowledge that the information received or generated, directly or indirectly, while working with BHEL on contract is confidential and that the nature of the business of the BHEL is such that the following conditions are reasonable, and therefore:

I, or any other personnel employed or engaged by our company agree as follows to maintain confidentiality & integrity of the information handled, generated &agree not to disclose, directly or indirectly, any information related to the BHEL. Without restricting the generality of the foregoing, it is agreed that we will not disclose such information consisting but not necessarily limited to:

1) Technical information: Methods, drawings, processes, formulae, compositions, systems, techniques, inventions, computer programs/data/configuration and research projects.
2) Business information: Customer lists, project schedules, pricing data, estimates, financial or marketing data

We will also keep the availability of the equipment's and supplied as per the contractual agreement in PO. On conclusion of contract, I, or any other personnel employed or engaged by our company shall return to BHEL all documents and property of BHEL, including but not necessarily limited to: drawings, blueprints, reports, manuals, computer programs/data/configuration, and all other materials and all copies thereof relating in any way to BHEL's business, or in any way obtained by me during the course of contract. I further agree that I, or any others employed or engaged by our company shall not retain copies, notes or abstracts of the foregoing.

This obligation of confidentiality shall continue after the conclusion of the contract also.

I acknowledge that the aforesaid restrictions are necessary and fundamental to the business of the BHEL, and are reasonable given the nature of the business carried on by the BHEL. I agree that this agreement shall be governed by and construed in accordance with the laws of country. I understand that any violation of this agreement may invite action from BHEL.

I enter into this agreement totally voluntarily, with full knowledge of its meaning, and without duress.

Dated at_____, this ____ day of _____, 20__.

Name

Company

Signature

Annexure-E

AUTHORIZATION BY OEM

Date: _____

To,

Informatics Centre,
Bharat Heavy Electricals Limited, Jhansi,
Uttar Pradesh, India-284129

Subject: **Letter of Authority**

Tender Ref. No:JS/IT/WC/NET/14-15/001 **dated _____**

Dear Sir,

We hereby authorize _____ who has all India presence and fulfills the requirements of the tender enquiry ref. no. **JS/IT/WC/NET/14-15/001**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:

Sr.No.	Equipment
1.	
2.	
3.	
4.	
5.	

The authorized agency would ensure reliable service during complete lease period and if BHEL opts, the Agency would provide maintenance support for two years after the expiry of the financial lease period.

In case of any default we would do alternative arrangement on the same terms and conditions as negotiated and finalized in this tender enquiry.

(Authorized Signatory)

For _____

Note: This 'Letter of Authority' should be issued on the letterhead of OEM.
OEM: Means Original Equipment Manufacturer.

Annexure-F

Annual Turnover of the Bidder

Sr. No.	Financial Year	Turnover In Rs. Crores
1	2010-11	
2	2011-12	
3	2012-13	
4	2013-14	

Date: _____

(Vendor's Signature with seal)

Annexure-G

Major Orders Received within stipulated Time

Sr.No.	Organisation Name	Type of Order (Lease / Outright Purchase)	Order Date
1			
2			
3			
4			
5			

Date: _____

(**Vendor's Signature with seal**)

Annexure – H

Price Format

Price Bid

1	Price Bid has been divided into 2 parts i.e., Part A & B. Part A consists of items which are to be procured under lease. Part B is for AMC value of network after 5 year lease is over.
2	The lease charges are to be quoted for financial lease for 60 months, payable at the end of the quarter
3	The Comparative Statement will be on Total Lease Amount (col j) of part A payable in 5 years on full scope of supply. AMC Charges of part B will not be considered for Comparative Statement Purpose
4	Service Tax (Payable to BHEL as Cenvat) will be subtracted for comparative statement
5	All values to be quoted in Rupees

S. No.	Item	Unit	Qty	Unit Price (Outright)	Five Years Lease Rental Charges									
					Towards Equipment Cost (Excluding VAT)	ED on (a)	VAT/CST on (a+b)	Towards Maintenance Charges (Excluding Service Tax)	Service Tax on Maintenance on (c)	Total Interest Charges	Service Tax on (f)	Any Other Tax	Total (a+b+c+d+e+f+g+h)	Cost to BHEL (i -b-VAT)
					Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly
A	**Items on Lease**				(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	**(j)**
A.1	**Active Components**													
1	Core Switch	No.	1											
2	Distribution Switch	No.	5											
3	Access Switch	No.	63											
4	10 Gig LR Transceiver	No.	24											
5	1 Gig LX Transceiver	No.	190											
6	Wireless Controller	No.	1											
7	Wireless Access Point	No.	10											
8	Network Management Software for 100 Nodes	No.	1											
9	PCMCIA cards for Wireless Connectivity to Desktop	No.	90											
10	Firewall	No.	1											

A.2	**Passive Cabling**														
11	6-core Outside Plant Cable -ECSS Armored, Loose-tube, Gel-filled, 9/125 SM OS2	Mtrs.	17400												
12	Black, 12F, 1U, LC SM, with Pigtail, loaded with Splice tray & Couplers & Splice Protectors	Nos.	38												
13	Black, 24F, 1U, LC SM, with Pigtail, loaded with Splice tray & Couplers & Splice Protectors	Nos.	11												
14	LC-LC Style Singlemode Duplex Patch Cord, 3 Meter	Nos.	90												
15	Cat 6 UTP Jack with bend limiting boot For User End	Nos.	1190												
16	1-port British-style shuttered faceplate, WHITE	Nos.	1190												
17	Cat6 SL Series Patch Cords - 4 Feet-Blue	Nos.	1190												
18	Cat6 SL Series Patch Cords - 7 Feet-Blue	Nos.	1190												
19	24-port unloaded Modular Straight Jack Panel for SL series, 1U	Nos.	63												
20	Cat 6 UTP Jack with bend limiting boot For Rack End	Nos.	1190												
21	4-pair, Cat6 UTP Cable, roll of 305m Avrage of 75mtrs.	Box	293												
22	3x3 Pvc Gang Box (Local Supply)	Nos.	1190												
23	25mm PVC Conduit/Casing/Flexible with accessories (ISI)	Mtrs.	1700												
24	32mm PVC Conduit/Casing/Flexible with accessories (ISI)	Mtrs.	6000												
25	38/40mm PVC Conduit/Casing/Flexible with accessories (ISI)	Mtrs.	1550												
26	32mm HDPE Pipe With Rope (ISI)	Mtrs.	15000												
27	32mm GI Pipe (ISI)	Mtrs.	1000												
28	**RACK 600W /AL/ 42U/800 H/d 60*50 A/U EXTRUSIONS WITH 80MMH STRONG STEEL END FRAME EMBEDED AT TOP AND BOTTOM WITH CABLE ENTRY FROM TOP AND BOTTOM PANEL, PROVISION 19" MTG ANGLES WITH UNIQUE 'U' MARKING. TOTAL MODULAR STRUCTURE with DOOR STEEL 600W 42U PRFFUL,PERFORATED WITH HEX PERFORATION**	Nos.	**2**												
29	DOOR STEEL 600W 42U PRFFUL,PERFORATED WITH HEX PERFORATION	Nos.	4												
30	CASTOR MED DTY FT BRAKE 100 KG	Nos.	**2**												
31	FAN HOUSING UNIT	Nos.	**2**												
32	FANS 90 CFM 230 VAC	Nos.	8												
33	PDU VERTICAL 5X15AMP WITH 10 SOCKET (Flat & Round pin)	Nos.	4												

34	EARTHING KIT	Nos.	2											
35	**RACK 600W / AL/ 27U/800 WITH FRONT GLASS DOOR & REAR DOOR 27U**	Nos.	1											
36	CASTOR MED DTY FT BRAKE 100 KG	Nos.	1											
37	FANS 90 CFM 230 VAC	Nos.	4											
38	PDU VERTICAL 5X15AMP WITH 10 SOCKET (Flat & Round pin)	Nos.	2											
39	TRAY FAN , 1U 4 FAN POSITION	Nos.	1											
40	EARTHING KIT	Nos.	1											
41	**FLEXIBOX 15U/500 1 SECTION - ASSEMBLED**	Nos.	**38**											
42	FANS 90 CFM 230 VAC	Nos.	38											
43	PDU HORIZONTAL 5AMP WITH 6 SOCKET	Nos.	38											
44	**1U Wire manager**	Nos.	**63**											
45	**Mounting hardware (Pkt of 20)**	Nos.	**50**											
A.3	**UTP Service**													
46	UTP cable pulling in PVC Conduit/ Casing on the wall / ceiling / column, etc. as required	Mtr.	89365											
47	Ferulling & Continuty Testing of UTP Node For Both End	No.	1190											
48	Laying Of 40/38mm Pvc Pipe /Casing/Flexible	Mtr.	1550											
49	Laying Of 32mm Pvc Pipe /Casing/Flexible	Mtr.	6000											
50	Laying Of 25 mm Pvc Pipe /Casing/Flexible	Mtr.	1700											
51	Installation & Termination of Jack Panels & Cable Manager with dressing	No.	63											
52	Installation & Termination of Information Outlet at one end	No.	1190											
53	Installation & Fixing of Face Plate/Gang Box	No.	2380											
54	Penta Scanning Testing of UTP Node	No.	1190											
55	Certification of Passive Network	No.	1											
56	Integration and Documentation charges for Copper network	No.	1											

A.4	**Fiber Service**													
57	Laying of HDPE pipe (for Fiber optic cable) in ground including excavation of soft soil, sand cushioning, protective covering and refilling the trench in soft Soil	Mtr.	15000											
58	Laying of GI pipe (for Fiber optic cable) in ground including excavation of all types of hard soil, sand cushioning, protective covering and refilling the trench including cutting of roads and making the roads, etc as required	Mtr.	1000											
59	Fixing of GI/HDPE pipe with the accessories on the surface of wall / ceiling / column, etc. with clamps, saddles, screws, etc as required.	Mtr.	500											
60	Fiber optic cabling pulling in HDPE/GI Pipe	Mtr.	12750											
61	Fiber optic cabling pulling in HDPE pipe on the Existing Cable Tray Up to Ground Level Arround 30mtr.	Mtr.	5500											
62	Installation of Racks	No.	**41**											
63	Fiber Optic Pigtails splicing	No.	90											
64	LIU Installation	No.	49											
65	Testing and Certification charges for Fiber Pigtails	No.	90											
66	Supply & Fixing of Route Markers	No.	300											
67	Integration and Documentation charges for Fiber network	No.	1											
68	Project Management Charges	No.	1											
													Total Lease Amount	
B	**Quarterly AMC Charges from 6th Year Valid for 2 Years**													
		Quarterly AMC Charges (In Rs.) (A)	**Applicable Taxes (In Rs.) (B)**	**Total Quarterly AMC Charges (In Rs.) (C=A+B)**										
69	Quarterly AMC Charges for Active from 6th Year valid for 2 years													
	Note : Taxes and duties by Central Govt. and State Govt. shall be quoted Extra. Any Statuary Variation in Taxes and Duties levied by Govt. payable by the Contractor for which rate, basis of charge and break up value of the Tax/Duty are indicated in price schedule will be considered. All necessary Documentary evidence shall be submitted by the Contractor in support of their claim.													

Date: .....

(Signature & Office Seal of the vendor)

Annexure-I

Terms and Conditions of Reverse Auction

Against this enquiry for the subject item/system with detailed scope of supply as per enquiry specifications, BHEL may resort to "REVERSE AUCTION PROCEDURE" i.e., ON LINE BIDDING (THROUGH A SERVICE PROVIDER). The philosophy followed for reverse auction shall be English Reverse (No ties).

1. For the proposed reverse auction, technically and commercially acceptable bidders only shall be eligible to participate.
2. Those bidders who have given their acceptance for Reverse Auction (quoted against this tender enquiry) will have to necessary submit 'online sealed bid' by the bidder for any of the eligible items for which techno-commercially qualified, will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines in vogue.
3. BHEL will engage the services of a service provider who will provide all necessary training and assistance before commencement of on line bidding on internet.
4. In case of reverse auction, BHEL will inform the bidders the details of Service Provider to enable them to contact & get trained.
5. Business rules like event date, time, bid decrement, extension etc. also will be communicated through service provider for compliance.
6. Bidders have to fax the Compliance form (**Annexure K**) before start of Reverse Auction. Without this, the bidder will not be eligible to participate in the event.
7. In line with the NIT terms, BHEL will provide the calculation sheet (e.g., EXCEL Sheet) which will help to arrive at "Total Cost to BHEL" like Packing & forwarding charges, Taxes and Duties, Freight charges, Insurance, Service Tax for Services and loading factors (for non-compliance to BHEL standard Commercial terms & conditions) for each of the bidder to enable them to fill-in the price and keep it ready for keying in during the Auction.
8. Reverse Auction will be conducted on scheduled date and time.
9. At the End of Reverse Auction event, the lowest bidder value will be known on auction portal.
10. The lowest bidder has to fax/e-mail the duly signed and filled-in prescribed format for price breakup including that of line items, if required, (**Annexure L**) as provided on case-to-case basis to Service provider within two working days of Auction without fail.
11. In case BHEL decides not to go for Reverse Auction procedure for this tender enquiry, the Price bids and price impacts, if any, already submitted and available with BHEL shall be opened as per BHEL's standard practice.
12. Bidders shall be required to read the "Terms and Conditions" section of the auctions site of Service provider, using Login ID's and passwords given to them by the service provider before reverse auction

event. Bidders should acquaint themselves of the 'Business Rules of Reverse Auction', which will be communicated before the Reverse Auction.

13. 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, shall be initiated by BHEL and the results of the RA scrapped/aborted.
14. The Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party.
15. In case BHEL decides to go for Reverse Auction, the H1 bidder(s) (whose quote is highest in online sealed bid) may not be allowed to participate in further RA process.

Annexure-J Qualifying Requirements

Sr. No	**Qualifying Requirements**	Format attached As annexure	Whether Documents attached or not
1.	Signed copy of tender		
2.	Quoted for all items	Check	
3.	Acceptance of Technical Terms and Conditions	Clause-3 of Tender	
4.	Acceptance of Commercial Terms and Conditions	Clause-4 of Tender	
5.	Technical specification of the offered solution to be filled in the Check-list format issued as Requirements in the tender document	Clause-5 of Tender	
6.	Deviations, if any, as per BHEL's Format or "No-Deviations" Certificate	Annexure-A,B	
7.	Un-priced Commercial offer as per Price Format	Annexure-H	
8.	Certificates from respective OEMs declaring support for a minimum period of seven years from the date of commissioning.	Annexure-E	
9.	Authorization letter from OEM citing reference of this tender	Annexure-E	
10.	Earnest Money Deposit (EMD) of **Rs.2,00,000**/-		
11.	Tender fee of **Rs 1000**/- + VAT@**14%**= **Rs 1140**/-		
12.	All the Certificates and supporting documents required under **Clause 2** of eligibility criteria for bidders		
15.	Documentary proof for having registered office in India.		
16.	Self declaration regarding not banned/ blacklisted/ guilty of fraud by any court-of-law.		
17	Self declaration regarding not banned/ blacklisted/ guilty of fraud by any unit/division of BHEL.		
18.	The Vendor should have PF and ESI/Medical Policy for persons deployed at BHEL Site.	PF/ESI Certificates	
19.	Income Tax Return of last three years along with the copy of PAN Card.		
20.	Copy of PAN based Service Tax Registration No.		
21.	Copy of Certificate of Incorporation		
22.	Non-Discloser Agreement	Annexure-D	
23.	Acceptance to Participate in Reverse Auction (RA)	Annexure-C	**Yes/ No**

Note:-Your specific fulfilments of the above requirements are essential for consideration of your offer, otherwise your offer is liable for rejection.

Date: _____

(Vendor's Signature with seal)

Annexure-K Process Compliance Form

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

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 Terms & Conditions 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 email/fax the price confirmation & break up of our quoted price (including that of line items) as per **Annexure - L** 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 honour 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 it to M/s {Service provider} at {……..} prior to start of the Event.
- Attach a signed copy of the RFQ document along with the Agreement Form/ Process Compliance Form and send to M/s. {Service Provider}

Annexure-L RA price confirmation and breakup

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.{_____} for item covered under tender enquiry No. {…..} dt. {…...}

Total price of the items covered under above cited enquiries is inclusive of {Packing & forwarding, 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 {____} days.

The price break-up including that of line items is as given below.

========

Total - Rs.

========

Thanking you and looking forward to the valuable order from BHEL.

Yours Sincerely,

For _____

Name:
Company:
Date:
Seal:

Annexure-M Acceptance Test Procedure (ATP) Sign Off Document

Checklist

Description	Compliance (Yes/No)	Vendor Remarks
Complete System supply, installation and running of Gigabit Network as per requirements and Technical Specifications given under **Clause 5** as well as complying the network connectivity diagrams and details must be completed for proceeding with ATP. **Newness Certificate:** The vendor/Lessor has to submit the newness certificate of all the equipment's supplied. **OEM Support:** The vendor/Lessor has to submit the certificate from the principal of equipment suppliers for their back to back support for **complete 5 years** of lease period.		
After the installation and commissioning of the Gigabit Network as per the technical specification following are to be demonstrated :		
(a) Demonstration of attenuation values for fiber segments like i) Single Mode Gigabit backbone fiber optic cable segments, ii) Fiber optic cable segments to connect factory gates and iii) Redundant fiber optic segments between the major blocks specified : @ ~ 1300 nm – maximum 0.5 db/KM @ ~ 1550 nm – maximum 0.4 db/KM		
(b) Demonstration of Maximum attenuation of 0.75 Db per mated pair for Passive Components and cabling media for Gigabit Network.		
After installation and configuration of ICC Core Switch, 5 nos. Distribution Switches & Access Switches in Annexes/Shops /Gates :		
• Demonstration of speed of fiber optic backbone to be **10 Gigabit** (10000 Mbps) between ICC Core Switch to Distribution Switches.		
• Speed between Distribution level switches to Access Switches placed in annexes and various shops to be **1 Gigabit** (1000) Mbps		
• Speed between access switches to desktops should be **10/100/1000** Mbps		

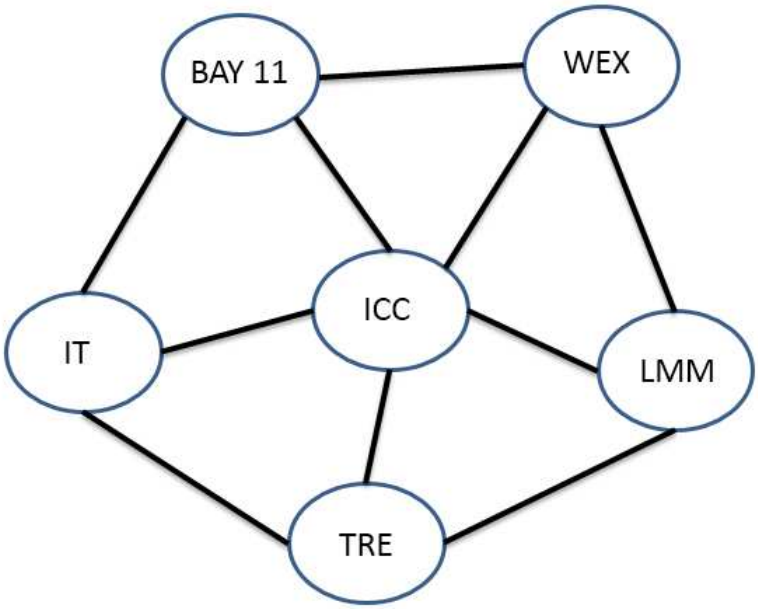
Vendor Name :		Name :	
Organisation :		Organisation :	**BHEL, Jhansi**
Date :		Date :	
Signature :		Signature :	

Annexure-M Acceptance Test Procedure (ATP) Sign Off Document (contd.)

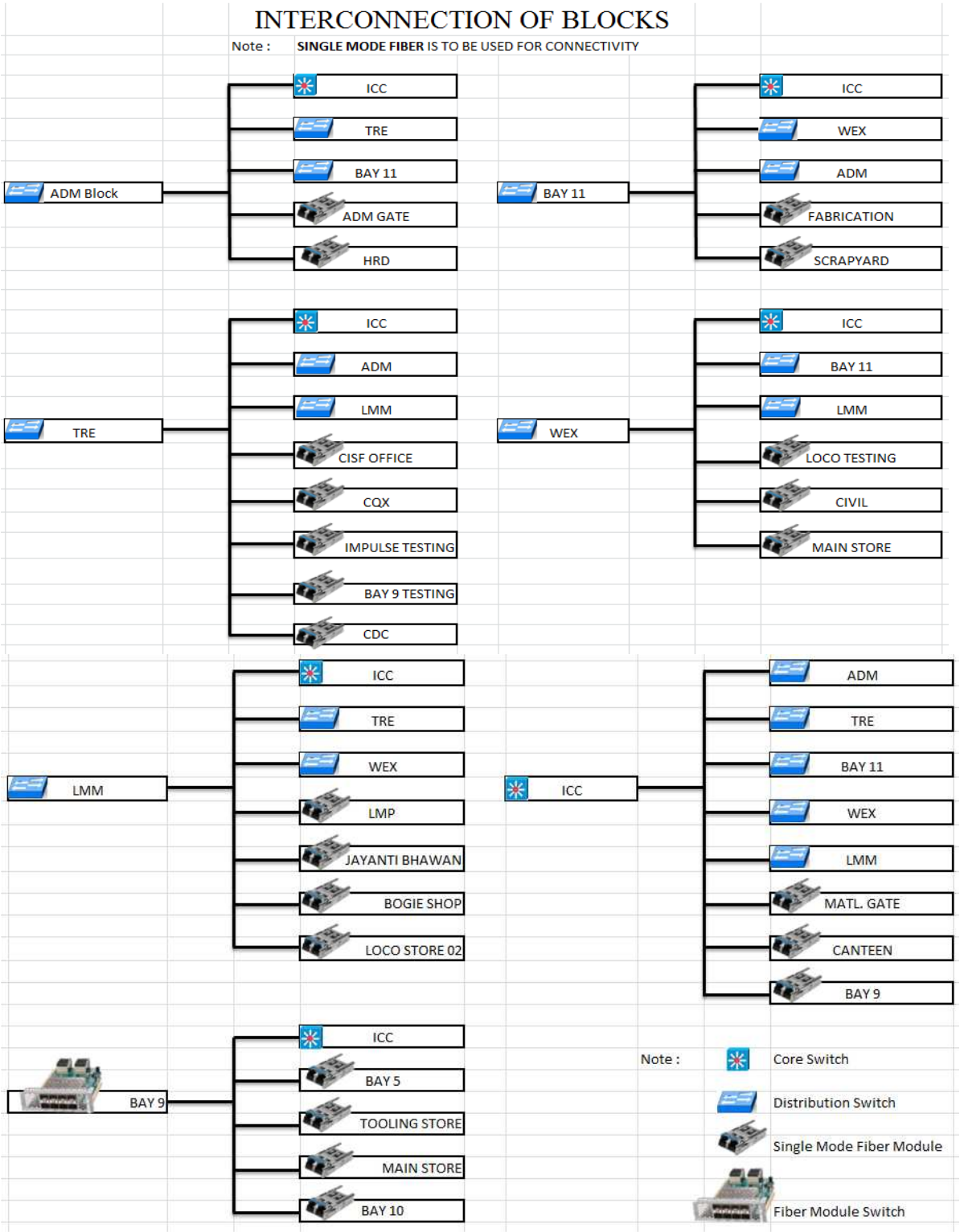
Description	Compliance (Yes/No)	Vendor Remarks
Demonstration of switchover of network services to : a) SMF cable via alternate route		
Demonstration of NMS configured for all supplied active components mapped on the Network Management Station Console with locations and routing indicated and event traps, alerts, real time network monitoring, logs and reports.		
Demonstration of VLAN Configured separately for each block and inter VLAN routing.		
Complete Network Documentation Soft Media and Hard Copy comprising of :		
• All fiber segments and terminations including measurement of max attenuation for end to end fiber links		
• Marking and labelling of all cables, ports and terminations		
• Routing and connections at each rack		
• Backbone network with distances, location, layout, losses, marking, labelling and configuration		
• Configuration for NMS		

Vendor Name :		Name :	
Organisation :		Organisation :	**BHEL, Jhansi**
Date :		Date :	
Signature :		Signature :	

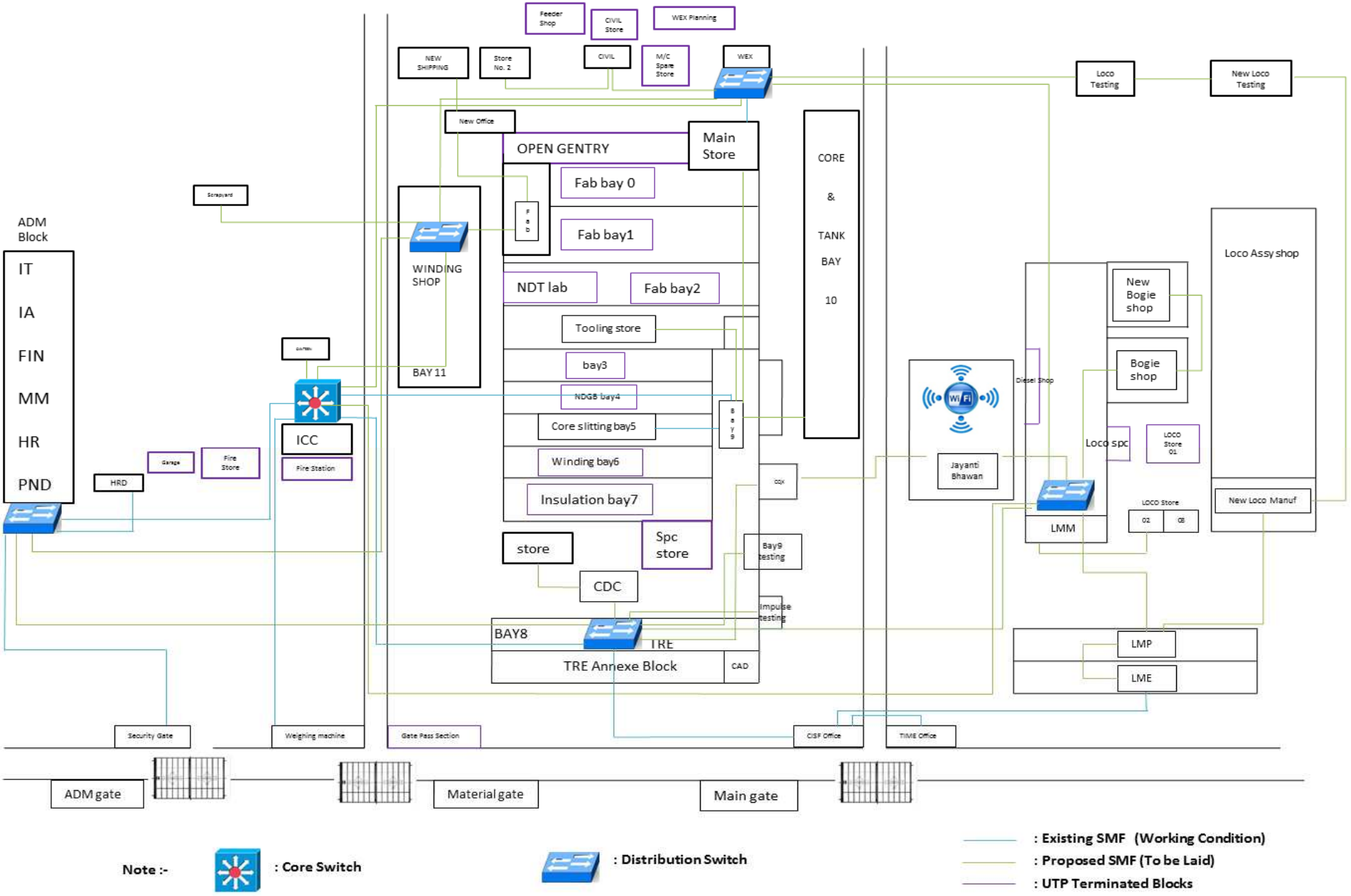
Logical Ring Connectivity b/w Core and Distribution Switches



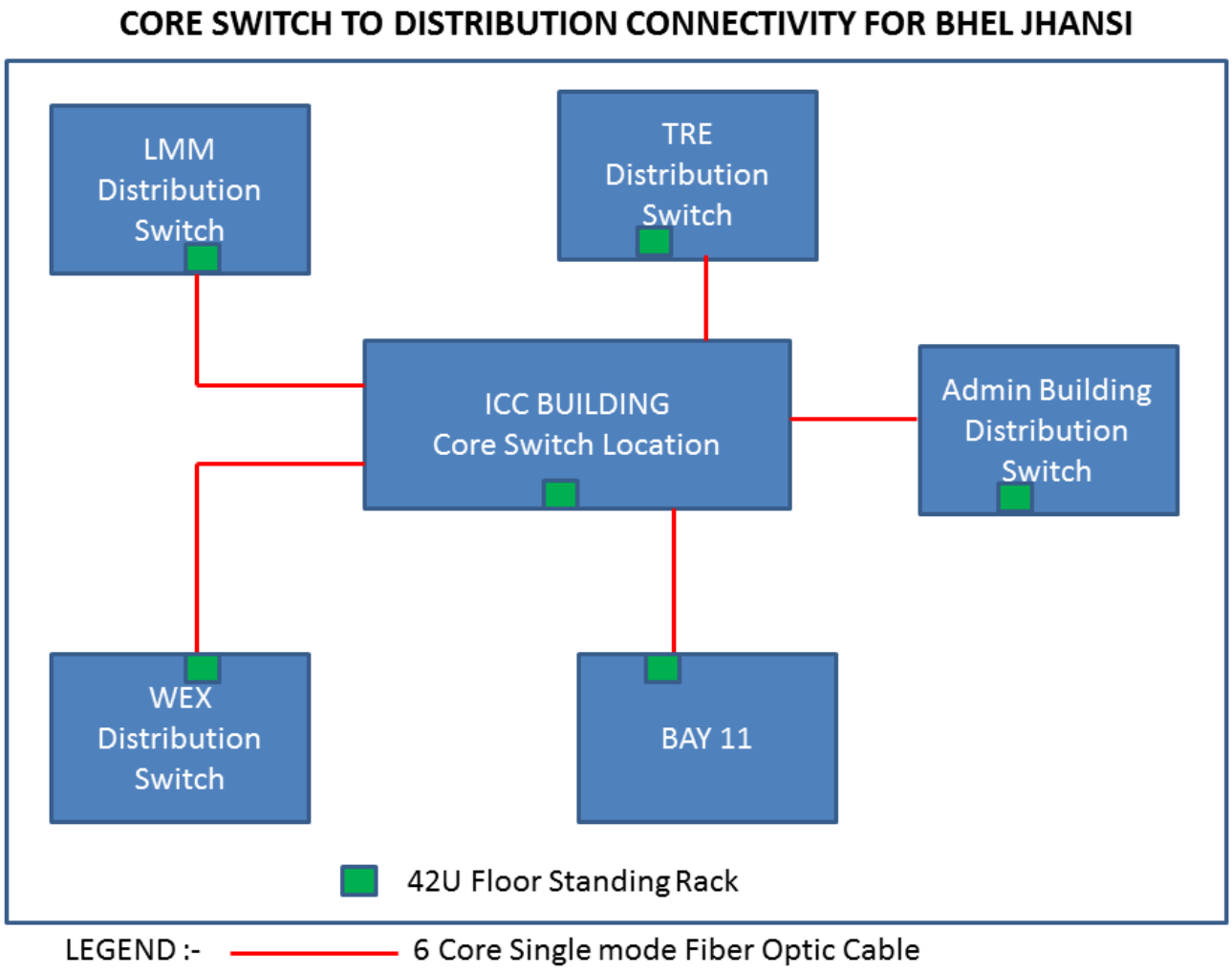
Note: **Core Switch** is located at **ICC** while **Distribution Switches** are placed at 5 different locations namely **IT** (ADM Block), **BAY 11**, **WEX**, **LMM** and **TRE.**


INTERCONNECTION OF BLOCKS
Note : SINGLE MODE FIBER IS TO BE USED FOR CONNECTIVITY
ADM Block
ICC
TRE
BAY 11
ADM GATE
HRD
BAY 11
ICC
WEX
ADM
FABRICATION
SCRAPYARD
TRE
ICC
ADM
LMM
CISF OFFICE
CQX
IMPULSE TESTING
BAY 9 TESTING
CDC
WEX
ICC
BAY 11
LMM
LOCO TESTING
CIVIL
MAIN STORE
LMM
ICC
TRE
WEX
LMP
JAYANTI BHAWAN
BOGIE SHOP
LOCO STORE 02
ICC
ADM
TRE
BAY 11
WEX
LMM
MATL. GATE
CANTEEN
BAY 9
BAY 9
ICC
BAY 5
TOOLING STORE
MAIN STORE
BAY 10
Note :
Core Switch
Distribution Switch
Single Mode Fiber Module
Fiber Module Switch

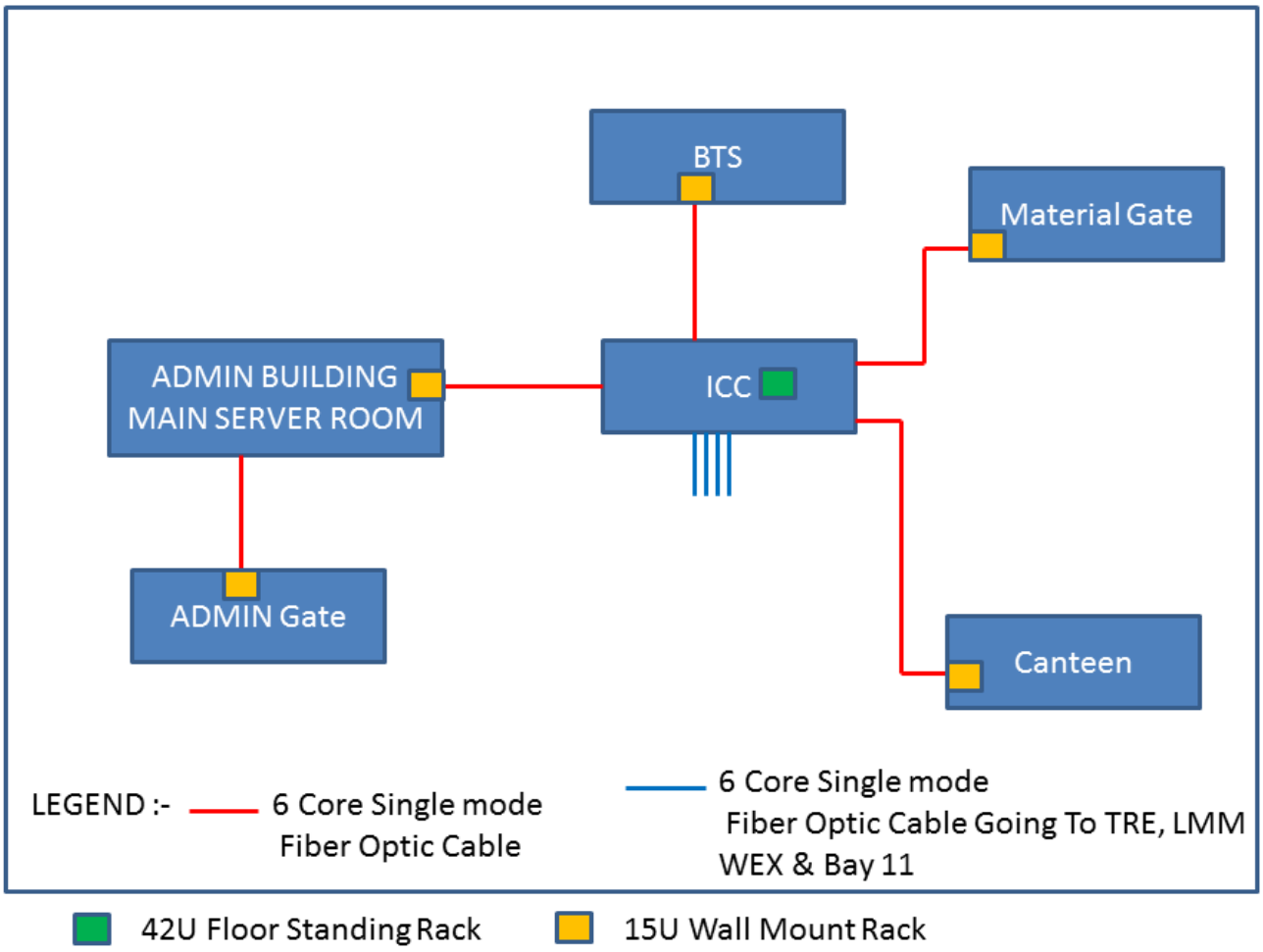
Proposed Single Mode Fiber Layout

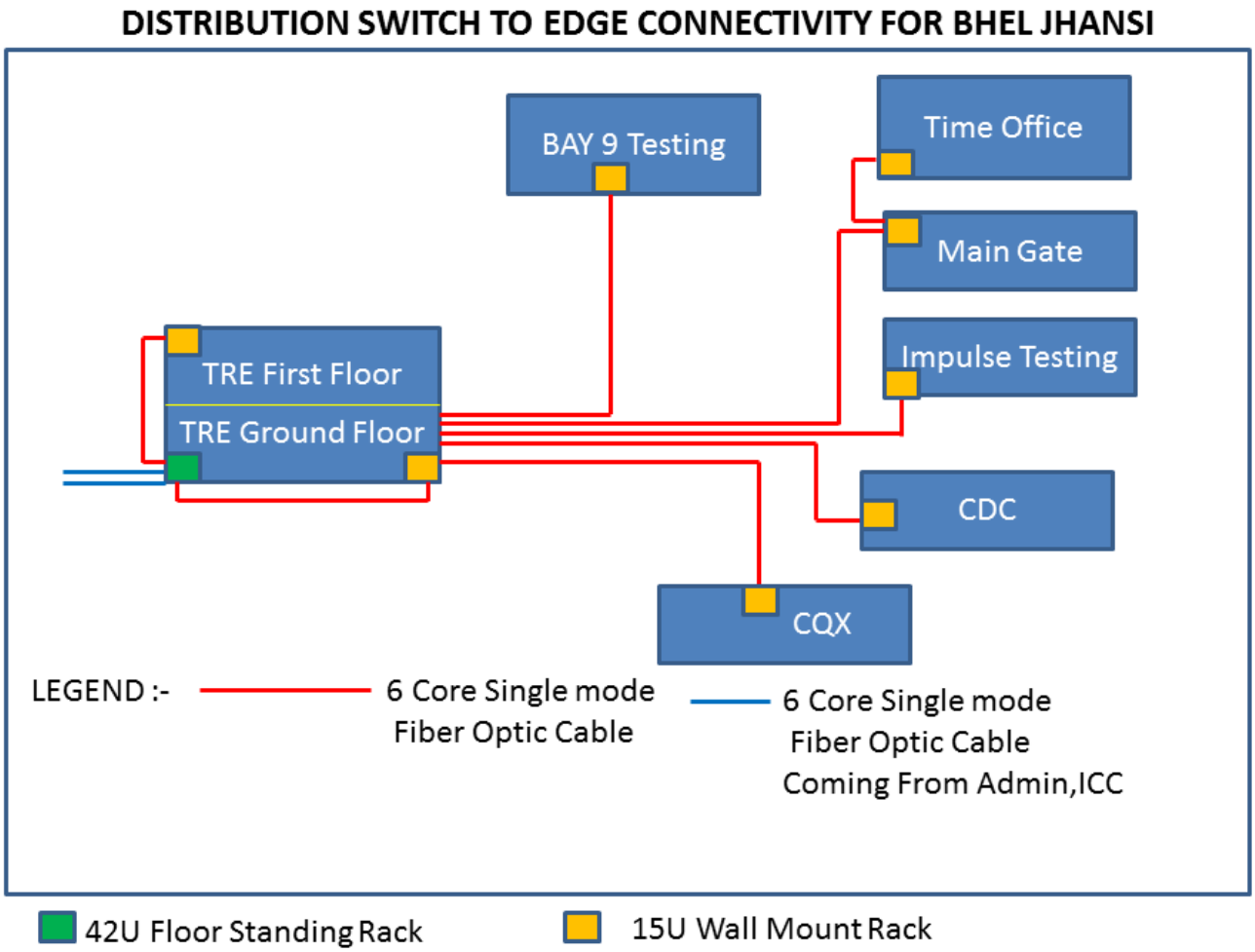


Detailed Network Logical Diagram:

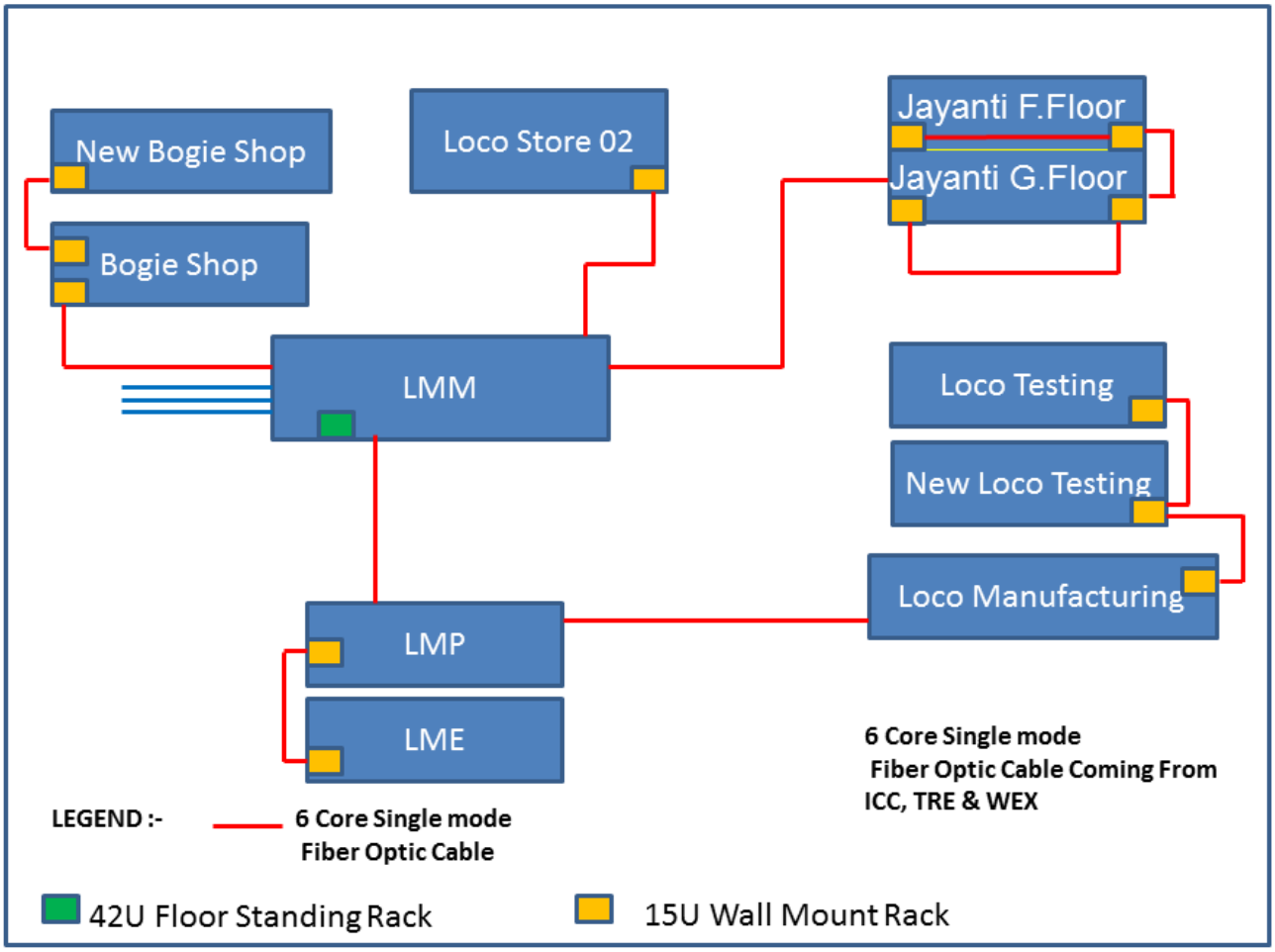


DISTRIBUTION SWITCH TO EDGE CONNECTIVITY FOR BHEL JHANSI

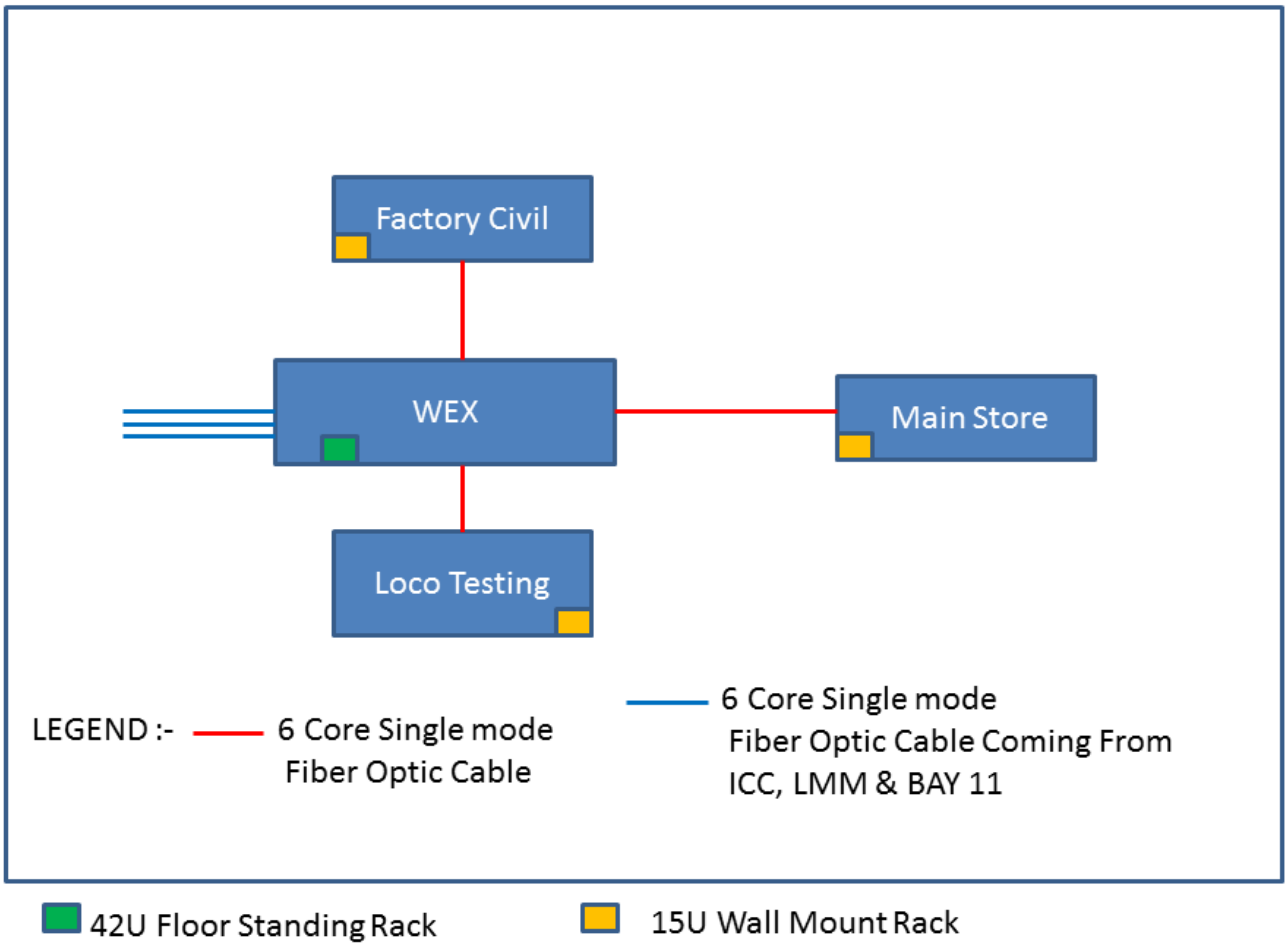



DISTRIBUTION SWITCH TO EDGE CONNECTIVITY FOR BHEL JHANSI
BAY 9 Testing
Time Office
Main Gate
Impulse Testing
TRE First Floor
TRE Ground Floor
CDC
CQX
LEGEND :-
6 Core Single mode Fiber Optic Cable
6 Core Single mode Fiber Optic Cable Coming From Admin,ICC
42U Floor Standing Rack
15U Wall Mount Rack

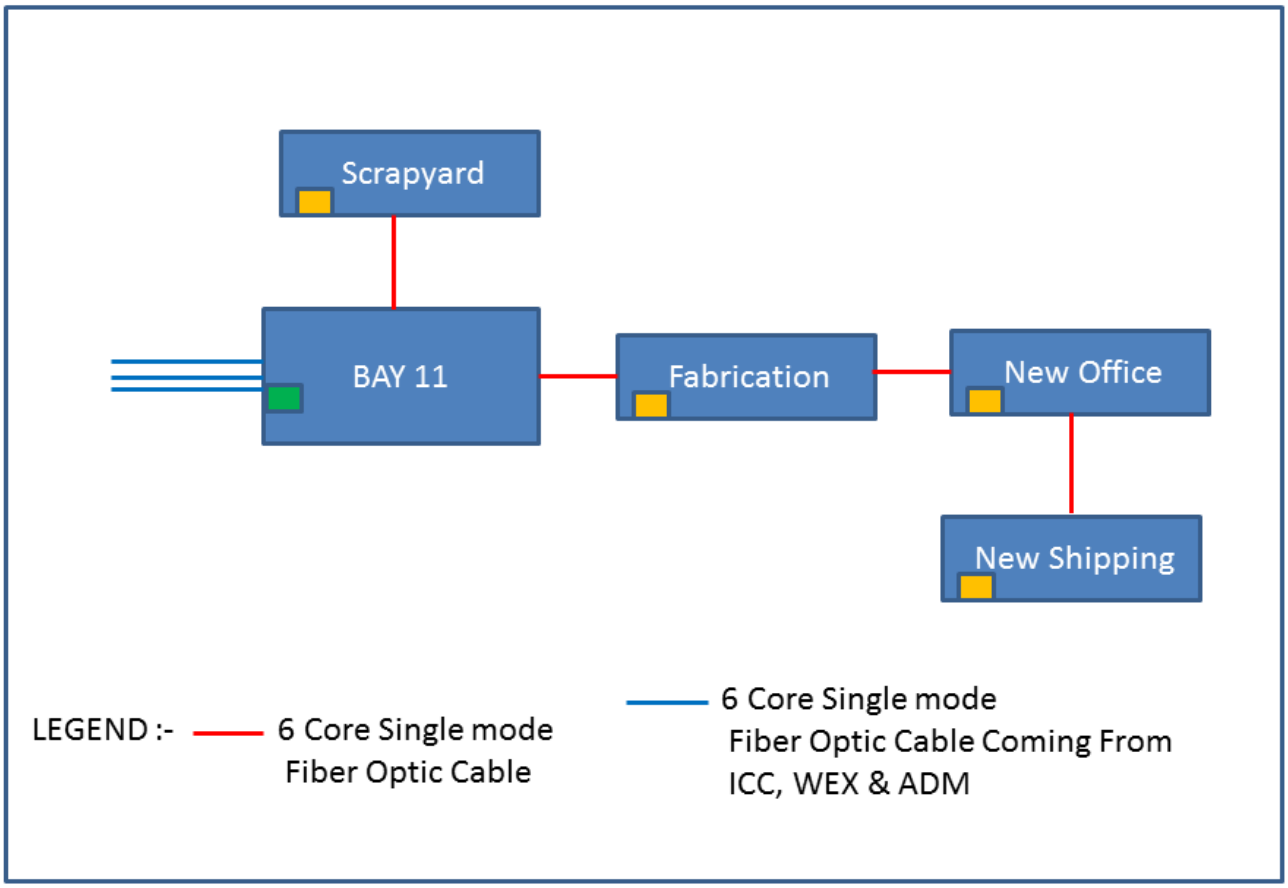
DISTRIBUTION SWITCH TO EDGE CONNECTIVITY FOR BHEL JHANSI



DISTRIBUTION SWITCH TO EDGE CONNECTIVITY FOR BHEL JHANSI

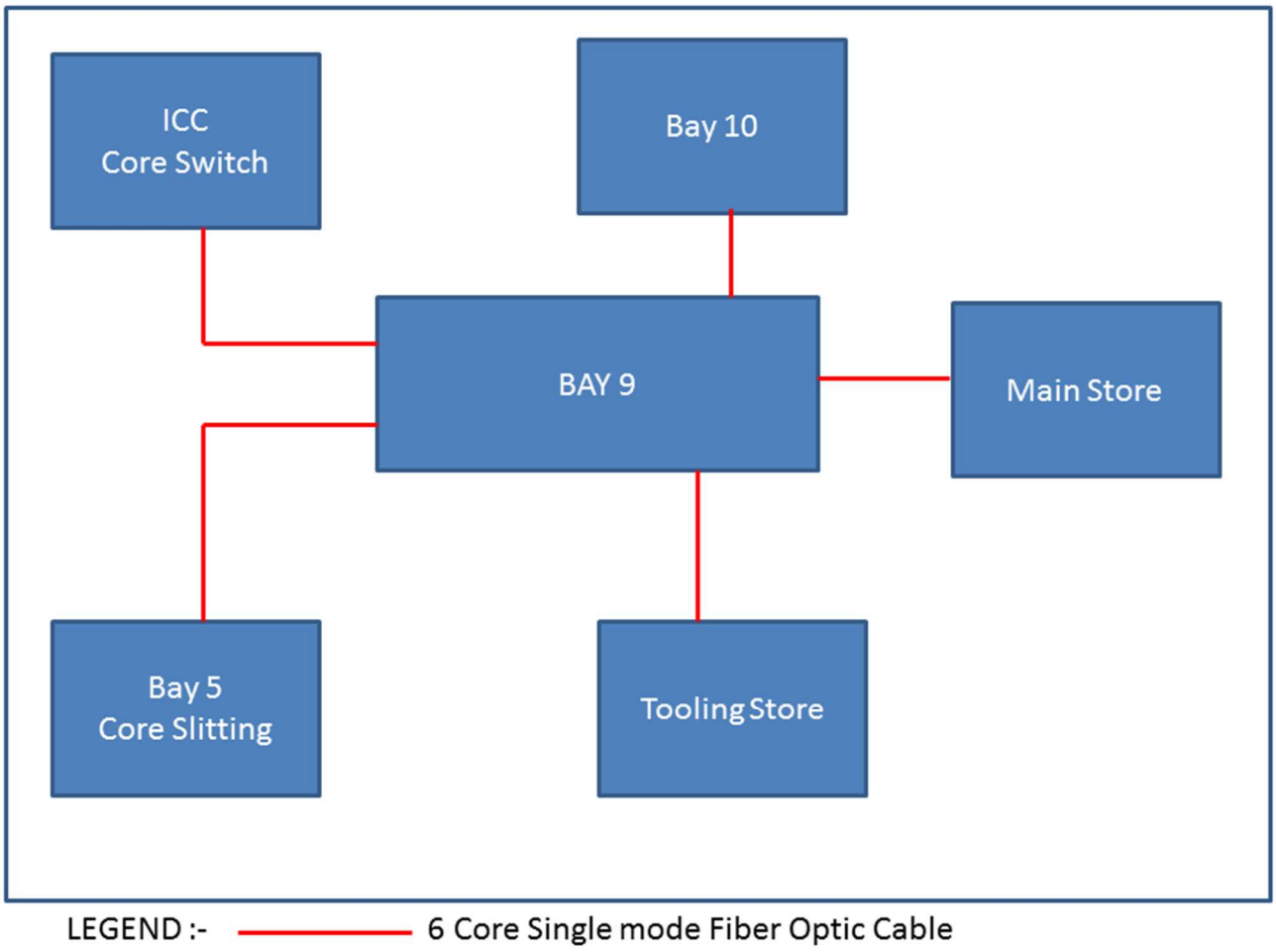


DISTRIBUTION SWITCH TO EDGE CONNECTIVITY FOR BHEL JHANSI



42U Floor Standing Rack 15U Wall Mount Rack

DISTRIBUTION SWITCH AT BAY 9 LOCATION: At present a Distribution Switch is placed at Bay 9 location. In Network Up gradation the proposed location for the switch is Bay 11 which has been shown in **Proposed Single Mode Fiber Layout at pg. 75**. The Distribution Switch at this location is to be replaced by a Fiber Terminated Access Switch that can give fiber connectivity to following locations. **6 Core Single Mode Fiber** is to be used for giving Network Connectivity to various neighbor locations as shown:



Approximate Lengths between Blocks			
Sr. No.	Source	Destination	Length (In Meters)
1	ADM Block	ADM Gate	150
2	ADM Block	HRD	200
3	ADM Block	ICC	300
4	ADM Block	Bay 11	1000
5	ADM Block	TRE	700
6	Bay 11	ICC	500
7	Bay 11	Fabrication	150
8	Fabrication	New Office	150
9	New Office	New Shipping	100
10	Bay 11	Scrapyard	100
11	Bay 11	WEX	500
12	Bay 9	Main Store	200
13	Bay 9	Bay 10	150
14	Bay 9	Tooling Store	100
15	Bay 9	Core Slitting Bay 5	100
16	ICC	Canteen	150
17	ICC	Material Gate	250
18	ICC	ADM	300
19	ICC	TRE	250
20	ICC	WEX	1000
21	ICC	LMM	1000
22	ICC	BAY 9	500
23	TRE	CISF Office	200
24	TRE	CDC	150
25	CDC	Store	100
26	TRE	CQX	200
27	TRE	LMM	500
28	TRE	IMPULSE TESTING	100
29	TRE	BAY 9 TESTING	100
30	CISF Office	Time Office	50
31	LME	Time Office	200
32	LME	LMP	50
33	LMM	Jayanti Bhawan	150
34	LMM	WEX	700
35	Jayanti Bhawan	CQX	200
36	LMP	LMM	100
37	LMM	Bogie Shop	200
38	Bogie Shop	New Bogie Shop	150
39	LMM	Loco Store 02	100
40	LMP	New Loco Manuf.	200
41	WEX	Civil Office	100
42	Civil Office	Store No. 2	100
43	WEX	New Shipping	300
44	WEX	Loco Testing	400
45	WEX	Main Store	100
46	Loco Testing	New Loco Testing	200
47	New Loco Testing	New Loco Manuf.	300
		Total Length	**12800**

Nodes Break Up at Various Departments					
Building Name	No of Node	42U Floor Standing Rack	27U Floor Standing Rack	15U Wall Mount Rack	24 Port Unloaded Jack panel
Cater to Admin Core Rack	45	1	0	0	2
Admin Gate	10	0	0	1	1
Material Gate	10	0	0	1	1
Canteen	10	0	0	1	1
HRD Dep't	40	0	0	1	2
BTS Room(BSNL)	5	0	0	1	1
Cater to TRE DS & Another 5 Rack	250	0	0	5	11
Main gate	10	0	0	1	1
Impulse	20	0	0	1	1
CDC	20	0	0	1	1
LME	20	0	0	1	1
Bay9 testing	10	0	0	1	1
CQX	20	0	0	1	1
Cater to LME DS	90	1	0	0	4
Time office	40	0	0	1	2
LMP	40	0	0	1	2
Jayanti In Building 4 Rack Location	90	0	1	3	4
New Assy shop In Building 4 Rack Location	45	0	0	4	2
LOCO Manufacturing	20	0	0	1	1
Bogie Shop	20	0	0	1	1
Bogie Shop New	18	0	0	1	1
WEX DS	45	1	0	0	2
LOCO Testing	10	0	0	1	1
Store	40	0	0	1	2
New Shipping	10	0	0	1	1
New Building	10	0	0	1	1
Boiler	15	0	0	1	1
Civil	20	0	0	1	1
Bay 11 In Building 5 Rack Location	72	1	0	4	3
Backbone & Buffer	200	0	0	0	9
Total Node	**1255**	**4**	**1**	**38**	**63**